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SIXTH EDITION

EVIDENCE-BASED GERIATRIC NURSING PROTOCOLS FOR BEST PRACTICE



Marie Boltz
EXECUTIVE EDITOR

Elizabeth A. Capezuti
DeAnne Zwicker
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Terry Fulmer, PhD, RN, FAAN, is the president of The John A. Hartford Foundation in New York City (NYC), a foundation dedicated to improving the care of older adults. Established in 1929, the Foundation has a current endowment of more than half a billion dollars. She serves as the chief strategist for the Foundation and was recently recognized for her leadership as one of the top 50 Influencers in Aging by PBS's Next Avenue, the premier digital publication dedicated to covering issues for older Americans. Dr. Fulmer is an elected member of the National Academy of Medicine. She previously served as distinguished professor and dean of Bouvé College of Health Sciences at Northeastern University. Before that, she served as the Erline Perkins McGriff Professor and dean of New York University (NYU) College of

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Foreword

Older adults are the largest consumers of healthcare in the United States. Their health needs are often complex, with a trend toward declining function and a higher likelihood of having one or more chronic diseases. Most practitioners are unprepared to adequately care for older adults who present with health issues that are compounded by age changes, chronicity, and contributing social determinants. The current healthcare system tends to manage these complex health issues in a fragmented way without coordination across care providers, settings, and time. What we have learned after years of ineffective approaches to the health needs of older adults is this: Poor care is costly care and costly care is not sustainable. For more than half a century, visionary leaders have made healthcare improvement for older adults their rallying cry. Geriatric nurses, including the editors and contributing authors of *Evidence-Based Geriatric Nursing Protocols for Best Practice*, have been among those leaders and at the forefront of needed change.

Just like healthcare providers, geriatric nurses are uniquely and strategically positioned to make an enduring impact on the quality of direct care and on the effectiveness of systems where that care is delivered. Geriatric nurses have a duty of care to adhere to a set of standards that guide practice for the purpose of improving the lives of others. These standards of care are not invariant, but change over time as new knowledge is gained through research and as new public health issues emerge in society. The trust and respect given to the profession will be determined by the competency and compassion demonstrated at the point of care.

Trust and respect are fragile commodities, however, and must be earned. There is no better way to ensure competency than by keeping informed of what constitutes best practice at any point in time. *Evidence-Based Geriatric Nursing Protocols for Best Practice* was written for this purpose. A wide audience—students, faculty, and clinicians—will find this text engaging, instructive, and indispensable.

The sixth edition of *Evidence-Based Geriatric Nursing Protocols for Best Practice* completely updates and expands the award-winning fifth edition. What impresses me about this new edition is the depth of information provided and the carefully crafted structure of the text. Each of the 44 chapters is written by experts in the field, scientists, educators, and clinicians, who bring years of experience working with older adults who live with common and complex clinical problems. These experts not only share the latest research, guidelines, and protocols for practice but also bring the content to life using actual case studies that skillfully illustrate best practice.

I was especially excited to see new chapters that address emerging clinical and social issues that impact health outcomes for older adults. The chapters on person-centered care, technology, HIV in older adults, and dementia assessment and intervention are cutting edge and essential reading. The chapters that take on some of the social determinants of health, the effect of the physical environment on function and the needs of the LGBTQ community, will help nurses contribute to older adults' ability to live healthy and full lives.

I like to think of *Evidence-Based Geriatric Nursing Protocols for Best Practice* as a compendium of critical competencies written by some of the most successful experts in the field. Every geriatric nurse who wants to improve the lives of older adults will keep this resource in their library and, like a trusted mentor, turn to it often.

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Preface

Across healthcare settings, older adults represent the majority of consumers served. They present with the most clinically and socially complex situations and thus require nurses to possess highly developed assessment competencies, critical thinking abilities, and relationship-based skills. Nurses have an enormous responsibility when providing care to older adults in this rapidly changing healthcare environment with its increasing regulatory requirements, variable staffing levels, and unpredictable reimbursement. Nurses also have an amazing opportunity to positively change the daily experiences and health of older adults. The nurse who is armed with an understanding of the unique clinical presentations and response to treatment in older adults and who has knowledge about evidence-based assessment and interventions is situated to not only prevent and manage health problems but also to promote function and quality of life.

As in the previous editions of *Evidence-Based Geriatric Nursing Protocols for Best Practice*, we present up-to-date information on assessment and interventions for common health problems and geriatric syndromes. We have expanded our robust clinical content to include evidence-based approaches to support LGBTQ elders, persons living with dementia and their families, and older adults living with HIV. We are pleased to also include three new chapters that comprise operational strategies in the following areas: embedding clinical practice guidelines into the electronic health record, person-centered care approaches, and age-friendly environmental considerations.

In this sixth edition, we provide guidelines that are developed by experts on the topics of each chapter and are based on the best available evidence. A systematic method, the AGREE (Appraisal of Guidelines for Research and Evaluation) appraisal process (AGREE Next Steps Consortium, 2013), was used to evaluate the protocols and identify a process to help us improve the validity of the book's content. Thus, a systematic process, described in Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach, was developed for authors to retrieve and evaluate the level of evidence of key references related to specific assessment and management strategies in each chapter. This first chapter details the process of how the clinical practice guidelines were developed and how they complied with the AGREE items for rigor of development (AGREE Next Steps Consortium, 2013). Chapter 1 is an important chapter reference for understanding the rating of the levels of evidence throughout the book.

HOW TO BEST USE THIS BOOK

Chapters provide overview and background information on the topic, evidence-based assessment and intervention strategies, and, when appropriate, a topic-specific case study with discussion. The text of the chapter provides the context and detailed evidence for the protocol; the tabular protocol is not intended to be used in isolation of the text. We recommend that the reader take the following approach when reviewing the chapters:

1. Review the *objectives* to ascertain what is to be achieved by reviewing the chapter.
2. Review the *text*, noting the level of evidence presented in the reference section: Level I being the highest (e.g., systematic reviews/meta-analyses) and Level VI the lowest (e.g., expert opinions). Refer back to Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach, Figure 1.1, for the definitions of the levels of evidence to understand the quantitative evidence that supports each of the recommendations. Keep in mind that it is virtually impossible to have evidence for all assessments and interventions,

which does not mean they are not going to be used as an intervention. Many interventions that have been successfully used for years have not been quantitatively researched but are well known to be effective to experts in the field of geriatrics.

3. Review the *protocols* and remember that they reflect assessment and intervention strategies for acute care recommended by experts who have reviewed the evidence. This evidence is from all levels of care (e.g., community, primary care, long-term care) and should be applied to the unique needs of the individual patient.
4. Review the *case study* on each topic, which provides a more real-life, practical manner in which the protocol may be applied in clinical practice.

The *resources* in the chapters provide easy access to tools discussed in the chapter and link readers with organizations that provide ongoing, up-to-date information on the topic.

Although this book is titled *Evidence-Based Geriatric Nursing Protocols for Best Practice*, the text may be used by educators for geriatric nursing courses and advanced practice nurses, and by many other disciplines, including interprofessional team members, long-term care and other staff educators, social workers, dietitians, and physicians. It is our hope that this book provides a resource to help nurses and interprofessional colleagues collaborate effectively to provide effective and person-centered care.

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Terry Fulmer
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Qualified instructors may obtain access to PowerPoints and a Test Bank by emailing textbook@springerpub.com.

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- Authors who provided a valuable contribution in previous editions and their ongoing gerontological scholarship
- The institutions that supported faculty and clinicians who were contributors to this book
- The older adults and families who teach and inspire us to continually seek new and effective ways to improve care delivery
- Springer Publishing Company for its ongoing support of quality geriatric nursing publications

Evidence-Based Geriatric Nursing Protocols for Best Practice

Incorporating Evidence Into Practice

I

Chapter 1 Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach

Chapter 2 Measuring Performance and Improving Quality

Chapter 3 Informational Technology: Embedding Geriatric Clinical Practice Guidelines

Chapter 4 Organizational Approaches to Promote Person-Centered Care

Chapter 5 Environmental Approaches to Support Aging-Friendly Care

Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach

1

Kathleen Phillips

EDUCATIONAL OBJECTIVES

After completion of this chapter, the reader should be able to:

1. Describe how to level the evidence used to develop and substantiate a practice protocol.
2. Differentiate among recommendations, guidelines, and practice protocols.
3. Evaluate clinical practice guidelines using Appraisal of Guidelines for Research and Evaluation (AGREE) II.
4. Identify the five steps of the process for discovery of best evidence and integration into practice.
5. Describe the best sources of evidence available to answer background/overview questions to support protocol development.
6. Describe the specialized evidence sources most appropriate to support protocol development for specific patients and/or problems.

OVERVIEW

Clinical decision-making that is grounded in the best available evidence is essential to promote patient safety and quality healthcare outcomes. With the knowledge base for geriatric nursing rapidly expanding, assessing geriatric clinical practice guidelines (CPGs) for their validity and incorporation of the best available evidence is critical to the safety and outcomes of care. In the second edition of this book, Lucas and Fulmer (2003) challenged geriatric nurses to take the lead in the assessment of CPGs, recognizing that, in the absence of best evidence, guidelines and protocols have little value for clinical decision-making. In the third edition of this book, Levin, Singleton, and Jacobs (2008) proposed a method for ensuring that the protocols included here were based on meta-analysis (if data are available), systematic review of the literature, and synthesis of best evidence.

The purpose of this chapter is to describe the process that was used to create the fourth, fifth, and the current sixth edition of *Evidence-Based Geriatric Nursing Protocols for Best Practice*. Before the third edition of this book, there was no standard process or specific criteria for protocol development, nor was there any indication of the "level of evidence" of each source cited in a chapter (i.e., the evidence base for the protocol). In the third and fourth editions of this book, the process previously used to develop the geriatric nursing protocols was enhanced and described in detail. That process differed from the procedures followed in the current edition. This chapter is a guide to

understanding how the protocols contained in this book were developed and it details how to use a systematic, efficient, and evidence-based approach to discovering and evaluating evidence, which is the process needed to guide the assessment, development, and updating of practice protocols in any area of nursing practice.

DEFINITION OF TERMS

Evidence-based practice (EBP) is a framework for clinical decision-making that uses (a) the best available evidence, (b) the clinician's expertise, and (c) a patient's values and circumstances to guide judgments about a patient's personal health condition (Keefer & Levin, 2013; Melnyk & Fineout-Overholt, 2015; Straus, Glasziou, Richardson, & Haynes, 2010). Healthcare professionals often use the terms *recommendations, guidelines*, and *protocols* interchangeably, but they are not synonymous.

A recommendation is a suggestion for practice, not necessarily sanctioned by a formal, expert group. A CPG is an "official recommendation" or suggested approach to diagnose and manage a broad health condition or problem (e.g., heart failure, smoking cessation, or pain management). A protocol is a more detailed guide for approaching a clinical problem or health condition and is tailored to a specific practice situation. For example, guidelines for falls prevention recommend developing a protocol for toileting older, sedated, or confused patients (Gray-Miceli & Quigley, 2013). The specific practices or protocols that each healthcare organization implements, however, are agency specific. The validity of any of these practice guides can vary depending on the type and the level of evidence on which they are based. Using standard criteria to develop or refine CPGs or protocols assures reliability of their content. Standardization gives both nurses, who use the guideline/protocol, and patients, who receive care based on the guideline/protocol, assurance that the geriatric content and practice recommendations are based on the best evidence.

In contrast to these practice guides, "standards of practice" are not specific or necessarily evidence based; rather, they are a generally accepted, formal, and published framework for practice. As an example, the American Nurses Association document, *Nursing: Scope and Standards of Practice,* Third Edition, contains a standard regarding nurses' accountability for making an assessment of a patient's health status (American Nurses Association, 2015). The standard is a general statement, whereas a protocol may specify the measurement tool(s) to use in that assessment—for example, STRATIFY, an instrument used to measure the risk of falls (Smith, Forster, & Young, 2006).

The AGREE (Appraisal of Guidelines for Research and Evaluation) and AGREE II Instruments

The AGREE instrument (www.agreetrust.org/resource-centre/the-original-agree-instrument), originally created and evaluated by a team of international guideline developers and researchers for use by the National Health Service, has been revised and updated and remains a generic tool designed primarily to help guideline developers and users assess the methodological quality of guidelines (Brouwers et al., 2010). This appraisal includes evaluation of the methods used to develop the CPG, assessment of the validity of the recommendations made in the guideline, and consideration of factors related to the use of the CPG in practice. Although the AGREE instrument was created to critically appraise CPGs, the process and criteria can also be applied to the development of clinical practice protocols. Thus, the AGREE instrument has been expanded for that purpose to standardize the creation and revision of the geriatric nursing practice protocols in this book.

The initial AGREE instrument and the one used for clinical guideline/protocol development in the third edition of this book has six quality domains: *scope and purpose*, *stakeholder involvement, rigor of development, clarity and presentation, application,* and *editorial independence*. A total of 23 items divided among the domains were rated on a 4-point Likert-type scale from "strongly disagree" to "strongly agree." Appraisers evaluate how well the guideline they are assessing meets the criteria (i.e., items) of the six quality domains. For example, when evaluating the *rigor of development,* appraisers rated seven items. The reliability of the AGREE instrument is increased when each guideline is appraised by more than one appraiser. Each of the six domains receives an individual domain score and, based on these scores, the appraiser subjectively assesses the overall quality of a guideline.

Important to note, however, is that the original AGREE instrument was revised in 2009 (AGREE Next Steps Consortium, 2013) and is now called AGREE II, which is the version that we used for the fourth, fifth, and sixth editions of this book. The revision added one new item to the *rigor of development* domain. This is the current item 9, which underscores the importance of evaluating the evidence that is applied to practice. Item 9 reads: "The strengths and limitations of the body of evidence are clearly described" (Exhibit 1.1). The remainder of the changes included a revision of the Likert-type scale used to evaluate each item in the AGREE II, a reordering of the number assigned to each item based on the addition of the new item 9, and minor editing of items for clarity. No other substantive changes were made. Exhibit 1.1 includes the items that are in the

EXHIBIT 1.1

Sample Domain and Items From the AGREE II Instrument for Critical Appraisal of Clinical Practice Guidelines

Domain 3: Rigor of Development
7. Systematic methods were used to search for evidence.
8. The criteria for selecting the evidence are clearly described.
9. The strengths and limitations of the body of evidence are clearly described.
10. The methods for formulating the recommendations are clearly described.
11. The health benefits, side effects, and risks have been considered in formulating the recommendations.
12. There is an explicit link between the recommendations and the supporting evidence.
13. The guideline has been externally reviewed by experts prior to its publication.
14. A procedure for updating the guideline is provided.

AGREE, Appraisal of Guidelines for Research and Evaluation.

Source: Reprinted from AGREE Next Steps Consortium. (2013). *AGREE II instrument*. Retrieved from http://www.agreetrust.org/wp-content/uploads/2013/10/AGREE-II-Users-Manual-and-23-item-Instrument_2009_UPDATE_2013.pdf, by permission of Melissa Brouwers

rigor of development domain and were used for evaluation of evidence in the current edition of this book. A 2013 update of the AGREE II instrument (www.agreetrust.org/resource-centre/agree-ii-training-tools) includes a history of the project, information about language translations, and enhanced online training tools freely available to support guideline developers (AGREE Enterprise, 2014).

The *rigor of development* section of the AGREE instrument provides standards for literature searching and documenting the databases and terms searched. Adhering to these criteria to find and use the best available evidence on a clinical question is critical to the validity of geriatric nursing protocols and ultimately to patient safety and outcomes of care.

Published guidelines can be appraised using the AGREE II instrument. In the process of guideline development, however, the clinician is faced with the added responsibility of appraising all available evidence for its quality and relevance. In other words, how well does the available evidence support recommended clinical practices? The clinician needs to be able to support or defend the inclusion of each recommendation in the protocol based on its level and quality of evidence. To do so, the guideline must reflect a systematic, structured approach to find and assess the available evidence.

Searching for the Best Evidence

Models of EBP describe the evidence-based process in five steps (Melnyk & Fineout-Overholt, 2015; Titler, 2010):

1. Develop an answerable question.
2. Locate the best evidence.
3. Critically appraise the evidence.
4. Integrate the evidence into practice using clinical expertise with attention to patient's values and perspectives.
5. Evaluate the outcome(s).

Although the evidence-based process encompasses these five steps, for the purposes of this volume of protocols and their development, this chapter focuses on the first three steps in more detail.

Step 1: Develop an Answerable Question

Developing an answerable question is critical before one can choose relevant sources to search. The information needed may be in the form of a specific "foreground" question (one that is focused on a particular clinical issue) or it may be a broad question (one that asks for overview information about a disease, condition, or aspect of healthcare; Melnyk & Fineout-Overholt, 2015; Straus et al., 2010) to gain some background of the practice problem and interventions, and gain insight into its significance. Background information includes both internal data from a specific agency and external data to place the health condition or problem in a broader societal context. Internal data usually include quality metrics from the healthcare agency in conjunction with healthcare providers' observations. External data might require a search for local and/or national benchmarking data and prevalence statistics as well as general literature describing the local problem as one that goes beyond a specific healthcare setting, population, or intervention.

An example of a background query might be one that seeks data: *What is the prevalence of falls in older residents in a long-term care facility?* Should these data demonstrate an unacceptable fall rate compared with national benchmark and safety target statistics, then the local problem can be shown to have significance beyond the specific clinical agency. A broad research query (an example of an overarching background question) related to a larger category of disease or health problem and encompassing multiple interventions

might be: *What is the best evidence for fall prevention in hospitalized older adults?* The first place to search for evidence would be the ECRI Institute's Guidelines Trust™ (http://guidelines.ecri.org), as described in Table 1.1.

A related question—*What is the best evidence for falls prevention for the elderly in hospitals and long-term care facilities?*—is addressed in a systematic review (Cameron et al., 2012) from the Cochrane Library, as cited in Table 1.1. The *Cochrane Library of Systematic Reviews* contains rigorous and comprehensive narrative and statistical (meta-analyses) reviews that synthesize multiple studies of interventions. The information contained in this review synthesizes multifactorial interventions and may help to further focus the inquiry into a question about the effectiveness of a specific intervention.

A similar example (Slade, 2013) in Table 1.1 cites a Joanna Briggs Institute's evidence summary, which answers a general background or overview question: *What is the evidence regarding specific interventions to prevent falls in older adults?*

Once the overall evidence regarding a background question is uncovered, the question can be narrowed into a specific "PICO" format to specify the intervention or assessment tool being examined (Straus et al., 2010, p. 15). PICO stands for:

- P = Population or patient problem
- I = Intervention
- C = Comparison group or standard practice
- O = Outcomes
- T = Time

The focused clinical or PICO question now specifies a patient problem or population and focuses on a specific intervention—for example, *Does the introduction of a video-based educational module for staff decrease the rate of falls for hospitalized patients?*

A case study (Cangany et al., 2015), located in the Cumulative Index to Nursing and Allied Health Literature (CINAHL) article database, provides an example of evidence in a specialized hospital setting. Foreground questions are best answered by individual primary studies or syntheses of multiple studies, such as systematic reviews or meta-analyses. PICO templates work best to gather the evidence for focused clinical questions. In the question mentioned earlier, the *problem* was identified as a hospital progressive care unit with a fall rate higher than the National Database of Nursing Quality Indicators (NDNQI) benchmark, for a population of patients with heart disease. The *intervention* was the implementation of an educational video for staff, along with improved signage, improved documentation of bed alarm usage, a fall risk assessment, and a "patient/family fall teaching contract." The *comparison* implied was the usual care, and the *outcome* measures were both a reduction in the fall rate and the costs associated with the intervention versus the change in fall rate.

Step 2: Locate the Best Evidence

Step 2, locate the evidence, requires an evidence search based on the elements identified in the clinical question. Gathering the evidence for the protocols in this book presented the challenge of conducting literature reviews encompassing *both* the breadth of overview information as well as the depth of specificity represented in high-level systematic reviews and clinical trials to answer specific clinical questions.

Not every nurse, whether he or she is a staff nurse, advanced practice nurse, educator, or administrator, has developed proficient database search skills to conduct a literature review to locate evidence. Beyond a basic knowledge of Boolean logic, truncation, and applying categorical limits to filter results, competency in "information literacy" requires experience with the idiosyncrasies of databases, selection of terms, and ease with controlled vocabularies and database functionality (Association of College & Research Libraries, 2013). Many nurses report that limited access to resources, gaps in information literacy skills, and, most of all, a lack of time are barriers to "readiness" for EBP (Pravikoff, Tanner, & Pierce, 2005).

The digital age presents both consumers of research evidence and researchers with an array of tools for searching, managing, and citing both the published literature and the unpublished literature. The ever-changing electronic environment provides an array of search engines, "apps," and specialized discovery tools. Such an environment can be daunting and often overwhelming to novice and experienced users alike. Research portals promoting "one-box" search tools purport comprehensiveness, yet search results are often vast and unfiltered. The apparent ease of keyword searching invites cherry picking from the first few pages of results and can unwittingly introduce "search bias" (Wentz, 2002) into the quest for evidence, thus negating the sophisticated methodologies that were employed in primary searches to decrease experimenter bias and increase quality of evidence.

Health sciences librarians as intermediaries have been called "an essential part of the health care team by allowing knowledge consumers to focus on the wise interpretation and use of knowledge for critical decision making, rather than spending unproductive time on its access and retrieval" (Homan, 2010, p. 51). The *Cochrane Handbook* points out the complexity of conducting a systematic literature review

TABLE 1.1

Selected Databases, Examples of Types of Questions, Sample Citations, and Level of Evidence of Citation

Database/Description/Access	Overview Question	PICO or Focused Clinical Question	Sample Citation	Level of Evidence
PubMed/MEDLINE Premier biomedical database produced by the U.S. National Library of Medicine containing more than 25 million citations for biomedical literature from MEDLINE, life science journals, and online books. http://pubmed.gov		In hospitalized elders, does the STRATIFY falls risk assessment tool predict falls in hospital and after discharge?	Smith et al. (2006)	Level IV
CINAHL Cumulative Index to Nursing and Allied Health Literature (authoritative index for more than 5,000 nursing and allied health journals). http://health.ebsco.com/products/the-cinahl-database/allied-health-nursing		Does the introduction of an educational video recording for staff decrease the rate of falls for hospitalized patients?	Cangany, Back, Hamilton-Kelly, Altman, and Lacey (2015)	Level V
PsycINFO Indexes the professional and academic literature in the behavioral sciences and mental health, including medicine, psychiatry, nursing, sociology, pharmacology, physiology, and linguistics. http://www.apa.org/pubs/databases/psycinfo		Does exercise improve static and dynamic balance and dual-task ability in healthy older adults?	Gobbo, Bergamin, Sieverdes, Ermolao, and Zaccaria (2014)	Level I
Joanna Briggs Institute EBP Database Evidence summaries (short abstracts that summarize existing international evidence on common healthcare interventions and activities based on structured searches of the literature and selected evidence-based healthcare databases). http://connect.jbiconnectplus.org	What is the evidence regarding specific interventions to prevent falls in older adults?		Slade (2013)	Level VI
Cochrane Database of Systematic Reviews Produced by the Cochrane Library, one of the six databases that contain different types of high-quality, independent evidence to inform healthcare decision-making. http://www.cochranelibrary.com	What is the best evidence for falls prevention for the older adult in hospitals and long-term care facilities?		Cameron et al. (2012)	Level I
ClinicalTrials.gov A service of the U.S. National Institutes of Health, an international registry of publicly and privately supported clinical studies of human participants. https://clinicaltrials.gov		Are high-intensity exercise programs an effective intervention for patients with Parkinson's disease, compared with the usual care (low-intensity group therapy)?	ClinicalTrials.gov (2014)	NA
ECRI Institute Guidelines Trust™ A public resource for evidence-based clinical practice guidelines. http://guidelines.ecri.org	What is the best evidence for fall prevention in hospitalized older adults?		ECRI Institute Guidelines Trust (ECRI, 2019)	Level I

EBP, evidence-based practice; PICO, population, intervention, comparison group or standard practice, outcomes.

Note: Not every question will have the *Time* component.

Source: ECRI Institute. (2019). Retrieved from https://guidelines.ecri.org/

and highly recommends enlisting the help of a healthcare librarian when searching for evidence (Lefebvre, Manheimer, & Glanville, 2011).

Search Strategies

General or overview/background questions may be answered in textbooks, review articles, and "point of care" tools that aggregate overviews of best evidence, for example, clinical reference tools, systematic reviews, and synthesis tools. Locating systematic or narrative review articles or clinical guidelines based on systematic reviews may be helpful in the initial steps of gathering external evidence to support the significance of a problem before developing a narrower PICO question and investing a great deal of time in a question for which there might be limited evidence.

A search for individual studies in the published literature begins with database selection and translation of search terms into the controlled vocabulary of the database, if possible. In addition to the published literature, unpublished "grey" literature should also be considered. Grey literature, defined during the Fourth International Conference on Grey Literature, is the information "which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers" (National Information Center on Health Services Research and Health Care Technology, n.d., para 2). It includes resources such as theses, dissertations, conference proceedings, standards, technical documentation, newsletters, corporate organizations, and government documents. Although grey literature may not be peer-reviewed or evaluated, it is nonetheless a part of a comprehensive gathering of evidence as a source for CPGs and protocols. One example in Table 1.1, clinicaltrials.gov, lists a study that proposes an exercise program for patients who have Parkinson's disease, with the status "recruiting participants" as of 2014 (ClinicalTrials.gov, 2014). Trial registries and open-access repositories of clinical trials provide study criteria, outcome measures, and historical revisions to studies. They may be specialized for a particular kind of publication; for example, the Cochrane Library (www.cochranelibrary.com) and the PROSPERO database (www.crd.york.ac.uk/prospero), are both examples of systematic review protocol repositories. The major article databases for finding the best primary evidence for most clinical nursing questions are the *CINAHL* database (https://www.ebscohost.com/nursing/products/cinahl-databases), the *MEDLINE,* and the U.S. National Library of Medicine's premier biomedical article database (www.ncbi.nlm.nih.gov/pubmed). The PubMed interface to MEDLINE includes newly added citations to provide access to the most recently published literature. Another of the many sources of ongoing trials for nursing research is the Virginia Henderson Global Nursing e-Repository (www.sigmarepository.org). The Cochrane Library (which includes the Database of Systematic Reviews) and the Joanna Briggs publications (a paid subscription service including evidence summaries, practice sheets, and systematic reviews; http://connect.jbiconnectplus.org) are examples of synthesized, appraised sources of evidence for broad topic areas.

The AGREE II instrument was used as a standard against which we could evaluate the process for evidence searching and use in chapter and protocol development (AGREE Next Steps Consortium, 2013). Domain 3, *rigor of development*, Item 7, states: "Systematic methods were used to search for evidence" (AGREE Next Steps Consortium, 2013, p. 4). And the user's manual directs: "The search strategy should be as comprehensive as possible and executed in a manner free from potential biases and sufficiently detailed to be replicated" (p. 23). Taking a tip from the *Cochrane Handbook*, a literature search should capture both the subject terms and the methodological aspects of studies when gathering relevant records (Higgins & Green, 2011). The following guidelines reflect the process used to gather evidence for this book's protocols and are recommended guidelines for conducting a literature search.

- To facilitate replication and update of searches, save a search strategy listing the keywords/descriptors and search string used in each database searched (e.g., MEDLINE, PsycINFO, CINAHL, trial registries).
- Specify the time period searched (e.g., 2014–2019).
- Specify the categorical limits or methodological filters used (e.g., the article type: "meta-analysis" or the "systematic review subset" in PubMed; the "methodology" limit in PsycINFO for meta-analysis *or* clinical trial; the "research" limit in CINAHL).

Aggregate and organize evidence in a bibliographic management tool (e.g., Endnote [www.endnote.com], Mendeley [www.mendeley.com], RefWorks [https://www.refworks.com/refworks2], or Zotero [www.zotero.org]). Gathering evidence to support broader topics, such as the protocols in this book, presents the searcher with a greater challenge. Limiting searches by methodology can unwittingly eliminate the best evidence for study designs that do not lend themselves to these methods. For example, a cross-sectional retrospective design may provide the highest level of evidence for a study that examines "nurses' perception" of the practice environment (Boltz et al., 2008).

A challenge to a searcher is the need to balance the comprehensiveness of recall (or "sensitivity") with precision ("specificity") to retrieve a manageable number of references. The *Cochrane Handbook* states: "Searches should seek high

sensitivity, which may result in relatively low precision" (Lefebvre et al., 2011, Section 6.1). Thus, retrieving a large set of articles may include many irrelevant hits. Conversely, putting too many restrictions on a database search may exclude relevant studies. The goal of retrieving the relevant studies for broad topic areas requires "sacrificing precision" and manually filtering false or irrelevant hits. Pitfalls of computerized retrieval are justification for the review by the searcher to hand weed false hits from the retrieved list of articles.

The iterative nature of any literature search means that an initial set of relevant references for both broad or specific questions serves to *point* protocol authors toward best evidence as an adjunct to their own knowledge and their own pursuit of "chains of citation" (McLellan, 2001), related records, and their clinical expertise. For example, a core list of references on the topic of physical restraints might lead to exploring citations related to wandering, psychogeriatric care, or elder abuse.

Step 3: Critically Appraise the Evidence

Step 3, critically appraise the evidence, begins with identifying the methodology used in a study (often evident from reviewing the article abstract) followed by a critical reading and evaluation of the research methodology and results. The coding scheme described subsequently provides the first step in filtering retrieved studies based on research methods.

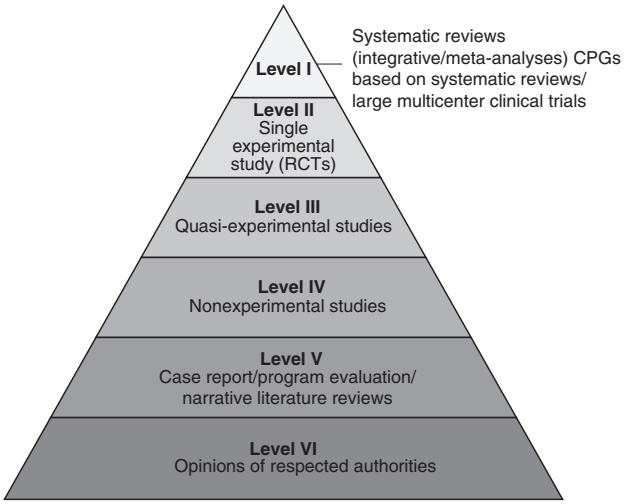
Levels of evidence (LOE) offer a schema that, once known, helps the reader to follow an efficient path for evidence searching as well as understand the relative value of the information presented to the clinical topic or question under review. There are many extant schemas used to identify the LOE of sources. Although multiple schemas exist, there are commonalities in their hierarchical structure, often represented by a pyramid or "publishing wedge" (DiCenso, Bayley, & Haynes, 2009). The highest level of evidence is seen at the top of a pyramid, usually systematic reviews (meta-analyses) and CPGs based on high-level evidence. The LOE for the current edition can be seen in Figure 1.1 (Levin, 2011). A major difference exists between the former and current pyramids that are recommended for guiding your evidence search. Quantitative and qualitative research ask very different questions and thus cannot be included in the same hierarchy-of-evidence scheme. A hierarchy of qualitative evidence, developed by Daly et al. (2007), further aids researchers in the process of guiding the evidence search.

A Level I evidence rating is given to evidence from synthesized sources: systematic reviews, which can either be meta-analyses or structured integrative reviews of evidence, and CPGs based on Level I evidence as well as multicenter clinical trials. Evidence that is judged to be at Level II comes from a single randomized controlled trial. A quasi-experimental study, such as a nonrandomized controlled single group pretest/posttest, time series, or matched case-controlled study, is considered Level III evidence. Level IV evidence comes from a nonexperimental study, such as correlational descriptive research or case-control studies. A narrative literature review, a case report systematically obtained and of verifiable quality, or program evaluation data are rated as Level V. Level VI evidence is identified as the opinion of respected authorities (e.g., internationally or nationally known) based on their clinical experience or the opinions of an expert committee, including their interpretation of nonresearch-based information. This level also includes regulatory or legal opinions. Level I evidence is considered the strongest.

The critical appraisal of extant CPGs and research studies uses specialized tools designed to evaluate the quality of each type of evidence. Examples are the AGREE II instrument (which this volume of protocols conforms to), the Critical Appraisal Skills Programme (www.casp-uk.net), and the PRISMA checklist (a 27-item list of criteria for evaluation; www.prisma-statement.org) for reporting systematic reviews and meta-analyses, among others.

FIGURE 1.1

Level of evidence hierarchy.



CPG, clinical practice guidelines; RCT, randomized controlled trial.

Source: Originally published in Levin, R. F. (2011). Edifices of evidence: The proliferation of pyramids. *Research and Theory for Nursing Practice*, *25*(1), 8–10. doi:10.1891/1541-6577.25.1.8. Reprinted with permission.

This book provides the inclusion of the level and type of evidence for references in chapter citations, which leads to a recommendation for practice. Using this type of standard approach ensures that this book contains protocols and recommendations for use with geriatric patients and their families that are based on the best available evidence and a similar standard of evaluation.

SUMMARY

The protocols contained in this edition, therefore, have been refined, revised, and developed by the authors using the best available research evidence as a foundation, with the ultimate goal of improving patient safety and outcomes. The systematic process used for finding, retrieving, and disseminating the best evidence for this edition of *Evidence-Based Geriatric Nursing Protocols for Best Practice* provides a model for the use of research evidence in nursing education and in clinical practice. Translating nursing research into practice requires competency in information literacy, knowledge of the evidence-based process, and the ability to discern the context of a research study as ranked hierarchically. The following chapters and protocols present both overview (background) and foreground information in readiness for taking the next steps in the EBP process: Step 4: Integrate the evidence into practice using clinical expertise with attention to patient's values and perspectives, and Step 5: Evaluate the outcome(s).

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Measuring Performance and Improving Quality

Lenard L. Parisi

2

EDUCATIONAL OBJECTIVES

After completion of this chapter, the reader should be able to:

1. Discuss key components of the definition of quality as outlined by the Institute of Medicine.
2. Describe three challenges of measuring quality of care.
3. Delineate three strategies for addressing the challenges of measuring quality.
4. List three characteristics of a good performance measure.

OVERVIEW

Nadzam and Abraham (2003) state that "The main objective of implementing best practice protocols for geriatric nursing is to stimulate nurses to practice with greater knowledge and skill, and thus improve the quality of care to older adults" (p. 11). Although improved patient care and safety are certainly necessary goals, providers also need to be focused on the implementation of evidence-based practice and improvement of outcomes of care. The implementation of evidence-based nursing practice as a means of providing safe, quality patient care and positive outcomes is well supported in the literature. However, in order to ensure that protocols are implemented correctly, as is true with the delivery of all nursing care, it is essential to evaluate the care provided. Clinical outcomes are a focus of many payment-related initiatives such as value-based payments, bundled payment arrangements with payer and providers, and other quality incentive programs (Struth, 2017).

The improvement of care and clinical outcomes, commonly known as performance improvement, requires a defined, organized approach. Improvement efforts are typically guided by the organization's quality-assessment (measurement) and performance-improvement (process improvement) model. There are many resources available online, such as the Institute for Healthcare Improvement (IHI) website (IHI.org), where there is information about their model for improvement. Some other well-known models or approaches for improving care and processes include Plan–Do–Study–Act (PDSA), IHI website, and Lean Six Sigma (www.ihi.org/resources/Pages/Tools/Quality-Improvement-Essentials-Toolkit.aspx). These methodologies are simply an organized approach to defining improvement priorities, collecting data, analyzing the data, making sound recommendations for process improvement, implementing identified changes, and then reevaluating the measures. Through performance improvement, standards of care (Nurses Improving Care for Healthsystem Elders [NICHE] protocols, in this case) are identified, evaluated, and analyzed for variances in practice and then improved. The goal is to standardize and improve patient care and outcomes. Improvements in quality of patient care occur through restructuring, redesigning, and innovating processes. For these changes to occur, nursing professionals need to be supported by a structure that provides a vision

for continuous improvement, empowers them to make changes, and delivers ongoing and reliable outcome information (Johnson, Hallsey, Meredith, & Warden, 2006).

From the very beginning of the NICHE project in the early 1990s (Capezuti et al., 2013), the NICHE team has struggled with the following questions: How can we measure whether the combination of models of care, staff education and development, and organizational change leads to improvements in patient care? How can we provide hospitals and health systems that are committed to improving their nursing care to older adults with guidance and frameworks, let alone tools for measuring the quality of geriatric care? In turn, these questions generated many other questions: Is it possible to measure quality? Can we identify direct indicators of quality? Or do we have to rely on indirect indicators (e.g., if 30-day readmissions of patients older than 65 years drop, can we reasonably state that this reflects an improvement in the quality of care)? What factors may influence our desired quality outcomes, whether these are unrelated factors (e.g., the pressure to reduce length of stay) or related factors (e.g., the severity of illness)? How can we design evaluation programs that enable us to measure quality without adding more burden (of data collection, of taking time away from direct nursing care)? No doubt, the results from evaluation programs should be useful at the "local" level. Would it be helpful, though, to have results that are comparable across clinical settings (within the same hospital or health system) and across institutions (e.g., as quality benchmarking tools)? Many of these questions remain unanswered today, although the focus on defining practice through an evidence-based approach is becoming the standard, for it is against a standard of care that we monitor and evaluate expected care. Defining outcomes for internal and external reporting is expected, as is the improvement of processes required to deliver safe, affordable quality patient care.

This chapter provides guidance in the selection, development, and use of performance measures to monitor quality of care as a springboard to performance-improvement initiatives. Following a definition of quality of care, the chapter identifies several challenges in the measurement of quality. The concept of performance measures as the evaluation link between care delivery and quality improvement is introduced. Next, the chapter offers practical advice on what and how to measure (Capezuti et al., 2013). It also describes external comparative databases sponsored by the Centers for Medicare & Medicaid Services (CMS) and other quality-improvement organizations. It concludes with a description of the challenges inherent in selecting performance measures.

It is important to reaffirm two key principles for the purposes of evaluating nursing care in this context. First, at the management level, it is indispensable to measure the quality of geriatric nursing care; however, doing so must help those who actually provide care (nurses) and must impact those who receive care (older adult patients). Second, measuring quality of care is not the end goal; rather, it is done to enable the continuous use of quality-of-care information to improve patient care.

QUALITY HEALTHCARE DEFINED

It is not uncommon to begin a discussion of quality-related topics without reflecting on one's own values and beliefs surrounding quality healthcare. Many have tried to define the concept, but like the old cliché "beauty is in the eye of the beholder" so is our own perception of quality. Healthcare consumers and providers alike are often asked: What does quality mean to you? The response typically varies and includes statements such as a safe healthcare experience, receiving correct medications and receiving them in a timely manner, a pain-free procedure or postoperative experience, compliance with regulation, accessibility to services, effectiveness of treatments and medications, efficiency of services, good communication among providers (information sharing), and a caring environment. These are important attributes to remember when discussing the provision of care with clients and patients.

The National Academy of Medicine (NAM; known originally as the Institute of Medicine or IOM) defines quality of care as "the degree to which health services for individuals and populations increase[s] the likelihood of desired health outcomes and are consistent with current professional knowledge" (Kohn, Corrigan, & Donaldson, 2000, p. 211). Note that this definition does not tell us what quality is, but what quality should achieve. This definition also does not say that quality exists if certain conditions are met (e.g., a ratio of *x* falls to *y* in older orthopedic surgery patients, a 30-day readmission rate of *z*, etc.). Instead, it emphasizes that the likelihood of achieving desired levels of care is what matters. In other words, quality is not a matter of reaching something but, rather, the challenge, over and over, of improving the odds of reaching the desired level of outcomes. Thus, the definition implies the cyclical and longitudinal nature of quality: What we achieve today must guide us as to what to do tomorrow—better and better, over and over—the focus being on improving processes while demonstrating sustained improvement.

The NAM definition stresses the framework within which to conceptualize quality: knowledge. The best knowledge to have is research evidence—preferably from randomized clinical trials (experimental studies)—yet without ignoring the relevance of less rigorous studies

(nonrandomized studies, epidemiological investigations, descriptive studies, even case studies). To be realistic, in nursing we have limited evidence to guide the care of older adults. Therefore, professional consensus among clinical and research experts is a critical factor in determining quality. Furthermore, knowledge is needed at three levels: To achieve quality, we need to know what to do (knowledge about best practice), we need to know how to do it (knowledge about behavioral skills), and we need to know what outcomes to achieve (knowledge about best outcomes).

The NAM definition of quality of care contains several other important elements. "Health services" focuses the definition on the care itself. Granted, the quality of care provided is determined by factors such as knowledgeable professionals, good technology, and efficient organizations; yet, these are not typically the focus of quality measurement. Rather, the definition implies a challenge to healthcare organizations: The system should be organized in such a way that knowledge-based care is provided and that its effects can be measured. This brings us to the "desired health outcomes" element of the definition. Quality is not an attribute (as in "My hospital is in the top 100 hospitals in the United States as ranked by *U.S. News & World Report*") but an ability (as in "Only *x*% of our older adult surgical patients develop acute confusion; of those who do, *y*% return to normal cognitive function within *z* hours after onset").

In the NAM definition, *degree* implies that quality occurs on a continuum from unacceptable to excellent. The clinical consequences are on a continuum as well. If the care is of unacceptable quality, the likelihood that we will achieve the desired outcomes is nil. In fact, we probably will achieve outcomes that are the opposite of what are desired. As the care moves up the scale toward excellent, the more likely the desired outcomes will be achieved. "Degree" also implies quantification. Although it helps to be able to talk to colleagues about, say, unacceptable, poor, average, good, or excellent care, these terms should be anchored by a measurement system. Such systems enable us to interpret what, for instance, poor care is by providing us with a range of numbers that correspond to "poor." In turn, these numbers can provide us with a reference point for improving care to the level of average: We measure care again, looking at whether the numbers have improved, then checking whether these numbers fall in the range defined as "average." Likewise, if we see a worsening of scores, we will be able to conclude whether we have gone from, say, good to average. "Individuals and populations" underscores that quality of care is reflected in the outcomes of one patient and in the outcomes of a set of patients. It focuses our attention on providing quality care to individuals while aiming to raise the level of care provided to populations of patients.

In summary, the NAM definition of quality of care forces us to think about quality in relative and dynamic terms rather than in absolute and static terms. Quality of care is not a state of being but rather a process of becoming. Quality is and should be measurable, using performance measures: "a quantitative tool that provides an indication of an organization's performance in relation to a specified process or outcome" (Schyve & Nadzam, 1998, p. 222).

Quality improvement is a process of attaining ever better levels of care in parallel with advances in knowledge and technology. It strives toward increasing the likelihood that certain outcomes will be achieved. This is the professional responsibility of those who are charged with providing care (i.e., clinicians, managers, and their organizations). On the other hand, consumers of healthcare (i.e., patients, but also purchasers, payers, regulators, and accreditors) are much less concerned with the processes in place as with the results of those processes.

CLINICAL OUTCOMES AND PUBLICLY REPORTED QUALITY MEASURES

Although it is important to evaluate clinical practices and processes, it is equally important to evaluate and improve outcomes of care. Clinical outcome indicators are receiving unprecedented attention within the healthcare industry from providers, payers, and consumers alike. Regulatory and accrediting bodies review outcome indicators to evaluate the care provided by the organization before and during regulatory and accrediting surveys and to evaluate clinical and related processes. Organizations are expected to use outcome data to identify and prioritize the processes that support clinical care and demonstrate an attempt to improve performance. Providers may use outcome data to support best practices by benchmarking their results with similar organizations. The benchmarking process is supported through publicly reported outcome data at the national and state levels. National reporting occurs on the CMS website, where consumers and providers alike may access information and compare hospitals, home care agencies, nursing homes, and managed care plans. For example, the websites www.medicare.gov/hospitalcompare/about/what-is-hos.html, www.medicare.gov/NHCompare, and www.medicare.gov/HHCompare list outcome indicators relative to the specific service or delivery model. Consumers may use these websites to select organizations and compare outcomes, one against another, to aid in their selection of a facility or service. These websites also serve as a resource for providers to benchmark their outcomes

against those of another organization. Outcome data also become increasingly important to providers as the industry continues the shift toward payment models. With these models, practitioners are reimbursed for achieving quality-of-care outcomes.

One important nationwide quality initiative, which is sure to have a positive impact on the care for older adults, is the focus on readmissions (www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html). This is an important outcome measure that is sure to foster improved evaluation of clinical processes across the healthcare continuum.

Measuring Quality of Care

Schyve and Nadzam (1998) identified several challenges to measuring quality. First, the suggestion that quality of care is in the eye of the beholder points to the different interests of multiple users. This issue encompasses both measurement and communication challenges. Measurement and analysis methods must generate information about the quality of care that meets the needs of different stakeholders. In addition, the results must be communicated in ways that meet these different needs. Second, we must have good and generally accepted tools for measuring quality. Thus, user groups must come together in their conceptualization of quality care so that relevant healthcare measures can be identified and standardized. A common language of measurement must be developed, grounded in a shared perspective on quality that is cohesive across the continuum, yet meets the needs of various user groups. Third, once the measurement systems are in place, data must be collected. This translates into resource demands and logistic issues as to who is to report, record, collect, and manage data. Fourth, data must be analyzed in statistically appropriate ways. This is not just a matter of using the right statistical methods; it is more important that user groups must agree on a framework for analyzing quality data to interpret the results. Fifth, healthcare environments are complex and dynamic in nature. There are differences across healthcare environments, between types of provider organizations, and within organizations. Furthermore, changes in healthcare occur frequently, such as the movement of care from one setting to another and the introduction of new technology. Finding common denominators is a major challenge.

ADDRESSING THE CHALLENGES

These challenges to measuring quality are not insurmountable. However, making a commitment to quality care entails a commitment to putting the processes and systems in place to measure quality through performance measures and to report quality-of-care results. This commitment applies as much to a quality-improvement initiative on a nursing unit as it does to a corporate commitment by a large healthcare system. In other words, once an organization decides to pursue excellence (i.e., quality), it must accept the need to overcome the various challenges to measurement and reporting. Let us examine how this could be done in a clinical setting.

McGlynn and Asch (1998) offer several strategies for addressing the challenges of measuring quality. First, the various user groups must identify and balance competing perspectives. This is a process of giving and taking: not only proposing highly clinical measures (e.g., prevalence of pressure ulcers) but also providing more general data (e.g., use of restraints). It is a process of asking and responding: not only asking management for monthly statistics on medication errors but also agreeing to provide management with the necessary documentation of the reasons stated for restraint use. Second, there must be an accountability framework. Committing to quality care implies that nurses assume several responsibilities and are willing to be held accountable for each of them: (a) providing the best possible care to older patients, (b) examining their own geriatric nursing knowledge and practice, (c) seeking ways to improve it, (d) agreeing to evaluation of their practice, and (e) responding to needs for improvement. Third, there must be objectivity in the evaluation of quality. This requires setting and adopting explicit criteria for judging performance, then building the evaluation process on these criteria. Nurses, their colleagues, and their managers need to reach consensus on how performance will be measured and what will be considered excellent (and good, average, etc.) performance. Fourth, once these indicators have been identified, nurses need to select a subset of indicators for routine reporting. Indicators should give a reliable snapshot of the team's care to older patients. Fifth, it is critical to separate as much as possible the use of indicators for evaluating patient care and the use of these indicators for financial or nonfinancial incentives. Should the team be cost-conscious? Yes, but cost should not influence any clinical judgment as to what is best for patients. Finally, nurses in the clinical setting must plan how to collect the data. At the institutional level, this may be facilitated by information systems that allow performance measurement and reporting. Ideally, point-of-care documentation will also provide the data necessary for a systematic and goal-directed quality-improvement program, thus eliminating separate data abstraction and collection activities.

The success of a quality-improvement program in geriatric nursing care (and the ability to overcome many of

the challenges) hinges on the decision as to what to measure. We know that good performance measures must be objective, that data collection must be easy and as burdenless as possible, that statistical analysis must be guided by principles and placed within a framework, and that communication of results must be targeted toward different user groups. Conceivably, we could try to measure every possible aspect of care; realistically, however, the planning for this will never reach the implementation stage. Instead, nurses need to establish priorities by asking these questions: Based on our clinical expertise, what is critical for us to know? What aspects of our care to older patients are of high risk or high volume? What parts of our elder care are problem-prone, either because we have experienced difficulties in the past or because we can anticipate problems as a result of the lack of knowledge or resources? What clinical indicators would be of interest to other user groups: patients, the general public, management, payers, accreditors, and practitioners? Throughout this prioritization process, nurses should keep asking themselves: What questions are we trying to answer, and for whom?

Measuring Performance-Selecting Quality Indicators

The correct selection of performance measures or quality indicators is a crucial step in evaluating nursing care and is based on two important factors: frequency and volume. Clearly, high-volume practices or frequent processes require focused attention—to ensure that the care is being delivered according to protocol or processes are functioning as designed. Problem-prone or high-risk processes would also warrant a review as these are processes with inherent risk to patients or potential variances in implementing the process. The selection of indicators must also be consistent with organizational goals for improvement. In today's healthcare environment, selection of indicators may be based on external requirements such as value-based payment measures or reporting of publicly reported measures. This provides buy-in from practitioners as well as administration when reporting and identifying opportunities for improvement. Performance measures (i.e., indicators) must be based on a standard of care, policy, procedure, or protocol. These documents, or standards of care, define practice and expectations in the clinical setting and, therefore, determine the criteria for the monitoring tool. The measurement of these standards simply reflects adherence to or implementation of these standards. Once it is decided what to measure, nurses in the clinical geriatric practice setting face the task of deciding how to measure performance. There are two possibilities: either the appropriate measure (indicator) already exists or a new performance measure must be developed. Either way, there are a number of requirements of a good performance measure that will need to be applied.

Although indicators used to monitor patient care and performance do not need to be subject to the rigors of research, it is imperative that they reflect some of the attributes necessary to make relevant statements about the care. The measure and its output need to focus on improvement, not merely the description of something. It is not helpful to have a very accurate measure that just tells the status of a given dimension of practice. Instead, the measure needs to inform us about current quality levels and relate them to previous and future quality levels. It needs to be able to compute improvements or declines in quality over time so that we can plan for the future. For example, to have a measure that only tells the number of medication errors in the past month would not be helpful. Instead, a measure that tells what types of medication errors were made, perhaps even with a severity rating indicated, compares this to medication errors made during the previous months and shows in numbers and graphs the changes over time that will enable us to do the necessary root cause analysis to prevent more medication errors in the future.

Performance measures need to be clearly defined, including the terms used, the data elements collected, and the calculation steps employed. Establishing the definition before implementing the monitoring activity allows for precise data collection. It also facilitates benchmarking with other organizations, when the data elements are similarly defined and the data-collection methodologies are consistent. Imagine that we want to monitor falls on the unit. The initial questions would be: What is considered a fall? Does the patient have to be on the floor? Does a patient slumping against the wall or onto a table while trying to prevent himself or herself from falling to the floor constitute a fall? Is a fall caused by physical weakness or orthostatic hypotension treated the same way as a fall caused by tripping over an obstacle? The next question would be: Over what time period are falls measured: a week, a fortnight, a month, a quarter, or a year? The time frame is not a matter of convenience, but of accuracy. To be able to monitor falls accurately, we need to identify a time frame that will capture enough events to be meaningful and interpretable from a quality improvement point of view. External indicator definitions, such as those defined for use in the National Database of Nursing Quality Indicators, provide guidance for both the indicator definition and the data-collection methodology for "nursing-sensitive indicators." The nursing-sensitive indicators reflect the structure, process, and outcomes of nursing care. The *structure* of nursing care

is indicated by the supply of nursing staff, the skill level of the nursing staff, and the education/certification of nursing staff. *Process* indicators measure aspects of nursing care such as assessment, intervention, and RN job satisfaction. Patient *outcomes* that are determined to be nursing sensitive are those that improve if there is a greater quantity or quality of nursing care (e.g., pressure ulcers, falls, intravenous [IV] infiltrations). However, frequency of primary Cesarean sections and cardiac failure is not considered "nursing sensitive" (for details, see https://www.pressganey.com/docs/default-source/default-document-library/clinical excellence_ndnqi_solution-summary.pdf?sfvrsn=0). Several nursing organizations across the country participate in data collection and submission, which allows for a robust database and excellent benchmarking opportunities.

Additional indicator attributes include validity, sensitivity, and specificity. *Validity* refers to whether the measure actually measures what it says it measures. *Sensitivity* and *specificity* refer to the ability of the measure to capture all true cases of the event being measured, and only true cases. We want to make sure that a performance measure identifies true cases as true and false cases as false and does not identify a true case as false or a false case as true. Sensitivity of a performance measure determines the likelihood of a positive test when a condition is present. Lack of sensitivity is expressed as false positives, that is, the indicator calculates a condition as present when in fact it is not. *Specificity* refers to the likelihood of a negative test when a condition is not present. False negatives reflect lack of specificity, that is, the indicator calculates a condition as not present when in fact it is. Consider the case of depression and the recommendation in Chapter 19 to use the Geriatric Depression Scale, in which a score of 11 or greater is indicative of depression. How robust is this cutoff score of 11? What is the likelihood that someone with a score of 9 or 10 (i.e., negative for depression) might actually be depressed (i.e., false negative)? Similarly, what is the likelihood that a patient with a score of 13 would not be depressed (i.e., false positive)?

Reliability means that results are reproducible, that is, the indicator measures the same attribute consistently across the same patients and across time. Reliability begins with a precise definition and specification, as described earlier. A measure is reliable if different people calculate the same rate for the same patient sample. The core issue of reliability is measurement error, or the difference between the actual phenomenon and its measurement: The greater the difference, the less reliable the performance measure. For example, suppose that we want to focus on pain management in older adults with end-stage cancer. One way of measuring pain would be to ask patients to rate their pain as none, a little, some, quite a bit, or a lot. An alternative approach would be to administer a visual analog scale, a 10-point line on which patients indicate their pain levels. Yet another approach would be to ask the pharmacy to produce monthly reports of analgesic use by type and dose. Generally speaking, the more subjective the scoring or measurement, the less reliable it will be. If all these measures were of equal reliability, they would yield the same result. The concept of reliability, particularly inter-rater reliability, becomes increasingly important to consider in those situations in which data collection is assigned to several staff members (Albanese et al., 2010). It is important to review the data-collection methodology, and the instrument in detail, to avoid different approaches and interpretation by the various people collecting the data.

Several of the examples given earlier imply the criterion of interpretability. A performance measure must be interpretable, that is, it must convey a result that can be linked to the quality of clinical care. First, the quantitative output of a performance measure must be scaled in such a way that users can interpret it. For example, a scale that starts with 0 as the lowest possible level and ends with 100 is much easier to interpret than a scale that starts with 13.325 and has no upper boundary except infinity. Second, we should be able to place the number within a context. Suppose we are working in a hemodialysis center that serves quite a large proportion of end-stage renal disease (ESRD) patients older than 60 years—the group least likely to be fit for a kidney transplant yet with several years of life expectancy remaining. We know that virtually all ESRD patients develop anemia (i.e., hemoglobin [Hb] <11 g/dL), which in turn impacts their activities of daily living (ADL) and instrumental activities of daily living (IADL) performance. In collaboration with the nephrologists, we initiate a systematic program of anemia monitoring and management, relying in part on published best practice guidelines. We want to achieve the best practice guideline of 85% of all patients having Hb levels equal to or greater than 11 g/dL. We should be able to succeed because the central laboratory provides us with Hb levels, which allows us to calculate the percentage of patients having Hb levels of 11 g/dL or greater.

The concept of risk-adjusted performance measures or outcome indicators is an important one. Some patients are sicker than others, some have more comorbidities, and some are older and frailer. No doubt, we could come up with many more risk variables that influence how patients respond to nursing care. Good performance measures take this differential risk into consideration. They create a "level playing field" by adjusting quality indicators on the basis of the risk for severity of illness of the patients. It would

not be fair to the healthcare team if the patients on the unit are a lot sicker than those on the unit a floor above. The team is at greater risk of having lower quality outcomes not because the patients are provided inferior care but because the patients are a lot sicker and are at greater risk of a compromised response to the care provided. The sicker patients have greater needs in terms of care and ultimately are less likely to achieve the same outcomes as less-ill patients. Performance measures must be easy to collect. The many examples cited earlier also refer to the importance of using performance measures for which data are readily available, can be retrieved from existing sources, or can be collected with little burden. The goal is to gather good data quickly without running the risk of having "quick and dirty" data.

We begin the process of deciding how to measure by reviewing existing measures. There is no need to reinvent the wheel, especially if good measures are out there. Nurses should review the literature, check with national organizations, and consult with colleagues. Yet, we should not adopt existing measures blindly; instead, we need to subject them to a thorough review using the characteristics identified earlier. Also, healthcare organizations that have adopted these measures can offer their experience.

Recently, an initiative of the John A. Hartford Foundation and the IHI in partnership with the American Hospital Association and the Catholic Health Association of America (CHA) defined the four elements of a friendly health system. These elements, the **4Ms**, are:

- **What Matters:** alignment of patient goals with preferences
- **Medication:** use of medication that does not interfere with mentation, mobility, and what matters
- **Mentation:** prevention, identification, and management of delirium dementia and depression across care settings
- **Mobility:** ensuring older adults can move safely in order to maintain function and do what matters

This framework for age-friendly care can be integrated into quality initiatives to guide program goals and measures (Fulmer, Mate, & Berman, 2018).

Implementing the Quality-Assessment and Performance-Improvement Program

Successful performance-improvement programs require an organizational commitment toward implementation of the performance-improvement processes and principles outlined in this chapter (Kliger, Lacey, Olney, Cox, & O'Neil, 2010). Consequently, this commitment requires a defined, organized approach that most organizations embrace and define in the form of a written plan. The plan outlines the approach that the organization uses to improve care and safety for its patients. There are several important elements that must be addressed to implement the performance-improvement program effectively. The scope of service, which addresses the types of patients and care that is rendered, provides direction on the selection of performance measures. An authority and responsibility statement in the document defines who is able to implement the quality program and make decisions that will affect its implementation. Finally, it is important to define the committee structure used to effectively analyze and communicate improvement efforts to the organization.

The success of the performance-improvement program is highly dependent on a well-defined structure and appropriate selection of performance measures. The following is a list of issues that, if not addressed, may negatively impact the success of the quality program:

1. Lack of focus: a measure that tries to track too many criteria at the same time or is too complicated to administer, interpret, or use for quality monitoring and improvement
2. Wrong type of measure: a measure that calculates indicators the wrong way (e.g., uses rates when ratios are more appropriate, uses a continuous scale rather than a discrete scale, measures a process when the outcome is measurable and of greater interest)
3. Unclear definitions: a measure that is too broad or too vague in its scope and definitions (e.g., population is too heterogeneous, no risk adjustment, unclear data elements, poorly defined values)
4. Too much work: a measure that requires too much clinician time to generate the data or too much manual chart abstraction
5. Reinventing the wheel: a measure that is a reinvention rather than an improvement of a performance measure
6. Events not under control: a measure focusing on a process or outcome that is out of the organization's (or the unit's) control to improve
7. Trying to do research rather than quality improvement: data collection and analysis are done for the sake of research rather than for improvement of nursing care and the health and well-being of the patients
8. Poor communication of results: the format of communication does not target and enable change
9. Uninterpretable and underused: uninterpretable results are of little relevance to improving geriatric nursing care

SUMMARY

In summary, the success of the quality-assessment and performance-improvement program's ability to measure, evaluate, and improve the quality of nursing care to healthsystem elders is in the planning. First, it is important to define the scope of services provided and those to be monitored and improved. Second, performance measures that are reflective of the care provided need to be identified. Indicators may be developed internally or obtained from external sources of outcomes and data-collection methodologies. Third, it is important to analyze the data, pulling together the right people to evaluate processes, make recommendations, and improve care. Finally, it is important to communicate the findings across the organization and celebrate success.

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Informational Technology: Embedding Geriatric Clinical Practice Guidelines

3

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EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Define computerized provider order entry and identify its contribution to geriatric care.
2. Describe how clinical decision support systems can promote positive geriatric care.
3. Discuss a case example that illustrates the development of a comprehensive geriatric nutrition dashboard.

OVERVIEW

Electronic health records (EHRs) are the mainstay of nearly all hospitals. The impetus for transition from a paper to an electronic health record was driven largely by payers (Medicare/Medicaid and Health Maintenance Organizations), quality improvement organizations, and Institute of Medicine panels (Gillum, 2013). They were conceived of as a solution to the myriad of limitations inherent in a paper recording system, mainly inconsistency in content and quality, illegibility, and safety concerns (Berner, Detmer, & Simborg, 2005). In addition to the portability of EHRs, two additional features have been particularly successful in improving safety and care quality for older adult patients: computerized provider order entry (CPOE) and clinical decision support systems (CDSS).

CPOE is a central tenet of the EHRs and is a required component as part of meaningful use. It is defined by the Centers for Medicare and Medicaid Services as "the provider's use of computer assistance to directly enter medication orders from a computer or mobile device. The order is also documented or captured in a digital, structured, and computable format for use in improving safety and organization" (Centers for Medicare and Medicaid Services, 2014, p. 1). The intent of CPOE is to improve patient safety via several features. CPOE ensures prescribing providers have access to patients' allergy information at the time of prescribing. It also ensures patients receive appropriate dosages for medications based on weight, renal function, or other clinical situations. For older adult patients, CPOE systems can support providers in avoidance or judicious use of medications that may be potentially inappropriate in older adults. Potentially inappropriate medications are outlined in the Beers Criteria, a comprehensive evidence-based list of medications identified as potentially inappropriate for use in older adults for a variety of reasons (American Geriatrics Society 2015 Beers Criteria Update Expert Panel, 2015). EHRs that contain alerts for prescriptions of Beers Criteria medications have been successful in decreasing or eliminating the use of these medications (Clyne, Bradley, Hughes, Fahey, & Lapane, 2012; Mattison, Afonso, Ngo, & Mukamal, 2010; Zillich et al., 2008).

Another valuable aspect of the EHR is the opportunity to embed CDSS. These systems can support geriatric care in several ways. First, they can provide direction to clinicians regarding what needs to be assessed and what evidence-based care should be implemented. For example,

Dowding, Turley, and Garrido (2012) found that when risk assessments for hospital-acquired pressure ulcers and falls were embedded in the nursing assessment portion of the EHR, the percentage of patients with completed assessments increased significantly, leading to improved outcomes. Another type of CDSS involves embedding algorithms into the EHR to synthesize information entered by providers to determine a patient's level of risk for a particular outcome or to support culmination of an evidence-based assessment. Lekan and colleagues (2017) created an algorithm for identifying a frailty risk score by synthesizing various data points from the EHR, such as history of falls, vision impairment, poor appetite, and low albumin. The frailty risk score was statistically significantly correlated with in-hospital mortality. Rather than clinicians evaluating discrete pieces of data, the frailty risk score allows for an integrated assessment that can be leveraged to implement an individualized multicomponent intervention strategy (Lekan et al., 2017).

Despite the fact that the EHR contains a vast amount of information that can be accessed from nearly any electronic device at any time, some drawbacks have been identified. One of the biggest limitations of EHRs is their inability to "show" a summary of pertinent information in one view to tell the patient's story. Traditional inpatient paper medical records have progress notes that track the patient's story on a day-to-day timeline. It is easy for the reviewer to see what happened on a progressive timeline as he or she reads and turns the pages on what has happened from one day to the next. For example, the patient was admitted on a Monday morning; surgery was performed as evidenced by the surgeon's postoperative note; ambulation and activity were tracked in the next day's physical therapy note. The patient's story is told in a sequential fashion.

Electronic records disrupt this book-like storytelling by constantly forcing the user to reorient information and data and where it sits on a timeline. Since a user flips from one section of the EHR to another, and may be looking at a graph, a flowsheet of data, or a text-written note, understanding the sequence of events and how the information fits together can be challenging. This makes it much more difficult for clinicians to synthesize data on which to base care interventions. For geriatric patients, this concern is even more prominent. With regard to identifying the burden of "geriatric syndromes" on a patient, for example malnutrition, vision impairment, or walking difficulty, Kharrazi and colleagues (2018) found that structured EHR data provide an incomplete picture. Their study showed that information recorded in unstructured text fields in the EHR contained the most relevant information for identification of geriatric syndromes. Another limitation is the EHR's ability to support care coordination, especially across acute and community-based care settings (O'Malley, Grossman, Cohen, Kemper, & Pham, 2010).

Relevant components of a particular assessment often reside in various aspects of the medical record. To alleviate this, some organizations have customized their EHRs to create dashboards that summarize information relevant to the clinical situation (Mlaver et al., 2017; Schleyer et al., 2019; Swartz, Cimino, Fred, Green, & Vawdrey, 2014). For example, Schleyer and colleagues (2019) created a chest pain dashboard that displays five data points relevant to the management of chest pain on one screen. Swartz and colleagues (2014) created a dashboard to summarize patient history, labs, test results, and medications all in one view.

The fragmented nature of clinical information in the EHR is an important limitation to comprehensive interdisciplinary care of geriatric patients. A functional assessment performed by a physical therapist, a social assessment by a social worker, and a medication management assessment performed by a pharmacist all reside in completely separate areas of the EHR. Therefore, to get a comprehensive view of a patient's needs, a provider would need to know where all the various assessments reside and be able to synthesize and refer to the information when determining a course of treatment. This chapter will provide a case example of a comprehensive geriatric nutrition dashboard and a protocol for clinicians to follow, outlining the critical steps involved in EHR dashboard development and implementation.

CASE EXAMPLE 3.1: CREATING A COMPREHENSIVE GERIATRIC NUTRITION DASHBOARD

In one large academic medical center, geriatric nurse consultants (GNCs) conduct a comprehensive geriatric assessment (CGA) for adults over age 70 admitted to the hospital medicine service and support the interprofessional care team in implementing geriatric evidence-based practices to prevent excess disability and other avoidable negative outcomes over the course of a hospital stay (Trotta, Rao, Hermann, & Boltz, 2018). On discharge, GNCs write transition notes to facilitate continuation of geriatric evidence-based care in the home setting. Recommendations for ongoing nutrition support are a fundamental component of the transition.

As part of the CGA, GNCs conduct a screening for malnutrition, and if the screen is positive, they refer the patient to the nutritionist for a full assessment, including the Mini Nutritional Assessment (Vellas et al., 1999). The GNCs also assess for functional ability using validated instruments. However, the GNCs recognized that in order to

provide recommendations for nutritional support as older adult patients transitioned home after hospitalization, they needed more information. For example, they needed to know the patient's current diet order and chewing and swallowing ability level. They also needed to know whether or not the patient screened positive for food insecurity, as this finding would impact the way in which the GNC and case manager intervened. The patient's functional status would impact the ability to shop for food, prepare food, and clean up. Given the complexity of a truly comprehensive assessment of an older adult's current nutritional status, it was challenging to locate and organize the findings of these various aspects of nutrition in the EHR. They also recognized that to access more information within the EHR about these various assessments that impact nutrition, the GNC would have to search several areas of the EHR (see Table 3.1).

In order to get a comprehensive view of a patient's nutritional needs, at least five locations in the EHR needed to be accessed. Not only is this time consuming, but most practitioners would likely not remember to check all these areas. In addition, the results of these various pieces of a comprehensive nutritional assessment could not be viewed together in one place. To address this issue, we created a customized comprehensive geriatric nutrition dashboard. This dashboard pulls from the various areas within the EHR where these assessments and recommendations are

TABLE 3.1

Nutrition-Related Data and Location in the EHR

Data Point(s)	Location of Data in the EHR
Results of nutrition assessment	Nutrition navigator
Results of screen for food insecurity	Nursing admission navigator
Current diet order (cardiac, renal, diabetic, etc.)	Medical orders
Speech therapist recommendations for diet consistency (regular, chopped, pureed, etc.)	Speech pathologist note
Current diet consistency order	Medical orders
Patient's food likes and dislikes	Nutrition navigator
Cultural considerations	Nursing admission navigator
Food preparation and shopping ability	Functional assessment within the geriatric nurse consultant assessment navigator

EHR, electronic health record.

TABLE 3.2

Example of information contained in the EHR geriatric nutrition dashboard for a fictitious patient.

Geriatric Nutritional Concerns	
Malnutrition Assessment Findings	**Patient meets established criteria for: Severe protein-calorie malnutrition in the context of acute illness or injury.** Documented 10/08/2018 1143
Within the past 12 months, you worried that your food would run out before you got money to buy more.	**Sometimes true** Documented 10/22/2018 0900
Within the past 12 months, the food you bought just didn't last and you didn't have money to get more.	**Sometimes true** Documented 10/22/2018 0900
SLP Recommended Diet	**Chopped, thin** [strict 1:1 feed, encourage chin tuck position. NO straws, small sips] Documented 10/19/2018 1555
SLP Medication Administration Recommendations	**Whole, in puree** Documented 10/19/2018 1555
SLP General Recommendations	**Aspiration precautions, small bites/small sips, slow rate of intake, feed only when alert, 1:1 feed, reflux precautions, if signs/symptoms of aspiration--> initiate NPO, upright posture, 90 degrees w/all PO intake, alternate between food and liquid** Documented 10/19/2018 1555
Other SLP General Recommendations	**Pharyngeal strengthening exercises** Documented 10/16/2018 1401
Likes	**Scrambled eggs for breakfast, rice** Documented 10/22/2018 0917
Dislikes	**Noodles** Documented 10/22/2018 0917
Cultural Considerations	**No pork, lactose intolerant** Documented 10/22/2018 0917
Food Preparation	**Heats and serves prepared meals or prepares meals but does not maintain adequate diet** Documented 10/22/2018 0900
Shopping	**Needs to be accompanied on any shopping trip** Documented 10/22/2018 0900

NPO, nothing by mouth; PO, by mouth; SLP, speech-language pathologist.

documented so that they can be viewed in one location (see Figure 3.1). Table 3.2 provides an example of the information contained in the EHR geriatric nutrition dashboard for a fictitious patient. The left column lists the discrete field or assessment from the EHR. The right column represents the corresponding documentation, along with the date and time that information was entered in the EHR. This table shows that the information in the geriatric nutrition dashboard presents a comprehensive picture of information that is otherwise available in various locations in the EHR and was documented on various dates and times over the course of the patient's hospital stay.

Once the geriatric nutritional concerns dashboard became available in the EHR, GNCs were able to use it to efficiently evaluate a patient's current comprehensive nutrition status and make recommendations to the home-based care team for ongoing nutritional support. Depending on the patient's individualized needs, recommendations could include social work services to secure nutritional support to address food insecurity, specific involvement of caregivers to support food preparation and shopping, ongoing speech therapy services in the home, or any combination of these interventions.

PROTOCOL FOR CREATING A DASHBOARD

1. Identify the problem/limitation in the EHR. What problem are you trying to solve? Do not start by proposing a solution. Rather, begin with the problem at hand.
2. Gather key stakeholders. These are people who conduct these assessments, people who would use the solution, and potentially someone who has knowledge of the EHR functionality.
3. Identify the governing body for making changes within the EHR. These groups have different names in different organizations, but they are usually comprised of clinical informaticists, IT applications analysts, and end users. This is usually a clinical informatics group along with IT application analysts.
4. Identify the process for requesting modifications to the EHR to enhance usability. This is frequently done by placing a ticket containing the request.
5. Key stakeholder group should identify the specific components they want to have in their customized dashboard and the specific locations in the EHR where they currently reside.
6. Identification of the scope of the project. The governing body will respond to the ticket and ask additional questions to determine the scope and timeline of the project.
7. Identify the approvals that will be necessary to carry out the request. This process may be in parallel to or embedded within the process for making the initial modification request. Ensuring you have the appropriate approvals is critical.
8. Discuss how the data should be displayed, with particular attention to what units of measure to display, for example, pounds versus kilograms. If dates are included, determine the direction: chronological or reverse chronological.
9. Work with an EHR analyst to create an initial version in an EHR test environment. Several iterations will likely be needed before the dashboard becomes "live."
10. Identify the timeline for steps to unfold and follow up regularly, as EHR analysists are dealing with many requests.
11. Conduct the appropriate testing to ensure that data you want are being pulled from the correct sources. This is critical to avoid the pulling of rogue data into the dashboard, meaning, data points might have various names in various locations in the EHR. Working closely with your analyst will help ensure this step unfolds as planned.
12. Once your dashboard is functioning accurately and the build is complete, publicize your dashboard to any interprofessional team member who may want to use it.
13. Continue to monitor the functionality of your dashboard. Missing data can limit functionality. For example, if a daily weight is needed to measure patient progress on a nutrition regimen, absence of consistent documentation of weights will limit functionality. This presents an opportunity to work with clinical staff to ensure consistent documentation of the specific data elements required for your dashboard.

SUMMARY

This chapter provides an example of how a dashboard to address comprehensive management of geriatric nutrition can be created within an EHR. Further iterations of this dashboard are in progress and will include additional aspects of the assessment, such as depression and cognitive status. The GNCs recognized that patients experiencing depression may need additional nutritional support, because they may have low intake and lack the motivation to eat. The GNCs also recognized that the patient's cognitive status could impact aspects of nutrition such as remembering to eat and having the necessary executive function to plan for, prepare, and cook meals. This case example also provides a prototype for other geriatric clinical issues that require multiple considerations; for example, functional maintenance.

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Organizational Approaches to Promote Person-Centered Care

4

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EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe person-centered care (PCC).
2. Discuss national initiatives to support PCC.
3. List PCC nursing strategies.
4. Identify approaches to evaluate PCC.

OVERVIEW

Person-centered care (PCC) is considered the gold standard for healthcare delivery in the United States and globally. The National Academies of Sciences, Engineering, and Medicine published *Crossing the Quality Chasm: A New Health System for the 21st Century* in 2001 and *Crossing the Global Quality Chasm: Improving Health Care Worldwide* in 2018; both reports identified the individual as a codesigner and decision maker within the healthcare system (Committee on Improving the Quality of Health Care Globally, 2018; Committee on Quality Health Care in American, 2001). The Institute for Healthcare Improvement has also put forth person-centered values and initiatives to improve care for all (Fulmer, Mate, & Berman, 2018).

The purpose of this chapter is to define PCC; provide an overview of its origin and history; summarize federal and state initiatives supporting PCC; outline nursing strategies for PCC; explore organizational models, approaches, and measurement of PCC; and present a case study outlining PCC principles and approaches. The chapter will conclude with strategies geared toward evaluation of PCC.

DEFINITION AND ATTRIBUTES

PCC is a widely used term in nursing and healthcare research and practice, yet a recent review by Kogan, Wilber, and Mosqueda (2016) found as many as 15 definitions for PCC. In addition, the terms *patient-centered care*, *patient-directed care*, and *person-directed care* are frequently used as synonyms, yet they may have distinct meanings (Behrens et al., 2019; Kogan et al., 2016; Kumar & Chattu, 2018). Current convention suggests that patient-centered and patient-directed care is not limited to preference-based care for their medical conditions or illness; rather, it sees the individual as having unique social, mental, emotional, and other life goals and needs (Kumar & Chattu, 2018).

The American Geriatrics Society convened an interdisciplinary panel with the goal of defining PCC and key attributes (American Geriatrics Society Expert Panel on Person-Centered Care, 2016). They defined PCC as asking and allowing an individual to state his or her values and preferences that should then direct all healthcare choices and decisions to support not only the individual's health-related goals, but all other personal goals as well (American

Geriatrics Society Expert Panel on Person-Centered Care, 2016). In addition to defining PCC, the expert panel also determined eight essential elements to fully achieve PCC, which are listed and described in Table 4.1.

Further work has been done to identify essential elements of PCC for specific populations and settings. A 2019 study used concept mapping with an expert panel to identify domains important across various long-term settings, including assisted living, nursing home, and home and community-based care settings. The six domains identified are: (a) Enacting Humanistic Values (e.g., supporting autonomy and empowering individuals); (b) Direct Care Worker Values (e.g., respectfulness and understanding); (c) Engagement Facilitators (e.g., involvement of family and friends in care and activities); (d) Living Environment (e.g., homelike atmosphere); (e) Communication; and (f) Supportive Systems (e.g., care coordination; Behrens et al., 2019). Similarly, a research review identified components of PCC that impact outcomes for those with dementia. They suggested six practice recommendations for PCC for persons with dementia: (a) Know the Person; (b) Recognize and Accept the Person's Reality; (c) Identify Areas for Continued Engagement; (d) Relationship Building; (e) Develop Relationships Across All Involved; and (f) Review Outcomes and Make Changes as Needed (Fazio, Pace, Flinner, & Kallmyer, 2018).

Given that there is not one global definition of PCC to date, clinicians and researchers must be thoughtful when selecting their framework for PCC. In the absence of a consensus definition of PCC, regardless of the population or setting, the definition and key attributes must be clearly illustrated and explained to all, including older adults and informal caregivers involved in their care. Researchers evaluating the impact of PCC must provide comprehensive definitions of PCC and the measures used to evaluate the impact.

TABLE 4.1

Essential Elements of Person-Centered Care

Element	Description
1. Personalized Care Plan	Preference-based, holistic care plan including personal and social goals
2. Care Plan Reassessment	Addresses physical, mental, and social changes as well as changing personal and medical care goals
3. Interdisciplinary Team-Based Care	Evolving caregiver team including the patient and family
4. Team Leader	Primary contact person and team leader to ensure continuity of care
5. Care Coordination	Ensured by primary contact person across settings and disciplines of care
6. Constant Communication	Open dialogue between patients, families, and providers in person and through the electronic health record
7. Continuing Education	Focus on person-centered care
8. Measurable Outcomes	Reasonable outcomes based on the individual's goals

Source: Data from American Geriatrics Society Expert Panel on Person-Centered Care. (2016). Person-centered care: A definition and essential elements. *Journal of American Geriatrics Society, 64*(1), 15–18. doi:10.1111/jgs.13866

ORIGIN AND HISTORY

PCC is believed to have begun in the 1940s with the work of psychologist Carl Rogers (Flinner, Kallmyer, Pace, & Fazio, 2018). His work focused on the development of person-centered therapy, also referred to as person-centered psychotherapy or counseling, which helps individuals to gain greater self-awareness (Dewing, 2004; Li & Porock, 2014). About a decade later, in the 1950s, patient-centered care gained interest in medicine and healthcare-related practice and research. Although distinct from PCC, patient-centered care was part of the paradigm shift from focusing on disease processes to focusing on the person (Groene, 2011). Additional terms used for patient-centered care include patient- and family-centered care, relationship-centered care, personalized care, and user- or client-centered care (Santana et al., 2018). Person-centered nursing is a term used to describe the person-centered approach to building therapeutic nurse–patient relationships during the delivery of nursing care (McCormack & McCance, 2006).

Most of our understanding of PCC derives from practice initiatives with older adults in long-term care (LTC) and those with dementia. Kitwood (1998) further advanced the concept by using the term *PCC* in the late 1980s to contrast the need for holistic dementia care versus the disease-based, medical approach (Flinner et al., 2018; Kitwood, 1998). Kitwood reasoned that PCC was the interaction between the individual's health, social context, and environment and emphasized the need for communication and relationship building among all those involved in the care of the person with dementia.

PCC in primary healthcare, including medicine and nursing, is thought to have been a movement from patient-centered care or medicine (Hakansson et al.,

2019). Often the terms *PCC* and *patient-centered care* are used interchangeably in the literature, yet there are differences in the goals of care (Hakansson et al., 2019; Kumar & Chattu, 2018). The goal of PCC is holistic and focused on quality of life, whereas patient-centered care focuses on treating the illness or condition to maintain or improve function. At the heart of person- and patient-centered care are similar values, including empathy, respect, engagement, relationship building, communication, shared decision-making, holism, personalization, and coordinated care (Hakansson et al., 2019).

More recently, the phrases *precision medicine*, *personalized medicine*, and/or *individualized medicine* have been used to describe individualized care (Jameson & Longo, 2015). The term *4P Medicine*, which stands for predictive, preventative, personalized, and participatory medicine, has also been proposed, but not as widely accepted (Jameson & Longo, 2015). Personalized medicine, and associated terms as noted previously, are based within a biomedical framework, whereas PCC is derived from a holistic perspective (El-Alti, Sandman, & Munthe, 2019). Personalized medicine may or may not result in improved outcomes and care for an individual, whereas precision medicine is thought to be a combination of the best available treatments and care based on genetic, environmental, and social factors both for the individual and for society as well (Jameson & Longo, 2015). Future exploration of how patient-centered care and personalized, precision, individualized medicine can work together to improve outcomes and care is expected.

FEDERAL AND STATE INITIATIVES

The Centers for Medicare and Medicaid Services (CMS), the payer for most LTC supports and services, supports PCC practices and policies. The CMS 2016 Quality Strategy includes six priorities to improve individual and family engagement in care design and delivery (CMS, 2016a, 2016b). A tenet of this change was to incorporate preferences and values into care as a way to improve health, the experience of healthcare delivery and services, and promote self-management (CMS, 2016a, 2016b). In 2018, proposed changes to the payment programs for Medicare included shifting payment from volume to quality of care indicators. Reimbursement in this model would be linked to patient-centered, or driven, quality indicators of care (CMS, 2018). The new structure for payments was designed to treat the person as a whole being, emphasizing the unique needs, values, and preferences of each individual.

At the state level, the agencies that monitor nursing homes in Kansas and Ohio have adopted PCC practices. Promoting Excellent Alternatives in Kansas (PEAK) began in 2002 as a way to promote culture change among LTC providers across the state (Kansas State University, 2019). PEAK is supported by the Kansas State University and the Kansas Department for Aging and Disability Services (KDADS). In 2012, PEAK underwent a transition to PEAK 2.0, with an increased emphasis on PCC practices rather than culture change. PEAK 2.0 is a Medicaid pay-for-performance incentive program and focuses on the following five domains of PCC: (a) Foundation, (b) Resident Choice, (c) Staff Empowerment, (d) Home Environment, and (e) Meaningful Life (Kansas State University, 2019).

The Ohio Person-Centered Care Coalition (OPCCC) was formed in 2005 by an interdisciplinary group of stakeholders in LTC, including representatives from groups of healthcare providers, consumers, and regulatory agencies (OPCCC, n.d.-a). Administered by the Ohio Health Care Association (OHCA), the OPCCC strives to influence change in LTC settings that transform the culture based on the following principles and values: (a) Each person has something to contribute; (b) Every person has goals; (c) Individuals know themselves the best; (d) Every person has the ability to make his or her choices known; and (e) Choices and preferences should always be considered (OPCCC, n.d.-b). In July 2016, legislation was introduced in Ohio, making it mandatory for skilled nursing facilities to implement the Preferences for Everyday Living Inventory, a measure of individual preferences across multiple domains into routine care to be reimbursed by Medicaid for services rendered (OHCA, 2016).

NURSING STRATEGIES

A core value in the nursing process is providing care. To achieve this, nurses develop therapeutic relationships with patients, family members, and other members of the healthcare team (McCormack, 2003, 2004; McCormack & McCance, 2006). Nurses are able to create these relationships through evaluation of the overall satisfaction and involvement with care and the creation of a therapeutic milieu (McCormack & McCance, 2006). This focus on creation of meaningful relationships to improve person-specific outcomes fits within the tenets of PCC.

Nurses can use strategies embedded within the framework of PCC to enhance relationship building and, ideally, patient outcomes over time. One way to do this is through the assessment of individual preferences, which is a critical tenet of PCC (Van Haitsma et al., 2019). Preferences can be thought of as an expression of how well a decision addresses individual values and personal goals (Van Haitsma et al., 2019). Knowing and being able to

meet preferences are ways to operationalize and measure the extent to which PCC is provided (Reid, Chappell, & Gish, 2007). Currently, there is a lack of evidence to support how assessment and knowledge of an individual's preferences results in improved individual outcomes. Both the Preference-Based Model of Care (Van Haitsma et al., 2019) and the Person-Centered Care Model (Santana et al., 2018) provide a framework for implementing and measuring PCC. The latter includes processes of care as well as preference congruence, or how care that is provided across settings matches a person's expressed preferences (Reid, Chappell, & Gish, 2007).

Engagement of the individual in his or her care is critical to PCC. The person should be involved in assessment strategies, care planning, and evaluation of outcomes important to the individual (Santana et al., 2018). Family members recognized as important to the person should also be included in all of these processes, as appropriate. In addition to their own care, individuals and their families should be included on the healthcare organization's planning committees such as patient and family advisory councils that engage key stakeholders in practice and quality improvement projects (Sharma et al., 2016). Additional approaches include tools such as the "All About Me Board," which is a way to organize general information on what names the individual prefers to be called, favorite hobbies, what makes them feel calm, past work experience, and also names of family members and/or important pets (Fick, DiMeglio, McDowell, & Mathis-Halpin, 2013).

SETTING-SPECIFIC APPROACHES

PCC may differ depending on the unique population and setting. The latter includes long-term, home and community-based, and acute care settings.

Long-Term Care

The movement toward PCC in LTC settings began as a widely adopted "culture-change" movement in the United States (Li & Porock, 2014). Principles of PCC are at the core of the culture-change movement and provide a platform to promote resident choice, dignity, respect, and quality of life. In the 1990s in the United States, the culture-change movement began to shift toward models of care that guided not only direct care, but also the physical environment (Li & Porock, 2014). Culture-change models include the Pioneer Network, the Eden Alternative, and The Green House Project, which are summarized in Table 4.2.

The Pioneer Network is composed of interdisciplinary members in five broad categories: (a) Policy Makers, (b) Healthcare Consumers, (c) Academia, (d) Healthcare Providers, and (e) Partners (Pioneer Network, n.d.). To accomplish systems change, The Pioneer Network strives to create avenues for communication; develop and foster relationships; change practice, research, and policy; and provide information to all stakeholders (Pioneer Network, n.d.). The Pioneer Network has fostered a coalition across most states to help with lasting change.

The Eden Alternative is perhaps the most widely known model in the United States and was founded by

TABLE 4.2

Approaches to Person-Centered Care in Long-Term Care Settings

Title	Description	Link
Pioneer Network	Recognized as the national leader of the culture-change movement in long-term care with the goal of shifting long-term care to person-directed practices across the country.	www.pioneernetwork.net
Eden Alternative	International organization to improve the lives of older adults by decreasing loneliness, helplessness, and boredom through creation of elder-centered communities ranging from long-term care settings and beyond.	www.edenalt.org
The Green House Project	Transformation of long-term and post-acute care settings to smaller-scale, "homelike" settings focused on improving quality of life and engagement in meaningful relationships.	www.thegreenhouseproject.org

Bill Thomas. Currently, it is an international organization focused on improving quality of life for older adults regardless of where they may reside through the use of person-centered and person-directed practices (Eden Alternative, n.d.-a). Quality of life is measured by the three "plagues" of loneliness, helplessness, and boredom and the implementation of 10 Eden Principles to alleviate these plagues (Thomas, 1996). The Eden Alternative is shaped by a framework of seven Domains of Well-Being: (a) Identity, (b) Growth, (c) Autonomy, (d) Security, (e) Connectedness, (f) Meaning, and (g) Joy (Eden Alternative, n.d.-b). A key approach within The Eden Alternative is a transformation of the physical environment to a homelike environment with plants, animals, and intergenerational activities (Li & Porock, 2014).

The Green House Project, also known as the Small House Model, aims to promote PCC through drastic transformation of the physical environment. Communities are formed with small numbers of residents, approximately 10 or less, to promote social and therapeutic interactions (Li & Porock, 2014; Rabig, Thomas, Kane, Cutler, & McAlilly, 2006; Robinson & Gallagher, 2008).

The impact of person-centered models of care or approaches to care in LTC settings has received some attention, but more work remains to be done. Results on resident, family, and staff outcomes is mixed (Ausserhofer et al., 2016). Reports suggest that direct resident time per resident day and staff interaction with residents may be improved with the use of models such as The Green House (Sharkey, Hudak, Horn, James, & Howes, 2011). There is also evidence to suggest that direct care providers and staff may benefit from the movement toward smaller-scale, more homelike LTC environments, resulting in higher job satisfaction and less turnover (Vermeerbergen, Van Hootegem, & Benders, 2017). This result may be achieved through increased social support in the work environments of alternatives like The Green House, but no clear association exists to date.

Home and Community-Based Care

The provision of PCC within the context of home and community-based care services and supports has been seen through the fairly widespread adoption of the Patient-Centered Medical Home (PCMH; Hong, Huo, & Mainous, 2018; Jackson et al., 2013). The PCMH seeks to transform primary care by improving patient and informal caregiver experiences, outcomes, and interactions within the healthcare system (Jackson et al., 2013). Although PCMH has varying conceptual and operational definitions, basic tenets include a patient-centered focus, care coordination across healthcare team members and settings, and emphasis on care quality and safety (Jackson et al., 2013).

The PCMH was initially supported by the American Academy of Pediatrics (AAP), where the pediatrician was considered as a gatekeeper and the person responsible for restoring the health of children who were chronically ill (Arend, Tsang-Quinn, Levine, & Thomas, 2012). The definition was later expanded by the AAP to focus on patient- and family-centered comprehensive care provided by the primary care practitioner. The Institute of Medicine (IOM), now known as the National Academies of Science, supported the notion of patient care homes, including improved access to care, continuity of care, team-based care, and the patient being involved in his or her own care (Arend et al., 2012). In addition, support for PCMH came from other organizations such as the American Academy of Family Practice (AAFP), American College of Physicians (ACP), American Osteopathic Association, National Committee for Quality Assurance (NCQA), the Joint Commission, and others (Arend et al., 2012). In general, PCMH homes have been shown to provide increased access to care, better continuity of care across providers and settings, care that is more patient-centered, improved patient self-management and involvement of care, and also increased use of health information technology in care (Arend et al., 2012). The bulk of data supporting PCMH focuses on one aspect rather than the implementation of a comprehensive package including all elements.

There is some evidence to support improved outcomes with the use of a PCMH. In terms of disease-specific measures and outcomes, recent research has linked PCMH with better control of chronic health conditions such as diabetes and hypertension (Rosland et al., 2018). Some evidence supports systematic outcomes such as improved patient and caregiver satisfaction, lowered burnout and stress among healthcare staff, and fewer hospitalizations and emergency department visits (Nelson et al., 2014). Both of these studies, which were conducted within Veterans Affairs settings, found that outcomes were dose dependent. Facilities with improved uptake of PCMH principles fared better with regard to outcomes than those that were not as successful in implementing the model. Future work may focus on understanding barriers to and facilitators of implementation across organizations and different types of settings in an effort to improve outcomes.

Acute Care

Embedded PCC within the context of acute care hospitals is a challenging arena and is gaining increased attention.

This interest comes from an increasingly complex, chronically ill population, who are the largest population being seen in acute care. Expectations of patients and families, as well as their self-care knowledge and skills, have risen over the years, creating a need to change the way that acute care is delivered. At the same time, acute care hospitals are seeing increased costs, with fewer and more expensive resources. This has led to many changes that have been labeled as patient centered (Gabutti, Mascia, & Cicchetti, 2017). The bulk of the work done in acute care emphasizes patient-centered care, rather than PCC. For the purpose of this chapter, work using both patient-centered care and PCC are described.

Strategies for how acute care facilities are providing PCC have emphasized systemic shifts. Gabutti et al. (2017) described change as three pillars: (a) the progressive patient care model, (b) the patient-centered approach, and (c) the lean approach (Gabutti et al., 2017). The progressive patient care model is a shift from traditional clustering of patients on the basis of a specific disease process, such as telemetry, to a pooling of patients together on the basis of the amount of care they require. Examples of this may include assigning levels of care to patients using a numerical rating scale or grouping patients by more standard sets such as outpatient and inpatient surgeries, further stratifying inpatient surgical candidates on the basis of expected length of stay (Gabutti et al., 2017; Villa, Barbieri, & Lega, 2009; Villa, Prenestini, & Giusepi, 2014). Patient-centered approaches to change emphasize the need for improved communication and continuity of care across care providers and settings of care (Gabutti et al., 2017). With the exception of emergency departments, relatively little of this work is focused on within acute care communication and care transfers (Gabutti et al., 2017). Lean methods were originally created as a way to eliminate unnecessary steps and waste in engineering and manufacturing processes, beginning with the Toyota Production System (Nicosia, Park, Gray, Yakir, & Hung, 2018). In acute care settings, lean principles focus on improving patient flow by redefining roles and expectations of healthcare team members, changing staffing models and scheduling, improving communication among staff, and redesigning workspaces (Gabutti et al., 2017). Gabutti et al. (2017) further explain that information communication technology (ICT) tools, managerial accounting tools, and human resource management tools are the ways to achieve these changes.

Additional recent work by Fiorio, Gorli, and Verzillo (2018) suggests the following six changes that are required in order to move acute care facilities toward PCC: (a) organizational models of care delivery, (b) patient care needs, (c) nursing models of care delivery, (d) resources, (e) roles and responsibilities, and (f) physical space (Fiorio et al., 2018). Changes suggested by Gabutti et al. (2017) and Fiorio et al. (2018) can be summarized as two main themes. The first is change in organizational and nursing models of care, and the second is changes within the physical environment and structure.

Current organizational and nursing models of care delivery in hospitals are focused on tasks, with set roles and responsibilities of medical, nursing, and all healthcare team members. To shift toward PCC, a process-driven model such as primary nursing is needed to reduce fragmented care (Vos et al., 2011). Functional or team nursing involves a group of nurses being responsible for the care of each patient. In contrast, primary nursing means a primary nurse holds responsibility for the coordination and delivery of care throughout the course of hospitalization with the goal of providing continuity of care (Dal Molin et al., 2018; Fiorio et al., 2018; Vos et al., 2011). The role of the nurse may also shift from providing direct care to a nurse liaison or advocate, where the focus is on care coordination and communication between the patient, family, and all healthcare team members (Gabutti et al., 2017).

Evidence on patient and nursing staff outcomes related to implementation of primary care nursing has been relatively positive, with some mixed results. Patient outcomes such as pressure ulcers, falls, and urinary catheter infections may be positively impacted (Dal Molin et al., 2018). An even more recent study, using questionnaire data, found that patients felt primary nursing resulted in nursing care that was more tailored to their individual needs and preferences and that their needs were promptly addressed (Naef, Ernst, & Petry, 2019). In contrast, this same study reported that primary nursing resulted in decreased care coordination, which may ultimately impact patient outcomes. Evidence also suggests that changes within organizational and nursing care delivery models may result in increased workload and burden on healthcare staff, particularly nurses (Bohmer, Beyersdorger, & Harrow, 2010; Gabutti et al., 2017). Long-term work needs to evaluate whether this continues after the initial change.

Staff outcomes such as decreased turnover may be a result of the move to primary nursing care models (Butler et al., 2011). A potential explanation of the variance in outcomes related to primary care nursing is similar to those explored with other PCC setting-specific approaches; the implementation and uptake of primary care nursing is inconsistent and often done without appropriate system and organization supports (Goode & Rowe, 2001; Korhonen & Kangasniemi, 2013; Naef et al., 2019). Additional evidence is also needed to explore how primary nursing care

impacts outcomes for older adult patients and their informal, family caregivers, particularly in those with cognitive impairment such as dementia and/or delirium as this is an understudied area.

The second theme of change in acute care toward PCC has been within the physical space of facilities. These changes to the space where care is provided often coincide with organizational changes to the way that it is delivered. Changes in the acute care environment are now being designed to meet the needs of patients, families, and healthcare providers. Historically, hospitals have been built around fixed spaces, with isolated units. Each unit is often devoted to specialty care or procedural care, such as telemetry or surgery. This means that each unit is responsible for separate pieces, including beds, medical equipment, and staff. Recent changes with the PCC movement include physical spaces meant to capitalize on shared resources. Each unit has flexibility in design, equipment, and staff (Fiorio et al., 2018; Vos et al., 2011). All of these changes work together to promote a space that is focused on the patient and family and their needs, rather than what works best for the clinician and the healthcare organization as advocated by organizations such as *Planetree* (Frampton, 2009). Outcomes associated with changes in the physical environment have not been fully evaluated, but there is some evidence to suggest that redesign can improve patient flow throughout facilities and has been linked to increased patient satisfaction, decreased wait times in settings such as the emergency department, and shorter lengths of stay (Gabutti et al., 2017).

Future work on PCC needs to focus on how to operationalize and effectively implement changes (Gabutti et al., 2017). Current definitions of person-centered changes in acute care are broad and not properly defined in a way that direct healthcare staff, such as nurses, and also organizational managers and leaders can use them. Additional work needs to clearly outline effective approaches for policy makers as well (Gabutti et al., 2017).

MEASUREMENT OF PERSON-CENTERED CARE IN PRACTICE AND RESEARCH

PCC is complex, and until recently there was no standard approach in defining the term and essential elements. Given this, there has also been variation in measurement. Table 4.3 presents several tools to assess preferences for care and aspects of PCC.

There are also several global initiatives to facilitate patient engagement. The World Health Organization (WHO) has established a Health Evidence Network (HEN) to help patients, families, and their providers make healthcare decisions (WHO, 2019; Winn, Ozanne, & Sepucha, 2015). The International Patient Decision

TABLE 4.3

Tools to Measure Person-Centered Care

Name of Tool	Completed By	Number of Items	Aspects of Person-Centered Care Measured	Initial Development and Country of Origin
Client-Centered Care Questionnaire (CCCQ; De Witte, Schoot, & Proot, 2006)	Client	15	1. Client values and expectations 2. Aspects of care demands 3. Aspects of care relationship	Three home care organizations in the Netherlands
Individualized Care (IC; Chappell, Reid, & Gish, 2007)	Long-term care nursing staff of residents with dementia	13 IC-KNOW; 15 IC-AUTONOMY; 7 IC-COMMUNICATION-SR; 11 IC-COMMUNICATION-SS	1. Staff knowledge of residents (IC-KNOW) 2. Resident autonomy (IC-AUTONOMY) 3. Communication between staff and residents and also staff to staff (IC-COMMUNICATION-SR; IC-COMMUNICATION-SS)	Six long-term care settings in Canada
Patient-Centered Care in Primary Care Scale (Radwin et al., 2019)	Primary care clinic clients	36; 23 Short Form	1. Provider knowledge of person/individualizing care 2. Nurse knowing the person 3. Nurse individualizing care 4. Continuity of care	Veterans Affairs outpatient clinics in United States

(*continued*)

TABLE 4.3

Tools to Measure Person-Centered Care (*continued*)

Name of Tool	Completed By	Number of Items	Aspects of Person-Centered Care Measured	Initial Development and Country of Origin
Perceived Family Involvement (F-INVOLVE) and Importance of Family Involvement (F-IMPORTANT) Scales (Reid et al., 2007)	Family member of long-term care resident with dementia	20 (F-INVOLVE); 18 (F-IMPORTANT)	1. Family input on care 2. Family interaction in care 3. Family involvement in decision-making 4. Informal and formal support for family members 5. Education for family 6. Long-term care planning 7. Family presence at facility 8. Family knowledge of facility 9. Administrator involvement	Four long-term care settings in Canada
Person-Centered Care of Older People with Cognitive Impairment in Acute Care (POPAC) Scale (Edvardsson, Nilsson, Fetherstonhaugh, Nay, & Crowe, 2013)	Acute care nursing staff	15	1. Using cognitive assessments and care interventions 2. Using evidence and cognitive expertise 3. Individualizing care	Acute care setting in Australia
Person-Centered Climate Questionnaire-Patient Version (PCQ-P; Edvardsson, Sandman, & Rasmussen, 2008)	Client	17	1. Climate of safety 2. Climate of everydayness 3. A climate of hospitality	Acute and subacute care settings in Sweden
Person-Centered Climate Questionnaire-Staff Version (PCQ-S; Yoon, Roberts, Grau, & Edvardsson, 2015)	Long-term care nursing staff	14	1. Climate of safety 2. Climate of everydayness 3. A climate of community	Six long-term care settings in Midwestern United States
Person-Centered Care Assessment Tool (P-CAT; Edvardsson, Fetherstonhaugh, Nay, & Gibson, 2009)	Long-term care nursing staff	39	1. Extent of personalizing care 2. Amount of organizational support 3. Degree of environmental accessibility	Long-term care setting in Australia
Person-Centered Community Care Inventory (PERCCI; Wilberforce, Challis, Davies, Kelly, & Roberts, 2018)	Community dwelling older adult client	18	1. Interpersonal aspects of PCC 2. Organizational aspects of PCC	Community mental health settings in England
Person-Centered Inpatient Scale (P-CIS; Coyle & Williams, 2001)	Client	72	1. Personalization 2. Empowerment 3. Respectfulness 4. Information 5. Staff approachability and availability 6. Life impact 7. Miscellaneous	Acute care setting in Scotland

(*continued*)

TABLE 4.3

Tools to Measure Person-Centered Care (*continued*)

Name of Tool	Completed By	Number of Items	Aspects of Person-Centered Care Measured	Initial Development and Country of Origin
Person-Directed Care (PDC; White, Newton-Curtis, & Lyons, 2008)	Long-term care nursing staff	50	1. Knowing the person 2. Comfort care 3. Autonomy 4. Personhood 5. Support relations 6. Staff work with residents 7. Personal environment for residents 8. Management/Structure	Eight long-term care settings in Oregon
Preferences for Everyday Living Inventory (PELI-NH-Full Version 2.0; Curyto, Van Haitsma, & Towsley, 2016)	Long-term care resident	72	1. Social contact 2. Growth activities 3. Diversionary activities 4. Self-dominion 5. Enlisting others in care	Two long-term care settings across the Northeastern United States

PCC, person-centered care.

Aid Standards (IPDAS) Collaboration is a network of researchers, practitioners, and key stakeholders that also aims to improve PCC through evidence-based development of patient decision aids (Elwyn et al., 2006; IPDAS, 2019; Winn et al., 2015). Key stakeholders in this group include patients.

Understanding an individual's preferences for care is a component of PCC. Owing to constraints within the healthcare system, it has been difficult to measure the extent to which these preferences are adhered to (Winn et al., 2015). Work has been done to understand how to define and also measure the agreement between patient preferences and medical treatments provided, which is a key tenet of patient-centered care (Sepucha & Ozanne, 2010); however, no clear method is available for determining this match, and additional work is needed in this area (Winn et al., 2015).

CASE STUDY 4.1

Mr. H. is an 80-year-old widower who came to the nursing home (NH) for rehabilitation following a hospitalization for a head injury. He has dementia, which at times causes problems with his short-term memory. Mr. H. ambulates independently. He desires to spend unsupervised time outside whenever he wants during nicer weather. The NH has a courtyard that is secure, but Mr. H. prefers to go out in front of the building because he likes to scavenger hunt for coins. Staff members are worried for his safety. Staff are particularly concerned that Mr. H. will sustain an unwitnessed fall, get hit by a car, or wander away and forget his way back. Beyond the physical safety of Mr. H., staff are troubled by the potential for a regulatory deficiency or a lawsuit related to a preventable harm. They have asked Mr. H. to refrain from going outside unattended until the situation can be further evaluated by the interprofessional team and a risk mitigation plan can be established. Mr. H. told staff members that he does not share the same worries and that he enjoys scavenger hunting because it helps to take his mind off his illness and keeps him physically active. He does not understand the staff's request and as a result has become angry, less talkative, and has begun to refuse clinical care and involvement in other activities. The goal is for Mr. H. to return home with LTC services and supports for his head injury and progressing dementia.

The interprofessional team has identified this circumstance as an opportunity to reevaluate Mr. H's care plan to ensure it is person-centered. The following actions are taken:

- The nurse assesses Mr. H's cognitive status.
- The physical therapist assesses Mr. H's physical function.

(*continued*)

CASE STUDY (*continued*)

- The nurse clarifies with Mr. H. his preference to go outside, identifying why it is so important to him.
- During an interdisciplinary care team meeting, the team explicitly discusses Mr. H's goal to be discharged home; preference to go outside unsupervised; and the potential benefits, harms, and alternative options to honoring Mr. H.'s preference.
- The nurse educates Mr. H. and his family on the risks and documents the discussion. The nurse invites Mr. H. and his family to a care planning meeting to determine how to best honor his preference.
- The interdisciplinary team, along with the resident and the family, construct a personalized, preference-based PCC plan using the Rothschild Process for Care Planning Resident Choice process and documentation form.

Based on the improvement noted in Mr. H's physical function and that he has previously been outside to scavenger hunt without supervision and was able to return independently, the interdisciplinary collaborative practice team has agreed that it would be in Mr. H's best interest to continue his hobby. Mr. H stays in the NH for two more weeks and then is discharged back home.

Case Study Discussion

In this case study, person-centered care was established by personalizing Mr. H's care plan to his specific preference to go outside unattended. The interdisciplinary team worked together to assess Mr. H's health status and create an open and continuous line of communication with Mr. H. and his daughter about his preference. Going outside independently is a reasonable outcome for Mr. H as the goal is to have him remain independent enough to continue care for his head injury and sequelae at home.

SUMMARY

PCC is a global, national, and local priority for nurses and interdisciplinary healthcare team members. PCC assessment includes, but is not limited to, personal and medical background, preferences, values, and beliefs. The evidence supports the effectiveness of PCC models in long-term and acute care settings. Future work will continue on evaluation of models in home and community-based care settings.

Ongoing evaluation with the person and family to assess preference congruence, understand their engagement in decision-making, and evaluate the impact of preference assessment on respect and dignity will be future areas to focus on in research and practice. Additional evaluation of the physical environments in acute, LTC, primary care, and community-based care with regard to how well they help to promote PCC should also be an area where we continue to focus and develop evidence-based approaches to meeting different needs. The provision of PCC is considered a global best practice for healthcare delivery. There has been considerable progress made in understanding PCC from all stakeholder perspectives, and we will continue to see the important role that nurses play in implementation and evaluation strategies moving forward.

NURSING STANDARD OF PRACTICE

Protocol 4.1: Implementation of Person-Centered Care

I. GOAL

To facilitate the implementation of person-centered care (PCC) for individuals as they move across settings of care and receive care from all interdisciplinary healthcare team members.

II. OVERVIEW

PCC is conceptually defined, and major tenets have been identified. Global and local movements toward PCC are seen at theoretical and operationalized levels. Changes moving toward PCC in acute, long-term, and home and

(*continued*)



Protocol 4.1: Implementation of Person-Centered Care (*continued*)

community-based care settings have been identified and include shifts in both how care is provided and the environments in which care takes place. Measurement of preferences can be accomplished using various standardized tools. The congruence between preferences for care and care provided continues to be an area where additional work is needed to understand how to achieve best practices. Nurses play an integral role in the implementation of PCC across settings and in involving both the patient and the family. Clinicians and researchers selecting a PCC framework must clearly outline and describe how they will measure PCC and evaluate the impact of any interviews.

III. BACKGROUND

A. Definition
   PCC is generally defined as asking and allowing an individual to indicate his or her values and preferences that should then direct all healthcare choices and decisions to support not only their health-related goals, but all other personal goals as well to the fullest extent possible.
B. Attributes
   I. Personalized Care Plan
   II. Continued Assessment of Preferences and Care Plan
   III. Interdisciplinary Team Care
   IV. Team Leader or Gatekeeper for All Healthcare Information and Decisions Made
   V. Care Coordination Across Healthcare Team Members
   VI. Continued Communication Across All Team Members
   VII. Continuing Education
   VIII. Measurable Outcomes

IV. HISTORY

PCC is rooted in psychology and is considered to be a more holistic concept than similarly used terms such as *patient-centered care*. In the 1980s, Thomas Kitwood advanced our understanding and acceptance of PCC in particular in persons with dementia. Kitwood proposed that PCC was the interaction between the individual's health, social context, and environment and emphasized the need for communication and relationship building among all those involved in the care of the person; these are all tenets of the currently accepted definitions of PCC.

V. FEDERAL AND STATE INITIATIVES

At the federal level, PCC is supported by the Centers for Medicare & Medicaid Services. At the state and local levels, early adopters have included Kansas and Ohio with Promoting Excellent Alternatives in Kansas (PEAK) in 2002 and the Ohio Person-Centered Care Coalition (OPCCC) beginning in 2005. Evaluation of both of these programs continues.

VI. NURSING STRATEGIES

A. Assessment of preferences and promoting congruence between preferences and care provided
B. Knowing the person by using "All About Me" or similar approaches
C. Engagement of the person in assessment, planning, and evaluation
D. Inclusion of family in assessment, planning, and evaluation, as desired by the person
E. Including the person and family in organizational planning/initiatives (e.g., committees, councils)

VII. ORGANIZATIONAL MODELS AND APPROACHES

A. Acute Care
   I. PCC shifts in acute care include changes in both organizational and nursing care delivery models and also changes to the physical environment and structure within these settings. Shifts in organizational and nursing models of care include a shift from task-oriented, fragmented care to primary care nursing delivery models. Environmental and structural changes include movements toward flexible designs, shared resources, and staff across hospital units.

(*continued*)

Protocol 4.1: Implementation of Person-Centered Care (*continued*)

B. Long-Term Care
   I. Models of PCC in long-term care (LTC) began as a "culture-change" movement in the United States. Common culture-change models include The Pioneer Network, the Eden Alternative, and The Green House Project. The Pioneer Network is a national leader of person-centered practices in the United States. The Eden Alternative is focused on decreasing loneliness, helplessness, and boredom through elder-centered communities in LTC and also other settings. Transformation of long-term and postacute care settings to smaller, more homelike settings emphasizing quality of life and meaningful relationships is the crux of The Green House Project.
C. Home and Community-Based Care Services
   I. The Patient-Centered Medical Home (PCMH) is the primary model used to promote patient-centered care in home and community-based care settings. In general, the PCMH emphasizes care coordination among interdisciplinary healthcare team members with a focus on care quality and safety.

VIII. EVALUATION OF EXPECTED OUTCOMES

A. PCC assessment initiated, including personal and medical background, preferences, values, and beliefs
B. Ongoing and transitional evaluation with person and family to describe preference congruence, engagement in decision-making, respect and dignity, and environment
C. Evaluation of the physical environment
D. Audits of personalized care plans to address preference congruence
E. Staff orientation includes importance of PCC, assessment of preferences, preference congruence, team-based care, including the person and family, and the focus on interpersonal communication with older adults, families, and other clinicians

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Environmental Approaches to Support Aging-Friendly Care

5

Rana Sagha Zadeh

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Define the three key components of the "aging-friendly physical environment of care."
2. Identify recent, current, and upcoming trends in evidence-based healthcare design.
3. Understand the role of the physical environment in safe and effective care delivery.
4. Summarize the existing evidence on the role of the physical environment in healthcare, especially for older adults.
5. Describe the process for successfully applying evidence about the physical environment into healthcare practice.

OVERVIEW

The physical environment is a key component of aging-friendly care models that can facilitate or hinder safe and effective care (Boltz, Capezuti, & Shabbat, 2010; Huang, Larente, & Morais, 2011). Therefore, management of the physical environment becomes an essential consideration in achieving optimal care, supporting physical and behavioral health, and maximizing physical and functional performance for older adults. In this chapter, we provide a framework for an "aging-friendly physical environment of care," describe its essential components, share a brief summary of recent trends and foundational evidence, and present key considerations for successful application of the evidence into practice.

BACKGROUND AND STATEMENT OF PROBLEM

By the combined work of researchers from design, nursing, and medicine, the evidence-based practice and evidence-based medicine (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996) decision-making frameworks have recently been expanded to include decisions on the healthcare built environment. This trend was formalized by the term *evidence-based design* (EBD), defined as "basing design decisions on credible research to achieve the best possible outcome" (Center for Health Design, 2008a, p. 3; Hamilton, 2003, p. 20). Over 3,000 studies to date have been identified on the role of the physical environment on healthcare outcomes, ranging from safety issues to the pace and quality of recovery. For patients and families, the physical environment has been shown to be a factor in improving experiences and quality of care by providing comfort, dignity, privacy, and control. Thus, the creation of a positive environment of care requires attention to the built environment.

For patients with multiple comorbidities, advanced illness, or life-limiting illness, the physical environment can be either a source of suffering or a refuge that provides

relief from suffering, a symbol of care or a cause of stigma. The term *palliative design* was coined in 2018 to highlight the growing body of evidence on "the design and management of the physical environment to improve quality of life and minimize suffering (including physical, psychological, social, and spiritual symptoms) for patients, their families, and their caregivers" (Sagha Zadeh & Eshelman, 2019, p. 183). Palliative design is the conscious design of the environment to meet the varied needs of the patients, manage symptoms, and safeguard quality of life. It is intended to work alongside, and in integration with, medical care to achieve the desired care outcomes (Sagha Zadeh & Eshelman, 2019).

Particularly for seniors who may be experiencing combined levels of physical and cognitive impairments, the institutional physical environment sometimes becomes the underlying reason for health and safety issues independent of the disease or medical treatment consequences. It can also exacerbate negative disease or treatment symptoms (Figure 5.1).

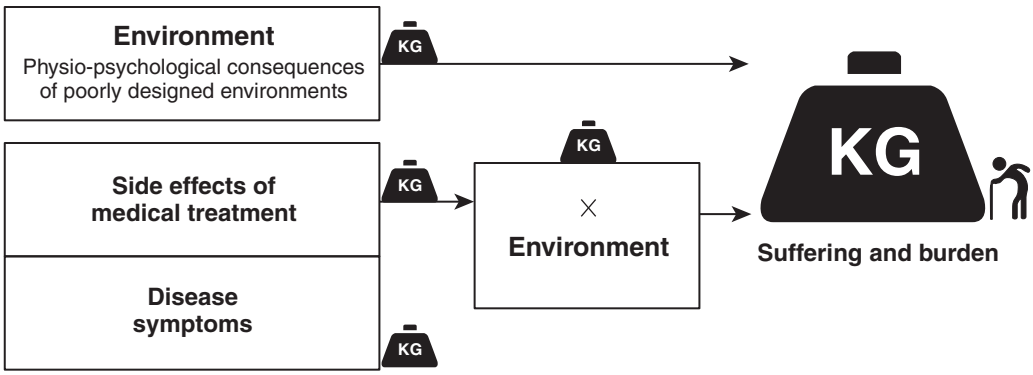
Examples of the former are sleep and restlessness issues resulting from noise pollution in the hospital environment (e.g., from equipment, verbal distress of neighboring patients, alarms, and conversations). These sleep disturbances can even develop in healthy adults exposed to the auditory and sensory aspects of hospital environments in laboratory studies (Stanchina, Abu-Hijleh, Chaudhry, Carlisle, & Millman, 2005; Topf, 1992; Topf, Bookman, & Arand, 1996; Wallace, Robins, Alvord, & Walker, 1999) and can persist after hospitalization. Unfortunately, falls and infections can be other devastating direct consequences of a physical environment of care that has not been optimized (Hall & Kamerow, 2013; Taylor & Hignett, 2016). The physical environment was shown to be the root cause of nearly half of hospital patient falls in 2005 (Taylor & Hignett, 2016).

Delirium provides an example of a situation in which the environment is not the root cause of the symptom but can worsen or ease suffering. Although age, illness, and drugs are typically the causes of delirium (Fong, Tulebaev, & Inouye, 2009), the condition is significantly intensified by the physical environment, which in some cases can even cause a doubling in the rate of delirium occurrence (Ghaeli, Shahhatami, Mojtahed Zade, Mohammadi, & Arbabi, 2018). Management of environmental factors (e.g., circadian light variation, room exposure to outside views and light) has been shown to reduce delirium in older adults considerably (Ghaeli et al., 2018; Williams, Campbell, Raynor, Mlynarczyk, & Ward, 1985).

As seen in these examples, a portion of the suffering and harm experienced by patients, as well as the burden placed on staff, can be an unintended consequence of the physical environment. These environment-induced consequences of hospitalization could be avoided by conscientious design of the physical environment. Overlooking the physical environment is not only a threat to staff productivity but can also prolong hospitalization, increase medication use, and reduce patient satisfaction. As the growing body of evidence continues to clarify the role of the environment as a nonpharmacological strategy for safe and high-quality care delivery, the allocation of resources to optimize the physical environment is moving from being desirable to being absolutely necessary.

FIGURE 5.1

Causes of suffering for older adults as related to the physical environment.



AGING-FRIENDLY PHYSICAL ENVIRONMENT OF CARE

Older adults may experience mobility loss, cognitive dependencies, and comorbidities. They are therefore more vulnerable to falls, infections, and injuries. If overlooked, the architecture of the care environment can threaten their safety; erode their sense of confidence, dignity, and control; and impair their quality of life (Brereton et al., 2012).

In this section, we describe a proposed framework that synthesizes the latest evidence on desired qualities of the environment of care for older adults. An aging-friendly physical environment of care should support the multiple needs of the senior patient population and protect them from harm. An aging-friendly physical environment can be defined as a set of nonpharmacological interventions marked by the ability to support the following outcomes for older adults: (a) protecting their safety, (b) meeting their essential needs and managing their symptoms, and (c) supporting their sense of dignity, control and respect (Figure 5.2). Nursing assessment and evaluation of environmental strategies to improve care, whether performed as a single intervention or in combination with other strategies, can result in determining effective nonpharmacological interventions (Kline, 2009).

These three criteria are further explained in this section. It is notable that although the literature on the general population highlights the impact of environmental factors on health outcomes, the effectiveness of these strategies is highly dependent on the customization of the solutions to patient characteristics, such as age and health condition. It also depends on the type and quality of the intervention. The documented complex interaction of individual characteristics (e.g., age, health) with environmental factors calls for individualized response (Kline, 2009).

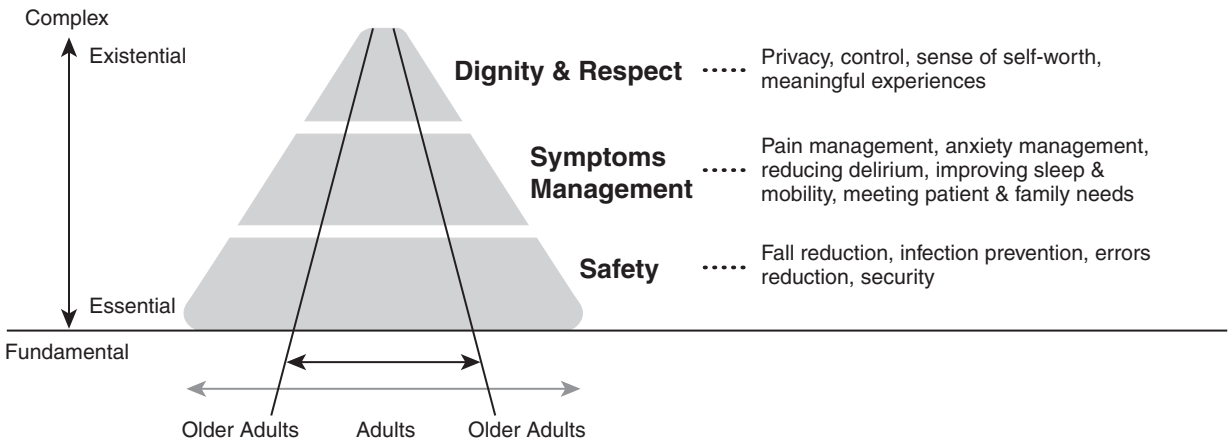
Safety (e.g., Preventing Falls, Infections, Errors, and Incidents)

Safety and injury prevention must be considered as the most fundamental criteria of aging-friendly care environments. In long-term and acute-care settings, injuries usually result from a combination of factors, including the physical environment.

Falls are the most frequently reported adverse events in in-patient settings (Beyea, 2005) and are a threat to elderly patients in particular (Morse, 2008). Analysis of hospital data shows that almost all fall incidents are preventable, yet falls have remained a key concern in nursing practice for the past several decades (Currie, 2006), probably because of the numerous factors involved in fall incidents. The risk factors leading to falls include both intrinsic factors (e.g., age, mental status, mobility) and extrinsic factors (e.g., environment, nursing practice, medication; Brambilla, Rebecchi, & Capolongo, 2019; Currie, 2006; Jensen, Lundin-Olsson, Nyberg, & Gustafson, 2002; Joint Commission, 2015). Hospital data show that

FIGURE 5.2

The aging-friendly physical environment.



Note: This framework is organized from the most fundamental needs to the most complex needs, as inspired by Maslow's hierarchy of needs (Maslow, 1943).

the physical environment is the root cause of 40% of fall incidents in U.S. hospitals (Taylor & Hignett, 2016). Yet environmental strategies have been widely underutilized in practice. However, with the recent push for improving safety by agencies such as the Agency for Healthcare Research and Quality (AHRQ), these trends are changing. The most effective approaches to preventing falls are multilevel interventions, as single interventions have shown mixed results (Cumming, 2002; Currie, 2006; Taylor, Hignett, & Joseph, 2014).

A combination of environmental strategies and nursing practices (nonpharmacological factors) and medication adjustments (pharmacological factors) that is then tailored to patient characteristics is deemed the most effective plan for fall prevention, according to multiple systematic reviews (Abdalla et al., 2018; Cumming, 2002; Currie, 2008). Examples of relevant physical environmental interventions include grab bars, open-circulation pathways, toilet height and design, flooring materials, flooring irregularities, and spatial design aspects, including proximity and visibility of the patient areas from staff work areas (Brambilla et al., 2019; Melo, 2018; Taylor & Hignett, 2016). With such a strategic and informed approach, areas of high risk for falls could be transformed to improve patient safety. The selection of the correct strategies requires combining experience and evidence and working closely with architects and engineers. Exhibit 5.1 displays an example of such an effort at The Villages Regional Hospital in The Villages, Florida. Environmental solutions for fall prevention are not necessarily expensive. According to the principal architect in the case described in Exhibit 5.1, Sam Burnette, some of the strategies used (e.g., eliminating depressed slab) actually saved costs during construction compared to conventional approaches.

EXHIBIT 5.1

Examples of Fall-Prevention Strategies in a Shower Stall at The Villages Regional Hospital, The Villages, FL

- Removed trip hazards in shower areas
- Above-slab shower system eliminates curb
- No depressed slab required



Examples of fall-prevention strategies in a shower stall at The Villages Regional Hospital, The Villages, FL

Photo © ESa/Sam Burnette, The Villages Regional Hospital

The major patient population demographic at The Villages Regional Hospital is older adults. Therefore, the facility specifically adopted aging-friendly design strategies. Safety was a key goal of the project. The architecture firm implemented the following fall-prevention strategies:

1. Minimized site tripping obstacles (e.g., parking lot wheel stops and raised curbs at pedestrian crosswalk).
2. Eliminated flooring trip hazards at flooring material transitions (e.g., flooring between patient room and bathroom, hard tile and carpet transitions, and high thresholds at entry vestibules). Replaced bathroom shower units that had raised curbs with showers that have roll-in transitions.
3. Provided handrails and grab bars at key areas where seniors need the wall support for walking assistance.

—Sam Burnette, Principal, ESa

Source: ESa/Earl Swensson Associates, Nashville, TN.

Infections are another key safety concern for all patients (Clancy, 2008), especially those with compromised immune system function. As in the case of falls, combined multilevel interventions (education, physical environment, clinical practice, and technology) are deemed the most effective infection prevention measures (Neo, Sagha-Zadeh, Vielemeyer, & Franklin, 2016; Zimring et al., 2013). Examples of physical environmental strategies that were found effective for preventing infection transmission include the use of single-occupancy rooms, sink and toilet redesign, surface redesign with antibacterial solutions or easy-to-clean finishes, strategic placement and numbering of hand-sanitizing stations, electronic reminders for hand cleaning, and air filtering (Bartley & Streifel, 2010; Hall & Kamerow, 2013; Memarzadeh, 2011; Neo & Sagha-Zadeh, 2017, Ulrich et al., 2008).

Recently, multidisciplinary partnerships among clinical and nonclinical stakeholders have led to the systematic development of multilevel interventions that include evaluation and recommendation of environmental measures, including, for example, the tools developed by the U.S. Department of Veterans Affairs and the Joint Commission Center for Transforming Healthcare (Department of Veterans Affairs, 2014; Joint Commission Center for Transforming Healthcare, n.d.). Another useful safety framework is the Conceptual Framework for the Chain of Transmission, supported by AHRQ; its chain of transmission interventions model provides an evidence-based guide for research and practice on environmental interventions to control pathogens in healthcare settings (Zimring et al., 2013).

Safety Risk Assessment (SRA) is an example of a recent systematic toolkit specifically focused on the optimization and refinement of the physical environment for injury prevention (Taylor, Quan, & Joseph, 2015). Developed by the Center for Health Design and funded by AHRQ, SRA encompasses evidence-based safety measures targeting infections, falls, medication errors, security, injuries of behavioral health, and patient handling (Taylor, Joseph, & Quan, 2012; Taylor, Joseph, Quan, & Nanda, 2014). SRA is specifically designed to be used in combination with nursing practices and adapted to specific populations and contextual needs. It is composed of measures that help assess and prioritize safety hazards and offers design recommendations to mitigate these identified risks.

Symptom Management

Physical environmental strategies can be used to provide comfort but can also reduce symptoms of a disease or its treatment, especially when combined with medication and customized to the population and context. The physical environment, paired with social context, feeds sensory functions (visual, auditory, tactile, olfactory, and gustatory) and leads to biological and psychological responses that can vary according to an individuals' age, gender, and health conditions (Kline, 2009).

Evidence supports the idea that, when combined with clinical interventions, the management of physical environmental factors can be used as an effective strategy to manage pain and anxiety (Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Lee et al., 2004; Nelson, West, & Goodman, 2005; Ulrich, 1991; Ulrich et al., 2008; Ulrich, Zimring, Quan, & Joseph, 2006; Walch et al., 2005). Table 5.1 shows the relationship between patient pain and suffering and individual, social, clinical, and environmental factors modified from the human response model framework (HRM; Heitkemper & Bond, 2003; Heitkemper, Levy, Jarrett, & Bond, 1995; Kline, 2009).

One well-studied environmental strategy is positive distraction therapy. Humans have a predisposition to respond well to pleasant surroundings (Ulrich, 2001).

TABLE 5.1

Multiple Factors Influencing Patient Outcomes and Their Indicators

	Factors (Modifiable and Nonmodifiable)	Patient Symptoms and Indicators
Individual characteristics	Age, gender, genetics, attitude, health condition, sensory function	1. Physiological (blood pressure, heart rate) 2. Experiential (pain, State Trait Anxiety Index, patient satisfaction) 3. Clinical (medication use, length of stay)
Social, clinical, and environmental factors	Physical environment, amenities and resources, season of the year, social support, medical care practices, pharmaceuticals	

Note: HRM is an approach developed originally for nursing science for irritable bowel syndrome and later for pain to explain the complex relationship between the symptom and its contributors (Heitkemper & Bond, 2003; Heitkemper et al., 1995; Kline, 2009).

Source: Data from Kline, G. A. (2009). Does a view of nature promote relief from acute pain? *Journal of Holistic Nursing, 27*(3), 159–166. doi:10.1177/0898010109336138

Positive distractions are defined as environmental or social conditions marked by a capacity to restore mental health (Ulrich, 1991, 2001). They nudge the individual's attention away from internal and external suffering and stressors toward a more restorative state of mind (Shepley, 2006). In one example, Johns Hopkins researchers evaluated the effect of environmental audiovisual distraction therapy in a randomized controlled trial (Diette et al., 2003). The intervention consisted of exposure to nature scenes at the bedside paired with nature sounds before, during, and after a bronchoscopy procedure. This resulted in significantly less pain for older adults who received the intervention than in those who did not (Diette et al., 2003). The study concluded that such noninvasive strategies must be considered for use along with medication for pain management during painful and invasive treatments (Diette et al., 2003). Exhibit 5.2 displays the application of a similar intervention for pain and symptom management at Lee Health Hospital in Cape Coral, Florida.

EXHIBIT 5.2

Noninvasive Visual and Auditory Intervention for Pain and Symptom Management at Lee Health Hospital, Cape Coral, Florida



The application of combined visual and auditory interventions to reduce pain for patients during an invasive and painful procedure at Lee Health Hospital in Cape Coral, Florida. Researchers recommend that clinicians consider using this nonintrusive strategy along with conventional analgesic medication for patients who undergo painful treatments (Diette et al., 2003).

Photo credit: Bedscapes/Healing Environments International (www.bdscapes.com), Jenny Drew and Lee Health.

Another study by researchers at the University of Pittsburgh evaluated the analgesic effect of sunlight on patients recovering from elective cervical and lumbar spinal surgeries at Montefiore Hospital in Pittsburgh, Pennsylvania. Patients were randomly assigned to bright (more sunlight) or dim rooms of the ward. Those with bright rooms used 20% less analgesic medications and experienced less pain and anxiety. The effect was significant for all age groups, including older patients (Walch et al., 2005). Various forms of positive distractions could be used for such therapy, including art, music, nature, trees, flowers, birds, water, sky, smiling faces, virtual reality, videos, animation, comedy and laughter, caring, and social interaction (Ulrich, 2001).

Visual or physical access to nature is one of the most studied environmental variables in relation to pain and stress management in the general population, especially in older adults (Sagha Zadeh et al., 2018a). The benefits of exposure to nature can be generated either by providing views (e.g., window to natural scenery, indoor plants) or by allowing patients to go out in nature (e.g., access to a balcony, patio, or garden). These strategies can be used to reduce a sense of confinement and create a sense of refuge. A landmark randomized controlled trial of postsurgical patients compared hospitalized patients whose windows looked out on nature with patients whose views showed a brick wall. The patients with nature views had less use of analgesic medication, higher pain tolerance, and lower average length of hospital stay; they also expressed fewer negative comments about staff (Ulrich, 1984). Another study, focused on older adults residing in a long-term care facility, documented that engaging in a brief activity in a garden significantly reduced acute cortisol levels compared to doing the same activity in an indoor classroom (Rodiek, 2002). Also, a study investigating the transfer of older patients from home to in-patient hospice facilities found that the presence of nature at the institutional facility provided patients and their families with an easier transition and resulted in higher satisfaction (Evans, Cutson, Steinhauser, & Tulsky, 2006).

Noise control and lighting design are other well-studied components of healing environments (Sagha Zadeh-et al., 2018a; Stanchina et al., 2005; Topf et al., 1996; Ulrich et al., 2008). Unwanted noise is linked to negative physical and psychological symptoms, including increased stress, sleep loss, and aggression. One study showed that nursing home residents with functional and cognitive impairments tended to have less social interaction when noise levels were elevated (Garre-Olmo et al., 2012). For dementia patients, noise intensity has been associated with agitation and disruptive behavior (Algase, Beattie, Antonakos, Beel-Bates, & Yao, 2010; Joosse, 2009).

Noise can be effectively controlled by applying sound-absorbing finish surfaces, improving wall and door insulation, and altering room layouts, as well as addressing noise from equipment, food delivery, medication carts, and alarms. Exhibit 5.3 demonstrates an architectural approach to noise control in an aging-friendly patient room. The use of ear plugs or quiet protocols for staff conversations should be considered only as secondary solutions for this issue, as they add additional steps for staff and patients and could potentially interfere with care. Studies on older adults have shown that effective management of sleep and circadian disturbances is possible by optimizing day and night light exposure, either as a single intervention (Chong, Tan, Tay, Wong, & Ancoli-Israel, 2013; Fukuda et al., 2001; Kobayashi et al., 2001) or in combination with other clinical interventions (e.g., mind–body approaches and complementary health practices; McDowell, Mion, Lydon, & Inouye, 1998; Robinson, Weitzel, & Henderson, 2005).

Temperature is another environmental variable that is likely to help with patient comfort and symptom management. Room temperature that is adjustable on the basis of patient needs was identified in one systematic review as a factor that can reduce agitation in dementia patients (Marquardt, Bueter, & Motzek, 2014). Older patients and those with mobility and cognitive impairment are more sensitive than young, healthy patients to thermal conditions (Klenk, Becker, & Rapp, 2010; U.S. National Institutes of Health, 2011; Vassallo, Gera & Allen, 1995).

Environmental factors may be used in conjunction with clinical practice and medication to treat pain and other symptoms (Kline, 2009). However, the effectiveness of physical environmental therapies is highly dependent on individual and social context, and the qualities of the intervention itself must be carefully designed and adapted to the population of interest. For example, a 2011 study found that displaying realistic artwork depicting nature in the waiting room of a psychiatric facility significantly reduced the occurrence of agitated episodes requiring medication administration and medical staff interventions (Nanda, Eisen, Zadeh, & Owen, 2011). Blank walls and abstract art did not produce such positive health effects. One systematic review concluded that sensory stimulations are more likely to be effective in pain reduction when multiple types are combined (e.g., auditory and visual; Kline, 2009).

Dignity

Evidence indicates that the built environment surrounding patients and families is a symbol of care quality and can enhance their sense of respect, dignity, self-worth,

EXHIBIT 5.3

Noise Reduction Strategies in a Patient Room at The Villages Regional Hospital, The Villages, Florida

The Villages Regional Hospital, North Tower and Procedural Center additions completed in 2016.



Patient room at The Villages Regional Hospital, The Villages, FL
Photo © ESa/Michael Peck

The Villages Regional Hospital invested in developing a specialized physical environment that is supportive of elderly patients' needs.

The following strategies for noise reduction were used:

1. Incorporated an NRC (noise reduction coefficient) rating in the drywall and acoustical ceiling tile materials. These provide acoustical benefits for a modest material cost.
2. Selected acoustically quieter flooring options, such as luxury vinyl tile or cushioned sheet flooring as opposed to older vinyl composite tile or stone/porcelain flooring. Hard-soled shoes, dropped clipboards, and other instruments can be noisy, disturbing distractions on hard floors.
3. Minimized equipment noise and unnecessary monitoring alarms in patient rooms.
4. Replaced or repaired squeaky wheels on mobile equipment and mop buckets.

Source: ESa/Earl Swensson Associates, Nashville, TN.

and social value while reducing fear, shame, and stigma (Borhani, Abbaszadeh, & Rabori, 2016; Edvardsson, 2005; Matiti & Trorey, 2008). Patients with diminished cognitive, social, and physical abilities especially require environmental accommodations that afford them autonomy and meet their needs. Absence of these elements puts them at heightened risk for physical and emotional stress.

Promoting dignity, respect, and a sense of value and control (Baillie, 2009) has always been a primary goal of nursing care (Chochinov et al., 2008; International Council for Nurses, 2006; Mains, 1994). Elderly patients and those with health problems are most likely to feel a loss of dignity when receiving care (Baillie, 2009). In addition to nursing practice, other factors affect patients' perception of dignity, including the physical environment, safe care, holistic care, and individual traits (Baillie, 2009; Borhani et al., 2016; Webster & Bryan, 2009). A well-designed environment is flexible and adaptable to support patient mobility and allow personalization, is well-maintained and clean, and is supportive of privacy. Such an environment is likely to safeguard patients' personhood, dignity, and respect.

When it comes to the physical environment, privacy and control are considered by patients to be symbols of care and dignity (Baillie, 2009; Matiti & Trorey, 2008). Two qualitative studies, one of cardiac patients in an intensive care unit and one in three hospital wards (medical, acute surgical, and orthopedic), found that environmental cleanliness, privacy, and quiet surroundings were perceived as facilitators of dignity and that lack of those factors was perceived as a threat to patients' dignity (Borhani et al., 2016; Matiti & Trorey, 2008).

These studies also found that meeting the varying needs of patients and families was another effective method to promote a sense of respect. One example is environmental sensory needs: "The sounds of the air conditioner and the utility room are not good for those who suffer from heart disease. Some put up with it, but some don't. I myself get very annoyed, but nobody cares. This shows that the hospital does not think about the patients very much," said one patient. Another patient commented on the importance of providing space for family members: "I come from a long way. My daughter came with me. They told her to go and sit outside. Having visitors is not permitted in this ward. How sad I am. Where will my daughter sleep tonight? I'm upset. No matter how many sleeping pills they give me, they don't work. I'm so uncomfortable; they should comfort me" (Borhani et al., 2016).

A qualitative study of 133 caregivers on their perception of strategies to manage quality of life for patients with advanced illness found that a sense of worth and dignity can be supported by promoting feelings of independence, providing privacy, and creating meaningful experiences through a combination of strategies related to clinical practices and the environment. "Providing privacy translates [into] trust and being valued as an individual," said a caregiver in the study (Sagha Zadeh, Eshelman, Setla, & Sadatsafavi, 2018b). Patients' sense of dignity can be increased by taking all possible measures in the environment and care practices to "make the patient feel useful if ambulatory" and support them "doing as much as they can." Examples include giving the patient "control over [the] environment and who comes and goes"; "offering choices [of] linens, music, TV, etc."; and minimizing distractions such as "noise, motion, vibration, and door movement" (Sagha Zadeh et al., 2018b).

Environments that encourage personalization may also facilitate dignified care. Being stripped of one's identity in a sterile healthcare environment can harm one's sense of dignity, especially for older patients (Hubbard et al., 2018). An Australian study of older patients in a rehabilitation ward provided resources for all patients to decorate their room with personal photos. The intervention enhanced the connection between staff and patients and promoted patients' sense of dignity and identity (Hubbard et al., 2018). Another study of 44 medical residents showed that personalizing the physical environment by bringing in patients' belongings led to elderly patients being treated more positively than those who were treated in typical hospital rooms with no such intervention (Millard & Smith, 1981). Exhibit 5.4 shows an example of an architect's visualization of a room in a long-term care facility for patients with dementia.

In summary, factors other than care by nursing and medical professionals can influence a patient's perception of dignity, respect, and identity. Optimizing these factors, including the physical environment, is likely to not only improve patient satisfaction but also to reduce the burden on clinical staff.

APPLICATION OF RESEARCH ON THE PHYSICAL ENVIRONMENT INTO PRACTICE FOR AGING-FRIENDLY CARE

Although research on the role of the physical environment in providing better care for older adults is promising, its seamless and effective application into care practice requires an integrative and holistic approach. The best evidence must be gathered and combined with the voices and experiences of medical and design practitioners. The resulting solutions need to be adapted and customized to the specific context, patient population, and setting. This

EXHIBIT 5.4

Conceptual Rendering for Resident Room for a Dementia Care Facility

Allowed room customization with personal belongings

- Provided access to nature, daylight, and the outdoors
- Provided space for bringing personal furniture, improved ambulation, and minimized trip hazards



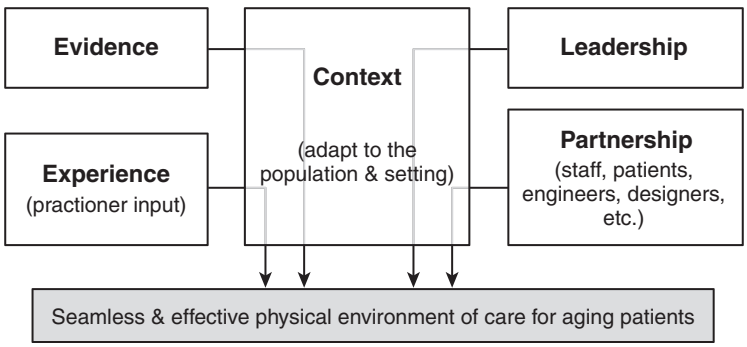
Photo credit: Rendering courtesy of EYP Architecture & Engineering

Conceptual rendering for resident room for a dementia care facility.

Source: EYP Architecture & Engineering, Houston, Texas.

FIGURE 5.3

Proposed translational framework for successful implementation of healing environments for aging patients.



Note: Informed by "EBD Steps" from the Center for Health Design (2008a, 2008b) and the active design and injury prevention translational guides from the Johns Hopkins Center for Injury Research and Policy (2013).

process requires collaboration among multiple disciplines, as well as support and buy-in from leadership. Communication between staff, patient representatives, designers, and engineers will not only ensure successful design, application, and evaluation of the solutions but also create a sense of ownership, mutual trust, and teamwork among the personnel and leadership. Figure 5.3 provides a proposed framework for the successful implementation of

healing environments for aging populations as informed by existing translational processes for the physical environment, including "Evidence-Based Design Steps" (Center for Health Design, 2008b, p. 3) and Active Design Guide translational reports (Johns Hopkins Center for Injury Research and Policy, 2013).

According to the AHRQ, a systems approach with involvement of multiple groups is needed for the development of an efficient and safe care environment (Shekelle et al., 2013). This requires looking at the problem from multiple perspectives and implementing a combined solution tailored to the problem at hand. This is the reason for today's worldwide trend toward the formation of innovative, multidisciplinary partnerships among practitioners in nursing, medicine, business, and engineering. Intended to produce a disruptive transformation of healthcare into a user-friendly service with accountability and affordability, these movements combine hospitality, design, engineering, nursing, medicinal, and business practices.

CASE STUDY 5.1

RS is a 78-year-old female patient with Alzheimer's disease diagnosed 6 years ago. She presented to the hospital from her home with worsening agitation that could not be adequately managed in the community. On admission, underlying medical issues were ruled out with laboratory and imaging tests. Geriatrics and Psychiatry Services were consulted for her behavioral symptoms. She was started on olanzapine 5 mg twice a day and 2.5 mg daily as needed for intermittent agitation. Despite the medications, her behavior continued to be difficult to manage and presented daily disruptions to her medical care. She was unable to participate in physical therapy or consume meals owing to her behavioral disturbances. On further questioning of her caretakers, it was noted that her routine sleep schedule at home was 1 a.m. to 10 a.m. With this information, the medical team intervened by implementing a modified sleep schedule paired with environmental and medical care modifications. The early-morning vital sign check and phlebotomy were postponed to the afternoon if feasible, and her meals and physical therapy sessions were restructured to accommodate her waking hours. She was transferred to a private room in an effort to minimize auditory, visual, and traffic disruptions. Lighting was minimized during her sleep hours, and family members brought familiar objects to her bedside. With these interventions, the behavioral outbursts gradually lessened, ultimately leading to her successful discharge to a skilled nursing facility.

(*continued*)

Discussion

This case illustrates how environmental interventions combined with medical care can be highly effective in the medical management of behavioral disturbance in dementia patients in the hospital setting. Efforts to control the amount of noise and light, the activities of care personnel, and the objects in the immediate surroundings should be considered in addition to medication management when dealing with behavioral disturbances in the hospital setting.

Case study credit: Cynthia Lien, MD

SUMMARY

The physical environment is one of the standing criteria in aging-friendly care models (Boltz et al., 2010; Huang et al., 2011) and can hinder or promote safe and effective care. Environmental interventions are most likely to yield positive outcomes if they are applied in combination with clinical practice and adapted to specific patient populations and settings. Providing an optimized physical environment of care is not without cost but provides great value in supporting clinical practices to reduce suffering and burden on patients, families, and staff. The development of environments that successfully meet the needs of seniors and staff requires commitment from the administration. Clarity on the value of investing time and resources toward developing a geriatric-friendly environment is critical to informing upper-level management in their strategic capital investment decisions.

The optimization of the environment for aging-friendly care and other nonpharmacological strategies needs to be considered for use together with pharmacological strategies to improve patient outcomes and ensure quality and accountability of care.

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Assessment and Management Principles

II

Chapter 6 Age-Related Changes in Health

Chapter 7 Healthcare Decision-Making

Chapter 8 Sensory Changes in the Older Adult

Chapter 9 Assessing Cognitive Function in the Older Adult

Chapter 10 Assessment of Physical Function in the Older Adult

Chapter 11 Oral Healthcare in the Older Adult

Chapter 12 Managing Oral Hydration in the Older Adult

Chapter 13 Nutrition in the Older Adult

Chapter 14 Family Caregiving

Chapter 15 Issues Regarding Sexuality in Older Adults

Chapter 16 Elder Mistreatment Detection

Chapter 17 Advance Care Planning

Age-Related Changes in Health*

Marianne Logan Fingerhood

6

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe the structural and functional changes in multiple body systems that occur during the normal aging process.
2. Understand the clinical significance of these age-related changes regarding the health and disease risks of the older adult.
3. Discuss the components of a nursing assessment for the older adult in light of the manifestations of normal aging.
4. Identify care strategies to promote successful aging in older adults, with consideration of age-related changes.

OVERVIEW

The process of normal aging, independent of disease, is accompanied by a myriad of changes in body systems. As evidenced by longitudinal studies, such as the Baltimore Longitudinal Study of Aging (www.blsa.nih.gov), modifications occur in both structure and function of organs and are most pronounced at an advanced age of 85 years or older (Dumic et al., 2019). Many of these alterations are characterized by a decline in physiological reserve. Although baseline function is preserved, organ systems become progressively less capable of maintaining homeostasis in the face of stresses imposed by the environment, disease, or medical therapies (Lederer & Nayak, 2017). Age-related changes are strongly impacted by genetics (Harada, Natelson Love, & Triebel, 2013), as well as by long-term lifestyle factors, including physical activity, diet, alcohol consumption, and tobacco use (Kitzman, Upadhya, Haykowsky, & Taffet, 2017). Furthermore, great heterogeneity occurs among older adults; clinical manifestations of aging can range from stability to significant decline in function of specific organ systems (Denic, Glassock, & Rule, 2016).

The clinical implications of these age-related alterations are important in nursing assessment and care of the older adult for several reasons (Smith & Cotter, 2012). First, changes associated with normal aging must be differentiated from pathological processes in order to develop appropriate interventions (Saxon, Etten, & Perkins, 2015). Manifestations of aging can also adversely impact the health and functional capability of older adults and require therapeutic strategies to correct (Matos et al., 2018; Miller, 2015). Age-associated changes predispose older persons to selected diseases (Kitzman et al., 2017; Matos et al., 2018).

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

Thus, nurses' understanding of these risks can serve to develop more effective approaches to assessment and care. Finally, aging and illness may interact reciprocally, resulting in altered presentation of illness, response to treatment, and outcomes (Dumic et al., 2019).

This chapter describes age-dependent changes for several body systems. Clinical implications of these alterations, including associated disease risks, are then discussed, followed by nursing assessment and care strategies related to these changes.

CARDIOVASCULAR SYSTEM

Cardiac reserve declines in normal aging. This alteration does not affect cardiac function at rest, and resting heart rate, ejection fraction, and cardiac output remain virtually unchanged with age (van Riet et al., 2016). However, under physiological stress, the ability of the older adult's heart to increase both rate and cardiac output, in response to increased cardiac demand, such as physical activity or infection, is compromised (Paneni, Canestro, Libby, Luscher, & Camici, 2017). Such diminished functional reserve results in reduced exercise tolerance, fatigue, shortness of breath, slow recovery from tachycardia (Bettelli, 2018), and intolerance of volume depletion (Johanning, 2017). Furthermore, because of the decreased maximal attainable heart rate with aging, a heart rate greater than 90 beats per minute (bpm) in an older adult indicates significant physiological stress (Kitzman et al., 2017).

Age-dependent changes in both the vasculature and the heart contribute to the impairment in cardiac reserve. An increase in the wall thickness and stiffness of the aorta and carotid arteries results in diminished vessel compliance and greater systemic vascular resistance (Heckman, Forman, & Cheng, 2017). Elevated systolic blood pressure (BP) with constant diastolic pressure follows, increasing the risk of isolated systolic hypertension and widened pulse pressure (AlGhatrif & Lakatta, 2015). Strong arterial pulses, diminished peripheral pulses, and increased potential for inflamed varicosities commonly occur with age. Reductions in capillary density restrict blood flow in the extremities, producing cool skin (Johanning, 2017).

As an adaptive measure to increased workload against noncompliant arteries, the left ventricle and atrium hypertrophy and become rigid. The ensuing impairment in relaxation of the left ventricle during diastole places greater dependence on atrial contractions to achieve left ventricular filling (Paneni et al., 2017). In addition, sympathetic response in the heart is blunted because of diminished beta-adrenergic sensitivity, resulting in decreased myocardial contractility (van Riet et al., 2016).

Additional age-related changes include sclerosis of atrial and mitral valves, which impairs their tight closure and increases the risk of dysfunction. The ensuing leaky heart valves may result in aortic regurgitation or mitral stenosis, which present on examination as heart murmurs (Kitzman et al., 2017). Loss of pacemaker and conduction cells contributes to changes in the resting electrocardiogram (EKG) of older adults. Isolated premature atrial and ventricular complexes are common arrhythmias, and the risk of atrial fibrillation is increased (Karamichalakis et al., 2015). Because of atrial contractions in diastole, an extra heart sound, S_4, frequently develops, occurring immediately before the normal S_1 and S_2 (Paneni et al., 2017).

Baroreceptor function, which regulates BP, is impaired with age, particularly with change in position. Postural hypotension with orthostatic symptoms may follow, especially after prolonged bed rest, dehydration, or cardiovascular drug use, and can cause dizziness and the potential for falls (Butt & Harvey, 2015).

Cardiac assessment of an older adult includes performing an EKG and monitoring heart rate (40–100 bpm within normal limits), rhythm (whether it is regular or irregular), heart sounds (S_1, S_2, and extra heart sounds S_3 and S_4), and murmurs (noting location where loudest). The apical impulse is displaced laterally. In palpation of the carotid arteries, asymmetric volumes and decreased pulsations may indicate aortic stenosis and impaired left cardiac output, respectively. Auscultation of a bruit potentially suggests occlusive arterial disease. Peripheral pulses should be assessed bilaterally at a minimum of one pulse point in each extremity. Assessment may reveal asymmetry in pulse volume, suggesting insufficiency in arterial circulation (Johanning, 2017). The nurse should examine lower extremities for varicose veins and note dilation or swelling. In addition, dyspnea with exertion and exercise intolerance are critical to note (Bettelli, 2018).

BP should be measured at least three times on three different occasions or by ambulatory BP monitoring to appropriately diagnose hypertension. The reading should be performed in a comfortably seated position with back supported and feet flat on the floor, with the appropriate size cuff. The BP should then be repeated after 5 minutes of rest. Measurements in both supine and standing positions evaluate postural hypotension (Supiano, 2017).

Nursing care strategies include referrals for older adults who have irregularities of heart rhythm and decreased or asymmetric peripheral pulses. The risk of postural hypotension emphasizes the need for safety precautions (Bettelli, 2018) to prevent falls. These include avoiding prolonged recumbency or motionless standing and encouraging the older adult to rise slowly from lying or sitting positions and wait for 1 to 2 minutes after a position change to

stand or transfer. Overt signs of hypotension, such as a change in sensorium or mental status, dizziness, or orthostasis, should be monitored, and fall-prevention strategies should be instituted. For optimal cardiac functioning, sufficient fluid intake is advised to ensure adequate hydration and prevent hypovolemia (Bettelli, 2018; Miller, 2015).

Older adults should be encouraged to adopt lifestyle practices for cardiovascular fitness with the aim of ensuring a healthy body weight (body mass index [BMI] 18.5–24.9 kg/m^2; Lichtenstein et al., 2006) and normal BP (James et al., 2014). These practices involve eating a healthful diet (Schwingshackl et al., 2018), physical activity appropriate for age and health status (Puts et al., 2017), and elimination of the use of and exposure to tobacco products (National Center for Chronic Disease Prevention and Health Promotion [NCCDPHP] Office on Smoking and Health, 2014).

PULMONARY SYSTEM

Respiratory function deteriorates slowly and progressively with age. This decline in ventilatory capacity seldom affects breathing during rest or customary limited physical activity in healthy older adults (Schroder, Storbeck, Rabe, & Weber, 2015); however, with greater than usual exertional demands, pulmonary reserve against hypoxia is readily exhausted and dyspnea occurs (Taylor & Johnson, 2010).

Several age-dependent anatomic and physiological changes combine to impair the functional reserve of the pulmonary system. Respiratory muscle strength and endurance deteriorate to restrict maximal ventilatory capacity (Sillanpaa et al., 2014). Secondary to calcification of rib-cage cartilage, the chest wall becomes rigid (Brandsma et al., 2017), limiting thoracic compliance. Loss of elastic fibers reduces recoil of small airways, which can collapse and cause air trapping, particularly in dependent portions of the lung. Decreases in alveolar surface area, vascularization, and surfactant production adversely affect gaseous exchange (Schroder et al., 2015).

Additional clinical consequences of aging include an increased anteroposterior chest diameter caused by skeletal changes. An elevated respiratory rate of 12 to 24 breaths per minute accompanies reduced tidal volume for rapid, shallow breathing. Limited diaphragmatic excursion and decreased chest/lung expansion, as a consequence of kyphosis, can result in less effective inspiration and expiration (Lorbergs et al., 2017). Because of decreased cough reflex effectiveness and deep-breathing capacity, mucus and foreign matter clearance is restricted, predisposing to aspiration, infection, and bronchospasm (Brandsma et al., 2017). Furthermore, elevating the risk of infection is a decline in ciliary and macrophage activities and drying of the mucosal membranes with more difficult mucus excretion (Shanker, Rojas, & Caufield, 2017). With the loss of elastic recoil comes the potential for atelectasis. Because of reduced respiratory center sensitivity, ventilatory responses to hypoxia and hypercapnia are blunted (Schroder et al., 2015), putting the older adult at risk of developing respiratory distress with illness or administration of narcotics (Clayton, 2008; Miller, 2015).

The modifications in ventilatory capacity with age are reflected in changes in pulmonary function tests measuring lung volumes, flow rates, diffusing capacity, and gas exchange. Whereas the total lung capacity remains constant, the vital capacity is reduced, and the residual volume is increased (Sillanpaa et al., 2014). Reductions in all measures of expiratory flow (forced expiratory volume in 1 second [FEV_1], forced vital capacity [FVC], FEV_1/FVC, peak expiratory flow rate [PEFR]) quantify a decline in useful air movement (Shanker et al., 2017). Because of impaired alveolar function, the diffusing capacity of the lung for carbon monoxide (DLCO) declines as does pulmonary arterial oxygen tension (PaO_2), indicating impaired oxygen exchange; however, arterial pH and partial pressure of arterial carbon dioxide ($PaCO_2$) remain constant (Bush, 2016). Reductions in arterial oxygen saturation and cardiac output restrict the amount of oxygen available for use by tissues, particularly in the supine position, although arterial blood gas seldom limits exercise in healthy subjects (Hassel et al., 2015).

Respiratory assessment includes determination of breathing rate, rhythm, regularity, volume (hyperventilation/hypoventilation), depth (shallow, deep; Bush, 2016), and effort (dyspnea; Hassel et al. 2015). Auscultation of breath sounds throughout the lung fields may reveal decreased air exchange at the lung bases (Gonzalez del Castillo & Sanchez, 2017). Thorax and symmetry of chest expansion should be inspected. A history of respiratory disease (tuberculosis, asthma), tobacco use (expressed as pack years), and extended exposure to environmental irritants through work or avocation are contributory (Bush, 2016).

Subjective assessment of cough includes questions on quality (productive/nonproductive), sputum characteristics (note hemoptysis; purulence indicating possible infection), and frequency (during eating or drinking, suggesting dysphagia and aspiration; Gonzalez del Castillo & Sanchez, 2017).

Secretions and decreased breathing rate during sedation can reduce ventilation and oxygenation. Oxygen saturation can be followed through arterial blood gases and pulse oximetry, whereas breathing rate (>24 respirations per minute), accessory muscle use, and skin color (cyanosis, pallor) should also be monitored (Tran, Rajwani, & Berlin, 2018). The inability to expectorate secretions, the appearance of dyspnea, and decreased saturation of oxygen (SaO_2) levels

suggest the need for suctioning to clear airways (Cao, White, & Ma, 2017). Optimal positioning to facilitate respiration should be regularly monitored with the use of upright positions (Fowler's or orthopneic position) recommended (Clayton, 2008). Pain assessment may be necessary to allow ambulation and deep breathing (Cao et al., 2017). See the "Atypical Presentation of Disease" section of this chapter for assessment of pneumonia, tuberculosis, and influenza.

Nursing care strategies useful in facilitating respiration and maintaining patent airways in the older adult include positioning to allow maximum chest expansion through the use of semi- or high-Fowler's or orthopneic position (Clayton, 2008). Additionally, frequent repositioning in bed or encouraging ambulation, if mobility permits, is advised (Cao et al., 2017). Analgesics may be necessary for ambulation and deep breathing (Clayton, 2008).

Hydration is maintained through fluid intake (6–8 oz/d) and air humidification, which prevent desiccation of mucous membranes and loosen secretions to facilitate expectoration (Miller, 2015). Suctioning may be necessary to clear airways of secretions, and oxygen should be provided as needed (Clayton, 2008). Incentive spirometry, with the use of sustained maximal inspiration (SMIs) devices, can improve pulmonary ventilation, mainly inhalation, as well as loosen respiratory secretions, particularly in older adults who are unable to ambulate or are declining in function (Cao et al., 2017).

Deep-breathing exercises, such as abdominal (diaphragmatic) and pursed-lip breathing, in addition to controlled and huff coughing, can further facilitate respiratory function. Techniques for healthy breathing, including sitting and standing erect, nose breathing (Cao et al., 2017), and regular exercise, should be promoted. Education on eliminating the use of and exposure to tobacco problems should be emphasized (NCCDPHP Office on Smoking and Health, 2014).

RENAL AND GENITOURINARY SYSTEMS

In normal aging, the mass of the kidney declines with a loss of functional glomeruli and tubules in addition to a reduction in blood flow. Concomitantly, changes occur in the activity of the regulatory hormones, vasopressin (antidiuretic hormone), atrial natriuretic hormone, and the renin–angiotensin–aldosterone system (Lederer & Nayak, 2017; Weinstein & Anderson, 2010). These alterations combine to result in diminished glomerular filtration rate (GFR), with a 10% decrement per decade starting at age 30 years, as well as impaired electrolyte and water management (Denic et al., 2016).

Despite these changes, the older adult maintains the ability to regulate fluid balance under baseline conditions; however, with age, the renal system is more limited in its capacity to respond to externally imposed stresses. This reduced functional reserve increases vulnerability to disturbances in fluid homeostasis as well as to renal complications and failure (Weinstein & Anderson, 2010), particularly from fluid/electrolyte overload and deficit, medications, or illness (Lederer & Nayak, 2017).

The decline in functional nephrons emphasizes the risk from nephrotoxic agents, including nonsteroidal anti-inflammatory drugs (NSAIDs), beta-lactam antibiotics, and radiocontrast dyes. Reduced GFR impairs the older adult's ability to excrete renally cleared medications, such as aminoglycoside antibiotics (e.g., gentamicin) and digoxin, increasing the risk of adverse drug reactions (Cutler & Clark, 2018). Dosages should be based on GFR estimated by the Cockcroft–Gault equation for creatinine clearance (Péquignot et al., 2009) or the modification of diet in renal disease (MDRD), rather than by serum creatinine concentration (Lederer & Nayak, 2017). Values of serum creatinine remain unchanged despite an age-associated decline in GFR because of the parallel decrease in both older adults' skeletal muscle mass, which produces creatinine, and GFR for creatinine elimination. Thus, serum creatinine levels overestimate GFR to result in potential drug overdose (Denic et al., 2016).

Increased risk of electrolyte imbalances can result from an age-dependent impairment in the excretion of excessive sodium loads, particularly in heart failure and with NSAID use, leading to intravascular volume overload. Clinical indicators include weight gain (>2%); intake greater than output; edema; change in mental status; tachycardia; bounding pulse; pulmonary congestion with dyspnea, rales; increased BP and central venous pressure (CVP); as well as distended neck/peripheral veins (Denic et al., 2016).

Conversely, sodium wasting or excess sodium excretion when maximal sodium conservation is needed can occur with diarrhea (Miller, 2015). Hypovolemia and dehydration may ensue, manifesting as acute change in mental status (may be the initial symptom), weight loss (>2%), decreased tissue turgor, dry oral mucosa, tachycardia, decreased BP, postural hypotension, flat neck veins, poor capillary refill, oliguria (<30 mL/hr), increased hematocrit and specific gravity of urine, and blood urea nitrogen (BUN); plasma creatinine ratio greater than 20:1; and serum osmolality greater than 300 mOsm/kg (Miller, 2015).

Impaired potassium excretion puts the older adult at risk for hyperkalemia, particularly in heart failure and with use of potassium supplements, potassium-sparing diuretics, NSAIDs, and angiotensin-converting enzyme (ACE)

inhibitors (Rich, 2017). Clinical indicators include diarrhea, change in mental status, cardiac dysrhythmias or arrest, muscle weakness and areflexia, paresthesias and numbness in extremities, EKG abnormalities, and serum potassium greater than 5.0 mEq/L (Denic et al., 2016).

Limited acid excretion capability can cause metabolic acidosis during acute illness in the older adult. This condition presents as Kussmaul's respirations, change in mental status, nausea, vomiting, arterial blood pH less than 7.35, serum bicarbonate less than 22 mEq/L, and $PaCO_2$ less than 38 mmHg with respiratory compensation (Denic et al., 2016).

Causes of abnormal water metabolism with age include diminution in maximal urine concentrating ability (Sands, 2012), which, in concert with blunted thirst sensation and total body water, can result in hypertonic dehydration and hypernatremia (Miller, 2015). Often associated with insensible fluid loss from fever (Lederer & Nayak, 2017), hypernatremia presents with thirst; dry oral mucosa; dry, furrowed tongue; postural hypotension; weakness; lethargy; serum sodium less than 150 mEq/L; and serum osmolality less than 290 mOsm/kg. Disorientation, seizures, and coma occur in severe hypernatremia (Grattagliano, Mastronuzzi, & D'Ambrosio, 2018).

Impaired excretion of a water load, exacerbated by ACE inhibitors, thiazide diuretics (Lederer & Nayak, 2017), and selective serotonin reuptake inhibitors (SSRIs; Miller, 2015), predisposes the older adult to water intoxication and hyponatremia (Denic et al., 2016). Clinical indicators involve lethargy, nausea, muscle weakness and cramps, serum sodium less than 135 mEq/L, and serum osmolality less than 290 mOsm/kg. Confusion, coma, and seizures are seen in severe hyponatremia (Grattagliano et al., 2018).

Changes in the lower urinary tract with age include reduced bladder elasticity and innervation, which contribute to decreases in urine flow rate, voided volume, and bladder capacity, as well as increases in postvoid residual and involuntary bladder contractions. A delayed or decreased perception of the signal from the bladder to void and decline in pelvic floor functioning (Ellsworth, Marschall-Kehrel, King, & Lukacz, 2013) translate into urinary urgency. Increased nocturnal urine flow, which results from altered regulatory hormone production, impaired ability to concentrate urine (Sands, 2012), and bladder-muscle instability, can lead to nocturnal polyuria (Lederer & Nayak, 2017). In older men, benign prostatic hyperplasia (BPH) can result in urinary urgency, hesitancy, and frequency (Rabijewski, Papierska, Kuczerowski, & Platkiewicz, 2015). All these changes combine to increase the risk of urinary incontinence in the older adult. Furthermore, urgency and nocturia increase the risk of falls. Changes with age in the physiology of the urinary tract, such as increased vaginal pH and decreased antibacterial activity of urine, in addition to the functional changes of the bladder, contribute to the development of bacteriuria, with potential for urinary tract infection (UTI; Gray, 2017; Rowe & Juthani-Mehta, 2017).

Renal assessment includes monitoring for renal function (GFR) based on creatinine clearance, particularly in acute and chronic illnesses (Lederer & Nayak, 2017; Péquignot et al., 2009). The choice, dose, need, and alternatives for nephrotoxic and renally excreted agents should be considered (Cutler & Clark, 2018).

Dehydration, volume overload, and electrolyte status are assessed first by screening for risk of fluid and electrolyte imbalances based on the older adult's age, medical and nutritional history, medications, cognitive and functional abilities, psychosocial status, and bowel and bladder patterns. Data on fluid intake and output; daily weights; and vital signs, including orthostatic BP measurements, are needed. Heart rate is a less reliable indicator for dehydration in older adults because of the effects of medications and heart disease (Miller, 2015).

Physical assessment for fluid/electrolyte status focuses on skin for edema and turgor. Note that turgor in older adults is a less reliable indicator for dehydration because of poor skin elasticity, and assessment over the sternum or inner thigh is recommended. Additional assessment involves the oral mucosa for dryness as well as cardiovascular, respiratory, and neurological systems. Acute changes in mental status, reasoning, memory, or attention may be initial symptoms of dehydration (Gray, 2017; Miller, 2015). Pertinent laboratory tests include serum electrolytes, serum osmolality, complete blood count (CBC), urine pH and specific gravity, BUN, hematocrit (Miller, 2015), and arterial blood gases (Denic et al., 2016).

Evaluations of urinary incontinence, UTI, and nocturnal polyuria using a 72-hour voiding diary are recommended. See the "Atypical Presentation of Disease" section that follows the UTI discussion. Voiding history and rectal examination are required to diagnose BPH (see Chapter 25, Urinary Incontinence in the Older Adult). Fall risk should be addressed when nocturnal or urgent voiding is present (see Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care).

Ongoing care involves monitoring for renal function (Lederer & Nayak, 2017; Péquignot et al., 2009) and for levels of nephrotoxic and renally cleared drugs (Cutler & Clark, 2018). Maintenance of fluid/electrolyte balance is paramount (Denic et al., 2016), especially if fluids are given intravenously (Bettelli, 2018). To prevent dehydration,

older adults weighing between 50 and 80 kg (110 and 176 lb) are advised to have a minimum fluid intake of 1,500 to 2,500 mL/d (unless contraindicated by the medical condition; Miller, 2015) from both fluids and food sources, including fruits, vegetables, soups, and gelatin, with avoidance of high salt and caffeine content (Miller, 2015; Ney, Weiss, Kind, & Robbins, 2009).

Incontinence care and exercise can contribute to management of voiding problems, including reduced incontinence, of older adults (Lukacz, Santiago-Lastra, Aldo, & Brubaker, 2017). Behavioral interventions recommended for nocturnal polyuria include limited fluid intake in the evening, avoidance of caffeine and alcohol, and a prompted-voiding schedule (Lederer & Nayak, 2017). Institution of safety precautions and fall-prevention strategies are needed in nocturnal or urgent voiding (see Chapter 19, Late Life Depression).

OROPHARYNGEAL AND GASTROINTESTINAL SYSTEMS

Age-specific alterations in the oral cavity can adversely affect the older adult's nutritional status. Deterioration in the strength of muscles of mastication as well as potential for tooth loss and xerostomia because of dehydration or medications may reduce food intake (Hall, 2017). Contributing to poor appetite are an altered taste perception and a diminished sense of smell (see Chapter 11, Oral Healthcare in the Older Adult; Landi, Picca, Calvani, & Marzetti, 2017; Visvanathan & Chapman, 2009).

Changes in the esophagus with age include delayed emptying in addition to decreases in upper and lower esophageal sphincter pressures, sphincter relaxation, and peristaltic contractions. Swallowing becomes slower and less efficient (Logemann, Curro, Pauloski, & Gensler, 2013). Although these alterations rarely impair esophageal function and swallowing sufficiently to cause dysphagia or aspiration in normal aging, such conditions can develop in conjunction with disease or medication side effects in older adults (Gregersen, Pedersen, & Drewes, 2008; Landi et al., 2017). Diminished gastric motility with delayed emptying contributes to altered oral-drug passage time and absorption in the stomach, elevated risk of gastroesophageal reflux disease (GERD; Commisso & Lim, 2019), and decreased postprandial hunger, leading to diminished food intake and possible malnutrition (Visvanathan & Chapman, 2009). Reduced mucin secretion impairs the protective function of the gastric mucosal barrier and increases the incidence of NSAID-induced gastric ulcerations (Hall, 2017). Although the motility and most absorptive functions of the small intestine are preserved with age, absorption of vitamin B12, folic acid, and carbohydrates declines (Hall, 2017). In addition, malabsorption of calcium and vitamin D contributes to the risk of osteoporosis. Supplementation with calcium and vitamins D and B12 is now recommended for older adults (U.S. Department of Agriculture [USDA] & U.S. Department of Health and Human Services [USDHHS], 2015; Visvanathan & Chapman, 2009).

Age-dependent weakening of the large-intestine wall predisposes older adults to diverticulosis and may lead to diverticulitis (Hall, 2017). Because motility of the colon appears to be preserved with age, increased self-reports of constipation in older adults may be attributed instead to altered dietary intake, medications, inactivity, or illness. Diminished rectal elasticity, internal anal sphincter thickening, and impaired sensation to defecate contribute to the risk of fecal incontinence in older adults (Roque & Bouras, 2015), although this condition is found primarily in combination with previous bowel surgery or disease and not in normal aging (Hall, 2017).

Pancreatic exocrine output of digestive enzymes is preserved to allow normal digestive capacity with aging (Hall, 2017). Regarding endocrine function, aging changes in carbohydrate metabolism allow a genetic predisposition for diabetes to become manifest (Meneilly, 2010). An age-related decrease in gallbladder function increases the risk of gallstone formation. Although liver size and blood flow decline with age, reserve capacity maintains adequate hepatic function, and values of liver function tests remain stable; however, the liver is more susceptible to damage by stressors, including alcohol and tobacco. Associated with changes in the hepatic and intestinal cytochrome P450 system (Hall, 2017), clearance of a range of medications, including many benzodiazepines, declines to result in increased potential for dose-dependent adverse reactions to these drugs (Cutler & Clark, 2018).

Reductions in antimicrobial activity of saliva and immune response of the gastrointestinal tract with age contribute to a high risk for infectious and inflammatory diseases of this system (Scannapieco & Cantos, 2016). Furthermore, impaired enteric neuronal function may blunt the older adult's reaction to infection and inflammation and result in atypical presentation of disease (see "Atypical Presentation of Disease" section; Dumic et al., 2019).

In the gastrointestinal evaluation, the abdomen and bowel sounds are assessed. Liver size, as well as reports of pain, anorexia, nausea, vomiting, and altered bowel habits, should be noted (Visvanathan & Chapman, 2009). Assessment of the oral cavity includes dentition and chewing capacity (Patil et al., 2018).

Weight is monitored with calculation of BMI and compared to recommended values (Lichtenstein et al., 2006; Sullivan & Johnson, 2017; Visvanathan & Chapman, 2009). Deficiencies in diet can be identified through comparisons of dietary intake, using a 24- to 72-hour food intake record, with nutritional guidelines (USDA & USDHHS, 2010; Wallace, 2017). In addition, laboratory values of serum albumin, prealbumin, and transferrin are useful nutritional indicators. Low albumin concentration can also affect efficacy and potential for toxicity of selected drugs, including digoxin and warfarin (Cutler & Clark, 2018). Several instruments for screening the nutritional status, eating habits, and appetite of older adults are available (see "Resources" section and Chapter 13, Nutrition in the Older Adult; Landi et al., 2017).

Signs of dysphagia, such as coughing or choking with solid or liquid food intake, should be reported for further evaluation. If aspiration from dysphagia is suspected, the lungs must be assessed for the presence of infection, typically indicated by unilateral or bilateral basilar crackles in the lungs, dyspnea, tachypnea, and cough (Bush, 2016). A decline in function or change in mental status may signal atypical presentation of respiratory infection from aspiration (Landi et al., 2017). Evaluation of GERD is based on typical and atypical symptoms (see "Atypical Presentation of Disease" section; Hall, 2017).

To assess constipation or fecal incontinence, a careful history with a 2-week bowel log noting laxative use is needed. Fecal impaction is assessed by digital examination of the rectum as a hardened mass of feces, which can be palpated. The impaction may also be palpated through the abdomen (Roque & Bouras, 2015).

For continuing care, referrals should be provided to a registered dietitian for poor food intake, unhealthy BMI (healthy BMI: 18.5–24.9 kg/m^2; overweight: 25–29.9 kg/m^2; obesity: 30 kg/m^2 or greater; Lichtenstein et al., 2006), and unintentional weight loss of 10% or greater in 6 months (Landi et al., 2017). Drug levels and liver function tests are monitored if drugs are metabolized hepatically (Cutler & Clark, 2018). Explanation of normal bowel frequency, the importance of diet and exercise, and recommended types of laxatives address constipation problems (Roque & Bouras, 2015). Mobility should be encouraged to prevent constipation, and prophylactic laxatives should be provided if constipating medications, such as opiates, are prescribed (Mounsey, Raleigh, & Wilson, 2015). Community-based food and nutrition programs (Visvanathan & Chapman, 2009) and education on healthful diets using the food pyramid for older adults may be useful in improving dietary intake (see Chapter 13, Nutrition in the Older Adult; USDA & USDHHS, 2015).

MUSCULOSKELETAL SYSTEM

Musculoskeletal tissues undergo age-associated changes that can negatively impact function in the older adult. Sarcopenia is defined as reduced muscle mass, physical performance, and grip strength (Cederholm & Morley, 2015). A decline in the size, number, and quality of skeletal muscle fibers occurs with aging, and lean body mass is replaced by fat and fibrous tissue so that by age 75 years, only 15% of the total body mass is muscle compared to 30% in a young, healthy adult (Shad, Wallis, van Loon, & Thompson, 2016). The decline can be as high as 0.5% per year, with a rate of strength loss as high as 3% per year (Tieland et al., 2017). These alterations result in diminished contractile muscle force with increased weakness and fatigue plus poor exercise tolerance. Age-specific physiological alterations contributing to sarcopenia include reductions in muscle innervation, insulin activity, and sex steroid (estrogen and testosterone) and growth hormone levels. Additionally, individual factors, such as weight loss, protein deficiency, and physical inactivity, including hospitalization and other periods of forced limited activity, can accelerate development of this condition so it progresses to a clinically significant problem (Fuggle, Shaw, Dennison, & Cooper, 2017; Shad et al., 2016). Sarcopenia has been documented to affect function adversely in older adults by increasing the risk of disability, falls, unstable gait, and need for assistive devices (Ko, Jerome, Simonsick, Studenski, & Ferrucci, 2018). Physical activity, particularly strength training, and adequate intake of energy and protein can prevent or reverse sarcopenia (Liguori et al., 2018; Robinson et al., 2017; Woo, 2018).

Age-dependent bone loss occurs in both sexes and at all sites in the skeleton. Whereas bone mass peaks between ages 30 and 35 years, density decreases thereafter at a rate of 0.5% per year. This decrement, caused by reduced osteoblast activity in the deposition of new bone, is accompanied by deterioration in bone architecture and strength (Manini, Gundermann, & Clark, 2017). Furthermore, from 5 to 7 years following menopause during estrogen decline, bone loss in women accelerates to a 3% to 5% annual rate. This loss, resulting from osteoclast activation with elevated bone breakdown or resorption (Maruotti, Corrado, & Cantatore, 2017), occurs mainly in cancellous or trabecular bone, such as the vertebral body, and may develop into type I osteoporosis in women aged 51 to 75 years, who risk vertebral fractures (Ensrud & Crandall, 2017). Decreased serum 25-hydroxy vitamin D at levels of less than 20 ng/mL in this age group have an increased risk of fracture during the menopausal transition period (Cauley, 2015). Following this postmenopausal period,

bone loss slows again in women and involves cortical bone in the long bones of the extremities. With aging, both women and men may develop type II osteoporosis and are susceptible to hip fractures and kyphosis from vertebral compression fractures in later life (Qaseem, Forciea, McLean, & Denbert, 2017).

An age-associated decline in the strength of ligaments and tendons, which are integral to normal joint function, predisposes to increased ligament and tendon injury, more limited joint range of motion (ROM), and reduced joint stability, leading to osteoarthritis (Collins, Diekman, & Loeser, 2018). Degeneration of intervertebral disks caused by dehydration and poor nutrient influx elevates the risk of spinal osteoarthritis, spondylosis, and stenosis with aging (Galbusera et al., 2014).

Age-related changes in articular cartilage, which covers the bone endings in joints to allow smooth movement, involve increased dehydration, stiffening, crystal formation, calcification, and roughening of the cartilage surface (Manini et al., 2017). Although these alterations have a minor effect on joint function under baseline conditions, the aging joint is less capable of withstanding mechanical stress, such as the stress caused by obesity or excess physical activity, and is also more susceptible to diseases, including osteoarthritis (Loeser, 2010).

Age-dependent changes in stature include dorsal kyphosis, reduction in height, flexion of the hips and knees, and a backward tilt of the head to compensate for the thoracic curvature (Manini et al., 2017). A shorter stride, reduced velocity, and broader base of support with feet more widely spaced characterize modifications in gait with age (Cruz-Jimenez, 2017; Ko et al., 2018).

The musculoskeletal assessment includes inspection of posture, gait, balance, symmetry of body parts, and alignment of extremities. Kyphosis, bony enlargements, or other abnormalities should be noted. The clinician should palpate bones, joints, and surrounding muscles, evaluating muscle strength on a scale of 0/5, and noting symmetry and signs of atrophy of major upper and lower extremity muscle groups. Active and passive ROM for major joints are evaluated, noting pain, limitation of ROM, and joint laxity. Joint stabilization and slow movements in ROM examinations are advised to prevent injury. Functionality, mobility, fine and gross motor skills, balance, and fall risk should be assessed (see Chapter 10, Assessment of Physical Function in the Older Adult, and Chapter 19, Late Life Depression; Cruz-Jimenez, 2017).

For continuing care, referrals to physical or occupational therapy may be appropriate. Increased physical activity, including aerobic (Chodzko-Zajko et al., 2009) and ROM exercise plus training programs to increase muscle strength and power (i.e., ability to produce force; Shad et al., 2016), is recommended to maintain maximal function. Interventions to promote such behavior in older adults involve health education, goal setting, and self-monitoring (Shad et al., 2016). Pain medication may be needed to enhance functionality (see Chapter 22, Pain Management in the Older Adult; Lim, Musa, Fredrick, & Ousman, 2017). Strategies to prevent falls (see Chapter 19, Late Life Depression) and avoid physical restraints (see Chapter 27, Physical Restraints and Side Rails in Acute and Critical Care Settings) are appropriate.

To prevent and treat osteoporosis, adequate daily intake of calcium (1,200 mg for women aged 50 years and older) and vitamin D (400 IU for women aged 50–70 years and 600 IU for women aged 71 years and older), physical exercise, and smoking cessation are recommended (Bijelic, Milicevic, & Balaban, 2017; JafariNasabian, Inglis, Reilly, Kelly, & Ilich, 2017). In addition, routine bone mineral density screening for osteoporosis is advised for women aged 65 years and older, as well as for women aged 60 to 64 years at increased risk for osteoporotic fractures (Agency for Healthcare Research and Quality [AHRQ], 2014; Curry et al., 2018).

NERVOUS SYSTEM AND COGNITION

Age-related alterations in the nervous system can affect function and cognition in older adults. Changes include a reduced number of cerebral and peripheral neurons (Lim et al., 2017; Todorova & Blokland, 2017), modifications in dendrites and glial support cells in the brain, and loss and remodeling of synapses (Bennett & Madden, 2014). Decreased levels of neurotransmitters, particularly dopamine, as well as deficits in systems that relay signals between neurons and regulate neuronal plasticity also occur with aging (Puglielli & Mattson, 2017).

Combined, these neurological changes contribute to decrements in general muscle strength; deep tendon reflexes; sensation of touch, pain, and vibration; and nerve conduction velocity (Lim et al., 2017; Todorova & Blokland, 2017), which result in slowed coordinated movements and increased response time to stimuli (Tieland et al., 2017). These clinical consequences, although relatively mild in normal aging, cause an overall slowing of motor skills with potential deficits in balance, gait, coordination, reaction time, and agility (Cruz-Jimenez, 2017; Ko et al., 2018). Such decline in function can adversely affect an older adult's daily activities, notably ambulation and driving, and predispose to falls and injury (Chodzko-Zajko et al., 2009; Cholerton, Reger, & Craft, 2017).

Neurological changes, along with thinning of the skin, compromise thermoregulation in the older adult.

These result in decreased sensitivity to ambient temperature as well as impaired heat conservation, production, and dissipation with predisposition to hypothermia and hyperthermia (Kuchel, 2017). Febrile responses to infection may be blunted or absent (see "Atypical Presentation of Disease" section; High, 2017; Liang, 2016).

With age, the speed of cognitive processing slows (Harada et al., 2013), and some degree of cognitive decline is common, but not universal in the older adult population (Kirova, Bays, & Lagalwar, 2015). Older adults demonstrate significant heterogeneity in cognitive performance, which may be positively impacted by education, good health, and physical activity (Coetsee & Terblanche, 2017; Collins et al., 2018; Young, Angevaren, Rusted, & Tabet, 2015).

Specific cognitive abilities exhibit differing levels of stability or decline with age. For example, crystallized intelligence, or the information and skills acquired from experience, remains largely intact, whereas fluid intelligence, or creative reasoning and problem -olving, declines (Harada et al., 2013). Sustained attention is unaffected by aging, although divided attention, or the ability to concentrate on multiple tasks concurrently, deteriorates. The mild decline in executive function, which includes the capability of directing behavior and completing multistep tasks, usually has minimal impact on an older adult's ability to manage daily activities. Although language abilities and comprehension appear stable, spontaneous word finding may deteriorate and is often a complaint of older adults. Remote memory, or recalling events in the distant past, and procedural memory, or remembering ways to perform tasks, remain intact but declarative memory, or learning new information, is slowed (Cholerton et al., 2017). However, despite some deficits, memory functions are adequate for normal life in successful aging (Klaming, Annese, Veltman, & Comijs, 2017).

Changes in the nervous system increase the risk of sleep disorders (Moraes et al., 2014) and delirium in the older adult, especially in acute care (see Chapter 20, Delirium: Prevention, Early Recognition, and Treatment). Neural changes affect the perception, tolerance, and response to treatment of pain (Lim et al., 2017). In addition, age-specific alterations predispose neurons to degeneration, contributing to Alzheimer's disease (Caseli, Beach, Knopman, & Graff-Radford, 2017), Parkinson's disease, and Huntington's disease (Paladina, Conte, Caggiano, Pieratoni, & Faraonio, 2018; Puglielli & Mattson, 2017).

Assessment, with periodic reassessment, of baseline functional status (see Chapter 9, Assessing Cognitive Function in the Older Adult) should include evaluation of fall risk, gait, and balance (see Chapter 10, Assessment of Physical Function in the Older Adult, and Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care) as well as basic, instrumental, and advanced activities of daily living (ADL). During acute illness, functional status, pain (see Chapter 18, Preventing Functional Decline in the Acute Care Setting), and symptoms of delirium (see Chapter 20, Delirium: Prevention, Early Recognition, and Treatment) should be monitored. Evaluation of baseline cognition with periodic reassessment (see Chapter 9, Assessing Cognitive Function in the Older Adult) and sleep disorders (Moraes et al., 2014) is warranted. The impact of physical and cognitive changes of aging on an older adult's level of safety and attentiveness in daily tasks should be determined (Cholerton et al., 2017; Harada et al., 2013; Klanning et al., 2017). Temperature indicating hypothermia (<95°F or <35°C) or hyperthermia (>105°F or >40.6°C) must be closely watched (Kuchel, 2017; Lu, Leasure, & Dai, 2010).

For care of the older adult, fall-prevention strategies should be implemented (see Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care). If delirium is identified, nursing interventions for its treatment are needed (see Chapter 20, Delirium: Prevention, Early Recognition, and Treatment). Particularly during surgery, procedures, such as the use of warmed intravenous fluids, humidified gases, and temperature-regulating blankets (Bettelli, 2018), should be instituted to maintain normal temperatures and prevent hypothermia in the older patient (Kuchel, 2017). Lifestyle modifications recommended to improve cognitive function include regular physical exercise (Coetsee & Terblanche, 2017; Collins et al., 2018), intellectual stimulation (Harada et al., 2013), and a healthful diet (USDA & USDHHS, 2015). Behavioral interventions for sleep disorders may be warranted (Spira et al., 2014).

IMMUNE SYSTEM AND VACCINATION

Immunosenescence, or the age-related dysfunction in immune response, is characterized by reduced cell-mediated immune function and humoral immune responses (Castelo-Branco & Soveral, 2014), as well as increased inflammatory response (High, 2017). In older adults, immunosenescence is responsible, in part, for the increased susceptibility to and severity of infectious diseases (Liang, 2016), the lower efficacy of vaccination (Castelo-Branco & Soveral, 2014), and the chronic inflammatory state, which may contribute to chronic disease with age (Hunt et al., 2010).

Infectious diseases are a critical threat to older adults, especially because vaccination efficacy declines with age. Mortality rates for infectious diseases are highest for adults older than 85 years, whereas reactivation of viruses, particularly varicella zoster leading to herpes zoster, occurs

significantly more frequently in older adults (High, 2017). Immunosenescence, by dampening the induction of adaptive immune responses, results in reduced response rates to vaccination. For example, influenza vaccination has a protection rate of only 56% in older persons. Furthermore, antibody titers following booster vaccinations, such as against tetanus, are lower and decline faster with diminished antibody function in older adults compared to younger individuals (Castelo-Branco & Soveral, 2014).

Current immunization recommendations for older adults are available from the Centers for Disease Control and Prevention (CDC, 2018). Vaccination with pneumococcal polysaccharide for pneumococcal infections is recommended for individuals 65 years of age and older, with one-time revaccination indicated if the patient was vaccinated 5 or more years previously and was aged younger than 65 years at the time of primary vaccination. For seasonal influenza, all individuals 50 years of age and older should be vaccinated with the inactivated vaccine just prior to influenza season each year. High-dose influenza vaccines have been found to be more efficacious (Dunkle et al., 2017). A single dose of zoster vaccine is recommended for all adults 60 years of age and older regardless of prior zoster history. A complete tetanus vaccine series is indicated for individuals having an uncertain history of tetanus immunization or having received fewer than three doses. Boosters should be given at 10-year intervals or more frequently with high-risk injuries. Hepatitis vaccines should also be considered for older adults, depending on circumstances such as potential exposure and travel (CDC, 2018; High, 2017).

ATYPICAL PRESENTATION OF DISEASE

Diseases, particularly infections, often manifest with atypical features in older adults. Signs and symptoms are frequently subtle in the very old (Gentleman, 2014). These may initially involve nonspecific declines in functional or mental status, anorexia with reduced oral intake, incontinence, falls (Liang, 2016), fatigue, or exacerbation of chronic illness such as heart failure or diabetes (High, 2017; Scannapieco & Cantos, 2016).

As a presenting sign of infection, fever is often blunted or absent, particularly in very old (High, 2017), frail, or malnourished (Kuchel, 2017) adults. Compared to young adults with a normal mean baseline body temperature of 98.6°F (37°C), frail older adults have a lower mean oral baseline temperature of 97.4°F (36.3°C; Lu et al., 2010). A blunted response to inflammatory stimuli in combination with lower basal temperature can result in a lack of measurable febrile response. Increasing age is a predisposing factor for the absence of fever (Liang, 2016).

Assessment of the older patient should note any changes from baseline (including those that are subtle and nonspecific) in functioning, mental status, and behavior (e.g., increased/new-onset confusion), appetite, or exacerbation of chronic illness (High, 2017). This is especially important in individuals with cognitive impairment who are unable to describe symptoms.

To detect fever, normal temperature should be established for the older adult and monitored for changes of 2°F to 2.4°F (1.1–1.3°C) above baseline (Liang, 2016). Oral temperatures of 99°F (37.2°C) or greater on repeated measurements also can be used to signify fever. The difficulty of diagnosing infection based on signs and symptoms may result in greater reliance on laboratory and radiologic evaluations (High, 2017).

In the assessment of disease, both typical and atypical symptoms must be considered. Evaluation for pneumococcal pneumonia includes monitoring for typical symptoms, such as productive cough, fever, chills, and dyspnea, as well as insidious, atypical symptoms, including tachypnea, lethargy (Mandell et al., 2007; Tran et al., 2018), weakness, falls, decline in functional status, delirium, or increased/new-onset confusion with absent high fever. Decreased appetite and dehydration may be the only initial symptoms in the older adult (Talbot, 2017). Although chest radiograph is basic to diagnosis, the older adult who is dehydrated may not show infiltrate or consolidation, and these findings may appear only after hydration (Miller, 2015).

Clinical features of tuberculosis in the older person are often atypical and nonspecific. Presenting symptoms may include dizziness, nonspecific pain, or impaired cognition rather than the typical manifestations of fever, night sweats, cough, or hemoptysis (High, 2017). Typical influenza symptoms of cough, fever, and chills may be combined with altered mental status in older adults (Talbot, 2017).

In an acute myocardial infarction, the classic presentation of severe chest pain and diaphoresis may be replaced by dyspnea, confusion, and anxiety (Gray-Vickrey, 2010).

UTI in older adults may present with classical symptoms of dysuria, flank or suprapubic discomfort, hematuria, and urinary frequency and urgency, or atypical symptoms of new-onset/worsening incontinence, anorexia, confusion, nocturia, or enuresis (Rowe & Juthani-Mehta, 2017).

For peritonitis, atypical symptoms, such as confusion and fatigue, may be manifest rather than the typical symptoms of rigidity (Lim et al., 2017). Evaluation of GERD is based on typical presenting symptoms of heartburn (pyrosis) and acid regurgitation, as well as atypical symptoms in the older adult of dysphagia, chest pain, hoarseness, vomiting, chronic cough, or recurrent aspiration pneumonia (Hall, 2017).

CASE STUDY 6.1

Ms. M is an 89-year-old woman presenting with productive cough, dyspnea, fatigue, and increased confusion over the past week. Her vital signs are pulse, 96 bpm; temperature, 98.6°F; respiration, 31 breaths per minute; and BP, 110/55 mmHg. A chest radiograph shows multilobe infiltrates with a diagnosis of pneumonia. How severe is her pneumonia?

Ms. M's symptoms of a respiratory rate greater than 30 respirations per minute, multilobe infiltrates on a chest radiograph, and diastolic BP of less than 60 mmHg characterize her pneumonia as severe (Mandell et al., 2007), and she is likely to require admission to an intensive care unit. However, several age-related changes affect her symptoms of pneumonia. Pneumonia may present in the older adult with typical symptoms of productive cough, fever, and dyspnea or with more insidious, atypical symptoms of tachypnea, lethargy (Mandell et al., 2007), weakness, falls, decline in functional status, or increased/new-onset confusion. Decreased appetite and dehydration may be the only initial symptoms (Talbot, 2017).

Because of reduced sympathetic innervation of the heart with age, the heart rate of an older adult does not increase in response to stress comparable to that of a younger individual (Kitzman et al., 2017). Thus, 96 bpm in an 89-year-old person is tachycardic and indicates a severe stress reaction. Furthermore, because of a blunted febrile response to infection, particularly in a very old, frail, or malnourished adult, a fever may not be manifest even with severe infection (High, 2017; Liang, 2016; Lu et al., 2010).

SUMMARY

Changes that occur with age strongly impact the health and functional status of older adults. Thus, recognition of and attention to these alterations are critically important in nursing assessment and care. Armed with knowledge of age-related changes and using the clinical protocol described in this chapter, nurses can play a vital role in improving geriatric standards of practice. Designing interventions that take age-related changes into consideration, educating patients and family caregivers on these alterations, and sharing information with professional colleagues will all serve to ensure optimal care of older adults.

NURSING STANDARD OF PRACTICE

Protocol 6.1: Age-Related Changes in Health

I. GOAL

To identify anatomical and physiological changes, which are attributed to the normal aging process

II. OVERVIEW

Age-associated changes are most pronounced in advanced age of 85 years or older, may alter the older person's response to illness, show great variability among individuals, are often impacted by genetic and long-term lifestyle factors, and commonly involve a decline in functional reserve with reduced response to stressors.

III. STATEMENT OF PROBLEM

Gerontological changes are important in nursing assessment and care because they can adversely affect health and functionality and require therapeutic strategies; must be differentiated from pathological processes to allow development of appropriate interventions; predispose to disease, thus emphasizing the need for risk evaluation of the older adult; and can interact reciprocally with illness, resulting in altered disease presentation, response to treatment, and outcomes.

IV. AGE-ASSOCIATED CARDIOVASCULAR CHANGES

A. Definition
   1. Isolated systolic hypertension: Systolic BP 140 mmHg and diastolic BP 90 mmHg

(*continued*)

Protocol 6.1: Age-Related Changes in Health (*continued*)

B. Etiology
   1. Arterial wall thickening and stiffening, decreased compliance
   2. Left ventricular and atrial hypertrophy; sclerosis of atrial and mitral valves
   3. Strong arterial pulses, diminished peripheral pulses, cool extremities

C. Implications
   1. Decreased cardiac reserve
      a. At rest: No change in heart rate, cardiac output
      b. Under physiological stress and exercise: Decreased maximal heart rate and cardiac output, resulting in fatigue, shortness of breath, slow recovery from tachycardia
      c. Risk of isolated systolic hypertension; inflamed varicosities
      d. Risk of arrhythmia, postural, and diuretic-induced hypotension; may cause syncope

D. Parameters of cardiovascular assessment
   1. Cardiac assessment: EKG; heart rate, rhythm, murmurs, heart sounds; palpate carotid artery and peripheral pulses for symmetry (Bush, 2016)
   2. Assess BP (lying, sitting, and standing) and pulse pressure (Bettelli, 2018; Butt & Harvey, 2015)

V. AGE-ASSOCIATED CHANGES IN THE PULMONARY SYSTEM

A. Etiology
   1. Decreased respiratory muscle strength; stiffer chest wall with reduced compliance
   2. Diminished ciliary and macrophage activity, drier mucous membranes; decreased cough reflex
   3. Decreased response to hypoxia and hypercapnia

B. Implications
   1. Reduced pulmonary functional reserve
      a. At rest: No change
      b. With exertion: Dyspnea, decreased exercise tolerance
   2. Decreased respiratory excursion and chest/lung expansion with less effective exhalation; respiratory rate of 12 to 24 breaths per minute
   3. Decreased cough and mucus/foreign matter clearance
   4. Increased risk of infection and bronchospasm with airway obstruction

C. Parameters of pulmonary assessment
   1. Assess respiration rate, rhythm, regularity, volume, depth (Bush, 2016), and exercise capacity (Hassel et al., 2015). Ascultate breath sounds throughout lung fields (Mick & Ackerman, 2004).
   2. Inspect thorax appearance, symmetry of chest expansion. Obtain smoking history.
   3. Monitor secretions, breathing rate during sedation, positioning (Clayton, 2008;), arterial blood gases, pulse oximetry (Bush, 2016).

D. Nursing care strategies
   1. Maintain patent airways through upright positioning/repositioning (Clayton, 2008).
   2. Provide oxygen as needed (Tran et al., 2018); maintain hydration and mobility (Miller, 2015).
   3. Assess incentive spirometry as indicated, particularly if immobile or declining in function (Cao et al., 2017; Clayton, 2008).
   4. Educate patient on cough enhancement (Cao et al., 2017), smoking cessation (NCCDPHP Office on Smoking and Health, 2014).

VI. AGE-ASSOCIATED CHANGES IN THE RENAL AND GENITOURINARY SYSTEMS

A. Definitions
   1. To determine renal function (GFR):
      a. *Cockcroft–Gault equation:* Calculation of creatinine clearance in older adults (Péquignot et al., 2009). For men:

$$\text{Creatinine clearance (mL/min)} = \frac{(140 - \text{Age in years}) \bullet (\text{Body weight in kg})}{72 \bullet (\text{Serum creatinine, mg/dL})}$$

(*continued*)

Protocol 6.1: Age-Related Changes in Health (*continued*)

For women, the calculated value is multiplied by 85% (0.85).

b. *MDRD:* See National Kidney Disease Education Program calculator (National Kidney Disease Education Program, 2012).

B. Etiology
   1. Decreases in kidney mass, blood flow, GFR (10% decrement/decade after age 30 years); decreased drug clearance
   2. Reduced bladder elasticity, muscle tone, capacity
   3. Increased postvoid residual, nocturnal urine production
   4. In males, prostate enlargement with risk of BPH

C. Implications
   1. Reduced renal functional reserve; risk of renal complications in illness
   2. Risk of nephrotoxic injury and adverse reactions from drugs
   3. Risk of volume overload (in heart failure), dehydration, hyponatremia (with thiazide diuretics), hypernatremia (associated with fever), and hyperkalemia (with potassium-sparing diuretics); reduced excretion of acid load
   4. Increased risk of urinary urgency, incontinence (not a normal finding), UTI, nocturnal polyuria; potential for falls

D. Parameters of renal and genitourinary assessment
   1. Assess renal function (GFR through creatinine clearance; Lederer & Nyak, 2017; National Kidney Disease Education Program, 2012; Péquignot et al., 2009).
   2. Assess choice/need/dose of nephrotoxic agents and renally cleared drugs (Cutler & Clark, 2018; see Chapter 24, Reducing Adverse Drug Events in the Older Adult).
   3. Assess for fluid/electrolyte and acid/base imbalances (Miller, 2015).
   4. Evaluate nocturnal polyuria, urinary incontinence, and BPH (Lederer & Nayak, 2017). Assess UTI symptoms (see "Atypical Presentation of Disease" section; Rowe & Juthani-Mehta, 2017).
   5. Assess fall risk if nocturnal or urgent voiding (see Chapter 19, Late Life Depression).

E. Nursing care strategies
   1. Monitor nephrotoxic and renally cleared drug levels (Cutler & Clark, 2018).
   2. Maintain fluid/electrolyte balance (Bettelli, 2018). Minimum ingestion of 1,500 to 2,500 mL/d from fluids and foods for 50- to 80-kg adults to prevent dehydration (Miller, 2015).
   3. For nocturnal polyuria, limit fluids in evening, avoid caffeine, use prompted-voiding schedule (Lederer & Nayak, 2017).
   4. Institute fall prevention strategies for nocturnal or urgent voiding (see Chapter 19, Late Life Depression)

VII. AGE-ASSOCIATED CHANGES IN THE OROPHARYNGEAL AND GASTROINTESTINAL SYSTEMS

A. Definition(s)
   1. BMI: Healthy, 18.5 to 24.9 kg/m^2; overweight, 25 to 29.9 kg/m^2; obese, 30 kg/m^2 or greater

B. Etiology
   1. Decreases in strength of muscles of mastication, taste, and thirst perception
   2. Decreased gastric motility with delayed emptying
   3. Atrophy of protective mucosa
   4. Malabsorption of carbohydrates, vitamins B12 and D, folic acid, calcium
   5. Impaired sensation to defecate
   6. Reduced hepatic reserve; decreased metabolism of drugs

C. Implications
   1. Risk of chewing impairment, fluid/electrolyte imbalances, poor nutrition
   2. Gastric changes: Altered drug absorption, increased risk of GERD, maldigestion, NSAID-induced ulcers
   3. Constipation not a normal finding; risk of fecal incontinence with disease (not in healthy aging)
   4. Stable liver function tests; risk of adverse drug reactions

(*continued*)

Protocol 6.1: Age-Related Changes in Health (*continued*)

D. Parameters of oropharyngeal and gastrointestinal assessment
   1. Assess abdomen, bowel sounds.
   2. Assess oral cavity (see Chapter 8, Sensory Changes in the Older Adult); chewing and swallowing capacity, dysphagia (coughing, choking with food/fluid intake; Landi et al., 2017). If aspiration occurs, assess lungs (rales) for infection and typical/atypical symptoms (High, 2017; Mandell et al., 2007; see "Atypical Presentation of Disease" section, www.consultgerirn.org).
   3. Monitor weight, calculate BMI, and compare to standards (Lichtenstein et al., 2006). Determine dietary intake and compare to nutritional guidelines (USDA & USDHHS, 2015; Visvanathan & Chapman, 2009; see Chapter 10, Assessment of Physical Function in the Older Adult).
   4. Assess for GERD, constipation and fecal incontinence, and fecal impaction by digital examination of rectum or palpation of abdomen.

E. Nursing care strategies
   1. Monitor drug levels and liver function tests if on medications metabolized by liver. Assess nutritional indicators (USDA & USDHHS, 2015; Visvanathan & Chapman, 2009).
   2. Educate patient on lifestyle modifications and OTC medications for GERD.
   3. Educate patient on normal bowel frequency, diet, exercise, and recommended laxatives. Encourage mobility, and provide laxatives if on constipating medications (Mounsey et al., 2015).
   4. Encourage participation in community-based nutrition programs (Visvanathan & Chapman, 2009); educate on healthful diets (USDA & USDHHS, 2015).

VIII. AGE-ASSOCIATED CHANGES IN THE MUSCULOSKELETAL SYSTEM

A. Definition

Sarcopenia: Reduced muscle mass, physical performance, and grip strength associated with aging

B. Etiology
   1. Sarcopenia evokes increased weakness and poor exercise tolerance
   2. Lean body mass replaced by fat with redistribution of fat
   3. Bone loss in women and men after peak mass at age 30 to 35 years
   4. Decreased ligament and tendon strength; intervertebral disc degeneration; articular cartilage erosion; changes in stature with kyphosis, height reduction

C. Implications
   1. Sarcopenia: Increased risk of disability, falls, unstable gait (Ko et al., 2018)
   2. Risk of osteopenia and osteoporosis
   3. Limited ROM, joint instability, risk of osteoarthritis

D. Nursing care strategies
   1. Encourage physical activity through health education and goal setting (Fuggle et al., 2017) to maintain function (Chodzko-Zajko et al., 2009).
   2. Administer pain medication to enhance functionality (see Chapter 18, Preventing Functional Decline in the Acute Care Setting). Implement strategies to prevent falls (see Chapter 19, Late Life Depression and Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care).
   3. Prevent osteoporosis by adequate daily intake of calcium and vitamin D, physical exercise, and smoking cessation (Bijelic et al., 2017; NCCDPHP Office on Smoking and Health, 2014). Advise routine bone mineral density screening (AHRQ, 2014; Curry et al., 2018).

IX. AGE-ASSOCIATED CHANGES IN THE NERVOUS SYSTEM AND COGNITION

A. Etiology
   1. Decrease in neurons and neurotransmitters
   2. Modifications in cerebral dendrites, glial support cells, synapses
   3. Compromised thermoregulation

(*continued*)



Protocol 6.1: Age-Related Changes in Health (*continued*)

B. Implications
   1. Impairments in general muscle strength, deep tendon reflexes, nerve conduction velocity; slowed motor skills and potential deficits in balance and coordination
   2. Decreased temperature sensitivity; blunted or absent fever response
   3. Slowed speed of cognitive processing. Some cognitive decline is common but not universal. Most memory functions are adequate for normal life
   4. Increased risk of sleep disorders, delirium, neurodegenerative diseases

C. Parameters of nervous system and cognition assessments
   1. Assess, with periodic reassessment, baseline functional status (Cholerton et al., 2017; see Chapter 9, Assessing Cognitive Function in the Older Adult, Chapter 10, Assessment of Physical Function in the Older Adult, and Chapter 19, Late Life Depression). During acute illness, monitor functional status and delirium (see Chapter 17, Advance Care Planning).
   2. Evaluate, with periodic reassessment, baseline cognition and sleep disorders (Moraes et al., 2014).
   3. Assess impact of age-related changes on level of safety and attentiveness in daily tasks (Klaming et al., 2017).
   4. Assess temperature during illness or surgery (Kuchel, 2017).

D. Nursing care strategies
   1. Institute fall-prevention strategies (see Chapter 19, Late Life Depression).
   2. To maintain cognitive function, encourage lifestyle practices of regular physical exercise (Harada et al., 2013) intellectual stimulation (Puglielli & Mattson, 2017), and healthful diet (Schwingshackl, et al., 2018).
   3. Recommend behavioral interventions for sleep disorders.

X. AGE-ASSOCIATED CHANGES IN THE IMMUNE SYSTEM

A. Etiology
   1. Immune response dysfunction, reduced efficacy of vaccinations (Liang, 2016), and chronic inflammatory state (Hunt et al., 2010).

B. Nursing care strategies
   1. Follow CDC immunization recommendations for the older adult for pneumococcal infections, seasonal influenza, zoster, tetnaus, and hepatitis (CDC, 2018: High 2017).

XI. ATYPICAL PRESENTATION OF DISEASE

A. Etiology
   1. Diseases, especially infections, may manifest with atypical symptoms in older adults.
   2. Symptoms/signs are often subtle and include nonspecific declines in function or mental status, decreased appetite, incontinence, falls (Liang, 2016), fatigue, and exacerbation of chronic illness (Gentleman, 2014; High, 2017).
   3. Fever blunted or absent in very old (High, 2017), frail, or malnourished (Tieland et al., 2017) adults. Baseline oral temperature in older adults is 97.4°F (36.3°C) versus 98.6°F (37°C) in younger adults (Lu et al., 2010).

B. Parameters of disease assessment
   1. Note any change from baseline in function, mental status, behavior, appetite, or chronic illness (High, 2017).
   2. Assess fever. Determine baseline and monitor for changes 2°F to 2.4°F (1.1°C–1.3°C) above baseline (Liang, 2016). Oral temperatures above 99°F (37.2°C) or greater also indicate fever (High, 2017).
   3. Note typical and atypical symptoms of pneumococcal pneumonia (Liang, 2016; Mandell et al., 2007), tuberculosis (Kuchel, 2017), influenza (Talbot, 2017), acute myocardial infarction (Gray-Vickrey, 2010), UTI (Rowe & Juthani-Mehta, 2017), peritonitis (Dumic et al., 2019; Scannapieco & Cantos, 2016), and GERD (Hall, 2017).

(*continued*)

Protocol 6.1: Age-Related Changes in Health *(continued)*

XII. EVALUATION/EXPECTED OUTCOMES (FOR ALL SYSTEMS)

A. The older adult will experience successful aging through appropriate lifestyle practices and healthcare.
B. Healthcare provider will
   1. Identify normative changes in aging and differentiate these from pathological processes.
   2. Develop interventions to correct for adverse effects associated with aging.
C. Institution will
   1. Develop programs to promote successful aging.
D. Provide staff education on age-related changes in health.

XIII. FOLLOW-UP MONITORING OF CONDITION

A. Continue to reassess effectiveness of interventions.
B. Incorporate continuous quality-improvement criteria into existing programs.

ABBREVIATIONS

AHRQ	Agency for Healthcare Research and Quality
BMI	Body mass index
BP	Blood pressure
BPH	Benign prostatic hyperplasia
CDC	Centers for Disease Control and Prevention
EKG	Electrocardiogram
GERD	Gastroesophageal reflux disease
GFR	Glomerular filtration rate
JNC	Joint National Committee
MDRD	Modification of diet in renal disease
NSAID	Nonsteroidal anti-inflammatory drug
OTC	Over the counter
ROM	Range of motion
USDA	U.S. Department of Agriculture
USDHHS	U.S. Department of Health and Human Services
UTI	Urinary tract infection

RESOURCES

Government Informational Agencies

Administration on Aging
http://www.aoa.gov

Agency for Healthcare Research and Quality
http://www.ahrq.gov

National Institute on Aging
http://www.nia.nih.gov

Nonprofit Organizations

Alliance for Aging Research
http://www.agingresearch.org

American Federation of Aging Research
http://www.afar.org

National Council on Aging
http://www.ncoa.org

Professional Societies

American Geriatrics Society
http://www.americangeriatrics.org

Gerontological Advanced Practice Nurses Association
https://www.gapna.org

National Gerontological Nursing Association
http://www.ngna.org

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Healthcare Decision-Making*

Joanne Roman Jones and Marie Boltz

7

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Define informed consent and its supporting bioethical and legal principles.
2. Understand the role of culture in healthcare decision-making.
3. Differentiate between competence and capacity.
4. Understand the process of decisional capacity assessment.
5. Describe the nurse's role and responsibility as an advocate for the patient's voice in healthcare decision-making.

OVERVIEW

Healthcare is about decisions—how they are made, who makes them, and according to what standards. Until the latter half of the 20th century, patients were told what healthcare interventions would benefit them, and they rarely questioned the doctor's instructions. The rise of the rights movement in most areas of society promoted the idea that patients would benefit from robust participation in decision-making affecting their health outcomes. Building on the well-established doctrine of informed consent, as well as statutory and case law, all states came to require that patient goals, values, and preferences be central to healthcare decision-making. The result was a greater degree of clinician–patient collaboration in planning and implementing care decisions. Although all healthcare activities deserve principled and thoughtful decision-making, the benefit–burden–risk calculus associated with treatment and diagnostic interventions typically requires specific informed consent by or on behalf of the patient. For this reason, the determination of patients' decision-making capacity, as well as applicable standards, becomes a pressing issue that arises daily in the clinical setting.

BACKGROUND AND STATEMENT OF PROBLEM

Ethical Principles and Professional Obligations

Core ethical principles that underlie the healthcare decision process and give rise to clinician obligations include:

- Respect for autonomy: supporting and facilitating the capable patient's exercise of self-determination regarding healthcare
- Beneficence: promoting the patient's best interest and well-being and protecting the patient from harm
- Nonmaleficence: avoiding actions likely to cause the patient harm

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

- Justice: allocating fairly the benefits and burdens related to healthcare delivery and ensuring that decisions are based on clinical need rather than ethically irrelevant characteristics, such as race, religion, or socioeconomic status

The tension between and among these ethical principles can create dilemmas for clinicians when their obligations conflict. For example, care providers have a duty to respect patients' autonomy by honoring their decisions *and* a duty to protect them from the harm of risky choices. Care providers are also expected to provide care to patients who need it *and* be responsible stewards of limited resources. Clinical, legal, and ethically valid decisions by or for patients invoke a careful balancing of information, principles, rights, and responsibilities in light of medical realities, cultural factors, and, increasingly, concerns about resource allocation and access to care.

Autonomy and Capacity

The well-settled right to determine what happens to one's own body has two equally important components: the right to *consent* to treatment and the right to *refuse* treatment. Grounded in the ethical principle of respect for persons, this right to bodily integrity is considered so fundamental that it is protected by the U.S. Constitution, state constitutions, and decisions of the U.S. Supreme Court (*Cruzan v. Director,* 1990). All persons are considered to have the potential for autonomy, expressed in the clinical setting through informed decision-making. The threshold question is whether they have the *capacity to exercise autonomy*.

Respect for autonomy is widely considered to be the ethical principle most central to healthcare decision-making because of its emphasis on self-governance and choices that reflect personal values. This heightened emphasis on self-determination is largely a Western phenomenon, however, and is not universally shared. Even capable patients who are from cultures that value collective rather than individual decision-making may not be comfortable with pure autonomous decision-making. Instead, they may involve trusted others in planning their care, thus demonstrating *assisted*, *supported*, or *delegated* autonomy as their preferred method of decision-making. If this is their customary dynamic and if it appears to be effective for them, there is no reason to encourage them to adopt an unfamiliar decision-making style in the mistaken belief that only self-governance is authentic. For these patients, autonomy may be reflected not in self-determined decision-making about treatment, but in expressions of values and goals of care. Drawing on the assistance or support of trusted others does not diminish the integrity of the process. Voluntarily delegating decision-making authority to others is also an autonomous choice, but it is one that must be explicitly confirmed, not inferred.

Diminished or fluctuating capacity is not a reason to ignore the patient's voice but is a signal to attend more carefully to what is being communicated. The "what" and "how" of the treatment may be a decision for others to make; the "why" or the rationale in the patient's voice must be heard.

Capacity and Competence

Decisional capacity refers to a set of skills related to healthcare decision-making, including the ability to:

- Understand and process information about diagnosis, prognosis, and treatment options.
- Weigh the benefits, burdens, and risks of the proposed options.
- Apply a set of personal values to the analysis.
- Arrive at a decision that is consistent over time.
- Communicate the decision (Roth, Meisel, & Lidz, 1997).

Capacity runs along a continuum rather than being all on or all off. Some patients are able to make all their own decisions—personal, legal, financial, healthcare—and some, like infants and adults with profound cognitive impairment, are unable to make any decisions. Because capacity is decision specific rather than global, most people are able to make some decisions and not others.

Although the terms *capacity* and *competence* are often used interchangeably, in the healthcare setting their distinctions go beyond semantics. Competence is a *legal* presumption that an adult has the mental ability to negotiate various legal tasks, such as entering into a contract, making a will, and standing for trial. Incompetence is a judicial determination that because a person lacks this ability, she or he should be prevented from doing certain things. In contrast, capacity is a *clinical* determination that a person has the ability to understand, make, and take responsibility for the consequences of healthcare decisions. Because the legal system should rarely be involved in medical decisions, the patient's capacity for decision-making is an assessment made by clinicians.

Consent and Refusal

In the clinical setting, the principle of respect for autonomy is most clearly expressed in the doctrine of informed

consent and refusal. Because therapeutic and diagnostic interventions typically involve a range of benefits, burdens, and risks, express consent is almost always required before interventions are implemented. Informed consent is a process over time rather than a single event or a signed document. Among adults with a language barrier associated with education and/or ethnicity, comprehension might be limited (Fink et al., 2010). Providing adequate time for the informed consent discussion(s) and the opportunity to ensure understanding and voluntariness are essential to a valid decision about whether to authorize a proposed intervention. As an expression of autonomy, the most effective consent process is a collaborative interaction that includes consultation with clinicians and trusted others.

Informed consent and refusal engage capable patients or surrogates acting on behalf of patients without capacity in a process that requires:

- Patient decisional capacity
- Disclosure of sufficient material information relevant to the decision in question
- Understanding of the information provided
- Voluntary choosing among the options
- Consent to or refusal of the proposed intervention (Lo, 2000)

Education can improve decisional capacity to give safe, informed consent even for clinically depressed older adults (Lapid, Rummans, Pankratz, & Appelbaum, 2004). In one study, depressed patients' involvement in healthcare decision-making not only increased the likelihood of their receiving treatment congruent with depression treatment guidelines, but also showed reduced symptoms of depression over an 18-month period (Clever et al., 2006). "Framing" can be persuasive; a clinician's emphasis on the distinctions about the efficacy of a treatment and whether it would be curative or palliative can influence a patient's decision even more than information given about the disease or treatment options (Van Kleffens, van Baarsen, & van Leeuwen, 2004).

Decision-Making Authority

Treatment decisions are typically made by capable patients based on their health goals, values, and preferences in response to information they receive about their diagnosis, prognosis, and therapeutic options. These decisions are, thus, an expression of autonomy, reflecting the view that healthcare is not something that is *done to* patients; rather, it is a collaborative endeavor in which patients and clinicians contribute to the shared goal of recovery, rehabilitation, or palliation.

Readiness for decision-making has a temporal, as well as a contextual, component. Asked in focus groups why they had or had not been involved in any advance care planning (ACP), older adults and their caregivers revealed considerable variability in their readiness for discussion of different components of the ACP process such as advance directive creation, communication with family and physicians, and consideration of their treatment goals (Fried, Bullock, Iannone, & O'Leary, 2009). Participants identified barriers and benefits to ACP and said that it was not the only way to prepare for decline in health or death. Prior experience with healthcare decision-making for others influenced older adults' propensity to engage in ACP. Having an active role in shared decision-making is associated with enhanced cancer-specific quality of life, satisfaction, and more likely use of adjuvant therapy for women with breast cancer but not for men with prostate cancer (Hack et al., 2010; Mandelblatt, Kreling, Figeuriedo, & Feng, 2006).

Perceptions of ACP are crucial in determining readiness to engage in the process of proactive consideration of healthcare options. If "ACP" is perceived as synonymous with "end of life," it is not surprising that individuals, families, and care professionals are reluctant to initiate or participate in "the discussion." The common response is, "No one is dying here, so we don't have to deal with these matters now."

When patients are not capable of making decisions about their treatment, others are asked to choose for them, basing their decisions as much as possible on what is known of the patients' preferences or what is considered to be in their best interest. The determination of decision-making authority is among the most critical tasks in the clinical setting. When patients lack the ability to make treatment decisions, authority to act on their behalf must be vested in others—appointed agents, family, or other surrogates. The threshold determination, then, is of the patient's decisional capacity: an assessment of an individual's ability to make decisions about healthcare and treatment.

DECISION AIDS

Especially because the older adult population is expected to double during the next 20 years, capacity assessments in settings that care for them are likely to be requested and relied on with increasing frequency. Given that decisional capacity is an important marker of an individual's ability to complete specific tasks or make specific decisions, the

reliability of capacity assessments is crucial in evaluating what individuals are able to do for themselves. Although decisional capacity is an index of patient ability to make decisions and, therefore, involves cognitive processes, its assessment requires more than a test of mental acuity or a psychiatric examination (Post & Blustein, 2015).

Given the importance of assessing decision-making capacity, the desire for a precise method of measurement is understandable. "Decisional capacity assessments are important tools in optimizing safety and autonomy when there are questions about an older adult's ability to make decisions related to healthcare, independent living, financial management, and other areas that are essential to daily functioning" (Braun & Moye, 2010, p. 204). Decision aids assist, guide, and support a decision-making process that requires consideration of benefits, burdens, risks, and options. Studies indicate that decision aids lead to decisions that are value based, more informed, less conflicted, and characterized by a process that is more participatory than passive compared with standard decision-making approaches (O'Connor et al., 2004). Decision aids made a difference in physician–patient discussions about the use of adjuvant therapy for women with breast cancer (Siminoff, Gordon, Silverman, Budd, & Ravdin, 2006); clarified values and options, and increased knowledge regarding breast and ovarian genetic testing counseling (Wakefield et al., 2008); and improved men's knowledge on the risks and benefits of prostate-specific antigen (PSA) testing (Watson et al., 2006). An "order effect" was discerned regarding the sequence in which information was presented in a decision aid to women with breast cancer (Ubel et al., 2010). The order of presentation of information about the risks and benefits of tamoxifen influenced their perceptions. Bias was eliminated by the simultaneous presentation of information of competing options and risks.

A comprehensive review of several additional capacity assessment instruments (Racine & Billick, 2012) concluded that sensitivity and specificity tend to be in tension with efficiency and ease of use. Some can be administered in less than 10 minutes but may be more general, whereas others, which are more specific and in depth, require considerably more time and complicated scoring systems. Although none of the instruments are considered to be the gold standard, the literature indicates that their use in clinical practice could improve accuracy in capacity determination. Especially in the older adult population, where capacity issues may be complex and multifactorial, these tools may be useful adjuncts to clinical interviews, medical record reviews, interviews, neuropsychological testing, and functional assessment.

ASSESSMENT OF THE PROBLEM

Determination of Decision-Making Capacity

The importance of capacity determination resides in the presumption that adults have decisional capacity, and, absent contrary evidence, treatment decisions typically defer to patient goals, values, and preferences. This deference usually extends to all decisions made by capable individuals, including those decisions that appear risky or ill advised. Capacity assessment is important because patients who lack the ability to appreciate the implications of, and accept responsibility for, their choices are vulnerable to the risks of deficient decision-making. Indeed, the reason capacity determination is considered so important and receives so much attention is that honoring the decisions of a capable patient demonstrates respect for the person, whereas honoring the decisions of a patient without capacity can be seen as an act of abandonment. Thus, clinicians have an obligation to ensure that capable patients have the opportunity to make treatment decisions that will be implemented and that incapacitated patients will be protected by having decisions made for them by others who act in their best interest.

Fulfilling this obligation requires that clinicians appreciate the characteristics of decision-making capacity, the elements of which include the ability to:

- Understand and process information about diagnosis, prognosis, and treatment options.
- Weigh the relative benefits, burdens, and risks of the care options.
- Apply a set of values to the analysis.
- Arrive at a decision that is consistent over time.
- Communicate the decision (Roth et al., 1997).

Capacity assessment depends on interaction with the patient over time rather than on specific tests. There is no gold standard instrument or "capacimeter" that assesses decisional capacity (Kapp & Mossman, 1996). The Mini-Mental State Examination (MMSE) estimates orientation, long- and short-term memory, and mathematical and language dexterity. It is not a test of executive function (an assessment more likely to capture reasoning and recall) and is, therefore, less helpful in gauging the patient's ability to understand the implications of a decision (Allen et al., 2003). It has been suggested, however, that an MMSE score of less than 19 or more than 23 might be able to distinguish those with and without capacity for decision-making (Karlawish, Casarett, James, Xie, & Kim, 2005). The Assessment of Capacity for Everyday Decision-making (ACED) is a valid and reliable

instrument to assess everyday decisional capacity in those with mild to moderate cognitive impairment (Lai et al., 2008). The ACED is useful for assessing the capacity to solve functional problems of older persons with mild to moderate cognitive impairment from disorders such as Alzheimer's disease. Common clinical examples are persons who have problems performing an IADL, such as cooking, but refusing help to manage that IADL. The ACED provides patient-specific assessments of decisional abilities needed to make that informed refusal. It can also inform the assessment of complex cases of "self-neglect syndrome" (Baruth & Lapid, 2017). The SPACED is the Short Portable ACED (Karlawish & Lai, 2009). The shorter version allows the examiner to interview a person with a functional problem that has at least one possible solution (e.g., an older adult is forgetting to take his medication and home care can provide a weekly pill box).

Although there is no consistent standardized definition of decisional capacity, there is evidence that safe and sufficient decision-making is retained in early-stage dementia (Kim, Karlawish, & Caine, 2002). Persons with mild to moderate dementia can make or at least participate in making treatment decisions, but impaired memory recall might be a barrier to their demonstrating understanding of treatment options (Moye, Karel, Azar, & Gurrera, 2004). Standard assessment of appreciation of diagnostic and treatment information should focus on the patient's ability to state the importance or implications of the choice on his or her future health. Specific neuropsychological tests (e.g., MacArthur Competence Assessment Tool and Hopemont Capacity Assessment Interview) can predict decisional capacity for those with mild to moderate dementia, although reasoning and appreciation might differ among those with mental illness (Gurrera, Moye, Karel, Azar, & Armesto, 2006).

In one study, the standard of decision-making most highly valued by a group of geriatricians, psychologists, and ethics committee members was the ability to appreciate the consequences of a decision, followed by the ability to respond "yes" or "no" to a question; the standard least supported was that the decision had to seem reasonable (Volicer & Ganzini, 2003).

Clinical Importance of Decisional Capacity

Accurate and useful capacity assessment depends on the recognition that capacity is decision specific rather than global and works on a sliding scale based on the notion of risk. The greater the risk attached to a decision, the higher the level of capacity required to make a decision that will be honored. For example, a person with diminished capacity may be able to decide what to have for lunch or when to shower without undue risk of harm. A patient who asks to be removed from life support, however, is someone whose level of capacity would need to be considerably higher, demonstrating comprehension of the risk–benefit ratio and appreciation of the consequences.

Evidence also suggests that adults with mild to moderate mental retardation are able to make and provide a rationale for their treatment decisions and evaluate the risks and benefits of treatment options (Cea & Fisher, 2003). Because most people have the ability to make some decisions and not others, respect for autonomy requires clinicians to identify the widest range of decisions each patient is capable of making. A note in the chart saying, "Patient lacks decision-making capacity" is extremely unhelpful because it implies that the individual is unable to make any decisions about anything. This inhibits the exercise of autonomy by arbitrarily precluding decision-making when, in fact, the patient may lack only the ability to make complex treatment decisions. Far more helpful would be an entry that says, "Patient lacks the capacity to make decisions about participation in a drug study" or "Patient lacks the capacity to make decisions about dialysis."

Likewise, decisional capacity may not be constant but may fluctuate, depending on the patient's clinical condition, medication, and/or time of day. Among gerontological nurses, protecting the right of older adults with diminished capacity or physical function to make those healthcare decisions that they can appropriately make is among their top practice concerns (Alford, 2006). Precisely because decisional capacity is not static, it is imperative for the protection of those with mild to moderate dementia that their understanding and reasoning about treatments and interventions are periodically assessed (Moye, Karel, Gurrera, & Azar, 2006). Approaching patients for discussions and decisions when they are at their most capable (e.g., during the patient's "window of lucidity") enhances their opportunities to participate in planning their healthcare.

Although disagreement with a proposed care plan or refusal of recommended treatment does not by itself demonstrate incapacity, risky or potentially harmful decisions should be carefully scrutinized to protect vulnerable patients from the consequences of deficient decision-making. Because appointing a healthcare agent requires a lower level of capacity than that needed to make the often complex decisions the agent will make, even patients with diminished capacity may be able to select the persons they want to speak for them (Mezey, Teresi, Ramsey, Mitty, & Bobrowitz, 2002).

Decision-Making in the Absence of Capacity

The more difficult clinical scenario is decision-making on behalf of patients who have lost or never had the capacity to make decisions for themselves. Two approaches have been developed in response to the needs of incapacitated patients: advance directives and surrogate decision-making. Advance directives (see Chapter 17, Advance Care Planning) include the *instruction directive*, also known as a living will, which is a list of interventions the patient does or does not want in specified circumstances, and the *appointment directive*, also known as a healthcare proxy or durable power of attorney for healthcare (DPOAHC), which is the legal designation of a healthcare agent with the same decision-making authority as the patient. A related type of prospective care planning is the Practitioner/Physician Orders for Life-Sustaining Treatment (POLST) or Medical Orders for Life-Sustaining Treatment (MOLST), which are consolidated sets of medical orders specifically for patients with life-limiting illnesses (Bomba, 2011; Fromme, Zive, Schmidt, Olszewski, & Toll, 2012).

Despite the advantages of ACP, it is estimated that only one third of the adult population in the United States has an advance directive (American Bar Association Commission on Law and Aging, 2014). For that reason, the majority of healthcare decisions for incapacitated patients are made by surrogates, usually family or others close to the patient, who are asked by the care team to participate in making treatment decisions. Absent explicit instructions from the patient (verbally or in an advance directive), decisions by others are based on either *substituted judgment* (when the patient's wishes are known or can be inferred) or the *best interest standard* (when the patient did not have or articulate treatment preferences). Substituted judgment determines what the *patient* would choose based on prior statements and patterns of decision-making. In contrast, the best interest standard invokes the *surrogate's* evaluation of the proposed intervention's benefits and burdens to the patient.

A healthcare surrogate may be any capable person 18 years of age or older who, although not specifically chosen or legally appointed, assumes the responsibility for making healthcare decisions on behalf of a person who lacks the capacity to make those decisions. Informal surrogates are individuals, typically family members, who are presumed to know the patient best and to act in his or her best interest. Formal surrogates may be specified by state law in a hierarchy, typically in descending order of relation to the patient. *Family consent laws* are state-specific statutes that set out the state-approved decision-making hierarchy—the order in which persons are authorized to make decisions on behalf of a patient who lacks decisional capacity and has not appointed a healthcare agent by means of an advance directive or DPOAHC. To gain as much insight as possible into the patient's goals, values, and preferences, and approximate as closely as possible the decisions he or she would make if capable, the ethical imperative is to engage the decision-making efforts of individuals who know the patient best before moving to those with a less vested relationship to him or her. For that reason, a good-faith effort is typically required to contact members in each level of the hierarchy in turn, moving to a lower level only when it has been determined that no one at a higher level is able or willing to assume decision-making responsibilities**.** Most states accord considerable latitude to surrogates, especially next of kin, in consenting to treatment. Decisions about limiting treatment are more problematic and may be significantly restricted, depending on the state in which the patient is receiving care (see the "Resources" section, American Bar Association Commission on Law & Aging, for state guidelines).

Context of Healthcare Decision-Making

Healthcare goals and the treatment preferences for achieving them typically change as an individual's health and functional status change (Fried et al., 2006). Previously unacceptable conditions may become more or less acceptable as they are experienced. For example, patients already in pain may be less likely to refuse a treatment outcome that includes being in pain than patients who are not currently suffering moderate to severe pain (Fried et al., 2006). Likewise, patients' treatment and comfort goals may differ from those of their family caregivers and professional providers (Steinhauser et al., 2000).

Just as there is the right to learn one's medical information, there is also a right not to be burdened with unwanted information. Older adults or those from cultures that traditionally shield patients from knowledge of their illness may prefer to have information disclosed to a particular family member, the family as a group, or trusted others, who will use it to make decisions on the patient's behalf. With the implementation of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), most hospitals have a form for patients to sign, designating their preferred decision-maker(s). Another approach is to ask, "You're here because you're not feeling well. We're going to do some tests and examinations, and then decisions about treatment will need to be made. Some patients like to have all the information; others don't. What would make you comfortable? Whom would you like us

to talk to? Would you like to be part of those discussions and decisions?"

It is not uncommon for even capable patients to say, "Talk to my daughter. She makes all my decisions about important things. Just do whatever she thinks is right." This is an autonomous decision, delegating a trusted person to be the decision-maker; if this is the dynamic the patient prefers, it would be inappropriate to try to change it. However, although it is important to respect patient preferences and cultural traditions, a patient's waiver of the right to have information must be explicitly confirmed, not presumed.

Trust is a critical element in the patient–provider relationship, especially in decision-making situations in which information is disclosed and questions are answered. Various factors influence information exchange and shared decision-making (Edwards, Davies, & Edwards, 2009). Providers may be influenced by their perceptions of informed patients and their interest in participatory decision-making, their limited knowledge of patients' cultures, or a tendency to stereotype patients rather than view them as individuals. Patients may be influenced by their personal motivations to obtain and use information, cultural identity and expression, health literacy, and ability to cope with the possibility of receiving distressing information. Of note, a shared influence reported by providers and patients is the sick-role expectation (Edwards et al., 2009). African American patients have been shown to be significantly more likely than Caucasian patients to report low trust of the U.S. healthcare system, unrelated to age or socioeconomic status (Halbert, Armstrong, Gandy, & Shaker, 2006), as well as little interest in ACP and advance directives (Cox et al., 2006). This is not, however, an indication that patients of color and minority ethnic populations do not want to participate in healthcare decision-making, including decisions at the end of life.

Quality-of-Life Considerations in Decision-Making

Although there is almost universal acknowledgment of the patient's desire to be comfortable (i.e., relieved of pain and suffering) and to achieve a sense of completion, other quality-of-life considerations elicit more varied responses. Attitudes about the importance of clergy, being physically touched, and using all available technology may differ among patients, families, and caregivers. Older adults with varying degrees of functional impairment and past experiences with treatment decision-making were found to be more interested in the outcome of a serious medical event than with curative interventions and whether the intervention could restore or maintain their ability to participate in activities they valued (Rosenfeld, Wenger, & Kagawa-Singer, 2000). Among older adults with end-stage renal disease, the decision to begin dialysis was found to be influenced by their family caregiving responsibilities, feeling that they had no other options, and their current enjoyment of life that inhibited contemplation of their death (Visser et al., 2009). Those who rejected dialysis were more often older, male, and widowers compared with those who accepted dialysis. The former group imagined that they would experience a loss of autonomy and a continuing trajectory of functional loss, have difficulty getting to the dialysis center, and have to start thinking about the future—a prospect that was unappealing to them at the time. These findings speak to the contextual and temporal nature of healthcare decision-making that has been explored by others (Fried et al., 2009).

INTERVENTIONS AND CARE STRATEGIES

Assessing the patient's orientation and understanding can provide critical information about decision-making behavior in different circumstances, as well as the ability to articulate care wishes. Reporting that a patient is "disoriented to time and place" is helpful only in establishing the context in which more focused and useful decisional capacity assessment should take place.

Documentation needs to be specific and descriptive. The entry should describe the circumstances or interaction(s) that led to the conclusion about the patient's ability to make decisions. Because capacity is decision specific, accurate and useful statements are "Patient appears to lack the capacity to make decisions about discharge; she is unable to describe how she will cook or get to the bathroom at home" or "Patient lacks the capacity to make decisions about surgery; he was unable to name the type of surgery, what the surgery is supposed to correct, or what is involved or to be expected during recovery."

Communicating information includes determining what the patient and/or surrogate(s) understand, what they need or want to know, and how involved they want to be in decision-making. Providing the relevant medical facts in lay language and avoiding medical jargon that creates distance are essential. It is also important to consider the participants in the decision-making. Who should be present? What is their relationship to the patient? What is their decisional authority? What information is necessary, at what level of detail, and how will it be used? When is the information to be provided and over what period of time (Popejoy, 2005)?

Whenever language barriers or preferences are identified, certified interpreters are essential. Trained interpreters might be the only healthcare staff who recognize that patients, families or other surrogates, and the physician or healthcare professionals have differing interpretations of illness, treatment, and health; inconsistent understandings of the goals and plan of care; and disparate views about death and dying. Moreover, these varied parties may use language and decision-making frameworks differently. An interpreter may realize that truth telling might not only be perceived as disrespectful and dangerous but may also potentially shorten the patient's life span, as believed in certain cultures. A trained interpreter is more than a word-for-word translator; rather, he or she can serve as a mediator, culture broker, patient advocate, witness, educator, and participant who interprets both fact and nuance.

CASE STUDY 7.1

Mr. Peters is an 85-year-old man with advanced Alzheimer's disease who has been living in a nursing home for the past 6 months. When he stopped eating several weeks ago, he was hospitalized for placement of a percutaneous endoscopic gastrostomy (PEG) tube to provide artificial nutrition and hydration. He returned to the nursing home briefly but developed uncontrolled diarrhea and apparent abdominal discomfort. Two days ago, his PEG tube fell out, and he has been readmitted to the hospital for treatment of the diarrhea and possible replacement of the PEG.

Mr. Peters opens his eyes and responds to painful stimuli but does not interact and appears not to recognize family members. He is clearly incapable of participating in discussions or decisions about his care. His close family includes his son and granddaughter, who are visiting from California, and his grandson, Jason, who has been very involved for several years in providing and deciding about Mr. Peters' care.

A clinical ethics consultation has been convened, including Mr. Peters's family, his two attending physicians, the house and nursing staff who have cared for him most consistently, and the bioethicist. Discussion focuses on clarifying his condition and probable clinical course, the goals of care, and his likely care preferences.

Jason describes his grandfather as very active and fiercely independent until age 78, when his dementia was apparent. With his wife, he had raised Jason, and, when she died, he continued to raise the boy alone until Jason left for college. When the dementia worsened several years ago, Jason arranged for his grandfather and a team of 24-hour caregivers to move into an apartment next to his. That arrangement continued until Mr. Peters required care that could best be provided in a skilled nursing facility.

All three family members agree that, given Mr. Peters's personality, values, and lifetime behavior pattern, he would not have wanted to be maintained in his current condition, certainly not dependent on artificial nutrition and hydration. Nevertheless, they express concern about the ethics, legality, and clinical effect of not replacing the PEG tube and are especially uncomfortable about whether it would be considered "starving" him to death.

According to the care team, Mr. Peters's advanced dementia is not reversible, and he will continue to deteriorate mentally and physically until death. The doctors referred to the considerable literature demonstrating that, in patients with advanced dementia, artificial nutrition and hydration can cause gastrointestinal (GI) distress, including nausea, bloating, gas, and diarrhea, which appears to have happened to Mr. Peters. In the opinion of the care team, continued artificial nutrition and hydration would only contribute to the patient's suffering and prolong the dying process. The doctors also explain that, far from suffering, Mr. Peters appears more comfortable because the PEG fell out and the diarrhea has stopped. They assure the family that the patient could be admitted to the nursing home's hospice unit, where he will receive comfort care, including pain and other symptom management. The bioethicist addressed the relevant ethical issues discussed here.

Discussion

The ethics analysis of this case focuses on decision-making for an incapacitated patient, promoting the patient's best interest and protecting him from harm, and forgoing life-sustaining treatment, specifically artificial nutrition and hydration, at the end of life.

Surrogate decision-making on behalf of patients lacking capacity uses the following standards.

- The patient's wishes as expressed directly through discussions with others or in advance directives
- Substituted judgment (when the patient's wishes are known or can be inferred)
- The best interest standard (when the patient's wishes are not known or inferable)

(*continued*)

CASE STUDY 7.1 (*continued*)

Mr. Peters has not left any explicit instructions; however, his family, knowing him very well, is able to predict with confidence what he would and would not have wanted based on his characteristic patterns of behavior and decision-making. In this case, the family's substituted judgment is consistent with what was considered by the family and the care team to be in the patient's best interest—protecting him from continued artificial nutrition and hydration that would have increased his suffering without providing benefit and prolonged his dying. Framing this as *protecting* the patient from the burdens and risks of an intervention rather than *depriving* him of necessary treatment can make this decision more tolerable for distressed families.

One of the most difficult surrogate decisions is forgoing life-sustaining treatment and, because providing nourishment is so intimately associated with love and nurturing, forgoing artificial nutrition and hydration is especially wrenching for families and caregivers. Clinicians, ethicists, and courts have agreed that artificial nutrition and hydration are medical treatments, the benefits, burdens, and risks of which should be assessed like those of any other intervention.

Capable patients and the appointed healthcare agents of incapacitated patients have a well-established right to refuse any unwanted treatment, including those that are life sustaining. Absent capacity or advance directives, the family's authority to make end-of-life decisions, including forgoing artificial nutrition and hydration, depends on the laws of the state in which the patient is treated. Many states permit family and surrogates authorized by case or statutory law to make these decisions based on substituted judgment or their assessment of the patient's best interest in light of the patient's condition and prognosis. Other states require surrogates, even next of kin, to provide explicit evidence that the patient would have refused artificial nutrition and hydration in order to authorize withholding or withdrawing the interventions. Because of the jurisdictional variations, the completion of advance directives, including the legal appointment of healthcare agents and alternative agents, should be strongly encouraged by healthcare professionals.

SUMMARY

The notion of "ownership" of one's body applies to healthcare decision-making even in times of crisis. Patients with diminished or fluctuating decisional capacity should not be denied the opportunity to make the specific healthcare decisions they are capable of making. A vulnerable patient who lacks capacity, despite some social or conversational skills, needs to be protected from the potentially harmful effects of uninformed, poorly reasoned, and potentially risky healthcare decisions. It is suggested that the best way for nurses to learn older adults' informational needs, avoid undue paternalism, and promote their patients' best interests is to engage them in discussion about their health goals, values, and preferences (Tuckett, 2006). The ethical obligations that must be assumed by healthcare professionals are skillfully assessing the clinical situation; assessing the benefits, burdens, and risks of the therapeutic options; the patient's capacity to make and take responsibility for the relevant decisions; and the surrogate's need for information, guidance, and support.

NURSING STANDARD OF PRACTICE

Protocol 7.1: Healthcare Decision-Making

I. GOALS

To ensure nurses in acute care:

A. Understand the supporting bioethical and legal principles of informed consent
B. Are able to differentiate between competence and capacity
C. Understand the issues and processes used to assess decisional capacity
D. Can describe the nurse's role and responsibility as an advocate for the patient's voice in healthcare decision-making

II. OVERVIEW

A. Persons with decisional capacity have a well-established right, grounded in law and Western bioethics, to determine what is done to their bodies.
B. In any healthcare setting, the exercise of autonomy (self-determination) is seen in the process of informed consent to and refusal of treatment and/or care planning.
C. Determination of decision-making capacity is a compelling clinical issue because treatment and diagnostic interventions have the potential for significant benefit, burden, and/or risk.
D. Honoring the decisions of a capable patient demonstrates respect for the person; honoring the decisions of a patient without capacity is an act of abandonment.

III. BACKGROUND AND STATEMENT OF THE PROBLEM

A. Introduction
   1. Core ethical principles that are the foundation of clinician obligation are the following:
      a. Respect for autonomy, beneficence, nonmaleficence, and distributive justice.
      b. Clinically, legally, and ethically valid decisions by or for patients require a careful balancing of information, principles, rights, and responsibilities in light of medical realities, cultural factors, and, increasingly, concerns about resource allocation.
      c. Even capable patients, including those who are older adults, easily confused, or from cultures that do not consider autonomy a central value, as well as patients with diminished or fluctuating capacity, may not be capable of or comfortable with exercising purely autonomous decision-making.
      d. Care professionals have an obligation to be alert to questionable or fluctuating capacity both in patients who refuse and those who consent to recommended treatment. Capable individuals may choose to make their own care decisions, or they may voluntarily delegate decision-making authority to trusted others. Delegation of decisional authority must be explicitly confirmed, not inferred.
      e. The context of decision-making can include cultural imperatives and taboos; perceptions of pain, suffering and quality of life, and death; education and socioeconomic status; language barriers; and advance healthcare planning.
B. Definitions
   1. *Consent:* The informed consent process requires evidence of decisional capacity, disclosure of sufficient information, understanding of the information provided, voluntariness in choosing among the options, and, on those bases, consent to or refusal of the intervention.
   2. *Competence:* A *legal* presumption that an adult has the mental ability to negotiate various legal tasks (e.g., entering into a contract, making a will).
   3. *Incompetence:* A *judicial* determination that a person lacks the ability to negotiate legal tasks and should be prevented from doing so.

(*continued*)

Protocol 7.1: Healthcare Decision-Making (*continued*)

4. *Decisional capacity:* A *clinical* determination that an individual has the ability to understand and to make and take responsibility for the consequences of health decisions. Because capacity is not global but decision specific, patients may have the ability to make some decisions but not others. Capacity may fluctuate according to factors, including clinical condition, time of day, medications, and psychological and comfort status.

C. Essential elements
   1. Decisional capacity reflects the ability to understand the facts, appreciate the implications, and assume responsibility for the consequences of a decision.
   2. The elements of decisional capacity: The ability to understand and process information; weigh the relative benefits, burdens, and risks of each option; apply personal values to the analysis; arrive at a consistent decision; and communicate the decision (Roth et al., 1997).
   3. Standards of decision-making
      a. Prior explicit articulation: A decision based on the previous expression of a capable person's wishes through oral or written comments or instructions.
      b. Substituted judgment: A decision by others based on the formerly capable person's wishes that are known or can be inferred from prior behaviors or decisions.
      c. Best interests standard: A decision based on what others judge to be in the best interest of an individual who never had or made known healthcare wishes and whose preferences cannot be inferred.

IV. ASSESSMENT OF DECISIONAL CAPACITY

A. There is no gold standard instrument to assess capacity.
B. Assessment should occur over time, at different times of day, and with attention to the patient's comfort level.
C. The MMSE or Mini-Cog Test are not tests of capacity.
D. Clinicians agree that the ability to understand the consequences of a decision is an important indicator of decisional capacity.
E. Safe and sufficient decision-making is retained in the early stages of dementia and by adults with mild to moderate mental retardation.

V. NURSING CARE STRATEGIES

A. Communicate with the patient and family or other surrogate decision-makers to enhance their understanding of treatment options.
B. Be sensitive to racial, ethnic, religious, and cultural mores and traditions regarding end-of-life care planning, disclosure of information, and care decisions.
C. Be aware of conflict-resolution support and systems available in the care-providing organization.
D. Observe, document, and report the patient's ability to:
   1. Articulate his or her needs and preferences.
   2. Follow directions.
   3. Make simple choices and decisions (e.g., "Do you prefer the TV on or off?" "Do you prefer orange juice or water?").
   4. Communicate consistent care wishes.
E. Observe period(s) of confusion and lucidity; document the specific time(s) when the patient seems more or less "clear." Observation and documentation of the patient's mental state should occur during the day, evening, and at night.
F. Assess the patient's understanding relative to the particular decision at issue. The following probes and statements are useful in assessing the degree to which the patient has the skills necessary to make a healthcare decision.
   1. "Tell me in your own words what the physician explained to you."
   2. "Tell me which parts, if any, were confusing."

(*continued*)

Protocol 7.1: Healthcare Decision-Making (*continued*)

3. "What do you feel you have to *gain* by agreeing to (the proposed intervention)?"
4. "Tell me what you feel you have to *lose* by agreeing to (the proposed intervention)."
5. "Tell me what you feel you have to gain or lose by refusing (the proposed intervention)."
6. "Tell me why this decision is important (difficult, frightening, etc.) to you."

G. Select (or construct) appropriate decision aids.
H. Help the patient express what he or she understands about the clinical situation, the goals of care, and his or her expectation of the outcomes of the diagnostic or treatment interventions.
I. Help the patient identify who should participate in diagnostic and treatment discussions and decisions.

VI. EVALUATION AND EXPECTED OUTCOME(S)

A. Referrals to the ethics committee or ethics consultant in situations of decision-making conflict between any of the involved parties
B. The use of interpreters in communication of, or decision-making about, diagnostic and/or treatment interventions
C. Plan of care: instructions regarding frequency of observation to ascertain the patient's lucid periods, if any
D. Documentation
   1. Is the process of the capacity assessment described?
   2. Is the assessment specific to the decision at issue?
   3. Is the informed consent and refusal interaction described?
   4. Are the specifics of the patient's degree or spheres of orientation described?
   5. Is the patient's language used to describe the diagnostic or treatment intervention under consideration recorded?
   6. Is the patient's demeanor during this discussion recorded?
   7. Are the patient's questions and the clinician(s)' answers recorded?
   8. Are appropriate mental status descriptors used consistently?

ABBREVIATION

MMSE Mini-Mental State Examination

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RESOURCES

American Bar Association (ABA)
http://www.americanbar.org

American Bar Association Commission on Law & Aging, Legislative Updates
See link for chart that summarizes the wide variation on how states allocate decisional authority in the absence of patient capacity to make healthcare decisions, as well as legislative updates and other relevant information.
http://www.americanbar.org/groups/law_aging.html

American Society of Bioethics and Humanities
http://www.asbh.org

The Hastings Center
http://www.thehastingscenter.org

Health Insurance Portability and Accountability Act of 1996 (HIPAA)
http://www.hhs.gov/ocr/privacy

The Office for Civil Rights (OCR) enforces the HIPAA Privacy Rule
http://www.hhs.gov/ocr/privacy/hipaa/understanding/summary/index.html

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Sensory Changes in the Older Adult*

Pamela Z. Cacchione

8

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe the normal changes of aging that affect the senses in the older adult.
2. Identify common disorders that impact the senses in the older adult.
3. Understand the increased risk of morbidity and mortality in sensory-impaired older adults.
4. Determine how best to assess the sensory status in the older adult.
5. Identify nursing strategies to manage sensory impairment in the older adult.
6. Collaborate with interprofessional team members who can assist the older adults with sensory impairment.

OVERVIEW

Understanding how to assess for and manage sensory deficits is essential to holistic nursing. A goal of *Healthy People 2020* is to decrease the prevalence and severity of disorders of vision, hearing, balance, smell, and taste, as well as voice, speech, and language (Office of Disease Prevention and Health Promotion [ODPHP], n.d.). With the growing evidence of increased morbidity and mortality related to sensory impairment, *Healthy People 2030* continues to focus on sensory disorders, as evidenced by their proposed objectives for *Healthy People 203*0 (Secretary's Advisory Committee for Healthy People 2030, 2019). This chapter on sensory changes addresses common age-related changes associated with the senses as well as disease states and injuries to the senses occurring more commonly with aging. Nursing care related to the *Healthy People 2020* goals regarding sensory changes are also addressed.

BACKGROUND AND STATEMENT OF PROBLEM

Individuals experience and interact with their environments through their senses. Vision, hearing, smell, taste, and peripheral sensation allow us to safely experience and enjoy the world around us. Changes in sensory function (vision, hearing, smell, taste, and peripheral sensation) are common as people age. These sensory changes can negatively impact the older adult's ability to interact safely within the environment and interpret and respond to sensory information, putting an older adult's health at risk and decreasing quality of life. For example, changes in hearing can impact an older person's communication skills; changes in vision can impact his or her health literacy by limiting the ability to take medications safely. Researchers have determined that sensory impairment is more dangerous than previously thought (Cacchione, 2014). Sensory impairment, particularly vision and hearing impairment,

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

has been linked to increased mortality (Cugati et al., 2007; Gopinath et al., 2013; Karpa et al., 2010). A decrease in sense of smell has been linked to increased risk of mortality within 5 years (Pinto, Wroblewski, Kern, Schumm, & McClintock, 2014). *Healthy People 2020* emphasizes the importance of healthy senses, including vision, hearing, balance, smell, and taste. Vision and hearing abilities are essential to language, whether spoken, signed, or read (ODPHP, n.d.). Decreases in sense of smell can interfere with an older adult's ability to smell smoke in a fire or recognize spoiled food. Many adults report a decrease in taste that impacts their desire to eat. Decreased peripheral sensation sets up an individual for injury and falls.

NORMAL CHANGES OF AGING SENSES

The senses—vision, hearing, taste, smell, balance, and peripheral sensation—change with aging, usually presenting primarily with a slowing of function. A summary table is presented describing age-related changes and the functional outcomes for each sense (Table 8.1).

Vision

There are several changes that occur with vision as people age. The eyelids start lagging, potentially obscuring vision; the pupil takes longer to dilate and contract, slowing

TABLE 8.1

Normal Changes of Aging

Sense	Change With Aging	Functional Outcome
Vision	■ Decreased dark adaptation ■ Decreased upward gaze ■ Eyes become drier and produce fewer tears ■ Cornea becomes less sensitive ■ Pupils decrease in size ■ Visual fields become smaller	■ Increased safety risk in changing environmental light ■ Decreased field of vision ■ Dry, irritated eyes ■ Slow to recognize injury to the cornea ■ Inability to adjust to glare and change in lighting conditions ■ Safety risk for driving and maneuvering in the environment
Hearing	■ Eardrum thickens ■ Loss of high-frequency hearing acuity ■ Decreased ability to process sounds after age 50 ■ Increased cerumen impactions ■ Ossification of the stapes	■ Thickened eardrum decreases sound moving across the ear canal ■ Decreased ability to hear sounds, such as/p/,/w/,/f/,/sh/, and women's and children's voices ■ Requires more time to process and respond to auditory stimuli ■ Decreased hearing because of blockage of sound
Smell	■ Decreased ability to identify odors ■ Impacts ability to taste	■ Inability to identify spoiled food or smoke ■ Limits enjoyment in eating
Taste	■ Decreased number of taste buds ■ Limited decrease in taste supported by studies ■ Less saliva production	■ Decreased sensitivity to flavors ■ Dry mouth affects ability to swallow
Sensation	■ Decreased vibratory sense ■ Decreased two-point discrimination ■ Decreased temperature sensitivity ■ Decreased balance ■ Decreased proprioception ■ Changed pain sensation	■ Increased risk for injury ■ Decreased ability to sense pressure ■ Decreased protective response to withdraw from hot objects ■ Risk of falls ■ Decreased protective mechanism

Sources: Data from Bromely, S. M. (2000). Smell and taste disorders: A primary care approach. *American Family Physician, 61*(2), 427–436, 438; Murphy, C., Schubert, C. R., Cruickshanks, K. J., Klein, B. E., Klein, R., & Nondahl, D. M. (2002). Prevalence of olfactory impairment in older adults. *Journal of the American Medical Association, 288*(18), 2307–2312. doi:10.1001/jama.288.18.2307; Schiffman, S. S. (1997). Taste and smell losses in normal aging and disease. *Journal of the American Medical Association, 278*(16), 1357–1362. doi:10.1001/jama.278.16.1357; Seiberling, K. A., & Conley, D. B. (2004). Aging and olfactory and taste function. *Otolaryngologic Clinics of North America, 37*(6), 1209–1228. doi:10.1016/j.otc.2004.06.006; Wallhagen, M. I., Pettengill, E., & Whiteside, M. (2006). Sensory impairment in older adults: Part 1. Hearing loss. *American Journal of Nursing, 106*(10), 40–48. doi:10.1097/00000446-200610000-00030; Whiteside, M. M., Wallhagen, M. I., & Pettengill, E. (2006). Sensory impairment in older adults: Part 2. Vision loss. *American Journal of Nursing, 106*(11), 52–61. doi:10.1097/00000446-200611000-00019

accommodation after age 50 because of the hardening of the lens; and presbyopia is widespread.

Presbyopia

Presbyopia results in the inability to focus on close objects (National Eye Institute [NEI], 2015). It is an age-related progressive decline in the crystalline lens' ability to accommodate, resulting in the inability to focus on near objects (Arines, Almaguer, & Acosta, 2017). Functionally, presbyopia occurs when the normal age-related reduction in the eyes' focusing range reaches a point, when optimally corrected for distance vision, where the clarity of near vision is insufficient to satisfy an individual's near vision requirements (Wolffsohn & Davies, 2019).

Hearing

Normal changes of aging impacting hearing acuity include the decrease in function of the hair fibers in the ear canal that normally aid in the natural removal of cerumen and the protection of the ear canal from external elements. Conduction of sound is limited by the ossification of the stapes, decreasing the vibration of the stapes and thickening of the tympanic membrane, making it less flexible (Wallhagen, Pettengill, & Whiteside, 2006).

Presbycusis

Presbycusis or age-related hearing is characterized by increased hearing thresholds, impaired processing of high-pitched sounds, including reduced frequency and temporal resolution, and difficulty understanding speech, especially in noisy or complex listening environments (Blazer, Domnitz, & Liverman, 2016). Presbycusis affects more than 50% of older adults by the age of 75 years and nearly 100% of adults aged 90 and older (Blevin, 2018). This high-frequency sensorineural hearing loss is a multifactorial process associated with aging and varies in severity (Blevin, 2018). Presbycusis usually has a bilateral progressive onset and has both intrinsic, including genetic, and extrinsic causes such as environmental exposures (Tawfik, Klepper, Saliba, & Friedman, 2019). Risk factors include heredity, vascular insults, environmental exposure, free radicals, hormones, and mitochondrial deoxyribonucleic acid (DNA) damage (Huang & Tang, 2010; Tawfik et al., 2019). Presenting symptoms of this irreversible condition include high-frequency hearing loss and difficulty hearing high-pitched sounds such as /t/,/p/,/k/,/s/,/z/,/sh/, and/ch/ (Blazer et al., 2016; Huang & Tang, 2010). Background noise further aggravates this hearing deficit (Blazer et al., 2016).

Smell

Changes in smell are common as we age but are not considered a normal part of aging. Frequently, older adults complain of distortions of smell. Factors associated with loss of sense of smell include age and gender, with older males being more prone to smell loss (Hoffman, Rawal, Li, & Duffy, 2016). The environment, head trauma, diseases, or illness can diminish the sense of smell (Hoffman et al., 2016). Changes in the sense of smell have also been found to correlate with neurological conditions, such as Parkinson's disease, and genetically with Alzheimer's disease. The rhinencephalic brain regions are thought to be vulnerable to Alzheimer's disease pathology (Daulatzai, 2015; Doty, 2018; Hoffman et al., 2016; Lafaille-Magnan et al., 2017; Oleson & Murphy, 2015).

Taste

Common changes in taste include a decreased ability to detect the intensity of taste thought to be partially due to a decline in taste buds (Doty, 2018). There is no decrease in somatic sensations, such as touch and burning pain in the tongue, when compared with the case in younger adults (Fukunaga, Uematsu, & Sugimoto, 2005). However, complete loss of taste is rare, and changes in taste are more often related to poor dentition and dental care; decreased sense of smell, diseases, or illness, such as rhinitis, allergies, or infections; and medications (Doty, 2018; Hoffman et al., 2016; Ogawa, Annear, Ikebe, & Maeda, 2017). Even though taste is processed by cranial nerves VII, IX, and X, there is little known about the central nervous system's impact on sense of taste (Doty, 2018; Ogawa et al., 2017).

Peripheral Sensation

Aging is associated with a decline in peripheral sensory nerve function (Breen et al., 2016). Two-point discrimination and vibratory sense both decrease with age. The ability to perceive painful stimuli is preserved in aging (Riley et al., 2017). However, older adults perform movements more slowly than younger adults, precipitating a slowed reaction time for pulling away from painful stimuli (Landelle, El Ahmadi, & Kavounoudias, 2018).

ASSESSMENT OF THE PROBLEM

Vision

The leading causes of vision impairment and blindness are age-related eye diseases (Prevent Blindness America, 2012). The prevalence of visual impairment increases with age and the settings in which older adults live, with vision impairment affecting approximately 2.6 million adults older than 65 years in the United States (Prevent Blindness America, 2012). According to data from the National Health and Nutrition Examination Survey (NHANES; Dillon, Gu, Hoffman, & Ko, 2010; Schiller, Lucas, & Peregoy, 2012; Swenor, Ramulu, Willis, Friedman, & Lin, 2013), 3.4% of older adults aged 70 to 79 years and 15.9% of older adults 80 years and older were found to be visually impaired (Swenor et al., 2013), but this varied by race and ethnicity with non-Hispanic Whites (13.8%), non-Hispanic Blacks (21.1%), and Mexican Americans (24%). The National Health Interview Survey from 2014 to 2015 reported prevalence rates for vision impairment even when wearing glasses or contact lenses for older adults between 65 and 84 years old of 13.0% and 85 years and older of 23.5% (Lamuda, Wittenborn, & Rein, 2018). Additionally, a study investigating socioeconomic factors in vision found that increasing age and lower socioeconomic status were associated with vision impairment (Zheng et al., 2012). Adults aged 85 years and older were found to have a 12.3% prevalence of blindness in the National Health Interview Study (Okeke et al., 2018). This is worrisome because this is the fastest growing segment of our population.

Studies evaluating older adults in long-term care settings demonstrate prevalence rates of visual impairment from 27% to 57% of older adults (Bron & Caird, 1997; Cacchione, Culp, Dyck, & Laing, 2003; Swanson, McGwin, Elliott, & Owsley, 2009). The NHIS study estimated national prevalence rates for people who wear glasses and found that 83.5% of older adults between 65 and 84 years old and 84.9% of those aged 85 and older wear glasses (Okeke et al., 2018). Despite this prevalence rate, uncorrected refractive error was common in visually impaired older adults. In one study, of the 8.8% of the older adults found to be visually impaired, 59% were impaired because of an uncorrected refractive error (Vitale, Cotch, & Sperduto, 2006). Leading causes of blindness by race and ethnicity were found to be age-related macular degeneration in Whites and Hispanics compared with cataracts and open-angle glaucoma in Blacks (American Academy of Ophthalmology [AAO], 2020a).

The definition of visual impairment varies by different groups and by country (Agency for Healthcare Research and Quality [AHRQ], 2004, 2012). The United States defines low vision as *best corrected visual acuity*:

- Normal vision: visual acuity of 20/20 or better
- Mild vision impairment: 20/25 to 20/50
- Moderate visual impairment: 20/60 to 20/160
- Severe visual impairment (legally blind): 20/200 to 20/400
- Profound vision impairment: 20/400 to 20/1,000
- Near-total vision loss: less than or equal to 20/1,250
- Total blindness: no light perception

Low vision can also be defined based on visual field limitations. *Severe visual impairment* is defined as best corrected field less than or equal to 20° (legal blindness). *Profound visual impairment* is defined as visual field less than or equal to 10 degrees (AHRQ, 2004, 2012).

Nursing Assessment of Vision

Health history is an essential part of vision assessment. Several health conditions predispose older adults to visual impairment. In the United States, diabetes is a common cause of disease-related blindness associated with diabetic retinopathy, with 40% to 45% of diabetics having some stage of diabetic retinopathy (NEI, 2019c). Hypertension carries with it the risk of hypertensive retinopathy. Ascertaining a thorough baseline health history with yearly reviews and updates is essential in maintaining visual health. Health questions related to visual health include the questions shown in Box 8.1 (Cacchione, 2007; Wallhagen et al., 2006).

Examination of the Eye

The external structures can cause decreased vision if the lids lag because of laxity of the skin of the upper eyelid. Lid lag can interfere with visual acuity and fields and may require surgery. A decreased level of tear function can negatively impact visual acuity. In severe cases, cataracts can be visible to the naked eye and appear as a whitish gray pupil instead of black. Cloudiness of the whole cornea of the eye is indicative of a corneal problem, not a cataract. If the person has had cataract surgery, the lens implant may be visible on close inspection.

Fundus Exam. Using an ophthalmoscope, a nurse can visualize the red reflex and, with experience and practice, the fundus of the eye. This is often difficult with small pupils. Darkening the room may help with dilating the pupils. Optometrists, ophthalmologists, and nurses with training can dilate the pupils to allow for a better view of

BOX 8.1

Vision History Questions

- When was your last eye exam?
- How would you describe your eyesight?
- Any change in your eyesight?
- When did you notice this change?
- Are you experiencing any blurred vision?
- Are you having any double vision?
- Are you bothered by glare?
- Are you experiencing any eye pain?
- Are you using any eye drops for any reason?
- Any history of trauma or injury to your eyes?
- Have you had any eye surgeries?
- Do you have cataracts?
- Any family history of eye problems?

Source: Data from Cacchione, P. Z. (2007). Nursing care of older adults with age-related vision loss. In S. Crocker-Houde (Ed.), *Vision loss in older adults: Nursing assessment and care management* (pp. 131–148). New York, NY: Springer Publishing Company; Whiteside, M. M., Wallhagen, M. I., & Pettengill, E. (2006). Sensory impairment in older adults: Part 2. Vision loss. *American Journal of Nursing, 106*(11), 52–61. doi:10.1097/00000446-200610000-00030

the fundus. Cataracts will appear as a dark shadow in the anterior portion of the lens in front of the retina.

Vision Testing. Vision testing should be completed before the eyes are dilated and assessed in each eye, then both eyes together for both uncorrected and corrected (with glasses or contacts) vision.

Distance Vision. The "gold standard" in eye charts, the Snellen chart, is one of the most commonly used to assess distance vision. Visual acuity is tested at 20 feet. The individual is asked to read the letters on the chart until he or she misses more than two on a line. Acuity equals the line above the line with more than two errors. Acuity measures range from 20/10 to 20/800 on the Snellen chart.

Early Treatment Diabetic Retinopathy Study. The Early Treatment Diabetic Retinopathy Study (ETDRS; Ferris, Kassoff, Bresnick, & Bailey, 1982) eye chart is also used frequently and can be used at a distance of 4 meters. At this distance, the greatest visual acuity measured is 20/200—the equivalent of legal blindness.

Pinhole Test. With best vision, with or without glasses, a multiple pinhole occluder or shield can be placed in front of the eye, allowing light rays to reach the retina without the interference of optical problems of the eye (AAO, 2020b). This test identifies refractive error of the peripheral cornea of the lens of the eye by allowing only perpendicular light into the lens (Kalinowski, 2008). If the individual can read farther down the chart with the pinhole, his or her vision may be improved with better refraction of his or her eyeglasses, or, if he or she does not have glasses, vision could be improved with eyeglasses. If the pinhole acuity is worse than 20/60, the individual's visual impairment is not correctable with glasses (Kumar et al., 2018).

Near Vision. Near vision is important for health literacy, especially regarding reading food or medication labels. There are several ways to assess near vision. Two commonly used tools are the Rosenbaum Pocket Eye Screener and the Lighthouse for the Blind Near Vision Screener. The Rosenbaum Pocket Eye Screener is a noncopyrighted tool based on the Snellen chart that can be useful in assessing near vision in the acute care and primary care settings. The Rosenbaum is true to scale when compared with the Snellen chart at the 20/200, 20/400, and 20/800 acuity levels. However, the other levels are slightly too large, causing an overestimation of visual acuity (Horton & Jones, 1997). The Lighthouse for the Blind Near Vision Screener (Lighthouse for the Blind, Owsley et al., 2007) is a handheld vision screener with a cord that can be used at 40 and 20 centimeters to measure the proper distance for testing near vision. This near vision screener mimics the ETDRS eye chart in a smaller version but is not pocket size. It does not, however, have the concern that the Rosenbaum Pocket Eye Screener has over the scale matching of the ETDRS distance acuity level. For research purposes, it has the added feature of the cord for measuring a consistent distance.

Contrast Sensitivity. Contrast sensitivity is the ability to discriminate between two luminance levels in a static image and is often compromised by aging and diseases or conditions of the eye (Saftari & Kwon, 2018). Decreases in contrast sensitivity occur with cataracts, glaucoma, and retinopathies (Khan, Petropoulous, Ponirakis, & Malik, 2017; Owsley, 2016). Low-contrast sensitivity despite normal visual acuity creates a situation where a person has difficulty detecting hazards in the environment, particularly at night (Saftari & Kwon, 2018). Decline in contrast sensitivity impacts one's ability to distinguish when one step ends and another begins, identify light switches on the wall, read materials not made in high-contrast font, or identify the buttons on the remote. Intact contrast sensitivity is important for day-to-day safety and function within the environment. Impaired contrast sensitivity has been associated with falls, decreased

physical function, and nursing home placement in older adults (Saftari & Kwon, 2018).

The Pelli–Robson Contrast Sensitivity Chart (Pelli, Robson, & Wilkins, 1988) is read at the 1- or 3-meter distance. All letters are presented at the 20/200 acuity level but in decreasing shades of black to gray. The Pelli–Robson Contrast Sensitivity Chart is widely used in practice and works well for older adults who are experienced in recognizing letters (Hirvelä & Laatikainen, 1995; Morse & Rosenthal, 1997). The MARS Letter Contrast Sensitivity Test is another validated screener for contrast sensitivity (Arditi, 2005). Additionally, the Melbourne Edge Test (Verbaken & Johnston, 1986) is helpful in identifying persons at risk for falls. Persons who have difficulty identifying the orientation of a line defined by the contrast between two abutted surfaces are likely to be at risk for falls (Lord, Delbaere, & Sturnieks, 2018).

Visual Fields. *Fields of vision* refers to the area of peripheral vision visible when the individual is focusing straight ahead (Cassin & Rubin, 2001). The vision in visual fields can be affected by many eye conditions, specifically glaucoma, macular degeneration, and retinopathies (Jessa, Evans, Thomson, & Rowlands, 2007), as well as neurological disorders that inhibit eye movement or affect the blood supply to the optic nerve. Intact visual fields are necessary to function safely in one's environment. A good bedside gross measure of visual fields can be done by assessing visual fields by confrontation. The examiner faces the patient and determines whether the patient can identify the number of examiner's fingers as they are moving into the patient's field of view (Leat et al., 2018). Although subjective and dependent on the examiner having normal fields of vision, the confrontation test is useful in quickly identifying large losses in visual fields.

The Humphrey Visual Field Test is completed by an ophthalmologist and assesses visual fields using a static type of perimetry (Gianutsos & Suchoff, 1997). This instrument provides a more reliable measure of functional visual fields. The Goldman VI4e kinetic perimetry visual field testing, on the other hand, assesses the kinetic type of functional visual fields (Hepworth & Rowe, 2018). Kinetic perimetry entails the introduction of a moving stimulus, moving from a nonvisible area toward the fixed point of view. The Goldman VI4e kinetic perimetry visual field testing is hard to standardize because it is operator dependent (Hepworth & Rowe, 2018). Because these automated methods are more widely used, the location of the visual field deficit may clue the examiner about the type of eye condition. For example, unilateral visual field deficits may be related to a cerebral vascular accident, glaucoma will affect the peripheral fields, and macular degeneration has associated loss of central field of vision.

Stereopsis. Stereopsis is the process in which humans have the ability to construct spatial relationships between objects using different viewpoints provided by their eyes to produce a vivid perception of depth and three-dimensional shapes (Read, Phillipson, Serrano-Pedraza, Milner, & Parker, 2010, Saftari & Kwon, 2018). The ability to perceive depth, judge distances, and perceive spatial relationships is necessary for safe negotiation of the environment (Lord et al., 2018). There are multiple clinical methods of measuring stereopsis and stereoacuity; however, these tests are much more effective in identifying intact stereoacuity than a decline in stereoacuity (O'Connor & Tidbury, 2018). Stereopsis and stereoacuity are not thought to be affected by aging but may be negatively impacted by distance acuity and eye diseases (O'Connor & Tidbury, 2018).

Visual Function Questionnaire

The NEI Visual Function Questionnaire (VFQ-25) is a 25-item survey that assesses the functional impact of visual impairment. It provides a subjective report on 12 functional subscales: general vision, near vision, distance vision, driving, peripheral vision, color vision, ocular pain, general health, vision-specific role difficulties, dependency, social function, and mental health (Revicki, Rentz, Harnam, Thomas, & Lanzetta, 2010). The NEI VFQ-25 has sound psychometric properties in cognitively intact older adults (Mangione et al., 2001).

Conditions of the Eye

Diseases That Alter Vision Seen More Frequently as People Age

Cataracts. Age-related cataracts gradually cloud the crystalline lens and may present either unilaterally or bilaterally as painless, progressive loss of vision (Owsley, 2011). Cataracts are usually age related, but they can be secondary to glaucoma, diabetes, Alzheimer's disease, congenital or smoking injury, or injuries related to medications such as steroids or sunlight exposure (NEI, 2019b). The management of cataracts includes early identification and monitoring followed by surgical extraction and lens implantation once vision is affected.

Age-Related Macular Degeneration (ARMD)

This involves the development of lipid deposits (drusen) beneath the retina in the retinal pigmented epithelium.

ARMD is the leading cause of central vision loss and legal blindness in older adults (Alavi, 2016). ARMD is more common in fair-haired, blue-eyed individuals. Other risk factors include smoking and excessive sunlight exposure. There are wet and dry forms of macular degeneration. The wet form is more easily treated than the dry form. Treatment is available for the wet form of ARMD and consists of injectable medications that target neovascularization to slow the progression of dry macular degeneration (Alavi, 2016, NEI, 2019a). In addition, photodynamic therapy and laser surgery are used to target leaky blood vessels (NEI, 2019a). The Age-related Eye Disease Study AREDs and AREDS2 found that a combination of supplements could slow the progression of ARMD by 25%; these include 500 mg of vitamin C, 400 international units of vitamin E, 80 mg zinc oxide, 2 mg cupric oxide, 10 mg lutein, and 2 mg zeaxanthin (NEI, 2019a).

Glaucoma. Glaucoma is the most common cause of irreversible blindness (Khan et al., 2017). It is a progressive, chronic, serious form of eye disease that is considered an optic neuropathy, where the loss of retinal ganglion cells negatively impacts the function of the optic nerve resulting in vision loss and blindness (Alavi, 2016). Primary open-angle glaucoma is the most common form of glaucoma in older adults (NEI, 2019d). Increased intraocular pressure causes atrophy and cupping of the optic nerve head, which leads to visual field deficits that can progress to blindness. In addition, glaucoma causes an intolerance to glare, decreased perception of contrast, and decreased ability to adapt to the dark. Treatments are available to delay vision loss, but no cure is available. African Americans and Mexican Americans are five times more likely than Caucasians to develop glaucoma (NEI, 2019d). Treatment for open-angle glaucoma includes medications to lower the eye pressures, laser trabeculoplasty, conventional surgery, or a combination of these treatments (NEI, 2019e). Closed angle glaucoma is a medical emergency and presents with acute increase in eye pressure, causing pain, nausea, blurred vision, and redness of the eye (NEI, 2019d). Persons with these symptoms should go to the nearest emergency department.

Diabetic Retinopathy. In persons with diabetes, diabetic retinopathy is the leading cause of serious vision loss (Khan et al., 2017). Diabetic retinopathy starts, because of high levels of blood sugar, as mild nonproliferative retinopathy with microaneurysms on the retina and progresses to moderate to severe nonproliferative retinopathy, in which blood vessels in the retina are blocked, depriving the retina of adequate blood supply, and then progresses to proliferative retinopathy, in which the growth of new abnormal fragile blood vessels that leak can cause blindness (NEI, 2019c). The risk can be reduced by effecting tight blood sugar control. As many as 45% of diabetics develop diabetic retinopathy (NEI, 2019c). Diabetic retinopathy is treated with tight blood sugar control, antivascular endothelial growth factor injections (anti-VEGF), laser surgery, and corticosteroids by a retinal specialist (NEI, 2019c).

Hypertensive Retinopathy. Similarly to diabetic retinopathy, hypertensive retinopathy is caused by end-organ damage from poorly controlled hypertension, causing background and, eventually, proliferative retinopathy. Hypertensive retinopathy is usually treated with laser photocoagulation and tight blood pressure control.

Temporal Arteritis. This is an autoimmune disorder that causes inflammation of the temporal artery, also known as *giant cell arteritis*. It presents as malaise, scalp tenderness, unilateral temporal headache, jaw claudication, and sudden vision loss (usually unilateral). This vision loss is a medical emergency but is potentially reversible if identified immediately. The client should see an ophthalmologist or go to the emergency department immediately if symptoms develop.

Detached Retina. This condition can occur in patients with cataracts or recent cataract surgery or trauma, or it can occur spontaneously. A detached retina presents as a curtain coming down across a patient's line of vision. An individual experiencing this should see an ophthalmologist or proceed to the closest emergency department immediately. See Box 8.2 for implications of vision changes on an older adult's function.

BOX 8.2

Implications of Vision Changes in Older Adults

Impact on safety
- Inability to read medication and food labels
- Decreased health literacy
- Difficulty navigating stairs or curbs
- Difficulty driving
- Difficulty crossing streets

Impact on quality of life
- Reduces ability to remain independent
- Difficulty or unable to read
- Falls

INTERVENTIONS AND CARE STRATEGIES

Vision

The nurse should obtain a past medical history to avoid disruption in the management of chronic eye conditions, ensuring continuation of ongoing regimens, such as eye drops for glaucoma. Without the continuation of the individual's eye drops, eye pressures could precipitously increase, causing an acute exacerbation of the glaucoma, potentially dramatically limiting vision. If an acute change in an individual's vision occurs, the primary care provider should be notified immediately. Depending on the signs and symptoms present, the individual may need to see an ophthalmologist or go to the emergency department to receive treatment to restore the vision or limit the deterioration. Many cities have ophthalmological emergency rooms.

Proper lighting is essential to optimize vision within an environment. Too little light can limit an individual's vision. Too much light, depending on the individual's eye condition, such as cataracts, macular degeneration, or glaucoma, may cause eye pain and glare. It is important to ascertain whether an individual is sensitive to light. If he or she is sensitive to light, indirect light and night lights may be helpful to provide a safe environment. The majority of older adults benefit from improved lighting. To avoid glare, directing incandescent lamps directly on a task, such as sewing or reading, often improves visual acuity and is well tolerated. Glare occurs when a light shines directly into the eye or reflects off a shiny surface. Therefore, people with glaucoma, diabetic retinopathy, and cataracts may benefit from additional lighting that is properly directed to avoid problems with glare (Perlmutter et al., 2013). Low-vision specialists recommend trying different positions and wattage of lighting to find what works best for each individual. There are lighting assessments, but more evidence is needed to support their use (Wittich, Amour, Jarry, & Seiple, 2018).

Encourage the use and proper fitting of eyeglasses. Older adults' eyeglasses should be labeled with the person's name so they can be returned to the owner if they are set down and left behind. Even with eyeglasses, magnification may be helpful. Additional lighted magnification can improve functional vision. (Large lighted magnifiers are available from low-vision centers.) A low-vision optometrist or specialist can assist in recommending the appropriate level of magnifier.

Contrast sensitivity is associated with several eye conditions, including cataracts, glaucoma, and macular degeneration. Adding contrast to the edge of each step, fixtures in the home, light switches that blend into the wall, or faucets that blend into the sink can create a safer and more functional environment. In addition, having contrasting colors in bathrooms, particularly around toilets and sinks, facilitate higher functioning with activities of daily living.

Annual screening is not recommended by the U.S. Preventive Services Task Force (2016) in the older adult. However, nurses should encourage an annual dilated eye exam either with an optometrist or ophthalmologist, particularly for those with hypertension, diabetes, or complaints of vision changes (AAO, 2020a). More frequent eye exams may be needed for older adults with diabetes or hypertension, glaucoma, and macular degeneration (AAO, 2020a). Nurses are members of the interprofessional team responsible for preventing unnecessary disability. Therefore, nurses should make sure that there is a mechanism in place to trigger eye exams on an annual basis.

Hearing Impairment

Owing to the slow, insidious development of hearing impairment, surveys to identify older adults with hearing impairment often suffer from underreporting on self-report instruments. The latest version of the NHANES included audiometric testing in older adults and found a prevalence rate of 45.6% in those between 70 and 74 years, and 80% of adults 85 years and older have disabling hearing loss (Blazer et al., 2016; Lin et al., 2013; National Institute on Deafness and Other Communication Disorders [NIDCD], 2018). Hearing loss has been found to be greater in men and progresses more quickly than in women (Chao & Chen, 2009, 2018). And less than a third of those who could benefit from a hearing aid have ever used them (NIDCD, 2018). This dramatic increase in prevalence rates is magnified in the nursing home population. Prevalence rates of hearing impairment in the nursing home are similar to rates of visual impairment, at approximately 24% (Warnat & Tabloski, 2006). When hearing is tested through audiometry, the prevalence rates increase to 42% to 90% (Bagai, Thavendiranathan, & Detsky, 2006; Cacchione et al., 2003; Tolson, Swan, & Knussen, 2002). The American Academy of Audiology defines hearing loss based on decibels or loudness and the Hertz or the pitch of sound. Normal speech is in the 0 to 25 dB range, mild hearing loss is defined as hearing between the 26-40 dB range. Hearing loss between the 41-55 dB range is moderate; 56-70 dB is considered moderately severe and 71 to 90 dB is severe hearing loss. Hearing loss 91 dB and over is considered profound hearing loss (Clark, 1981). Aging impairs the processing of sound through the ear canal peripherally as well as through central auditory processing, making it more difficult to hear the higher frequencies, including women's and children's voices (Patel & McKinnon, 2018).

Assessment of Hearing

Despite the U.S. Preventive Services Task Force not having sufficient evidence to recommend routine hearing screening in older adults, it is essential that older adults are assessed for hearing impairment (Bainbridge & Wallhagen, 2014; Wallhagen & Reed, 2018). Older adults with age-related hearing loss (ARHL) have greater difficulty hearing consonants within words that convey the meaning within a word, are used to separate syllables, and indicate separation of words (Patel & McKinnon, 2018). Often, it is easy to determine when an older adult is hard of hearing just by having a conversation with him or her. The older adult may lean in closer in an attempt to hear better, turn the head to the "good ear," or cup a hand behind the ear. Older adults may have to ask for things to be repeated; they may report having trouble hearing their grandchildren's or others' high-pitched voices. Older adults often complain that people are mumbling. Any or all of these signs may be present. Regardless of whether any of these signs are present, all older adults should have their hearing screened annually at their primary care visit (Patel & McKinnon, 2018). Primary care providers play an important role in screening for hearing loss and making appropriate referrals for older adults for an evaluation by a specialist (Patel & McKinnon, 2018). Methods of screening are described herein.

Hearing Handicap Inventory for the Elderly—Screen

The Hearing Handicap Inventory for the Elderly—Screen (HHIE-S; Ventry & Weinstein, 1983) is a 10-item scale used to determine how hearing is impacting an older adult's daily life and to assist in identifying who might benefit from a hearing aid and an audiology referral. The scale takes approximately 5 minutes to complete and is targeted for community-dwelling older adults. This scale is available online through the Hartford Foundation Institute for Geriatric Nursing "Try This: Best Practices in Care for Older Adults" (Demers, 2001). The HHIE-S has reported excellent sensitivity and specificity for severe hearing loss, but the sensitivity and specificity decrease as the level of hearing impairment lessens (Adams-Wendling, Pimple, Adams, & Titler, 2008).

Whisper Test

The whisper test involves covering the tragus of the opposite ear canal, and, from a distance of 2 feet, whispering a three-syllable word or a combination of three letters and numbers on an exhale. The person being tested then either correctly or incorrectly repeats the word or letter–number combination back (Strawbridge & Wallhagen, 2017). An incorrect response triggers a repeat attempt to see whether the older adult can identify a different three-syllable word or number–letter combination. The consistency of the level of the whispered word makes this test difficult to compare from examiner to examiner (Strawbridge & Wallhagen, 2017).

Finger Rub Test

Nurses can perform this quick and reliable assessment in any quiet setting (Wallhagen & Reed, 2018). With the person seated comfortably in the chair, the tester stands behind the person, and first rubs his or her fingers together next to the seated person's ear, one ear at a time, to familiarize the person with the sound. Then, the tester performs a finger rub test with his or her arms extended approximately 27 inches on each side (Strawbridge & Wallhagen, 2017). The person being tested has three trials to hear the finger rub on each ear. They must successfully hear the sound either on the first or second finger rubs even though three trials are performed. If they do not hear a finger rub on the first two trials, it is considered a positive screen for possible hearing loss. This test has a sensitivity of 91% and a specificity of 68%, and a positive predictive value of 88% and a negative predictive value of 74% (Strawbridge & Wallhagen, 2017).

Handheld Audioscope

The handheld audioscope is a device developed to specifically screen for hearing impairment. It has a test tone that is presented at the 60-dB level. The decibel levels that may be tested include the 20-, 25-, and 40-dB levels at the 500-, 1,000-, 2,000-, and 4,000-Hz levels (Strawbridge & Wallhagen, 2017). The audioscope has an otoscope that allows for the direct inspection of the tympanic membrane or cerumen impactions, which can result in conductive hearing loss present in up to 30% of older adults (Lewis-Cullinan & Janken, 1990; Yueh, Shapiro, MacLean, & Shekelle, 2003). Testing using the audioscope should be performed in a quiet setting and may not be as useful in the long-term care environment with high noise levels. Strawbridge and Wallhagen (2017) recommend screening in the primary care setting using the finger rub test or a direct question: "Do you feel you have any difficulty with your hearing?" If they fail the finger rub test or answer yes to the direct question, an otoscopic exam should be performed, and if cerumen is not blocking the canal, a referral for audiometry is indicated.

Pure Tone Audiometry

Pure tone audiometry is the gold standard of hearing tests, particularly if completed in a soundproof booth with 92% sensitivity and 94% specificity in detecting sensorineural

hearing loss (Frank & Petersen, 1987). Pure tone audiometry allows for testing of a wide range of decibels and Hertz levels, or loudness and pitch or frequencies, allowing for testing in the 5- to 120-dB range and 250 to 4,000 Hz. Portable pure tone audiometers with noise-reduction earphones are available and can be used in the community, outpatient, and long-term care settings when access to an audiologist is limited. This wide range of tones allows for a better understanding of the individual's functional hearing. Pure tone audiometry by an audiologist is the next step after screening has identified a hearing deficit (Strawbridge & Wallhagen, 2017).

Hearing Changes Common in Older Adults

Conductive hearing loss usually involves abnormalities or injury to the middle or external ear, including the ear canal, tympanic membrane, and ossicular chain of bones in the middle ear; air conduction thresholds will be higher than bone conduction thresholds (Blazer et al., 2016). Causes of conductive hearing impairment include cerumen impactions or foreign bodies, ruptured eardrum, otitis media, and otosclerosis (Wallhagen et al., 2006; Yueh et al., 2003).

Sensorineural hearing loss is the most common form of hearing loss in older adults and is identified when air conduction and bone conduction thresholds are similar but below normal hearing (Blazer et al., 2016). Sensorineural hearing loss involves damage to the inner ear, the cochlea, or the fibers of the eighth cranial nerve. The hearing loss is usually a bilateral, progressive onset, and is caused by gradual loss of hair cells and fibrous changes in the small blood vessels that supply the cochlea. Risk factors include heredity, environmental exposure, free radical, and mitochondrial DNA damage (Huang & Tang, 2010, National Institute on Aging [NIA], n.d.). Sudden sensorineural hearing loss can occur rapidly or over a period of 3 days. It is a medical emergency, and an individual should seek medical attention immediately (NIA, n.d.).

Central auditory processing disorder is an uncommon disorder, with prevalence ranging from 0.75% to 14.3% (Gates, Cooper, Kannel, & Miller, 1990; Quaranta et al., 2014). This disorder is defined as difficulties in the perceptual processing of auditory information in the central nervous system and the neurobiological activity that underlies the processing and gives rise to the electrophysiologic auditory potentials (Atcherson, Nagaraj, Kennett, & Levisee, 2015). Older adults with this condition have an inability to process incoming signals and may be found among patients with stroke and other neurological conditions such as Alzheimer's disease and Parkinson's disease (Atcherson et al., 2015). The person's hearing is often intact, but his or her ability to process the sound is impaired, resulting in impaired speech understanding (Quaranta et al., 2014). Persons with central auditory processing changes have been identified through the following behavioral tests: speech-in-noise processing, dichotic processing, and temporal processing (Atcherson et al., 2015).

Tinnitus, otherwise known as *ringing in the ear*, is the perception of sound without an external source and has an estimated prevalence of 10% to 15% (NIDCD, 2017e; Tunkel et al., 2014). There are two classifications of tinnitus: primary or secondary. Primary tinnitus is idiopathic or associated with sensorineural hearing loss. Secondary tinnitus is associated with a specific underlying cause or condition (Tunkel et al., 2014). Subjective ringing in the ears may fluctuate and can be caused by noise-induced damage to the hair receptors of the cochlear nerve and age-related changes in the organs of hearing and balance. Secondary tinnitus can be caused by hormonal changes, thyroid disorders, and tumors (NIA, n.d.; Tunkel et al., 2014). Patients with tinnitus should be referred to an ear, nose, and throat (ENT) specialist.

Ménière's disease is characterized by fluctuating hearing loss, dizziness, vertigo, tinnitus, and a sensation of pressure in the affected ear (Hussain, Murdin, & Schilder, 2018; NIDCD, 2017b). Ménière's disease typically begins between ages 40 and 60 years, and sometimes it resolves on its own (NIDCD, 2017b). Unfortunately, the fluctuating hearing loss can become permanent hearing loss over time. Possible causes of Ménière's disease include vascular constriction similar to that found in migraines, as well as viral infections, allergies, and autoimmune disorders, and may have a genetic component as Ménière's disease tends to run in families (NIDCD, 2017b). Persons who report the previous signs and symptoms should be referred to an otolaryngologist.

Implications of Hearing Changes

Older adults who have hearing impairment experience a decreased quality of communication, social isolation, low self-esteem, and generally lower quality of life. More recently, older adults with hearing impairment have been identified as being at higher risk of poor physical functioning, falls, healthcare expenditures, and dementia, as well as higher mortality rates (Goman & Lin, 2018; Karpa et al., 2010; Lin et al., 2013; Tahden, Giesler, Meis, Wagener, & Colonius, 2018). Decreased hearing impacts an individual's word recognition, decreasing the ability to communicate. This, in turn, can lead to significant safety issues. For example, if patient education about medication

administration is provided only verbally, key information can be misheard and misinterpreted. Difficulty understanding the spoken word can lead to fatigue and speech paucity of friends and loved ones, decreasing social engagement (Tahden et al., 2018).

Speech paucity is described as decreased attempts to have meaningful conversations because of the difficulty in getting the message through to a hearing-impaired loved one. Speech paucity (Wallhagen et al., 2006) leads to social isolation of the hearing impaired because only the necessary information is transferred and no everyday social information is shared (Wallhagen et al., 2004). This can lead to depression and low self-esteem in the hearing-impaired individual and the partner. Other factors that lead to social isolation in hearing-impaired older adults include the inability to hear the phone or the doorbell ringing or knocking at the door.

Ideally, older adults who develop hearing loss will see an audiologist and obtain unilateral or bilateral hearing aids or other audiological interventions to improve their ability to communicate with the people around them. Unfortunately, the stigma, cost, and delay in pursuing hearing aids are barriers to their success. Hearing aids should be pursued early in the course of hearing impairment. For example, hearing aids can be very helpful when hearing is impaired to the point that background noise interferes with understanding the spoken word. Success in using hearing aids at this level of hearing improves the chance that older adults will continue with hearing aids. Once an individual is offered a hearing aid, hearing rehabilitation should accompany the hearing-aid dispensing; this will increase the use of the hearing aid and positively impact his or her independent living and quality of life (Bainbridge & Wallhagen, 2014; Tahden et al., 2018). Once older adults become used to the silence, it is hard to adapt to the increased ambient noise heard with hearing aids. Often, older adults require extensive coaching from an audiologist to get through the transition phase of wearing hearing aids. Technological advancement has resulted in analog hearing aids that can be finely tuned to the individual's needs (Bainbridge & Wallhagen, 2014). In one intervention group of older adults fitted with hearing aids, 98% experienced benefit, and their caregivers perceived significant benefit as well (Tolson et al., 2002). University settings are often the most cost-effective locations to pursue hearing aids. The cost of hearing aids is an important factor because most insurance plans, including Medicare, do not cover hearing aids, but will cover cochlear implants.

Osseointegrated auditory implants are approved in the United States for unilateral hearing loss or those with conductive/mixed hearing loss (Blazer et al., 2016; Patel & McKinnon, 2018). These devices are similar to bone-anchored hearing aids (BAHA) that were developed following patients with dental implants reporting perceptions of sound through their dental implants (Patel & McKinnon, 2018). Older adults experience improved hearing and speech recognition in noisy settings but no improvement on sound localization after being fitted with a BAHA (Kim et al., 2017). As a result, they have become an alternative to traditional hearing aids in specific cases to improve function and quality of life in persons with unilateral conductive or mixed hearing loss (Kim et al., 2017; Patel & McKinnon, 2018).

Cochlear implants are another technological advancement that has demonstrated positive outcomes in profoundly deaf or severely hard-of-hearing older adults in the areas of speech recognition (NIDCD, 2017a). Cochlear implants are an effective intervention for older adults who do not benefit from amplification (Patel & McKinnon, 2018). A cochlear implant works by bypassing the damaged parts of the ear and stimulating the auditory nerve. These impulses are sent to the brain through the auditory nerve, and the brain recognizes them as sound (NIDCD, 2017a). Severe hearing impairment must be present unilaterally or bilaterally before this surgical intervention, under general anesthesia, is considered. In one study, cochlear implants were found to improve the ability to understand speech (NIDCD, 2017a). Currently, there is only evidence for unilateral cochlear implants in profoundly deaf adults rather than bilateral cochlear implants because of limited functional gain (Patel & McKinnon, 2018). Despite these improvements, relatively few adults have received this new technology. As of 2012, according to the U.S. Food and Drug Administration, nearly 58,000 adults have received cochlear implants (NIDCD, 2017a). Older cochlear implant users show greater confidence and participation in social situations than prior to their cochlear implant (Patel & McKinnon, 2018).

Smell and Taste

Smell and taste are two senses that are difficult to separate because they overlap, particularly when food is involved. These two senses are dependent on chemosensation, the ability of the nose, mouth, and throat to identify tastes and smells based on chemical reactions through receptors in the nasal airway; retronasal air flow; and taste buds on the tongue, palate, oropharynx, larynx, upper esophagus, and intestine (DeVere, 2017). Smell and taste ability decline later in life, with more than 75% of persons over age 80 exhibiting a significant decline in smell and taste (Doty, 2018). Often, when people go to their primary care provider as a result of having lost their sense of taste, they are

surprised to learn that they have a smell disorder instead (Doty, 2018). The sense of smell and ability to identify odors decrease owing to normal changes in aging. This can be problematic for safety reasons. One study found that persons who could not smell, anosmics, were three times more likely than those who could smell (normosmics) to have experienced a potentially life-threatening event, including ingestion of spoiled food or failure to detect smoke or leaking natural gas (Pence, Reiter, DiNardo, & Costanzo, 2014). Studies have also linked the loss of smell to Alzheimer's disease and Parkinson's disease (Devanand, 2016; Doty, 2017; Mesholam, Moberg, Mahr, & Doty, 1998; Vasavada et al., 2015). Taste problems are rare, with less than 20% of patients with altered taste actually having a primary taste disorder (DeVere, 2017).

Changes in Smell and Taste Common to Older Adults

There are four types of olfactory disorders: (a) *Hyposmia* is the reduction of the sense of smell, (b) *parosmia* is the distortion in the sense of smelling the presence of an odor, (c) *anosmia* is no sense of smell, and (d) *phantosmia* is the perception of an odor when no odor source is present (Doty, 2017; NIDCD, 2017c). Olfactory disorders impact quality of life and increase mortality in older adults (Devanand et al., 2015; Pinto et al., 2014). Common complaints from people with olfactory disorders include difficulty with cooking, decreased appetite, eating spoiled food, too little perception of body odor, and inability to detect gas leaks or smoke (DeVere, 2017).

Because of the impact disorders of taste and smell have on quality of life and mortality, it is important to take a complete history and physical examination with older adults. A thorough cranial nerve exam and head and neck examination should be included. In addition, neurological disorders such as head trauma, multiple sclerosis, Parkinson's disease, and Alzheimer's disease negatively impact smell (DeVere, 2017). If an older adult has a subjective complaint of decreased sense of smell or if an olfactory disorder is identified, the individual should be referred to an otorhinolaryngologist by the primary care provider.

Most changes in taste are thought to occur because of an oral condition, xerostomia (dry mouth), decreased sense of smell, medications, diseases such as diabetes, gastroesophageal reflux disease, hypothyroidism, liver and kidney disease, malnutrition, and tobacco use (DeVere, 2017; Doty, 2018). However, a thorough neuro exam is indicated. Cranial nerves V, VII, IX, and X play an important role in taste and tongue sensation (DeVere, 2017). Dysgeusia is defined as a condition in which a foul, salty, rancid, or metallic taste sensation persists in the mouth and can be associated with burning mouth syndrome (NIDCD, 2017d). Additional taste disorders include hypogeusia, which is the decreased ability to taste sweet, sour, bitter, salty, or savory tastes; and ageusia, which is the inability to detect any tastes (NIDCD, 2017d). However, because of the poor outcomes for older adults with taste disorders, referral for treatment is indicated either to an otolaryngologist, neurologist, or a subspecialist at a smell and taste center (DeVere, 2017; Doty, 2018).

As with olfactory disorders, disorders of taste are often identified on history, not by physical examination. There are very few tests to assess for taste disorders. Therefore, the history is essential. Substance abuse, including tobacco, alcohol, and cocaine, should be reviewed. The individual's dietary habits should be reviewed. Questions regarding recent dental work or procedures should also be asked. Ascertaining whether the individual has a history of gastric reflux could reveal manageable conditions impacting taste. Other potential causes of taste disorders include upper respiratory and middle ear infections, radiation therapy for head and neck cancers, exposure to chemical and certain medications, head injury, and poor oral hygiene (DeVere, 2017). A thorough review of medications is fundamental in the evaluation of a taste disorder (Doty, 2018).

Diseases That Alter Taste Seen More Frequently as People Age

Burning Mouth Syndrome

Burning mouth syndrome is a burning pain that is burning, scalding, or tingling in the mouth that lasts months or longer (National Institute of Dental and Craniofacial Research [NIDCR], 2017). This syndrome is most common in middle-aged and older women and is difficult to diagnose and may require evaluation by a dentist who specializes in oral medicine or oral surgery (NIDCR, 2017). Primary burning mouth syndrome is thought to be a neurological condition. Secondary burning mouth syndrome can be caused by vitamin B deficiencies, local trauma, gastrointestinal disorders causing reflux, allergies, salivary dysfunction, oral candida, medications, and diabetes (NIDCR, 2017).

Xerostomia

Xerostomia, the sensation of dry mouth, is common with many systemic conditions, medical management, radiation therapy, and prescribed medications used for older adults (Anil et al., 2016), including anticholinergic medications, antidepressants, antihistamines, angiotensin-converting enzyme inhibitors, lipid-lowering agents, antiparkinsonian

medications, and anticonvulsants, to name a few (Anil et al., 2016).

Implications of Taste and Smell Changes

Inability to smell limits some of the pleasures of everyday life, decreasing quality of life. The smell of a spring rain, of a Christmas tree, of flowers, or of coffee brewing may not be detectable. Taste is diminished because of the inability to smell. Of significant concern in older adults who have smell and taste disorders is malnutrition. Appetite is detrimentally affected because of the inability to smell and taste the food. Inability to smell is a safety hazard because of the inability to smell smoke in a fire or a gas leak. Decreased sense of taste may also result in inability to recognize spoiled food, resulting in nausea, vomiting, or infectious diarrhea. Because decreased sense of smell is associated with neurodegenerative diseases and increased mortality (DeVere, 2017; Doty, 2018), it is important to investigate potential reversible causes for a person's decreased sense of smell.

Peripheral Sensation

Peripheral sensation describes the way in which nerves send signals back and forth from the extremities to the central nervous system and back again (National Institute of Neurological Disorders and Stroke [NINDS], 2019). Sensation is disrupted due to over 100 different types of peripheral neuropathies, and symptoms vary depending on the type of nerves affected: motor, sensory, or autonomic (NINDS, 2019). In an NHANES study of older adults, older than 70 to 79 years, 28% reported the loss of feeling in their feet; this increased to 35% in adults older than 80 years (Dillon et al., 2010). Unfortunately, poor nerve function can increase late-life disability (Ward et al., 2014). Common disorders that increase the risk of peripheral neuropathy include diabetes; alcoholism; autoimmune disorders; osteoporosis with compression fractures; peripheral vascular disease; infections; nutritional deficiencies, particularly of vitamins (e.g., thiamine and B12); malignancies; and chemotherapy agents (NINDS, 2019). Mechanoreception (sense of touch) and thermoception (sense of temperature) along with pain provide critical environmental information that can be protective (Heft & Robinson, 2017). Therefore, it is essential to take complaints about decreased peripheral sensation seriously. Therefore, owing to the multitude of risk factors for peripheral neuropathy, a neurology consultation is recommended for complicated presentations of peripheral neuropathy to help determine the appropriate evaluation and management of the condition.

Changes in Peripheral Sensation Common to Older Adults

Conditions that alter peripheral sensation are seen more frequently as people age and include peripheral neuropathy, diabetic neuropathy, phantom limb pain, and acute sensory loss.

Peripheral Neuropathy. This is a heterogeneous group of disorders (Merkies, Faber, & Lauria, 2015) that present with nerve pain in the distal extremities related to nerve-fiber damage in the motor, large sensory, small sensory, and autonomic nerve fibers from underlying systemic illnesses, neurotoxic drugs, primary disorders of the immune system, and hereditary disorders (Merkies et al., 2015). The most commonly suspected causes are circulatory problems (peripheral vascular disease and diabetes) or vitamin deficiencies. Common vitamin deficiencies that impact peripheral nerves include thiamine and B12.

Diabetic Neuropathy. This is end-organ damage to the peripheral nerves from microvascular changes that occur with diabetes. It often leads to loss of sensation in the feet as well as balance and mobility deficits in diabetics, contributing to undetected skin trauma to the extremities and falls (Deshpande, Hewston, & Aldred, 2017). Diabetic neuropathy–related skin trauma often causes refractory infections because of poor vascular supply to the extremity. It is extremely important to teach diabetics and patients with peripheral neuropathy to provide special attention and care to their feet.

Phantom Limb Pain. This is the experience of pain that can range from dull ache to crushing pain where an amputated limb once was. The sensory cortex of the brain has influence in this mechanism. This pain is often chronic and requires special interventions for control and management, including electronic prosthetics, analgesics, and psychosocial support.

Acute Sensory Loss. Acute sensory loss may be caused by a stroke, acute nerve entrapment in the spine, traumatic nerve damage, or compartment syndrome, resulting from trauma to a limb. This sensory loss presents with acute onset of numbness, tingling, severe nerve pain, or lack of sensation and function in the affected extremity and is a medical emergency. Persons presenting with acute sensory loss should proceed to the nearest emergency department.

Implications of Peripheral Sensation Changes

Inability to recognize position sense, pressure, or to ascertain where feet are positioned on the floor can lead to falls,

burns, lacerations, calluses, and pressure ulcers. Intact peripheral sensation is essential for remaining safe in the environment.

Nursing Assessment and Care Strategies of Peripheral Sensation

Nurses should take appropriate health histories to ascertain the presence of decreased sensation or pain in limbs. In addition, a thorough inspection and physical examination of the individual's legs and feet or the affected extremity is also important. Diabetics and people known to have peripheral neuropathy should have thorough neurological exams, including vibratory sense with a tuning fork over bony prominences. The Semmes–Weinstein monofilament test is also recommended. This test was developed to identify persons at risk for neuropathic ulceration typically of the feet (Yildirim & Gunduz, 2015). Position sense and kinesthetic sense, the sense of movement, should also be tested (Landelle et al., 2018). A referral to neurology may be necessary for nerve conduction testing, which is the most important tool in the diagnostic workup of older adults with suspected peripheral neuropathy (Barrell & Smith, 2019).

Semmes–Weinstein Monofilament Test

This inexpensive simple procedure is used to screen for decreased sensation in several plantar sites on the foot. The Semmes–Weinstein monofilament is placed against the sole of the foot in eight different areas on the foot and not tested on calluses. The individual is asked to report when he or she perceives any sensations (Martinez-Hervás et al., 2017). The Semmes–Weinstein nylon monofilament 5.04 gauge buckles at a pressure of 10 g. Loss of sensation at this level of pressure indicates a risk for neuropathic ulcer development (Yildirim & Gunduz, 2015). Identification of this risk is important for improving the vigilance of foot care.

Vibratory Sense

This is assessed by using a 128-Hz vibrating tuning fork on a lower extremity bony prominence. The examiner places the vibrating tuning fork on the bony prominence and asks the individual whether he or she feels any vibration. Older adults should be able to feel the vibration.

Proprioception

This is the ability of individuals to determine where they are in space. To assess for deficits in proprioception in the feet that may set the older adult up for falls and local trauma, the examiner has the individual close his or her eyes and then holds the large toe on the sides and moves the toe up or down and asks the individual to identify which direction the toe was moved. Inability to correctly identify the direction is an indication of decreased proprioception.

CASE STUDY 8.1

Mr. Sweets is a 75-year-old African American male living by himself in the community. He lives in a senior apartment building, where he receives housekeeping services and can participate in a meal plan if he likes. He arrives on the acute care of the elderly (ACE) unit in your hospital with a diagnosis of hyperglycemia and a urinary tract infection. He also has a history of hypertension, hyperlipidemia, and osteoarthritis of the left hip. He is widowed and has three children: two live in the area, the other lives out of state. He is a retired aeronautical engineer. His medications include metformin, 1,500 mg daily increased from 1,000 mg; Zocor, 40 mg orally daily; lisinopril, 20 mg daily; hydrochlorothiazide (HCTZ), 25 mg daily; and Tylenol Extra Strength, 1,000 mg three times a day for his hip discomfort.

On your admission assessment, you discover that he remembers receiving verbal instructions to cut his diabetic pills in half. Thus, since that appointment, he has been taking only 500 mg of metformin instead of 1,500 mg. His primary care provider had instructed him to take one and one half tablets of his metformin, not just half a tablet. You were not sure whether this was just a misunderstanding or whether Mr. Sweets was having difficulty hearing. You are also concerned that his vision may be a problem as well because of his 5-year history of known diabetes.

After you complete taking your history, you gather your supplies to complete your physical exam. Your supplies include an audioscope; Lighthouse for the Blind Near Vision Screener; three plastic bags—one full of coffee, baby powder, and peppermint candies—a 128-Hz tuning fork; and a Semmes–Weinstein monofilament test. The audioscope reveals that Mr. Sweets's ear canals are completely occluded with cerumen and that he can hear only the test tone that is delivered at the 60-dB level. On the near vision screener, he scored 20/125 in both eyes with his dirty

(*continued*)

CASE STUDY 8.1 (*continued*)

glasses. Unfortunately, because his blood sugar currently is and has been elevated, it is unclear how much of the decreased vision is caused by his elevated blood sugar and how much is related to possible refractive error or diabetic retinopathy. Mr. Sweets was able to correctly identify each scent in the plastic bags. When you examine his feet, you identify that he has significant sensation loss on the bottom of his feet. He has intact vibratory sense in the ankle, but his vibratory sense is decreased in both great toes. His feet are currently free of any calluses, deformities, or open wounds. He does have some thickened toe nails.

Discussion

These assessments impact the care plan for Mr. Sweets. His sensory deficits most likely precipitated his hospital admission. Written instructions may have helped prevent this, but his near vision may have interfered with the understanding of the written directions as well. He should have written instructions in large font, because of his vision, ideally in 14- to 16-point type. Because of bilateral cerumen impactions, he will need to begin using cerumen softening drops and have the cerumen removed with a cerumen spoon or irrigation after a few days. If this is not successful, he may need to be seen by an otolaryngologist (ear–nose–throat [ENT] physician) to have the cerumen removed. If his hearing is still impaired after the cerumen is removed, Mr. Sweets should see an audiologist.

Based on your history, he was last seen by an ophthalmologist 3 years ago. He should be seen by an ophthalmologist to determine whether any treatments for his diabetic retinopathy are necessary. He should receive anticipatory guidance to see an ophthalmologist every 6 months to yearly because of his diabetes. He would qualify for low-vision services if his acuity remained at 20/125. He would also benefit from increased contrast. Older adults with diabetic retinopathy often need enhanced contrast. This can be achieved by adding red to light-colored fixtures and white to dark-colored fixtures, remote controls, and other electrical devices that are usually solid colors with limited contrast. A low-vision specialist could be very helpful here to make his home environment safe and user friendly.

Mr. Sweets should be evaluated by a diabetic foot nurse and a podiatrist to have his nails trimmed and to learn more about foot care. He will need to learn how to complete daily foot inspections as well as assistance learning what type of footwear is appropriate for his feet. His hip may cause him some difficulty reaching his feet. It will be important for him to use mirrors and palpation to assist him in his self-care. A diabetic nurse educator can assist him with further information on the management of the disease and empower him to ask more questions and clarify when information does not appear compatible with what his symptoms are.

Mr. Sweets was discharged from the hospital after 4 days. His metformin was increased to 1,500 mg; he is afebrile and discharged on oral antibiotics for his urinary tract infection. He had his glasses cleaned and ears cleaned out over those 4 days, so his hearing has improved to where he can hear at the 40-dB level. He has an appointment to see the audiologist. An appointment was also made for ophthalmology. Follow-up appointments have also been made with the endocrine staff, with the diabetic nurse educator, and diabetic foot nurse on the same visit. These appointments were written out on a 4- by 6-inch index card with a black marker that he could read with his glasses. Sensory impairment is an interprofessional healthcare problem. Good communication among disciplines is essential in maintaining Mr. Sweets's functional status and ability to stay in the community. Nurses are best prepared to help Mr. Sweets navigate and coordinate visits to the other disciplines. Screening completed by nurses either in the community, acute care, or long-term care settings can identify problems that have often been passed off by the older adult as the result of normal aging.

SUMMARY

Older adults, owing to normal changes of aging, chronic disease, and environmental factors, are prone to changes in their vision, hearing, sense of smell, taste, and touch. It is imperative that nurses assess for and enhance older adults' senses when possible to decrease the negative sequelae of sensory impairment. Sensory impairment has been linked to negative outcomes in older adults, including poor health literacy, cognitive impairment, falls, other safety risks such as eating spoiled food due to not smelling, and increased risk of death. Individualized-Sensory Enhancement for the Elderly provides a framework within which to address sensory impairment in older adults. This framework includes first assessing an older adult's sensory status, then recommending referrals as indicated, followed by assisting older adults with improving their environment, and using their adaptive equipment to improve the quality of their lives.



NURSING STANDARD OF PRACTICE

Protocol 8.1: Sensory Changes

I. OVERVIEW

The Individualized-Sensory Enhancement of the Elderly (I-SEE) program was developed to tailor nursing interventions to the type and level of sensory impairment experienced by the older adult (Cacchione, 2007). Originally developed to address hearing- and visually impaired older adults, the I-SEE can logically be extended to address sensory impairment in smell, taste, and peripheral sensation. There are three levels to the I-SEE program: nursing assessments, nursing actions, and nursing referrals.

II. NURSING SENSORY ASSESSMENTS

A. History
   1. Ask questions about changes in hearing, vision, sense of smell, and taste, as well as any numbness and tingling in extremities.
   2. Review medications that may be exacerbating the sensory problem, such as anticholinergic medications, antibiotics, aminoglycosides, and high-dose aspirin.
   3. Determine whether symptoms occurred suddenly or gradually.
   4. Clarify whether symptoms are unilateral or bilateral.
   5. Inquire whether the individual has had any prior treatment for sensory conditions.
   6. Ascertain whether sensory conditions interfere with daily function.
   7. Ask about ability to drive; both daytime and nighttime driving can be impacted by visual impairment as well as hearing and the peripheral nervous system.
   8. Determine interest in receiving treatment for these conditions.

B. For each positive symptom reported, gather more information by asking about the following: character, associated symptoms, radiation, location, intensity, and duration, as well as what makes it better, what medications the individual has tried for these symptoms, and what makes it worse. These questions can be easily remembered by using the acronym CAR LID BMW. Answers to these questions provide a better understanding of the individual's concerns.

III. PHYSICAL EXAM FOR ALL SYSTEMS

A. Inspect the external structures of the eyes and ears; examine the ear canal for cerumen using an otoscope.
B. Check visual acuity with a near vision screener and distance acuity measure and contrast sensitivity.
C. Perform whisper test to assess rough hearing. If available in your setting, use a handheld audioscope to assess up to 40-dB hearing. If a greater range of hearing testing is needed, use a portable audiometer with noise-reduction earphones—a referral to audiology may be indicated.
D. Assess the nares; determine whether they are patent using the otoscope.
E. Inspect the mouth and tongue for any obvious lesions, odors, or deviations from normal.
F. Perform a neurosensory exam of the extremities, including a monofilament test.
G. Complete a monofilament test on all diabetics. This test quantifies the level of sensory impairment in the feet of patients with diabetes.
H. Assess vibratory sense of the extremities with a 128-Hz tuning fork and proprioception.

IV. NURSING ACTIONS AND REFERRALS

A. Vision
   1. Avoid disruption in the management of chronic eye conditions by obtaining past history and ensuring continuation of ongoing regimens such as eye drops for glaucoma.
   2. Notify the primary care provider of any acute change in vision.

(*continued*)

Protocol 8.1: Nursing Standard of Practice (*continued*)

3. Encourage the use of good lighting in patient rooms. Avoid glare whenever possible.
4. Encourage the use of the patient's eyeglasses. Have family provide lighted magnification if needed. (These are the large magnifiers with a light attached; available for purchase on a sliding scale at low-vision centers.)
5. Add contrast to the fixtures and electronics in the room if light switches blend into the wall or faucets blend into the sink. Other low-contrast items in the environment include remote controls, television sets, and radios.
6. Encourage annual eye exams either with an optometrist or ophthalmologist.
7. Schedule an annual dilated exam for patients with diabetes and hypertension by an ophthalmologist.
8. Written materials should be provided in at least 14- to 16-point high-contrast fonts with generous white space to improve visual tracking.
9. Encourage use of adaptive equipment.
10. Reinforce referrals for low-vision intervention.

B. Hearing
1. Assess for cerumen impactions. Request cerumen softening drops followed by cerumen removal or ear, nose, and throat consultation.
2. Get the person's attention and face him or her before speaking to assist the individual with lip reading; if female, consider wearing red lipstick to increase the contrast of your lips, a common compensatory mechanism for older adults.
3. Have at least one pocket amplifier on the nursing unit to use with hard-of-hearing individuals.
4. Do not shout at people with hearing impairments, but rather use lower tones of your voice.
5. Provide written instructions (use thick, black marker if person is also visually impaired).
6. Encourage use and ensure appropriate care for hearing aids: remove batteries at night; use brush provided to gently clean the tubes to reduce wax accumulation. Before sending bed linens or clothing to the laundry, determine whether the patient's hearing aid is in his or her ear or in its designated location (bedside table or medication cart).
7. Notify the primary care provider of any sudden change in hearing, including tinnitus or sensations of fullness.
8. Referral to audiologist and/or ENT as indicated (e.g., complicated cerumen impactions, new-onset tinnitus, or vertigo).
9. Encourage use of adaptive equipment, particularly in social settings.

C. Taste and smell
1. Take all complaints of inability or decreased ability to smell or taste seriously. Do not pass them off to medications or poor dentition.
2. Notify the primary care provider of an abrupt change in taste or smell.
3. ENT referral for evaluation for change in smell or taste.
4. Patient teaching should focus on safety issues with odors of gas and spoiled food.
5. Educate seniors to have smoke and carbon monoxide detectors in their homes, date all food in the refrigerator, and evaluate food with methods other than sense of smell and taste.

D. Peripheral sensation
1. Educate every older adult to examine his or her feet daily, as well as to look inside his or her shoes before putting them on each day.
2. Educate the older adult to always wear shoes or protective slippers when he or she is ambulating to avoid unintentional injury to his or her feet.
3. The individual should be instructed to inform his or her primary provider of any lesions, calluses, or red areas.
4. Extremities should be kept clean and thoroughly dry before applying lotion.
5. Encourage the individual to bring in footwear for evaluation by the advanced practice nurse if he or she has concerns about safety. Most medical supply companies carry diabetic healing shoes that have wide toe boxes and Velcro straps that can be purchased for less than $50.
6. Refer diabetics to facilities with certified diabetes educators and foot care specialists.
7. Implement fall precautions and initiate referral to physical therapy for all diabetics with peripheral neuropathy.

(*continued*)

Protocol 8.1: Nursing Standard of Practice (*continued*)

8. Refer all older adults with decreased sensation or circulation to a podiatrist or foot care specialist for ongoing foot care.
9. Encourage a diet rich in thiamine and B12.

V. EXPECTED OUTCOMES

A. Baseline visual acuity and hearing acuity for all older patients will be performed before discharge from the hospital, and on admission to home care or nursing home.
B. Fall precautions should be in place for all older patients with sensory impairments. Older adults should avoid falls and injuries to extremities if they have decreased sensation of lower extremities.
C. Accidental exposure to toxins, either in the air or in food because of decreased sense of smell or taste, should be avoided.

VI. FOLLOW-UP MONITORING

A. Annual vision assessment: Medicaid in most states will pay for a new pair of eyeglasses every 2 years.
B. When vision is worse than 20/125, individuals should be referred to a low-vision specialist to provide training in the use of visual assistive devices.
C. Given that hearing can change significantly over time, an audiological evaluation for hearing-impaired older adults every 2 years is important. Primary care annual visits should ask about hearing impairment, complete an audioscope evaluation, and refer to audiology for positive screens for hearing loss. Some states will pay through Medicaid for one hearing aid under limited conditions. Hearing aids have been shown to be better accepted if older adults receive them when they start having difficulty with word finding with background noise. Encouragement and hearing rehabilitation are needed to improve the consistent use of hearing aids. Audiologists can help train older adults and their families in the use of hearing aids.
D. When abrupt changes in smell or taste are reported, a referral to a dentist or ENT is indicated.
E. Long-term adjustments must be made in the home when smell and taste are affected. First, food should be dated and discarded after 48 hours to avoid accidentally eating spoiled food. Smoke and carbon monoxide detectors must be present.
F. When xerostomia (severe dry mouth) is found, a referral to a dentist is indicated.
G. Older adults with decreased peripheral sensation should be referred to neurology for an accurate diagnosis and followed regularly by a podiatrist or foot care specialist.

VII. INTERPROFESSIONAL CARE OF SENSORY CHANGES

A. Care of the aging senses is an interprofessional endeavor. Nurses who frequently have the most contact with clients can take the lead in assessing and screening older adults for decreased sensory function.
B. Once these deficits are identified, it is important to take the appropriate steps and identify the resources available to the older adult.
C. Occupational therapists, low-vision specialists, audiologists, nutritionists, otolaryngologists, and neurologists are just some of the interprofessionals who may be part of the team caring for the sensory-impaired older adult.
D. Good communication among disciplines is essential to assist the older adult in benefitting from each specialist.

ABBREVIATIONS

ENT	Ear, nose, and throat
I-SEE	Individualized-Sensory Enhancement of the Elderly

RESOURCES

Related Professional Organizations and Informational Sites

Administration on Aging
http://www.aoa.gov

American Diabetes Association
www.diabetes.org

American Speech–Language-Hearing Association
http://www.asha.org

Assisted Listening Devices: Summary of available assisted listening devices
http://www.asha.org/public/hearing/treatment/assist_tech.htm

Cochlear Implants

General information including video on cochlear implants
www.fda.gov/medical-devices/implants-and-prosthetics/cochlear-implants

Foundation for Peripheral Neuropathy

Supports consumers and their families who suffer from peripheral neuropathy
www.foundationforpn.org

Hear Now

Will accept donated hearing aids to refit for the underserved
http://www.starkeyhearingfoundation.org/hear-now

The Lighthouse for the Blind

Consumer and health professional information on visual impairment and dual impairment; will accept donated hearing aids to refit for the underserved
http://www.lighthouse.org

Lighting Research Center

Consumer, builder, and health professional information on lighting
http://www.lrc.rpi.edu/programs/lightHealth/AARP/index.asp

The National Eye Institute

Contains health information for consumers and health professionals; also has images of eye diseases and eye charts
http://www.nei.nih.gov

National Institute on Aging Information Center
http://www.nia.nih.gov

National Institute on Deafness and Other Communication Disorders

Contains information for healthcare providers and consumers
http://www.nidcd.nih.gov

National Institute on Neurological Disorders and Stroke

Contains information for healthcare providers and consumers on peripheral neuropathy
http://www.ninds.nih.gov

Talking Tapes

Access to talking books for visually impaired older adults
www.loc.gov/programs/national-library-service-for-the-blind-and-print-disabled/about-this service

For Patients and Families

Aging in the Know

Your gateway to health and aging resources on the web. Created by the American Geriatrics Society Foundation for Health in Aging (FHA).
www.healthinaging.org

American Tinnitus Association
www.ata.org

Hearing Loss Association of America
www.hearingloss.org

League for Hard of Hearing
http://www.lhh.org

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Assessing Cognitive Function in the Older Adult*

Donna M. Fick, Pieter Heeren, and Koen Milisen

9

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Discuss the importance of assessing cognitive function.
2. Describe the methods of assessing cognitive function.
3. Compare and contrast the clinical features of delirium, mild cognitive impairment, dementia, and depression.
4. Incorporate the assessment of cognitive function into daily practice.

OVERVIEW

Cognitive function comprises perception, memory, and thinking—the processes by which a person perceives, recognizes, registers, stores, and uses information (Foreman & Vermeersch, 2004). Although alterations in cognitive functioning are inherent to aging, there are criteria that define pathological conditions, such as delirium, mild cognitive impairment, dementia, and depression (American Psychiatric Association [APA], 2013). These disorders have diverse clinical features and causes, but are all characterized by decline from a previously attained level (Sachdev et al., 2014). Clinicians often fail to detect these disorders in older adults, when using only routine history and standard examination (Burton et al., 2012; Douzenis et al., 2010; Torisson, Minthon, Stavenow, & Londos, 2012). This might have serious consequences that include missed opportunities to treat correctable conditions that are impacting the older adult's daily life and to minimize or prevent unfavorable outcomes such as functional decline and death (Bradshaw et al., 2013; Torisson et al., 2012). Assessing cognitive functioning is paramount for the early detection of pathological conditions and for monitoring the effectiveness of interventions (McCarten et al., 2012). The Aging, Demographics, and Memory Study (ADAMS) estimates the prevalence of cognitive impairment of all types to be 14% in people older than 71 (Alzheimer's Association, 2018). Additionally, the Age-Friendly Health Systems initiative, whose goals include making at least 20% of all health systems age friendly by 2020, uses the 4Ms Framework, which includes *mentation* (the prevention, identification, and management of delirium, dementia, and depression across care settings) as an essential dimension of quality care for older adults (Allen & Ouslander, 2018; Fulmer, Mate, & Berman, 2018; Institute for Healthcare Improvement, n.d.).

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

BACKGROUND AND STATEMENT OF PROBLEM

Declines in cognitive function are a hallmark of aging (Gutta & Howell, 2018); however, most declines in cognition with aging have no or minor clinical impact, are not pathological, and do not necessarily indicate signs of neurodegenerative diseases such as Alzheimer's disease (Blazer, Yaffe, & Liverman, 2015). Examples of nonpathological changes include a diminished ability to learn complex information, a delayed response time, and minor loss of recent memory; declines are especially evident with complex tasks or with those requiring multiple steps for completion (Gutta & Howell, 2018). Older adults are diverse and have a lifetime of factors that may impact cognition, and thus, cognitive aging is also diverse, and cognitive functioning levels often vary by individuals and throughout the life span. Additionally, it is important to keep in mind that cognitive impairment and dementia involve much more than just memory problems and forgetfulness and that impairment may present as issues with behavior; ability to do what used to be familiar tasks; or other issues with language, thinking, or changes in behavior (Blazer et al., 2015).

Pathological conditions of cognitive impairment that are prevalent with aging include delirium, mild cognitive impairment, dementia, and depression (depression can also be present without cognitive impairment; please see Table 9.1 for a comparison of the clinical features). Chapters 19, 20, and 21 describe these conditions more

TABLE 9.1

A Comparison of the Clinical Features of Delirium, Mild Cognitive Impairment, Dementia, and Depression

Clinical Feature	Delirium	Mild Cognitive Impairment	Dementia	Depression
Onset	Sudden/abrupt (can be days, hours, or weeks); depends on cause; often at twilight but can occur at any time of day	Insidious/slow; often unrecognized, as impairment does not interfere with daily activities	Insidious/slow but recognizable, as impairment interferes with daily activities; depends on cause	Often coincides with major life changes; often abrupt, but can be gradual
Course	Short; diurnal fluctuations in symptoms; worse at night, in darkness, and on awakening	Long; no diurnal effects, symptoms can improve, stabilize, or progress, yet relatively stable over time, may see deficits with increased stress	Long; no diurnal effects, symptoms progressive yet relatively stable over time, may see deficits with increased stress	Diurnal effects, typically worse in the morning; situational fluctuations in symptoms, but less than that with delirium
Progression	Abrupt	Variable: possibly absent or slow but uneven	Slow but uneven	Variable, rapid, or slow, but generally even
Duration	Several hours to less than 1 month; longer if unrecognized and untreated (sometimes untreatable) and can be persistent or lead to dementia	Months to years	Months to years	At least 2 weeks, can be several months to years
Consciousness	Disturbed	Clear	Clear—possibly disturbed in advanced dementia	Clear
Alertness	Fluctuates from stuporous to hypervigilant	Normal	Normal—possibly disturbed in advanced dementia	Often disturbed
Attention	Inattentive, easily distractible; the person cannot focus on an idea or task. Often considered a "hallmark sign of delirium"	Generally normal; if attention is affected, the person might have difficulties with complex-attention tasks (e.g., complex-problem solving)	Generally normal, depending on the cause; shifting from one (rather simple) attention task to another can be problematic	Often disturbed

(*continued*)

TABLE 9.1

A Comparison of the Clinical Features of Delirium, Mild Cognitive Impairment, Dementia, and Depression *(continued)*

Clinical Feature	Delirium	Mild Cognitive Impairment	Dementia	Depression
Orientation	Generally impaired; disoriented to time and place, should not be disoriented to person	Generally normal	Generally disturbed—impaired in advanced dementia	Selective disorientation
Memory	Recent and immediate impairment, unable to recall events of hospitalization and current illness, forgetful, unable to recall instructions	If memory is affected, mild declines in memory (misplacing things, repeating questions, having troubles keeping track of dates/appointments)	Major declines in memory (unable to recall recent events)	Selective or "patchy" impairment, "islands" of intact memory, recall better if cued, evaluation often difficult because of low motivation
Thinking	Disorganized; rambling, irrelevant, and incoherent conversation; unclear or illogical flow of ideas	If thinking is disturbed, changes in language (e.g., word-finding difficulties) and visuospatial function (e.g., slow to identify roadway hazards) might occur	Difficulty with abstraction, thoughts impoverished; judgment impaired	Intact but with themes of hopelessness, helplessness, or self-depreciation
Perception	Perceptual disturbances, such as illusions and visual and auditory hallucinations; misperceptions of common people and objects common	Intact	Misperceptions usually absent	Intact; delusions and hallucinations absent except in severe cases
Psychomotor behavior	Variable; hypoactive, hyperactive, and mixed	Normal	Normal, may have apraxia	Variable; psychomotor retardation or agitation
Associated features	Variable affective changes; symptoms of autonomic hypo-hyperarousal	The person might attempt to conceal or laugh off cognitive deficits	Affect tends to be superficial, inappropriate; attempts to conceal deficits in intellect; personality changes, aphasia, agnosia may be present; often lacks insight	Affect depressed; dysphoric mood, exaggerated and detailed complaints; preoccupied with personal thoughts; insight present; verbal elaboration; somatic complaints, poor hygiene, and neglect of self
Assessment	Distracted from task; fails to remember instructions, frequent errors without notice	Although a person or relative might report failings, these are often difficult to differentiate from declines inherent to aging. Neuropsychological tests have fairly good norms to detect this difference	Failings highlighted by family, frequent "near miss" answers, struggles with test, great effort to find an appropriate reply, frequent requests for feedback on performance	Failings highlighted by individual; frequent "don't know" answers, little effort; frequently gives up; indifferent toward test: does not care or attempt to find answer

extensively. Several strategies exist to prevent, treat, or slow these conditions (Inouye, Westendorp, & Saczynski, 2014; Langa & Levine, 2014). However, these opportunities exist mainly when and if these conditions are detected early.

Clinicians often fail to evaluate cognitive function when using routine history and standard examination (Burton et al., 2012; Torisson et al., 2012). Hence, early detection of cognitive impairment exists only when cognitive function is assessed (McCarten et al., 2012). Without assessment, these pathological conditions are often un(der)diagnosed (Torisson et al., 2012), and the individuals with these conditions face much greater, accelerated, and long-term cognitive and functional decline and death (Bradshaw et al., 2013; Collard et al., 2018; Liu et al., 2017). Yet it is clear that the assessment of cognitive function is a crucial step in a cascade of strategies to prevent, reverse, halt, or minimize cognitive decline.

ASSESSMENT OF THE PROBLEM

Methods for Assessing Cognitive Function

A two-step approach is recommended for determining the nature of impairment (Cordell et al., 2013; Jackson, Naqvi, & Sheehan, 2013). The first step is screening or assessing for impairment, and the second includes a full diagnostic person-centered clinical and functional evaluation, if necessary. Screening is conducted to briefly determine the presence or absence of impairment. If the assessment results indicate possible impairment, a full evaluation is necessary to make a diagnosis of dementia, delirium, depression, mild cognitive impairment, or some other health problem. The content of a full evaluation varies depending on the patient's presentation and includes tests to find out the etiologies of impairment, rule out reversible conditions or issues, and assess its severity (Cordell et al., 2013).

When a diagnosis is made, appropriate reassessment or *monitoring* is necessary to track cognitive and global functioning over time as a means for following the progression or regression of impairment, especially in response to treatment (Cordell et al., 2013; Shenkin, Russ, Ryan, & MacLullich, 2014).

Instruments to Assess for Cognitive Impairment

Numerous instruments are available to assess cognitive functioning, of which Folstein's Mini-Mental State Examination (MMSE) is one of the most well-known tools (Folstein, Folstein, & McHugh, 1975; Lin, O'Connor, Rossom, Perdue, & Eckstrom, 2013; Tombaugh & McIntyre, 1992). The MMSE consists of 11 items assessing orientation, attention, memory, concentration, language, and constructional ability. Each question is scored as either correct or incorrect; the total score ranges from 0 to 30 and reflects the number of correct responses. A score of less than 24 is often considered demonstrative of impaired cognition. The performance on the MMSE can be influenced by education (individuals with less than an eighth-grade education commit more errors), language (nonnative English speakers commit more errors, which is related to sociocultural differences), verbal ability (the MMSE can be used only with individuals who can respond verbally to questioning), and age (older people do less well; Tombaugh & McIntyre, 1992). Furthermore, it is important to stress that the MMSE is not available for public use without cost (Lin et al., 2013).

The Montreal Cognitive Assessment (MoCA) is an instrument for detecting and monitoring cognitive impairment (Nasreddine et al., 2005). It assesses the following cognitive domains: attention and concentration, executive functions, memory, language, visuoconstructional skills, conceptual thinking, calculations, and orientation. The total score is 30 points, and a score of 26 or above is generally considered normal. Validation studies of the MoCA indicate its performance to be equivalent or superior to that of the MMSE, especially in patients with mild cognitive impairment (Dong et al., 2012; Liew, Feng, Gao, Ng, & Yap, 2015). Permission to use or reproduce the MoCA is required in research and commercial settings.

The St. Louis University Mental Status (SLUMS) Exam is an 11-item questionnaire with scores ranging from 0 to 30 (Tariq, Tumosa, Chibnall, Perry, & Morley, 2006). It is designed to identify individuals with mild or early dementia (scores 21–26) through measuring orientation, memory, attention, and executive functions. In a study comparing performance with the MMSE, it was found that although both were equally sensitive for identifying those individuals with dementia, the SLUMS was superior when identifying individuals with mild neurocognitive disorder (Tariq et al., 2006).

As the administration times of the MMSE, MoCA, and SLUMS are quite long (approximately 10–15 minutes for trained users), it is recommended to use a briefer test for screening purposes, such as the Mini-Cog (Borson, Scanlan, Brush, Vitaliano, & Dokmak, 2000), to decide whether it is appropriate to conduct the MMSE or the MoCA. The Mini-Cog is a four-item screening test consisting of a three-item recall and a clock-drawing item; for example, draw the face of a clock, number the clock face, and place the hands on the clock face to indicate a specific time such as 11:10. Although the Mini-Cog is widely used and well known, clinicians might select other brief tools to use in their clinical practice, because there is no optimal

tool to detect cognitive impairment in all settings and patient populations (Cordell et al., 2013; Lin et al., 2013).

Most cognitive screening tests, among the ones mentioned earlier, are initially developed as a measure for global cognitive abilities. Because it is often difficult to make a differential diagnosis (Is the impairment delirium, mild cognitive impairment, dementia or depression, or possibly one superimposed on another?), parallel use of other short instruments, such as the Confusion Assessment Method (CAM; Inouye et al., 1990), the Delirium Observation Screening Scale (DOSS; Detroyer et al., 2014; Schuurmans, Shortridge-Baggett, & Duursma, 2003), or the Geriatric Depression Scale (GDS; Yesavage et al., 1982), can be useful to determine the nature of impairment and to rule out reversible and treatable conditions like delirium and depression. See Chapters 19, 20, and 21 for a more detailed discussion about which screening tool to choose per condition.

It is critically important to rule out reversible and treatable conditions that may be causing the cognitive impairment such as delirium or acute confusion. There are several tools to assess for delirium. The most widely used tool is the CAM, which assesses for evidence of an acute change, inattention, disorganized thinking, and altered level of consciousness. The CAM requires training and the use of another cognitive tool such as the MMSE (Inouye et al., 1990). Another widely used tool, the 3D-CAM, operationalizes the CAM with 10 questions, has high sensitivity and specificity, and can be completed in only 3 minutes (Marcantonio et al., 2014). Another approach is to use a two-step approach with a shorter assessment tool followed up by a diagnostic assessment. The 4AT is a recently designed screening instrument for detecting both delirium and cognitive impairment (Bellelli et al., 2014). Its key features are brevity (administered in less than 2 minutes), no special training required, allows for assessment of "untestable" patients, does not require supplemental materials, and incorporates brief cognitive test items. The 4AT (v 1.2) is free to download and use (www.the4AT.com). Initial validity and reliability tests are promising (Bellelli et al., 2014; Lees et al., 2013), and 4AT accurately excluded delirium and dementia in older patients in the emergency department (O'Sullivan et al., 2018). Another shorter (less than 40 seconds) highly sensitive screen is the Two-Item Ultra-Brief Delirium screen (UB-2), which has a sensitivity to detect delirium of 93% and 96% in persons with dementia (Fick et al., 2015, 2018). The UB-2 uses all 12 months of the year, which has been found to be more sensitive than asking only 6 months backward, in combination with the question, "What is the day of the week?", requires very minimal training, and can be performed by nursing assistants with high reliability (Fick et al., 2018; Zhou et al., 2018). If older adults fail either question, they are positive for delirium, and it should be followed up with another tool such as the CAM or 3D-CAM. The UB-2 form and a video on how to use the UB-2 can be accessed at www.nursing.psu.edu/readi

It is also recommended that formal cognitive testing be supplemented with information from close relatives (Cordell et al., 2013; Langa & Levine, 2014). This information assists in determining the duration of impairment—which is crucial for making a diagnosis—and can be obtained through history taking or the Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE; Jorm & Jacomb, 1989) and/or the Family Confusion Assessment Method (FAM-CAM; Steis et al., 2012). Another brief informant interview is the Eight-Item Interview to Differentiate Aging and Dementia (AD8; Galvin et al., 2005). Memory, orientation, judgment, and function questions assess any change in the ability of the patient to remember appointments, keep track of current events, express level of interest in hobbies, and balance a checkbook. The AD8 has documented face validity, established in clinical research citing the Clinical Dementia Rating (CDR) and the IQCODE as evidence. The AD8 was also validated as a direct assessment independently administered from an informant interview (Galvin, Roe, Xiong, & Morris, 2006). The Neuropsychiatric Inventory (NPI; Kaufer et al., 2000) and caregiver burden assessments (Adelman, Tmanova, Delgado, Dion, & Lachs, 2014) can also be used to obtain information from relatives.

Formal screening is not always possible. When a patient is too sick for formal testing (e.g., inattentive or responding unusually or inappropriately to conversation or questioning), naturally occurring observations during daily and routine contacts with the patient (e.g., during bathing, feeding, transferring the patient) can be used to evaluate an individual's cognitive functioning easily and in a nonthreatening way. The Nurses' Observation Scale for Cognitive Abilities (NOSCA) was developed and validated to standardize the reporting of these observations (Persoon, Banningh, van de Vrie, Rikkert, & van Achterberg, 2011; Persoon et al., 2012).

When time is scarce, at minimum, it is necessary to establish whether a patient fulfills the criteria for delirium (Inouye et al., 1990), because delirium is reversible in most cases, and older adults with delirium have the highest risk for severe short-term adverse outcomes (Witlox et al., 2010). Therefore, in expectation of formal screening results, the use of the instruments mentioned earlier should temporarily be substituted by assessment of orientation (to time and place) and attention (e.g., naming of days of the week, no errors should be allowed; or months of the year backward, no errors should be allowed; serial sevens [i.e.,

in subsequently subtracting 7 from 100], one error should be allowed for five subtractions; or digit spans backward [i.e., the length of the longest list of digits that a person can recite backward, normally three or more]). Any suspected or uncertain cases should be handled as delirious until proven otherwise (Inouye et al., 2014).

When screening results indicate impairment, referral to a specialist setting (e.g., memory clinic, neuropsychologist, psychiatrist, advanced practice nurse) is necessary for more diagnostic workup (i.e., extensive history taking, clinical and neurological examination, extended neuropsychological assessment, brain imaging, blood sampling, etc.). If an impairment is detected, it is critical to provide follow-up and community support with resources for the older adult and his or her caregiver or family. Chapters 19, 20, and 21 describe more extensively how a differential diagnosis can be made.

When to Assess Cognitive Function

As there is insufficient evidence supporting universal screening for cognitive impairment in older patients (Moyer, 2014), screening interventions are usually applied to a smaller group of persons with specific risk factors (i.e., case finding). Recommendations for assessing cognition with standardized and validated tools include presence of signs, symptoms, or complaints of cognitive impairment (Lin et al., 2013; Moyer, 2014) with behavior that is inappropriate to a situation or unusual for the individual (including functional decline); when there is no informant to confirm absence of signs or symptoms (Cordell et al., 2013); and before making important treatment decisions as an adjunct to determining an individual's capacity to consent and capacity to adhere to treatment guidelines (see Chapter 21, Dementia: Assessment and Care Strategies).

When and how frequently cognitive functioning needs to be (re-)assessed is in part a function of the purpose of the assessment, the condition of the patient (e.g., unusual/inappropriate behavior), and the results of prior or current testing. Of course, patients with delirium or at high risk of delirium need to be monitored frequently (e.g., every 4–8 hours) because of the possible course and complications of this condition. When assessing for delirium it is important to have a prevention plan in place and best practices for delirium management (Fick, 2018). In case of reassessment after onset of treatment, it is important to know that delirium interventions might need only a few hours before effects can be measured, whereas effects of interventions to improve complaints and signs related to depression or dementia might be measured only after 2 or more weeks, if possible. The Gerontological Society of America has developed a guideline for assessing for cognitive impairment that includes a toolkit with resources for caregivers, recommendations for fitting the assessment into the annual wellness visit, and tips for brain health (www.geron.org/kaer).

Cautions for Assessing Cognitive Function

Various characteristics of the physical environment should be considered to ensure that the results of the cognitive assessment accurately reflect the individual's abilities and not extraneous factors. Overall, the ideal assessment environment should maximize the comfort and privacy of both the assessor and the individual. The environment should enhance performance by maximizing the individual's ability to participate in the assessment process (Dellasega, 1998). To accomplish this, the room should be well lit and of comfortable ambient temperature. The assessor should sit at eye level and be sure to provide and clean sensory devices as needed. Lighting must be balanced to be sufficient for the individual to see the examination materials adequately, while not being so bright as to create glare. Also, the environment should be free from distractions that can result from extraneous noise, scattered assessment materials, or brightly colored and/or patterned clothing and flashy jewelry on the assessor (Lezak, Howieson, & Loring, 2004).

It will be vital to prepare the individual for the assessment—explaining what will take place and how long it will take—hence reducing anxiety and creating an emotionally nonthreatening environment and a safe individual–assessor relationship (Engberg & McDowell, 2000). Therefore, it is essential to avoid counterproductive statements that describe the assessment as consisting of "simple," "silly," or "stupid" questions. These tend to diminish motivation to perform and heighten anxiety when errors are committed.

Performing the assessment in the presence of others should be avoided when possible, as the other individual may be distracting. If the other individual is a relative, additional problems may arise. For example, when the individual fails to respond or responds in error, significant others tend to provide the answer, or to say such things as "Now, you know the answer to that," or "Now, you know that's wrong." Because older adults are especially sensitive to any insinuation that they may have some "memory problem," it is important for the assessor in these cases to stress the importance of the assessment without increasing the individual's anxiety. An informant questionnaire, like the IQCODE (Jorm & Jacomb, 1989), can be a creative solution to deal with disturbing others.

The assessment can be perceived by the individual as intrusive, intimidating, fatiguing, and offensive; characteristics that can seriously and negatively affect performance.

Consequently, an initial period to establish a rapport with the individual is recommended (Lezak et al., 2004). This period also allows a determination of the individual's capacity for assessment; for example, do conditions exist that could alter the performance of the individual or interpretation of results such as sensory decrements? As a consequence, the assessor can alter the testing environment through simple methods; for example, by taking a position across from the individual or a little to the side. In this position, the individual can readily use the assessor's nonverbal communication as well as read the assessor's lips. Positioning also is important relative to lighting and glare. The assessor must also be careful not to cue the older adult or make excuses for why he or she may not be performing well, but instead should be aware of signs of fatigue or discomfort from overtesting. If needed, the assessor can encourage the older adult by saying things such as "You are doing fine, and we are almost done, or do you need a little break?"

Finally, avoid assessment periods immediately on awakening from sleep (wait at least 30 minutes) and immediately before and after meals or medical procedures (Foreman, Fletcher, Mion, & Trygslad, 2003). In addition, it should be said that even in perfect circumstances and in the absence of pathological conditions, patients may perform poorly on cognitive screening tests for other reasons, including acute illness, sleep deprivation, cultural issues, and so on (Shenkin et al., 2014). Therefore, it is paramount that screening results are reported with the appropriate context in which these were obtained. Otherwise, at a future date, patient charts might falsely reflect chronic impairment (Cordell et al., 2013; Shenkin et al., 2014).

CASE STUDY 9.1

Before

Mrs. O, a 72-year-old retired farmer's wife, was referred to the emergency department (ED) because her primary care provider (PCP) judged her to be slow in responding. For more than 10 weeks, she has been complaining about intolerable pain in her right hip, which could not be managed effectively by the PCP with acetaminophen and tramadol hydrochloride. An x-ray had revealed that the 15-year-old hip prosthesis needed replacement, and surgery had been scheduled in the upcoming week. As a result of this problem, Mrs. O became dependent on her husband for several activities of daily living (bathing, dressing, toileting, and transferring).

In the ED

The triage nurse in the ED reports to his colleague on the observational ward that Mrs. O is a gentle, cooperative lady who needs upgrading of pain therapy in anticipation of surgery. As intolerable pain is her main complaint, he administered an intravenous bolus of 5 mg piritramide.

The admitting nurse of the observational unit decides to assess Mrs. O's cognitive functioning, because her husband reports being overwhelmed by his wife's condition. He reports that his wife's cognitive status was known to be problematic—she was diagnosed with mild cognitive impairment a year ago (MMSE: 22/30), but it worsened dramatically since the funeral of her sister 2 weeks ago. He also added that she had been talking nonsense from time to time since then. In brief, there are arguments for the presence of delirium, depression, and dementia, or possibly one superimposed on another.

Some instances later, Mrs. O starts shouting for help. She is agitated, disoriented to time and place, and fails to recite the months of the year backward. Blood test results show that she was experiencing multiple problems: low sodium levels, high creatinine level, and presence of inflammation. It is likely that the intravenous bolus of piritramide triggered or worsened the delirium, as it is known that opiates should be administered with caution in people at risk of delirium (American Geriatrics Society, 2019)—which was probably not considered by the triage nurse, as he did not assess Mrs. O's cognitive functioning before administering the drug. A transfer to the intensive care unit is necessary owing to tachycardia and delirium, and surgery needs to be postponed until the aforementioned problems are corrected.

2 Weeks Later

When there were no more arguments for the presence of delirium (e.g., no fluctuating behavior, inattention, or disorganized thinking for at least a week), Mrs. O's cognitive functioning (MMSE 21/30) and depressive symptoms (GDS: 2/30) were assessed to evaluate her capacity to adhere to rehabilitation following surgery and to establish a baseline post hospitalization.

Mrs. O had an uncomplicated postoperative course and regained functional independence after participating in a patient-centered rehabilitation program targeting patients with cognitive impairment. After discharge from rehabilitation, Mrs. O and her caregiver were connected to local resources, including the Alzheimer's Association and the Area Agency on Aging.

SUMMARY

The determination of an individual's cognitive status is critical in the process and outcomes of illness and its treatment. Being competent in the assessment of cognitive functioning requires (a) knowledge and skill as they relate to the performance of the assessment of cognitive functioning, (b) sensitivity to the issues that can negatively bias the results and interpretation of this assessment, (c) accurate and comprehensive documentation of the assessment, and (d) the incorporation of the results of the assessment in the development of the individual's plan of care.



NURSING STANDARD OF PRACTICE

Protocol 9.1: Assessing Cognitive Function

I. GOALS

The goals of cognitive assessment include the following:

A. To determine an individual's cognitive abilities
B. To recognize early and diagnose the presence of cognitive impairment
C. To monitor an individual's cognitive response to various treatments

II. OVERVIEW

A. Detecting cognitive impairment in older patients is important because of the impairment's association with adverse events (Bradshaw et al., 2013).
B. Assessing cognitive function is necessary for early detection and prompt treatment of impairment (McCarten et al., 2012).

III. BACKGROUND AND STATEMENT OF PROBLEM

A. Definition of cognitive functioning includes the processes by which an individual perceives, registers, stores, retrieves, and uses information.
B. The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*) provides criteria for diagnosing declines from a previously attained level (see *DSM-5* for specific criteria; APA, 2013; Sachdev et al., 2014).
    1. *Delirium* is a disturbance in attention and awareness that develops over a short period of time and tends to fluctuate in severity during the course of a day, combined with a disturbance in cognition (e.g., disorientation, memory deficit, etc.), neither of which are better explained by another neurocognitive disorder, but by one or multiple physiological effects (APA, 2013).
    2. *Mild neurocognitive disorder* (or *mild cognitive impairment*) is characterized by a modest cognitive decline from a previous level of performance in at least one cognitive domain (e.g., executive function, complex attention) that does not interfere with capacity for independence in everyday activities if the decline is not exclusively present in the context of a delirium or attributable to another mental disorder (APA, 2013).
    3. *Major neurocognitive disorder* (or *dementia*) is characterized by a significant cognitive decline from a previous level of performance in at least one cognitive domain (e.g., learning and memory, language) that interferes with independence in everyday activities if the decline is not exclusively present in the context of a delirium or attributable to another mental disorder (APA, 2013).
    4. *Depression* is a disorder represented by several symptoms. At the very least, one symptom needs to be the presence of a depressed mood or loss of interest or pleasure during a 2-week period, which causes clinically significant distress and leads to a decline from previous functioning; these symptoms cannot be attributed to direct physiological effects of a substance or a general medical condition (APA, 2013).

(*continued*)

Protocol 9.1: Assessing Cognitive Function (*continued*)

IV. ASSESSMENT OF COGNITIVE FUNCTION

A. Methods for assessing cognitive function
   1. *Screening*: to determine the absence or presence of impairment
   2. *Full evaluation*: to make a diagnosis if screening results indicate impairment
   3. *Monitoring*: to track cognitive status over time, especially in response to treatment

B. Instruments to assess for cognitive impairment
   1. *MMSE* (Folstein et al., 1975) is the most well-known and best studied instrument. It can be used to screen for or monitor cognitive impairment. However, performance on the MMSE is adversely influenced by education, age, language, and verbal ability. The MMSE is not available for public use without cost.
   2. *MoCA* and *SLUMS* can both detect and monitor cognitive impairment. Its performance is reported to be equivalent or superior to that of the MMSE, especially in patients with mild cognitive impairment.
   3. *Mini-Cog* is a widely used and recommended instrument that is often preferred over MMSE, MoCA, and SLUMS for detecting impairment because MMSE, MoCA, and SLUMS administration time is quite long. Depending on the setting, many other tools are available to briefly screen for the presence or absence of cognitive impairment.
   4. *Differential diagnosis*: Parallel use of other short instruments, such as the CAM (Inouye et al., 1990), the UB-2 (Fick et al., 2015), or the GDS (Yesavage et al., 1982), can be useful to rule out issues of delirium or depression and determine the nature of impairment.
   5. *Heteroanamnesis*: Information from relatives assists in determining the duration and nature of impairment. IQCODE, AD8, NPI, and FAM-CAM can be used to obtain this information.
   6. *Naturally occurring observations*: NOSCA standardizes the reporting of observations and conversations during naturally occurring care interactions (Persoon et al., 2011). The use of NOSCA is especially relevant when a patient's condition does not allow the use of other aforementioned instruments.
   7. *When screening results indicate impairment*: Referral to a specialist setting (e.g., memory clinic, neuropsychologist, psychiatrist, advanced practice nurse) is necessary for more diagnostic workup (i.e., extensive history taking, clinical and neurological examination, extended neuropsychological assessment, brain imaging, blood sampling, etc.).

C. When to assess cognitive function
   1. Presence of signs, symptoms, and/or complaints of cognitive impairment
   2. With behavior that is inappropriate to a situation and/or unusual for the individual (including functional decline)
   3. Lack of an informant to confirm absence of signs or symptoms
   4. Before making important treatment decisions as an adjunct to determining an individual's capacity to consent and capacity to adhere to treatment guidelines

D. Cautions for assessing cognitive function
   1. Physical environment (Dellasega, 1998)
      a. Comfortable ambient temperature
      b. Adequate lighting (not glaring)
      c. Free of distractions (e.g., should preferably be conducted in the absence of others and other activities)
      d. Position self to maximize individual's sensory abilities
   2. Interpersonal environment (Engberg & McDowell, 2000)
      a. Prepare individual for assessment
      b. Initiate assessment within nonthreatening conversation
      c. Let individual set pace of assessment
      d. Be emotionally nonthreatening

(*continued*)

Protocol 9.1: Assessing Cognitive Function (*continued*)

3. Timing of assessment (Foreman et al., 2003)
   a. Select time of assessment to reflect actual cognitive abilities of the individual
   b. Avoid the following times:
      i. Immediately on awakening from sleep (wait at least 30 minutes)
      ii. Immediately before and after meals
      iii. Immediately before and after medical diagnostic or therapeutic procedures
      iv. In the presence of unstable and/or interfering medical conditions (e.g., fever, nausea)
4. Reporting of assessment results (Shenkin et al., 2014)
   a. Report screening results with the context in which they were obtained.

V. EVALUATION/EXPECTED OUTCOMES

A. Patient
   1. Is assessed at recommended moments
   2. Any impairment detected early
   3. Care tailored to appropriately address cognitive status/impairment
   4. Satisfaction with care improved
B. Healthcare provider
   1. Competent to assess cognitive function
   2. Able to differentiate among delirium, mild cognitive impairment, dementia, and depression
   3. Uses standardized cognitive assessment protocol
   4. Satisfaction with care improved
C. Institution
   1. Improved documentation of cognitive assessments
   2. Impairments in cognitive function identified promptly and accurately
   3. Improved referral to appropriate advanced providers (e.g., geriatricians, geriatric nurse practitioners, neurologists, psychiatrists, memory clinics) for additional assessment and treatment recommendations
   4. Decreased overall costs of care

VI. FOLLOW-UP MONITORING

A. Provider competence in the assessment of cognitive function
B. Consistent and appropriate documentation of cognitive assessment
C. Consistent and appropriate care and follow-up in instances of impairment
D. Timely and appropriate referral for diagnostic and treatment recommendations

VII. RELEVANT PRACTICE GUIDELINES

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(*continued*)

Protocol 9.1: Assessing Cognitive Function (*continued*)

ABBREVIATIONS

AD8	Eight-Item Interview to Differentiate Aging and Dementia
CAM	Confusion Assessment Method
DOSS	Delirium Observation Screening Scale
DSM-5	*Diagnostic and Statistical Manual of Mental Disorders,* Fifth Edition
FAM-CAM	Family Confusion Assessment Method
GDS	Geriatric Depression Scale
GPA	Guidelines and Protocols Advisory Committee
IQCODE	Informant Questionnaire on Cognitive Decline in the Elderly
MMSE	Mini-Mental State Examination
MoCA	Montreal Cognitive Assessment
NICE	National Institute for Health and Clinical Excellence
NOSCA	Nurses' Observation Scale for Cognitive Abilities
NPI	Neuropsychiatric Inventory
SLUMS	St. Louis University Mental Status
UB-2-Item	Ultra-Brief Delirium Screen

RESOURCES

Recommended Instruments for Assessing Cognitive Functioning

4AT
http://www.the4AT.com

Mini-Cog
https://mini-cog.com

Mini-Mental State
http://www.minimental.com

Montreal Cognitive Assessment
http://www.mocatest.org

UB-2
http://www.nursing.psu.edu/readi

Additional Online Information About Assessing Cognitive Functioning

ConsultGeriRN
A series of tips on various aspects of assessing and caring for older adults sponsored by the Hartford Institute for Geriatric Nursing at New York University College of Nursing.
https://consultgeri.org/

Geriatric Toolkits
http://www.gericareonline.net/tools/index.html

Hospital Elder Life Program
https://www.hospitalelderlifeprogram.org/

ICU Delirium and Cognitive Impairment Study Group
http://www.icudelirium.org
http://idelirium.org

NIDUS
https://deliriumnetwork.org

The Gerontological Society of America Toolkit for Cognitive Impairment Detection
https://www.geron.org/images/gsa/kaer/gsa-kaer-toolkit.pdf

The NIH Toolbox
http://www.healthmeasures.net/explore-measurement-systems/nih-toolbox

The Portal of Geriatrics Online Education (POGOe) website: Brief Cognitive Screening in Older Adults
(Authors: Kristen H. Sorocco, PhD, Benjamin A. Bensadon, PhD, JoAnne Whalen, MAT)
https://pogoe.org/productid/21696

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Assessment of Physical Function in the Older Adult*

Denise M. Kresevic

10

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Identify common components of standardized functional assessment instruments for older adults.
2. Identify unique challenges to gathering and communicating information from older adults regarding functional assessments.
3. Describe evidence-based nursing care interventions to promote, maintain, and restore functional health and quality of life outcomes in older adults in acute care settings.
4. Acknowledge the relationship between an individual's function, goals, and available resources in planning.

OVERVIEW

Physical functioning, the ability to manage day-to-day functioning (e.g., bathing, dressing, ambulating, managing medications), rather than the absence of disease, is the cornerstone of health for older adults. Maintaining a safe level of independent functioning may pose a challenge for older adults dealing with acute illness or exacerbations of chronic illnesses.

Functional assessment instruments provide a common language of health for patients, family members, and healthcare providers across settings, especially for the care of older adults. These assessments also serve as important parameters for goal setting and interprofessional collaboration, and an objective measurement of outcomes of care.

The consequences of not assessing for changes in status and intervening in a timely fashion are significant and often include major changes in quality of life and lifestyle (Hoogerduijn, Schuurmans, Duijnstee, de Rooij, & Grypdonck, 2006). Acute changes in functional ability often signal an acute illness and an increased need for assistance to maintain safety. Likewise, improvements in function signal recovery and a return to health. These changes have important implications for nursing care across settings, but especially during hospitalization. The ability to assess functional status is critical in accurately identifying normal aging changes, illness, and disability and in developing an individualized plan for continuity of care across settings. The failure to assess function can lead to increased risk of complications (e.g., malnutrition, falls); hospital readmissions; likelihood of being discharged to a nursing home setting (Fortinsky, Covinsky, Palmer, & Landefeld, 1999); and mortality (Boyd, Xue, Guralnik, & Fried, 2005; Rozzini, Sabatini, & Trabucchi, 2005) as well as decreased functional recovery (Boyd et al., 2005; Boyd,

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

Ritchie, Tipton, Studenski, & Wieland, 2008; Gill, Allore, & Guo, 2004; Volpato et al., 2007) and quality of life.

BACKGROUND AND STATEMENT OF PROBLEM

Physical functioning is a dynamic process of interaction between individuals and their environments. The process is influenced by motivation, physical capacity, illness, cognitive ability, pain, and the external environment, including social supports. Management of these day-to-day activities (e.g., eating, bathing, ambulating, managing money) serves as the foundation for safe, independent functioning of all adults.

Hospitalization can also contribute to functional decline, with decline experienced by an estimated 20% to 40% of hospitalized older adults (Landefeld, Palmer, Kresevic, Fortinsky, & Kowal, 1995). Functional decline is a common complication in hospitalized older adults, even in those with good baseline function (Gill, Allore, Gahbauer, & Murphy, 2010). The cause of this decline appears multifactorial and includes individual as well as environmental factors. Evidence that targeted interventions are effective in preventing and reversing functional decline continues to mount (Barnes et al., 2012; Resnick et al., 2016). Hospitalization provides a unique opportunity to treat acute conditions as well as assess function and provide evidence-based interventions to maintain function, plan for services, and promote "successful aging."

Educational intervention has demonstrated improvements in caregiver knowledge and patient outcome (Resnick et al., 2016; Resnick, Galik, Boltz, & Pretzer-Aboff, 2011).

Patient risk factors for functional decline include prehospitalization functional loss; the presence of two or more comorbidities; taking five or more prescription medications; having had a hospitalization or emergency room visit in the previous 12 months (McCusker, Kakuma, & Abrahamowicz, 2002); depression, (Covinsky et al., 1998); impaired cognition, including delirium (Inouye, Schlesinger, & Lydon, 1999; Narain et al., 1988); pain (Reid, Williams, & Gill, 2005; Von Rueden et al., 2017); nutritional problems; adverse medication effects (Graf, 2006); fear of falling (Boltz, Capezuti, & Shabbat, 2011); low self-efficacy and outcome expectations (McAuley et al., 2006; Resnick, 2002); and attitudes and goals toward functional independence and views on hospitalization (Boltz et al., 2011; Boltz, Capezuti, Shabbat, & Hall, 2010; Boyd, Landefeld, et al., 2008; Brown, Williams, Woodby, Davis, & Allman, 2007; Liebzeit, King, Bratzke, & Boltz, 2018).

These risk factors for functional decline are also associated with common risk factors for functional decline, including falls, injuries, acute illness, medication side effects, depression, malnutrition, baseline functional impairment, and decreased mobility associated with iatrogenic complications such as incontinence, falls, and pressure sores (Creditor, 1993). In one randomized clinical trial of hospitalized older adults, the daily nursing assessment of ability to perform bathing, dressing, grooming, toileting, transferring, and ambulation during routine nursing care yielded information necessary for maintenance of function in self-care activities (Landefeld et al., 1995).

Studies over the past 20 years have found that the use of multidisciplinary assessments and nursing protocols can reduce hospital length of stay and costs while maintaining patient outcomes and not increasing hospital readmission rates (Barnes et al., 2012).

This chapter addresses the need for and goals of functional assessment of older adults in acute care and provides a clinical practice protocol to guide nurses in this assessment (Protocol 10.1).

ASSESSMENT OF THE PROBLEM

Assessment of function includes an ongoing systematic process of identifying the older person's physical abilities and need for help or assistance. Functional assessment also provides the opportunity to identify individual strengths and measures of "successful aging" and also promotes maintenance of health. This information is especially important for nurses in planning for transitions of care, including discharge to other facilities or home and evaluating continuity of care. Nurses are in a pivotal position in all care settings, but particularly during hospitalization, to assess the functional status of older adults by direct observation during routine care and through information gathered from the individual patient, the patient's family, and any other long-term caregivers.

Including critical components of functional assessments into routine assessments in the acute care setting can provide (a) baseline functional capacity and recent changes in level of independence indicative of possible illness, especially infections; (b) baseline information to benchmark patients' response to treatment as they move along the continuum from acute care to rehabilitation or from acute to subacute care (e.g., following a new stroke or hip replacement surgery); (c) information regarding care needs and eligibility for services, including safety, physical therapy, and posthospitalization needs; and (d) information on quality of care. The ongoing use of a standardized functional assessment instrument promotes systematic communication of the patient's health status between care settings. It also allows units to compare their level of care with other units in the facility, measure outcomes, and plan for continuity of care (Campbell, Seymour, Primrose, & ACMEPLUS Project, 2004; see Table 10.1).

TABLE 10.1

Functional Assessment of Older Adults

Dimension	Assessment Parameter	Standardized Instrument	Nursing Strategy
ADL Bathing Dressing Eating Toileting Hygiene Transferring	Self-report of patient Surrogate report Observation during hospitalization	Katz ADL index (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963)	Orient to environment Encourage active participation in ADL Range-of-motion exercises Encourage to be out of bed Promote continence Consult PT/OT for strengthening exercises
Mobility Balance sitting and standing Gait steadiness Turns	Self-report Surrogate report Observation	"Get Up and Go" test (Mathias, Nayak, & Isaacs, 1986)	Ambulate PT/OT consult Mobility aids Community referrals
IADL Housework Finances Driving Shopping Meal preparation Reading Medication adherence Current events awareness Hobbies Employment Volunteer work	Self-report (include normal daily routine) Surrogate report (able to balance check book, traffic violations)	Lawton IADL scale (Gurland et al., 1994; Lawton & Brody, 1969) DAFA—for patients with dementia (Karagiozis, Gray, Sacco, Shapiro, & Kawas, 1998)	Assess ability to: ■ Find hospital room ■ Read newspaper ■ Read pill bottles ■ Order hospital meals from menu Facilitate as needed: ■ Community referrals for transportation and/or meals on wheels ■ OT consult to assess home management skills (cooking, laundry, etc.) ■ Home care referral, including medication management, follow-up medical care, rehabilitation, home safety management, and ADL support
Frailty **Hospital admission risk profile** **Patient perception of health**	Self-report Self-report—ADL IADL Chart review age diagnoses Cognitive status MMSE Self-report	Fried Frailty Scale (Fried et al., 2009) HARP (Sager et al., 1996) SF-36v2, SF-6D (Brazier, Roberts, & Deverill, 2002; Ware, Snow, Kolinski, & Gandeck, 1993)	Weight loss, fatigue, handgrip, physical activity, and walking speed Early referral OT PT home services Early identification of at risk for functional decline referral OT PT home care services physical functioning, role limitations due to physical and emotional problems, bodily pain, vitality, social functioning, and mental health; a single question on the SF-36—general health assists in planning of patient-centered care and discharge planning needs

ADL, activities of daily living; DAFA, Direct Assessment of Functional Abilities; HARP, hospital admission risk profile; IADL, instrumental activities of daily living; PT/OT, physical therapist/occupational therapist.

Although gathering information about functional status is a critical indicator of quality care in geriatrics, it requires significant time, skill, and knowledge. Older persons often present to the care setting with multiple medical conditions resulting in fatigue and pain. Acute illnesses may be superimposed on multiple interrelated medical comorbidities. In addition, sensory aging changes, particularly vision and hearing, can threaten the accuracy of responses. Ideally, information regarding functional status should be elicited as part of the routine history of older adults and incorporated into daily care routines of all caregivers. In addition, comprehensive assessment of function provides an opportunity to teach patients and families about normal aging as well as indicators of pathology.

Assessment Instruments

Collecting systematic information regarding tasks of daily living (e.g., bathing, dressing, ambulating, using a phone, taking medications, managing finances) can be

accomplished by the use of standardized instruments. The use of standardized instruments serves to ensure inclusive assessments, the ability to communicate in a common language, and the ability to benchmark information over time. Several instruments have been developed over the years to measure function. Although all measure components of function, the decision as to which instrument to use depends on the primary purpose of the assessment and the institutional preferences and resources (Kane & Kane, 2000). No single instrument will meet the needs of all care settings (Hoogerduijn et al., 2006).

While institutions and care settings may choose from a myriad of instruments to use in clinical practice, nurses should be familiar with the most commonly used. Many performance-based measures and observational instruments can be incorporated into routine care practices without significantly burdening caregivers. Incorporating electronic medical record templates into routine documentation can function as a prompt for providers, decreasing the time and increasing the communication of the results of these assessments.

The Katz Index of Independence in Activities of Daily Living (commonly referred to as the Katz ADL index) assesses activities of daily living (ADL), including bathing, dressing, transferring, toileting, continence, and eating (Katz et al., 1963). This scale is used widely to assess the functioning of older adults in all settings, including during hospitalization (Mezey, Rauckhorst, & Stokes, 1993). Originally, the Katz ADL index was proposed as an observation tool, with scores ranging from 1 to 3, indicating *independent ability*, *limited assistance*, and *extensive assistance* for each activity. Over time, the instrument has evolved into a dichotomized tool with independent versus dependent ability of each task (Kane & Kane, 2000). With established reliability (0.94–0.97), it is easy to use either as an observational or as a self-reported measure of level of independence (Kane & Kane, 2000). The Katz ADL index is easily incorporated into history and physical assessment flowsheets and takes little time to complete. Many other tools exist to assess ADL, including the Barthel index for physical functioning and the Older Americans Resources and Services ADL scale (OARS-ADL; Burton, Damon, Dillinger, Erickson, & Peterson, 1978; Mahoney & Barthel, 1965; Mezey et al., 1993).

In addition to ADL tools, instruments to measure more complex physical function called *instrumental activities of daily living* (IADL) have been proposed to be included in a comprehensive assessment of function in older adults. The majority of these instruments assess the individual's function in relation to the environment. Common IADL skills identified include using a phone, shopping, meal preparation, housekeeping, laundry, medication administration, transportation, and money management (Kane & Kane, 2000). Although assessment of ADL provides useful information for nursing care needs both during and after hospitalization, IADL information helps target critical posthospital care needs. Although direct observation of the patient's IADL may not occur during an acute hospitalization, it is important for the nurse to assess this information to plan for the patient's discharge. Common instruments used to measure IADL include the Lawton IADL scale, the Older Americans Resources and Services Instrumental Activities of Daily Living (OARS-IADL) scale, and the Direct Assessment of Functional Abilities (DAFA) scale.

Perhaps the most widely used IADL instrument for hospitalized older adults is the Lawton IADL scale. This scale assesses eight items, with each scored from 0 (dependence) to 8 (independent self-care). Reliability coefficients have been reported to be 0.96 for men and 0.93 for women (Kane & Kane, 2000).

More recently, scales that address frailty have been developed to assist in the assessment of at-risk individuals. Frailty is characterized by five components: weight loss, fatigue, handgrip, physical activity, and walking speed (Fried et al., 2009). The most widely used is the Fried Frailty scale (see Chapter 27, Physical Restraints and Side Rails in Acute and Critical Care Settings). This scale uses objective and self-report data. Baseline frailty is an important predictor of functional decline during acute illness and hospitalization that necessitates early aggressive interventions to maintain, if not improve, mobility and nutrition.

Assessment of function in individuals with dementia presents a unique challenge. The DAFA, a 10-item observational measure of IADL, has been found to be useful in assessing function in the presence of dementia (Karagiozis et al., 1998; see www.consultgerirn.org/resources and the Resources section of this chapter for assessment instruments).

Regardless of the instrument used, basic ADL and IADL function should be assessed for each patient, including capacity for dressing, eating, transferring, toileting, hygiene, ambulation, and medication adherence (see Chapter 20, Delirium: Prevention, Early Recognition, and Treatment). Appropriate assessment instruments should be readily available on the acute care unit for reference and/or incorporated into routine documentation instruments for history, daily assessment, and discharge planning. To adequately assess function, sensory and cognitive capacity should be established and environmental adaptations, such as magnifying glasses or hearing amplifiers, may be necessary and should be accessible to nursing staff.

Although standardized instruments are useful for describing health status and planning for care, they must also be used in conjunction with individual observation and clinical judgment (Glenny, Kuspinar, & Naglie, 2017).

Despite age, functional status, and acute and chronic illness, the patients' perceptions of their functioning and overall health are paramount to planning and evaluating care. Many instruments have been developed to measure patients' perceptions of their health and overall functioning. One instrument that has demonstrated the ability to capture patients' perceptions and is easy to administer is the SF-36v2.

This instrument was derived from the General Health Survey of the Medical Outcomes Study by Stewart and colleagues (2007). A single question, "Is your health: excellent, very good, good, fair or poor," measures subjective health. In addition, the SF-6D, a shorter form of the SF-36v2 health survey, addresses six subscales: physical functioning, role limitations due to physical and emotional problems, bodily pain, vitality, social functioning, and mental health. Two summary scores can be calculated—physical component summary and the mental component summary.

Direct Assessment of Patients

Although nurses often rely on reports of physical functioning and capacity for ADL and IADL from other healthcare providers, patients, and family members, direct observation provides strong evidence for current capacity versus past ability.

Functional assessments are constantly conducted by nurses every time they notice that a patient can no longer pick up a fork or has difficulty walking. A comprehensive functional assessment leads to more than simply noticing a change in activity or ability, however. In a systematic manner, nurses need to assess the ability of a patient to perform ADL in the context of the patient's baseline functional and hospitalization status.

While assessing functional status, the patient should be made as comfortable as possible, given sufficient time to ask questions, and provided with frequent rest periods when needed. The need and availability of adaptive aids, such as glasses and hearing aids, should be applied. Often, family members accompany the older person and can assist in answering questions regarding function. However, an older person's perceptions of his or her ability are important and the individual should be encouraged to express his or her ideas. It is important for patients and family members to understand that baseline functional levels as well as any recent changes in function need to be reported. Many older adults may be reluctant to report decline in function, fearing that such reports will threaten their autonomy and independent living. Assessment of physical function by questioning or direct observation can seem overly intrusive to older adults who fear loss of independence. Creating a positive and open environment that acknowledges abilities, strengths, adaptations, and resources is essential.

Occasionally, the history and physical examination may reveal clues to further identify functional status. Muscle weakness and atrophy of legs may indicate lack of ability to safely ambulate independently. Temporal muscle wasting may indicate moderate to severe malnutrition resulting from inability to shop, prepare meals, or adequately consume sufficient calories. Hand contractures present with arthritis or cerebral vascular accidents alert the nurse to pay particular attention to performance versus self-report of ability to open pill bottles, dial a phone, or write checks. General appearance (e.g., hair, teeth, fingernails) and condition of clothing (e.g., clean and dry vs. urine-soaked undergarments) may give rise to information on bathing, dressing, continence, and ability to do laundry.

Specific Functional Assessments

Ambulation

Inherent in both ADL and IADL is ambulation, a critical parameter for functional assessment. Early nursing assessment of the hospitalized patient's ability to walk is very important in order to ensure safety and prevent falls and injuries. Identification of risks for falls can aid in the assessment of the individual's mobility needs and increase safe ambulation (see Chapter 19, Late Life Depression). The ability to safely ambulate is contingent on the ability to transfer, propel forward, and pivot with sufficient strength and balance. Ambulation is necessary for self-care both in the hospital and after hospital discharge. It is also a very sensitive indicator of acute health changes. Therefore, the ability to ambulate should be assessed by both self- or proxy report and/or by direct observation.

Some instruments used to assess ambulation, balance, and gait are sensitive measures of mobility (Applegate, Blass, & Franklin, 1990); however, they are also complex and time consuming to use. Therefore, direct observation of an individual's ability to get out of bed, sit in a chair, assume a standing position, and steadily walk a short distance—with or without assistive devices—is much simpler to do yet important to ensure safety (Applegate et al., 1990; Cress et al., 1995). However, acutely ill hospitalized older adults often tethered to equipment such as

intravenous lines or oxygen face unique challenges to demonstrate and maintain mobility and ambulation.

An efficient performance-based measure of ambulation, balance, and gait that can be observed during routine care of the hospitalized patient is the "Get Up and Go" test (Cress et al., 1995). To do a Get Up and Go test, patients are observed sitting in a chair, standing, walking, and pivoting. Direct observation of the patient should include an assessment of speed of performance, hesitancy, stumbling, swaying, grabbing for support, or unsafe maneuvers such as sitting too close to the edge of a chair or dizziness while pivoting (Tinetti & Ginter, 1998). Performance is scored from 1 (normal balance and steady gait) to 5 (severely abnormal balance and gait), which is clear evidence of fall risk (Kane & Kane, 2000). Assessment of unsafe transfers or ambulation indicates the need to begin immediate restorative therapies to prevent falls and injuries. These can include attention to environmental designs, such as walking paths free of clutter, handrails, and rest areas to encourage daily ambulation, as opposed to bed rest and immobility (Creditor, 1993). Although the Get Up and Go test is easy to perform, it is relatively subjective. Objectivity may be enhanced by timing the tasks (Kane & Kane, 2000).

Sensory Capacity

Evaluation of the potential impact of sensory changes on the performance of ADL is often underestimated. Impaired vision is especially important in medication adherence and safety. A simple test for functional vision is to have older adults read from a newspaper. A moderate impairment can be noted if only the headline can be read (Tinetti & Ginter, 1998). Another way to assess vision is to have older persons read prescription bottles. Functional assessment of safe medication administration includes the ability to read pill bottles and repeat directions for use, potential side effects, and instructions of when to contact a healthcare provider. Glasses should be available with clean lenses. Inability to read raises questions of literacy, undiagnosed vision difficulties, and safety for medication administration. Often overlooked is the number of older people who may not be able to read but are too embarrassed to reveal that information. As part of routine care, older adults should be encouraged to actively participate each day in learning about medications. In addition, at the time of discharge, nurses need to verify patient and family knowledge and skills regarding medications. This may include discussing medications as well as directly observing older adults opening pill bottles and identifying the correct pills.

Hearing ability is also essential for functioning and cognition. Individuals with decreased hearing may be inaccurately labeled as *cognitively impaired*. Hearing aids may not have been sent to the hospital with the older patient and should be obtained by the family. Hearing acuity may be validated by asking patients to identify the sound of a ticking watch. The "whisper test" may also be used. This is performed by whispering 10 words while standing 6 inches away from the individual. Inability to repeat five of the 10 words indicates a need for further assessment of hearing acuity. Occlusion of the external ear canal by cerumen, an easily treatable cause of decreased hearing acuity, may be evident with visualization (Mathias et al., 1986). Individuals with hearing deficits detected as part of bedside assessment should be referred for additional assessment and treatment. Amplifier devices may be useful and are an inexpensive item to stock on hospital nursing units.

Cognitive Capacity

Cognitive capacity includes a broad array of skills, including the ability to take in information, process it, make judgments, and act accordingly. This includes, but is not limited to, memory and decision-making.

Cognitive function is a major factor in a person's functional capacity, and baseline data regarding cognitive function should be gathered. However, such assessments most often initially rely on information provided by family members because acute illness may manifest as acute confusional states and not reflect baseline cognitive function (Kruianski & Gurland, 1976; see Chapter 6, Age-Related Changes in Health). Fluctuating attention may indicate an acute, reversible impairment (delirium) or temporary reactions to hospitalization. An acute change in cognition should be evaluated immediately for the presence of a potentially life-threatening, reversible medical condition (see Chapter 17, Advance Care Planning).

Cause of Functional Decline

All instances of functional decline should be assessed for an underlying reversible cause such as acute illness. With the resolution of acute illness (e.g., urinary tract infection [UTI], pneumonia, postoperative recovery), impaired ADL are expected to return to baseline with appropriate care and rehabilitation. Comprehensive musculoskeletal or neurological examination, laboratory tests, or referral for a therapeutic trial of physical or occupational therapy may be needed to boost recovery. In some cases, functional decline may accompany a predictable downward spiral associated with end-stage chronic diseases such as

Alzheimer's disease or terminal illnesses. However, even in individuals with these conditions, all potentially reversible causes should be fully explored.

INTERVENTIONS AND CARE STRATEGIES

Functional ability is a sensitive indicator of health in older adults. The need for assistance with ADL is an important nursing assessment to provide safe individualized care during hospitalization and also aids in care planning during and after a hospital stay. Sudden loss of function, including the ability to ambulate, is the hallmark of acute illness in older adults. Although recovery from illness may be associated with improvements in function, early nursing interventions to address care needs, refer to therapy, and modify environments of care help to ensure safety and decrease further loss of function. Therefore, all nurses must be skilled at incorporating a comprehensive functional assessment into all patient care assessments and communicating these assessments to the care team across transitions. Nurses need to be knowledgeable and skilled in assessment of function, implementing supportive environments, and providing geriatric-sensitive care to prevent functional decline. Geriatric-sensitive care incorporates strategies to prevent bed rest, encourage exercise and ambulation, ensure adequate nutrition, and encourage ongoing communication among all team members. Such care is essential in maximizing safe, independent functioning of hospitalized older adults (see Chapter 14, Family Caregiving).

CASE STUDY 10.1

Mrs. Hope, a 74-year-old retired night nurse, is admitted from her physician's office. Her admitting diagnosis is pneumonia, dehydration, and weakness. Her past medical history is significant for hypertension, congestive heart failure (CHF), and chronic obstructive pulmonary disease (COPD). Until the last few days she was very active, driving to church and the grocery store and volunteering several times a week at the library. Mrs. Hope is also a recent widow. She is extremely hard of hearing but has refused to wear her hearing aid. She smokes approximately 10 cigarettes a day, which she has done for more than 50 years. Her daughter who has accompanied her to the hospital admits that, lately, Mrs. Hope has not been taking most of her pills, although she has been taking aspirin for pain. She has also been losing weight and has poor appetite with little fluid intake. Laboratory values indicate anemia with a very low hematocrit and a urinary tract infection (UTI). A chest x-ray indicates a lung nodule.

Although on the unit, Mrs. Hope prefers to sleep in the recliner, saying she is most comfortable there and prefers to nap during the day. Despite intravenous (IV) fluids, blood transfusions, diuresis for fluid overload, oxygen therapy, occupational therapy for energy conservation, and round-the-clock acetaminophen for "aches and pains," Mrs. Hope continues to be weak and needs assistance with daily bathing and much encouragement and assistance to ambulate even short distances. She is able to communicate well using a hearing amplifier after her ears are cleaned of wax. She is assessed on rounds by the multidisciplinary care team over the next several days. Mrs. Hope acknowledges that she misses her husband but denies depression. After the team meeting, consultations are obtained for physical therapy, nutrition services, pharmacy, geriatric clinical nurse specialist, and social work, and the team begins to discuss Mrs. Hope's goals of care, including durable power of attorney for healthcare and advance directives. Over the next few days, with nutritional supplements and therapy, her fatigue improves, and she is able to be weaned from oxygen. Referrals for home care are made for nursing and therapy as well as for telehealth to monitor her CHF, weight, and blood pressure. Mrs. Hope's medication regimen is adjusted, substituting acetaminophen and an analgesic gel rather than aspirin, for her pain. She and her daughter are instructed on a high-calorie diet and are provided with information on senior centers, meals on wheels, and smoking-cessation programs. She is given vaccines for influenza and pneumonia. A future outpatient appointment for a comprehensive geriatric evaluation is made for a comprehensive geriatric assessment once her acute conditions resolve, including further testing of her lung nodule, anemia, cognitive status, and follow-up on advance directives.

Mrs. Hope is discharged home with her daughter after medications, diet, and exercises are reviewed using a teach-back method of education. She is given information on smoking cessation, pill boxes to aid with medication adherence and lifeline alert systems. The numbers for the home care agency and directions to the outpatient appointment are printed out for her at the time of discharge. A follow-up phone call confirms that Mrs. Hope is using her pill boxes and that she has made phone calls to her primary care physician and meals on wheels.

(*continued*)

CASE STUDY 10.1 (*continued*)

Discussion

This case study indicates the need to assess baseline function, changes in function, and trajectory of function following acute care. Assessment in this case used components from several standardized functional assessment instruments and incorporated them into existing care routines. Care was enhanced by collaboration among multiple disciplines and across settings. Opportunities for assessment and resolution of impairment rely on institutional preferences and resources, as well as the functional level of the patient. Despite Mrs. Hope's impaired function, the hospital staff worked to enhance her physical functioning as much as possible within the current care setting and a context of safety. Although the focus of acute care is on resolving acute issues such as pneumonia and exacerbations of chronic diseases, such as CHF and pain, other issues, such as weight loss, anemia, fatigue, and advance directives, should also be addressed. In this case, follow-up of several issues will need to be done after hospitalization. Given the complexity of many large healthcare systems, ideally, these appointments can be arranged before the patient leaves the hospital. Referrals for home care and continued physical therapy were made as part of a coordinated transition of care and include information on other community resources.

CASE STUDY 10.2

Mr. Goode is an 86-year-old retired college history professor who is well known for his accomplishments as a collegiate football player. His wife of 60 years died last year. He lives alone in a one-floor condominium. His daughter and son live in the same city. He has a cleaning lady who comes once a week. He has been receiving meals on wheels; he admits to being a terrible cook. Mr. Goode has been driving only short distances during the daytime since his cataract surgery 15 years ago. He rides his stationary exercise bike daily to keep up his "boyish" figure.

Mr. Goode has a long history of cardiac disease, including two myocardial infarctions and a coronary bypass graft 20 years ago. He has degenerative joint disease that affects his hips and knees, and 10 years ago he underwent bilateral knee replacements. Twenty years ago, he had prostate surgery for enlargement. His current medications include lisinopril 5 mg, furosemide 20 mg, potassium chloride 8 mEq every other day, acetaminophen 650 mg twice a day, and analgesic balm as needed.

Mr. Goode is admitted to the emergency department extremely short of breath; the cleaning lady had called 911. He has crackles in his lungs and 4+ pitting edema of his legs. He is placed on oxygen and given IV Lasix. A Foley catheter is placed, and an IV of D5½NS at 50 mL/hr is started. On admission to the nursing unit, he requires assistance to move from the cart to the bed. He complains of nausea, weakness, and knee pain. His physician orders bed rest and Benadryl 25 mg at bedtime as needed for sleep.

On hospital day 2, Mr. Goode refuses to get out of bed because of knee pain. He requests assistance with his bathing and eating. His weight has decreased 2 pounds, and he has decreased crackles in his lungs. His daughter arrives with his glasses, hearing aids with batteries, and pillboxes. His medication boxes are still filled from the previous 5 days. His laboratory results return. His urine is positive for bacteria, red and white cells, and leukoesterase, confirming a UTI. An electrocardiogram is negative for an acute myocardial infarction. A chest x-ray confirms acute CHF and pneumonia. He is placed on antibiotics, and his diuretics are increased for 1 day. He cannot recall the last time he had a bowel movement.

During team rounds, his orders are changed to the following: out of bed and ambulate in hallway twice a day, discontinue Foley catheter and Benadryl, and wean oxygen. His nurses review his baseline ADL function and current function and request a physical therapy consultation to evaluate safe ambulation and a social work consultation to evaluate self-care ability and home care services. The patient requests analgesic balm for his knees. Fall precautions are initiated, including frequent prompted voiding. He is ordered a bowel stimulant and encouraged to drink warm prune juice for constipation.

On hospital day 4, Mr. Goode ambulates out to the nurse's station and announces that he feels much better and is ready to go home. His progress is reviewed on team rounds. The physical therapy evaluation reveals that he is capable of ambulating and transferring independently and safely, and the therapist recommends a continued home exercise program. He is given information on community arthritis programs, including water aquatics and tai chi. The social worker has shared information with Mr. Goode and his son regarding the "lifeline" and recommended check-in phone calls every evening. Nutrition services recommended a low-salt diet and used sample menus to practice food choices, and a nurse has reviewed medications with Mr. Goode and his daughter, using a "teach-back method." A pillbox is filled in the pharmacy. The daughter agrees to purchase a scale with large numbers. Mr. Goode's daughter will check

(*continued*)

CASE STUDY 10.2 (*continued*)

the pillbox weekly. Mr. Goode is ready for discharge from the hospital and will return to his condominium because he has returned to his baseline ADL. Before discharge, he agrees to update his vaccines for pneumonia and zoster. He is encouraged to schedule a visit with his primary care provider before he leaves the hospital.

Discussion

Similar to Case 10.1, this case stresses the importance of establishing baseline function and using standardized instruments to assess and communicate levels of function. Again, the critical collaboration with a multidisciplinary team that includes the patient is evident in planning and evaluating care needs.

This case illustrates the appropriate in-hospital interventions needed to reverse decline, such as early ambulation, attention to sensory needs, treatment of constipation, and judicious use of medications.

SUMMARY

Knowledge of ADL and IADL abilities, including eating, bathing, ambulation, shopping, housework, finances, food preparation, medication administration, and transportation, is an important part of providing individual nursing care for comprehensive discharge planning (Woolf, 1990). In summary, for older people, the evaluation of function represents the cornerstone of good nursing care and affords a sound baseline by which to provide information essential to plan for continued care across settings.

NURSING STANDARD OF PRACTICE

Protocol 10.1: Assessment of Physical Function

I. GOAL

To maximize physical functioning, ensure safety, and prevent or minimize decline in ADL function, and plan for transitions of care

II. OBJECTIVE

The following nursing care protocol has been designed to help bedside nurses to assess and monitor function in older adults, prevent decline, and maintain the function of older adults during acute hospitalization.

III. BACKGROUND

A. Functional status of individuals describes the capacity and performance of safe ADL and IADL (Applegate et al., 1990; Kane & Kane, 2000; Katz et al., 1963; Lawton & Brody, 1969) and is a sensitive indicator of health or illness in older adults. It is, therefore, a critical nursing assessment (Buurman et al., 2011; Byles, 2000; Campbell et al., 2004; Kresevic et al., 1998; Mezey et al., 1993).

B. Some functional decline may be prevented or ameliorated with prompt and aggressive nursing intervention (e.g., ambulation, toileting schedules, enhanced communication, adaptive equipment, attention to medications and dosages, and management of pain [Barnes et al., 2012; Bates-Jensen et al., 2004; Boltz et al., 2010; Brown, Redden, Flood, & Allman, 2009; Counsell et al., 2000; Kalisch, Soohee, & Dabney, 2013; Landefeld et al., 1995; Palmer, Counsell, & Landefeld, 1998; Zisberger et al., 2011]).

C. Some functional decline may occur progressively and is not reversible. This decline often accompanies chronic and terminal disease states such as degenerative joint disease, Parkinson's disease, dementia, heart failure, and cancer (Hirsch, Sommers, Olsen, Mullen, & Winograd, 1990). Interprofessional team care meetings may be helpful in clarifying the trajectory of illness and referring for appropriate follow-up.

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Protocol 10.1: Assessment of Physical Function (*continued*)

D. Functional status is influenced by physiological aging changes, acute and chronic illness, and adaptation to the physical environment. Functional decline is often the initial symptom of acute illness such as infections (e.g., pneumonia and UTI). These declines are usually reversible and require medical evaluation (Applegate et al., 1990; Sager & Rudberg, 1998). Functional status is contingent on motivation, cognition, and sensory capacity, including vision and hearing (Pearson, 2000).
E. Risk factors for functional decline include frailty injuries, acute illness, medication side effects, pain, depression, malnutrition, decreased mobility, prolonged bed rest (including the use of physical restraints), prolonged use of Foley catheters, and changes in environment or routines (Brown et al., 2009; Counsell et al., 2000; Landefeld et al., 1995; McCusker et al., 2002).
F. Additional complications of functional decline include loss of independence, falls, incontinence, malnutrition, decreased socialization, depression, and increased risk for long-term institutionalization and depression (Covinsky et al., 1998; Creditor, 1993; Landefeld et al., 1995; see related chapters).
G. Recovery of function can also be a measure of return to health, such as for those individuals recovering from exacerbations of cardiovascular or respiratory diseases and acute infections, from joint replacement surgery, or from new strokes (Katz et al., 1963).
H. Functional status evaluation assists patients and their families in planning future care needs post hospitalization, such as short-term skilled care, assisted living, home care, and need for community services (Boltz, Resnick, Chippendale, & Galvin, 2014; Graf, 2006; Landefeld et al., 1995), or long-term residential care.
I. Physical environments of care with attention to the special needs of older adults serve to maintain and enhance function (i.e., chairs with arms, elevated toilet seat, levers vs. door knobs, enhanced lighting; Capezuti et al. 2008; Kresevic et al., 1998; Landefeld et al., 1995).

IV. ASSESSMENT PARAMETERS

A. Comprehensive functional assessment of older adults includes independent performance of basic ADL, social activities, or IADL, the assistance needed to accomplish these tasks, and sensory ability, pain level, cognition, and capacity to ambulate (Campbell et al., 2004; Doran et al., 2006; Freedman, Martin, & Schoeni, 2002; Kalish et al., 2013; Kane & Kane, 2000; Katz et al., 1963; Lawton & Brody, 1969; Lightbody & Baldwin, 2002; McCusker et al., 2002; Tinetti & Ginter, 1998).
   1. Basic ADL (bathing, dressing, grooming, eating, continence, transferring)
   2. IADL (meal preparation, shopping, medication administration, housework, transportation, accounting)
   3. Mobility (ambulation, pivoting)
B. Older adults may view their health in terms of how well they can function rather than in terms of disease alone. Strengths should be emphasized as well as needs for assistance (Depp & Jeste, 2006; Pearson, 2000).
C. The clinician should validate, document, and communicate baseline functional status and recent or progressive decline in function (Boltz, Chippendale, Resnick, & Galvin, 2015; Gillis, MacDonald, & MacIssac, 2008; Graf, 2006).
D. Function should be assessed over time to validate capacity, decline, or progress (Applegate et al., 1990; Callahan, Thomas, Goldhirsh, & Leipzig, 2002; Kane & Kane, 2000).
E. Standard instruments selected to assess function should be efficient to administer and easy to interpret. They should provide useful practical information for clinicians and be incorporated into routine history taking and daily assessments, and documentation including electronic medical records (Hoogerduijn et al., 2006; Kane & Kane, 2000; Kresevic et al., 1998; see "Function" topic at www.consultgerirn.org for tools).
F. Interprofessional communication regarding functional status, changes, and expected trajectory should be part of all care settings and should include the patient and family whenever possible (Counsell et al., 2000; Covinsky et al., 1998; Kresevic et al., 1998; Landefeld et al., 1995).
G. Interprofessional rounds support promotion of function by addressing functional assessment (baseline and current), evaluating potential interventions, and helping develop a plan of care with measurable goals (Kresevic & Holder; 1998).
H. Patient's perceptions of function, quality of life, and goals of care should be assessed, documented, and communicated to the care team across all settings (Liebzeit et al., 2018).

(*continued*)

Protocol 10.1: Assessment of Physical Function (*continued*)

V. CARE STRATEGIES

A. Strategies to maximize functional status and to prevent decline
   1. Maintain individual's daily routine. Help to maintain physical, cognitive, and social function through physical activity and socialization. Encourage ambulation, encourage the individual to get out of bed for meals, allow flexible visitation, including pets, and encourage reading the newspaper. Encourage adjunctive interventions such as relaxation and music therapy (Boltz et al., 2015; Kresevic & Holder, 1998; Landefeld et al., 1995; Resnick et al., 2011).
   2. Educate older adults, family, and formal caregivers on the value of independent functioning and the consequences of functional decline (Graf, 2006; Kresevic & Holder, 1998; Vass, Avlund, Lauridsen, & Hendriksen, 2005); increased risk for complications such as malnutrition, falls, hospital readmissions, increased likelihood of being discharged to a nursing home setting (Fortinsky et al., 1999); increased mortality (Boyd et al., 2005; Rozzini et al., 2005); and decreased functional recovery (Boltz et al., 2015; Boyd et al., 2005, Boyd, Ritchie, et al., 2008; Gill et al., 2004; Gillis et al., 2008; Volpato et al., 2007), ultimately decreasing quality of life.
      a. Physiological and psychological value of independent functioning
      b. Reversible functional decline associated with acute illness (Hirsch et al., 1990; Sager & Rudberg, 1998)
      c. Strategies to prevent functional decline: exercise, nutrition, pain management, and socialization (Boltz, Resnick, Capezuti, Shuluk, & Secic, 2012; de Morton, Keating, & Jeffs, 2007; Kresevic & Holder, 1998; Landefeld et al., 1995; Siegler, Glick, & Lee, 2002; Tucker, Molsberger, & Clark, 2004)
      d. Sources of assistance to manage decline
   3. Encourage activity, including routine exercise, range of motion, and ambulation to maintain activity, flexibility, and function (Counsell et al., 2000; Landefeld et al., 1995; Pedersen & Saltin, 2006).
   4. Minimize bed rest (Bates-Jensen et al., 2004; Covinsky et al., 1998; Kresevic & Holder, 1998; Landefeld et al., 1995).
   5. Explore alternatives to physical restraint use (e.g., cover tubings; use distraction; Covinsky et al., 1998; Kresevic & Holder, 1998; see Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care).
   6. Judiciously use medications, especially psychoactive medications, in geriatric dosages (Inouye, Rushing, Foreman, Palmer, & Pompei, 1998; see Chapter 17, Advance Care Planning).
   7. Assess and treat for pain (Covinsky et al., 1998). Consider alternative and nonpharmacological interventions.
   8. Design environments with handrails; wide doorways; raised toilet seats; shower seats; enhanced lighting; low beds; and chairs of various types and height, including recliners and rocking chairs (Cunningham & Michael, 2004; Kresevic et al., 1998).
   9. Help individuals regain baseline function after acute illnesses by using exercise, physical or occupational therapy consultation, nutrition, and coaching (Conn, Minor, Burks, Rantz, & Pomeroy, 2003; Covinsky et al., 1998; Engberg, Sereika, McDowell, Weber, & Brodak, 2002; Forbes, 2005; Hodgkinson, Evans, & Wood, 2003; Kresevic et al., 1998).

B. Strategies to help older individuals cope with functional decline
   1. Help older adults and family members determine realistic functional capacity based on health trajectory with interprofessional consultation (Kresevic & Holder, 1998).
   2. Provide caregiver education and support for families of individuals when decline cannot be ameliorated in spite of nursing and rehabilitative efforts (Graf, 2006). Palliative care consultation may offer the family and team important management strategies, particularly postacute care.
   3. Carefully document all intervention strategies and patient response (Graf, 2006).
   4. Provide information to caregivers on causes of functional decline related to acute and chronic conditions (Covinsky et al., 1998; Resnick et al., 2016).
   5. Provide education to address safety care needs for falls, injuries, and common complications. Short-term skilled care for physical therapy may be needed; long-term care settings may be required to ensure safety (Covinsky et al., 1998).
   6. Provide sufficient protein and caloric intake to ensure adequate intake and prevent further decline. Liberalize diet to include personal preferences (Edington et al., 2004; Landefeld et al., 1995).
   7. Provide caregiver support and community services, such as senior centers, meals on wheels, home care, nursing, and physical and occupational therapy services to manage functional decline (Covinsky et al., 1998; Graf, 2006).

(*continued*)

Protocol 10.1: Assessment of Physical Function (*continued*)

VI. EXPECTED OUTCOMES

A. Patients can
   1. Maintain safe level of ADL and ambulation.
   2. Make necessary adaptations to maintain safety and independence, including assistive devices and environmental adaptations.
   3. Strive to attain highest quality of life despite low functional level.
   4. Communicate preferences for care.

B. Providers can demonstrate
   1. Increased assessment, identification, and management of patients susceptible to or experiencing functional decline. Provide routine assessment of functional capacity despite level of care.
   2. Ongoing documentation (electronic medical record) and communication of capacity, interventions, goals, and outcomes
   3. Competence in preventive and restorative strategies for function
   4. Competence in assessing safe environments of care that foster safe independent function

C. Institution will experience
   1. System-wide incorporation of functional assessment into routine assessments
   2. A reduction in incidence and prevalence of functional decline
   3. A decrease in morbidity and mortality rates associated with functional decline
   4. Reduction in the use of physical restraints, prolonged bed rest, and Foley catheters use falls
   5. Decreased incidence of delirium
   6. An increase in prevalence of patients who leave the hospital with baseline or improved functional status
   7. Decreased readmission rate
   8. Increased early utilization of nutritional and rehabilitative services (occupational and physical therapy)
   9. Evidence of geriatric-sensitive physical care environments that facilitate safe, independent function such as low beds, comfortable chairs, and caregiver education on safe environmental design and exercise programs
   10. Evidence of continued interprofessional assessments, care planning, and evaluation of care related to function, including posthospital follow-up planning such as leadership support for interdisciplinary communication
   11. Leadership commitment to patient-centered care

VII. RELEVANT PRACTICE GUIDELINES

Several resources are now available to guide adoption of evidence-based nursing interventions to enhance function in older adults.

A. Agency for Healthcare Research and Quality and National Guideline Clearinghouse: www.guideline.gov
B. McGill University Health Centre Research and Clinical Resources for Evidence Based Nursing: www.muhc-ebn.mcgill.ca
C. National Quality Forum: www.qualityforum.org/Home.aspx
D. Registered Nurses Association of Ontario. (2005). *Clinical practice guidelines*. Retrieved from www.rnao.org/Page.asp?PageID=861&SiteNodeID=270&BL_ExpandID
E. University of Iowa Hartford Center of Geriatric Nursing Excellence. (n.d.). *Evidence-based practice guidelines*. Retrieved from www.nursing.uiowa.edu

ABBREVIATIONS

ADL	Activities of daily living
IADL	Instrumental activities of daily living
UTI	Urinary tract infection

RESOURCES

Agency for Healthcare Research and Quality and National Guideline Clearinghouse
http://www.guideline.gov

McGill University Health Centre Research and Research and Clinical Resources for Evidence Based Nursing
National Quality Forum
http://www.qualityforum.org/Home.aspx

NICHE: Nurses Improving Care for Healthsystem Elders
http://www.nicheprogram.org

Registered Nurses Association of Ontario. *Clinical practice guidelines*.
http://www.rnao.org/Page.asp?PageID=861&SiteNodeID=270&BL_ExpandID

Hartford Center of Geriatric Nursing Excellence. *Evidence-based practice guidelines*.

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Oral Healthcare in the Older Adult*

11

Linda J. O'Connor

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Discuss the consequences of poor oral health.
2. Describe a thorough oral assessment in the older adult.
3. Describe the oral hygiene plan of care for nonintubated older adults.
4. Discuss nursing interventions for oral care.

OVERVIEW

Poor oral health and periodontal disease have been associated with malnutrition, dehydration, cardiovascular disease, pneumonia, aspiration pneumonia, ventilator-associated pneumonia, diabetes, chronic kidney disease, and chronic obstructive pulmonary disease (COPD; Ahn et al., 2016; Bascones-Martinez, Gonzalez-Febles, & Sanz-Esporin, 2014; Borgnakke, Anderson, Shannon, & Jivanescu, 2015; Carrizales-Sepulveda, Ordaz-Farias, Vera-Pineda, & Flores-Ramirez, 2018; Dietrich et al., 2017; Hajishengallis, 2015; Hong et al., 2017; Jung et al., 2014; Manger et al., 2017; Navarro, Sala, & Salas, 2017; Nguyen, Kim, Quan, Nguyen, & Tran, 2015; Ozcaka, Becerik, Bicakci, & Kiyak, 2014; Tabeta, Yoshie, & Yamazaki, 2014). Oral health also affects nutritional status, ability to speak, self-esteem, mental wellness, and overall well-being (Bilic et al., 2017; Ferreira, Dias-Pereira, Branco-de-Almeida, Martins, & Palva, 2017; Zucoloto, Maroco, & Campos, 2016). Many oral diseases are not part of the natural aging process but side effects of medical treatment and medications.

BACKGROUND AND STATEMENT OF PROBLEM

Plaque retention is a problem in older adults who have difficulty in mechanically removing plaque caused by diminished manual dexterity, impaired vision, or chronic illness (Brown, Goryakin, & Finlayson, 2009; Hakuta, Mori, Ueno, Shinada, & Kawaguchi, 2009). An older adult's functional ability and cognitive status affect his or her ability to perform oral care and denture care. Dental plaque harbors microorganisms, including *Streptococcus, Staphylococcus*, gram-positive rods, gram-negative rods, and yeasts (Coulthwaite & Verran, 2007). Dentures also have the potential to harbor *Streptococcus pneumoniae*, *Haemophilus influenza*, *Escherichia coli*, *Klebsiella*, and *Pseudomonas* secondary to spending time in nonhygienic environments (Coulthwaite & Verran, 2007). Dentures have been seen thrown in with patients' clothing, thrown in a washbasin

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

or other containers with bathing items, and so forth, instead of being properly cleaned and stored in a denture cup. Lack of good oral hygiene increases the risk of development of secondary infections, extended hospital stays, and significant negative health outcomes.

Multiple medications produce side effects that affect the oral cavity. Cardiac medications can cause salivary dysfunction, gingival enlargement, and lichenoid mucosal reactions. Steroid treatment can predispose a patient to oral candidiasis, and cancer treatments can cause a plethora of oral conditions such as stomatitis, salivary hypofunction, microbial infections, and xerostomia.

The mouth reflects the culmination of multiple stressors over the years, and, as the mouth ages, it is less able to tolerate these stressors. With an increase in chronic disease and medication usage as a person ages, periodontal problems may increase. Many of the oral health problems seen in older adults could be avoided with routine preventive care.

ASSESSMENT OF THE PROBLEM

Physical Assessment

The promotion of oral health through assessment and good oral hygiene is an essential part of nursing care. Oral assessment is part of the nurse's head-to-toe assessment of the older adult and is done on admission and at the beginning of each shift. The nurse assesses the condition of the oral cavity, which should be pink, moist, and intact; the presence or absence of natural teeth and/or dentures; ability to function with or without natural teeth and/or dentures; and the patient's ability to speak, chew, or swallow. Natural teeth should be intact, and dentures (partial or full) should fit comfortably and not be moving when the older adult is speaking. Any abnormal findings such as dryness, swelling, sores, ulcers, bleeding, white patches, broken or decayed teeth, halitosis, ill-fitting dentures, difficulty swallowing, signs of aspiration, and pain are documented by the nurse, and the healthcare team informed.

Poorly fitting dentures can cause ulcerations and candidiasis (oral fungal infection, masses, and denture stomatitis). Denture stomatitis presents as red, inflamed tissue beneath dentures, caused by fungal infections and insufficient oral hygiene. Some oral mucosal diseases that nursing may see are angular cheilitis (red and white cracked lesions in the corners of the mouth, caused by inflammation and a fungal infection), cicatricial pemphigoid (produces red, inflamed lesions on the gingival, palate, tongue, and cheek tissues), lichen planus (most common form presents as a lacy white appearance on the tongue and/or cheeks), and pemphigus vulgaris (red bleeding tissues that result from trauma but heal without scarring). Untreated lesions can develop into large, infected regions, which require immediate medical attention. Dental professionals diagnose oral mucosal diseases, but the nurse needs to be aware of any abnormal findings and report them immediately.

The nurse also needs to assess the patient for functional ability and manual dexterity to provide oral hygiene. The nurse needs to observe the older adult providing oral hygiene to make sure that it is effective. The primary focus for nurses is to maintain the older adult's function so that older adults may participate in their daily care. Once the older adult performs his or her oral hygiene, the nurse must follow up as appropriate to complete the oral hygiene.

Assessment Tools

The Kayser-Jones Brief Oral Health Status Examination (BOHSE) is a 10-category screening tool that can be used with cognitively intact or impaired older adults in any healthcare setting. The BOHSE provides an organized, efficient method for nurses to document their oral assessment. The 10 categories (lymph nodes, lips, tongue, gums, tissues, saliva, natural teeth, artificial teeth, pairs of teeth in chewing positions, and oral cleanliness) are scored from 0 (healthy) to 2 (unhealthy). Total scores range from 0 to 20; the higher the score, the poorer the older adult's oral health (Kayser-Jones, Bird, Paul, Long, & Schell, 1995). See the "Resources" section for access to this tool.

INTERVENTION AND CARE STRATEGIES

The gold standard for providing oral hygiene is the toothbrush. It is the mechanical action of the toothbrush that is important for plaque removal. If the older adult has any decrease in function or manual dexterity, the nursing staff needs to assess the older adult's ability to provide effective oral hygiene and then assist as needed. Foam swabs may be used for cleaning the oral mucus of an edentulous older adult. Alcohol-free commercial mouth rinses may be used. Lemon–glycerin swabs or swab sticks cause drying of the oral mucosa and erosion of the tooth enamel and thus should never be used.

The use of chlorhexidine (CHG) in the older adult is determined by the dentist. CHG has been found to be an effective means for the reduction of nosocomial pneumonia and ventilator-associated pneumonia (El-Rabbany, Zaghlol, Bhandari, & Azarpazhooh, 2015; Manger et al., 2017; Rabello, Araujo, & Magalhaes, 2018; Silvestri et al., 2014). A good oral assessment by the nurse during each shift is essential for the patient on CHG, and so is monitoring of nutritional intake.

Education of the nursing staff is imperative. Implementation of evidence-based protocols combined with ongoing educational training sessions have been demonstrated to have a positive impact on oral care being provided and on the oral health status of older adults (Catteau, Piaton, Nicolas, Hennequin, & Lassauzay, 2016; Deutsch et al., 2017; Gibney, Wright, Sharma, & Naganathan, 2015; Janssens, Vanobbergen, Lambert, Schols, & De Visschere, 2018; Kaneoka et al., 2015; Ory et al., 2017; Tynan, Deeth, & McKenzie, 2018). Staff needs to be instructed on oral hygiene and the proper care of different appliances. Dentures should be brushed before they are placed into a denture cup. Dentures should be removed at night, but some older adults prefer to keep their dentures in continuously. It therefore becomes even more important for the nurse to do an assessment of the oral mucosa. In the acute care and long-term care setting, the older adult may not have dental adhesive, and, therefore, there is a high risk of food particles getting caught underneath their dentures. It is important, therefore, that staff remember to take the dentures out after each meal, rinse them and the patient's mouth, and place the dentures back in. Complete denture care should be given morning, night, and as needed.

Nurses need to be educated in oral assessment, and nursing assistants need education on observation of the oral cavity and what to report to the nurse. Both nurses and nursing assistants need to be educated about the proper techniques for providing oral hygiene and caring for oral appliances. Patients and families need information about the importance of good oral health and hygiene and to dispel the oral health myths that exist about oral health and aging in general.

Education focused on the importance of good oral health and hygiene in the older adult, the myths about oral health and aging, evidence-based practice protocols, implementing these protocols, and the appropriate products for providing oral hygiene to their patients and residents must also be provided to managers and administrators. Without the proper supplies, it is impossible for the nursing staff to provide the oral hygiene care the older adult needs and to properly implement evidence-based protocols for oral health and hygiene in the older adult.

CASE STUDY 11.1

Mrs. Smith, an 84-year-old female with a history of Alzheimer's-type dementia, was admitted for recent decreased oral intake and percutaneous endoscopic gastrostomy (PEG) placement. Mrs. Smith was alert, oriented to herself, pleasant, cooperative with care, and able to follow simple directions. She lived at home with her family and received care from a home health aide. The initial oral assessment was done on day 2 of admission, and it was found that upper dentures and lower natural teeth were both covered with food particles. Her oral mucosa was noted to be dry. The upper dentures were difficult to remove and caused her pain. The upper denture was being "kept in place" by a collection of old food, which was found on removal. The oral mucosa under the upper denture was covered with sores and ulcers and was bleeding, infected, and very painful. The health team was notified, a dental consultant was called, and an oral hygiene plan of care was implemented. Mrs. Smith's diet was changed to puree while her oral mucosa was healing, and the PEG placement was put on hold. On inquiry, it was learned from the family that their long-time aide had just moved and that the new aide had been with them for only a few months. It was during this time that they noticed the decline in Mrs. Smith's nutritional intake. The family chose to hire a new aide, and both the family and the new aide were educated on proper oral hygiene for Mrs. Smith. Once Mrs. Smith's oral mucosa had healed, the upper denture was replaced, and she was returned to her regular diet. Her oral intake returned to baseline, and a PEG was no longer required.

Discussion

This case study illustrates how poor oral care often goes undetected, the importance of good oral care, the need for physical assessment by the nurse, and the need for staff and family education. This patient was being admitted for an invasive procedure secondary to poor oral health caused by poor oral care. Although the family was involved in Mrs. Smith's care (she had no contractures or skin breakdown), her lack of oral care had gone unnoticed by them. The admitting nurse documented that the patient had dentures on the admission form but did not do a physical oral assessment. The nurse caring for the patient on day 2 had attended an oral health seminar and included the physical oral assessment in her morning rounds. She also followed up with the nursing assistants to ensure that oral care had been provided to the patient after each meal. The implementation of an oral hygiene plan of care and education of nursing staff, family, and home care staff ensured that Mrs. Smith received the oral care required for her oral mucosa to heal, and her nutritional status to return to baseline, and prevented the unnecessary placement of a PEG.

SUMMARY

A healthy mouth is a vital part of general health and well-being, and it is imperative that healthcare professionals provide continuing education to patients and families, advocate for oral health prevention, and provide oral care to older adults in all settings. Well-developed evidence-based oral care protocols and educational training sessions have been demonstrated to have a positive impact on the oral health status of older patients.



NURSING STANDARD OF PRACTICE

Protocol 11.1: Providing Oral Healthcare to Older Adults

I. GOAL

The promotion of oral health through good oral hygiene is an essential part of nursing care. The RN or designee provides regular oral care for functionally dependent and cognitively impaired older adults.

II. BACKGROUND

A. Oral hygiene is directly linked with systemic infections, cardiac disease, cerebrovascular accident, acute myocardial infarction, glucose control in diabetes, nutritional intake, comfort, ability to speak, and the patient's self-esteem and overall well-being.
B. Definitions
   1. *Oral* refers to the mouth (natural teeth, gingival and supporting tissues, hard and soft palate, mucosal lining of the mouth and throat, tongue, salivary glands, chewing muscles, upper and lower jaw, and lips).
   2. *Oral cavity* includes cheeks, as well as hard and soft palate.
   3. *Oral hygiene* is the prevention of plaque-related disease, the destruction of plaque through the mechanical action of tooth brushing and flossing, or the use of other oral hygiene aids.
   4. *Edentulous* means that natural teeth have been removed.

III. PARAMETERS OF ASSESSMENT

A. The RN conducts an oral assessment or evaluation on admission and on every shift. The nurse assesses the condition of:
   1. The oral cavity; should be pink, moist, and intact
   2. The presence of or absence of natural teeth and/or dentures
   3. Ability to function with or without natural teeth and/or dentures
   4. The patient's ability to speak, chew, or swallow
   5. Any abnormal findings, such as dryness, swelling, sores, ulcers, bleeding, white patches, broken or decayed teeth, halitosis, ill-fitting dentures, difficulty swallowing, signs of aspiration, and pain
B. Assessment tool: The Kayser-Jones BOHSE. See the "Resources" section for access to this tool.

IV. NURSING CARE STRATEGIES

A. Oral hygiene plan of care: dependent mouth care of the edentulous patient
   1. Oral care is provided during morning care, evening care, and as needed.
   2. Wash hands and don gloves.
   3. Remove dentures.
   4. Brush dentures with toothbrush/toothpaste and rinse.
   5. Brush patient's tongue.
   6. Reinsert dentures.
   7. Apply lip moisturizer.

(*continued*)

Protocol 11.1: Providing Oral Healthcare to Older Adults (*continued*)

B. Dependent mouth care: patients with teeth or partial dentures
   1. Oral care is provided during morning care, evening care, and as needed.
   2. Wash hands and don gloves.
   3. Gently brush teeth in an up-and-down motion with short strokes using the toothbrush.
   4. Brush patient's tongue.
   5. Apply lip moisturizer.
C. For partial dentures, follow procedure for full denture cleaning and insertion.
D. Assisted or supervised care
   1. Oral care is provided during morning care, evening care, and as needed.
   2. Assess what patient can do and provide assistance as needed.
   3. Set up necessary items.

V. EVALUATION OF EXPECTED OUTCOMES

A. Patient will
   1. Receive oral hygiene a minimum of once every 8 hours while in the acute care, long-term care, or home care setting.
   2. Patients and families will be referred to dental services for follow-up treatment.
   3. Patients and families will be educated on the importance of good oral hygiene and follow-up dental services.
B. RN will
   1. Conduct an assessment or evaluation of the oral cavity on admission and every shift.
   2. Notify the physician of any abnormalities present in the oral cavity.
   3. Assess what each patient can do independently.
   4. Observe aspiration precautions while providing care.
   5. Provide oral care education to patients and families.
C. Institution will
   1. Provide access to dental services as appropriate.
   2. Provide ongoing education to healthcare providers.
   3. Provide a yearly oral health and dental care in-service to healthcare providers.

ABBREVIATION

BOHSE Brief Oral Health Status Examination

RESOURCES

American Academy of Periodontology
www.perio.org

Centers for Disease Control and Prevention
http://www.cdc.gov/OralHealth

WHO Oral Health
www.who.int/oral_health/en

National Institute of Dental and Craniofacial Research
http://www.nidcr.nih.gov
http://www.consultgeri.org

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Managing Oral Hydration in the Older Adult*

12

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EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe older adults at risk of inadequate fluid intake and of dehydration.
2. Identify key aspects of a hydration assessment.
3. List specific interventions to promote hydration in older adults across care settings.
4. Identify outcomes of a hydration management program.

OVERVIEW

The incidence and prevalence of dehydration among older adults have been characterized as a public health issue for community-dwelling older adults (Picetti et al., 2017) and repeatedly noted as being far too commonly an avoidable diagnosis for those in long-term care (Paulis, Everink, Halfens, Lohrmann, & Schols, 2018). Studies using biomarkers (serum sodium, osmolality, and blood urea nitrogen [BUN]/creatinine ratio) for dehydration and volume depletion by the Established Populations for Epidemiologic Studies of the Elderly (EPESE; Stookey, Pieper, & Cohen, 2005) and National Health and Nutrition Examination Survey III (NHANES III; Stookey, 2005) found that the prevalence rate for these conditions in community-dwelling older adults could range from .5% to 60%, depending on the markers used. Several recent studies reported the occurrence of dehydration among community-dwelling older adults at 22% (Hooper et al., 2016) and 41.3% (Lesnik, Piko, Zeleznik, & Bevc, 2017).

The prevalence of dehydration among residents of long-term care (LTC) was reported in a systemic review, conducted by Paulis et al. (2018), to range from .8% to 38.5%. Hooper and team, who implemented the Dehydration Recognition in our Elders (DRIE; driestudy.appspot.com) study, reported that 19% of those in LTC were dehydrated. Yet that percentage is more than double that reported by Johnson and Hahn (2018) and Lesnik et al. (2017). In two separate studies, Murray, Doeltgen, Miller, and Scholten (2015, 2016) reported the rate of dehydration as 21% and 44% among individuals post stroke and in a rehabilitation facility.

Another line of investigation relevant to the occurrence of dehydration is the description of inadequate water intake among residents in LTC. Botigué et al. (2018), Gaspar (1988, 1999, 2011), Gaspar, Scherb, and Rivera-Mariani (2019), Marra et al. (2016), and Namasivayam-MacDonald et al. (2018) all reported that the intake of fluids was inadequate based on various

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

recommended parameters. The percentages of the sample that had less than the recommended parameter was over 90%, for all parameters used.

Admission and effects of hydration in the hospital setting have been explored by El-Sharkawy, Shahota, Maughan, and Lobo (2014), who found that 40% of older adults were dehydrated on admission to a hospital and 44% were found to be dehydrated at 48 hours. Fortes et al. (2015) reported that 21% of the hospitalized older adults population had water-loss dehydration and 19% presented with water solute dehydration. Bennett, Thomas, and Riegel (2004) found that 48% of older adults presenting with dehydration at an emergency department (ED) unit were from the community. Wolff, Stuckler, and McKee (2015) reported that those admitted from care homes had a ten times higher prevalence of hypernatremia as compared to those living in the community. Older adults have the highest rate of hospital admissions with dehydration as the primary diagnosis (AHRQ, 2015). Maintaining adequate fluid balance is an essential component of health across the life span; older adults are more vulnerable to shifts in water balance—both overhydration and dehydration—because of age-related changes and increased likelihood that an older individual has several medical conditions (Hooper, Bunn, Jimoh, & Fairweather-Tait, 2013). Dehydration is the more frequent occurrence in older adults (Warren et al., 1994; Xiao, Barber, & Campbell, 2004). In fact, avoidable hospitalizations for dehydration in older adults increased by 40% from 1990 to 2000, at a cost of $1.14 billion (Xiao et al., 2004) and is one of the Agency for Healthcare Research and Quality's 13 ambulatory care-sensitive conditions. When dehydration is considered as a comorbid condition, the cost of hospitalizations and rehospitalizations is even higher (Frangeskou, Lopez-Valcarcel, & Serra-Majem, 2015).

Careful attention to hydration requirements of older adults will not only help prevent hospitalizations for dehydration but also decrease associated conditions such as acute confusion and delirium (Foreman, 1989; Mentes & Culp, 2003; Mentes, Culp, Maas, & Rantz, 1999; Murray et al., 2015, 2016; O'Keeffe & Lavan, 1996; Seymour, Henschke, Cape, & Campbell, 1980), adverse drug reactions (Doucet et al., 2002), infections (Beaujean et al., 1997; Masotti et al., 2000; Murray et al., 2015, 2016), increased morbidity associated with bladder cancer (Michaud et al., 1999), coronary heart disease (Chan, Knutsen, Blix, Lee, & Fraser, 2002; Rasouli, Kiasari, & Arab, 2008), stroke (Lin, Lee, Hung, Chang, & Yang, 2014; Rodriguez et al., 2009), and other thromboembolytic events (Kelly et al., 2004). Furthermore, dehydration has been associated with longer hospital stays for rehabilitation (Frangeskou et al., 2015; Mukand, Cai, Zielinski, Danish, & Berman, 2003) and for readmission to the hospital (Frangeskou et al., 2015; Gordon, An, Hayward, & Williams, 1998). Even in healthy community-dwelling older adults, physical performance and cognitive processing are affected by mild dehydration (Ainslie et al., 2002).

Oral hydration of older adults is particularly complex for a variety of reasons. In the following review, issues of age-related changes, risk factors, assessment measures, and nursing strategies for effective interventions for dehydration are addressed.

BACKGROUND AND STATEMENT OF PROBLEM

Water is an essential component of body composition. Intricate cellular functions, such as gene expression, protein synthesis, and uptake and metabolism of nutrients, are affected by hydration status. Organ systems, specifically the cardiovascular and renal systems, are particularly vulnerable to fluctuating levels of hydration (Metheny, 2000).

Older individuals are at increased risk for hydration problems stemming from several converging age-related factors, including lack of thirst (Ainslie et al., 2002; Phillips, Bretherton, Johnston, & Gray, 1991; Phillips et al., 1984); changes in body composition, specifically loss of fluid-rich muscle tissue (Bossingham, Carnell, & Campbell, 2005); increasing inability to respond efficiently to physiological stressful events through which dehydration results (Farrell et al., 2008; Rolls, 1998); and renal changes, including a reduced renal capacity to handle water and sodium efficiently (Macias-Nuñez, 2008). Additionally, personal, often lifetime, hydration habits may contribute to risk but have not been explored in relation to underhydration. As a result, older adults are often at risk for a chronic state of underhydration. Several studies (Bossingham et al., 2005; Morgan, Masterson, Fahlman, Topp, & Boardley, 2003; Raman et al., 2004) of community-dwelling older adults suggest that under normal conditions, older adults maintain adequate hydration; however, when challenged by environmental stressors—physical or emotional illness, surgery, or trauma—they are at increased risk for dehydration and rapidly become dehydrated if they are already chronically underhydrated.

DEFINITIONS

Dehydration

Dehydration is the depletion in total body water (TBW) content caused by pathological fluid losses, diminished water intake, or a combination of both. It results in hypernatremia (more than 145 mEq/L) in the extracellular fluid

compartment, which draws water from the intracellular fluids. The water loss is shared by all body-fluid compartments, and relatively little reduction in extracellular fluids occurs. Thus, circulation is not compromised unless the loss is very large.

Underhydration

Underhydration is a precursory condition to dehydration associated with insidious onset and poor outcomes (Mentes, 2006; Mentes & Culp, 2003). Others have referred to this condition as *mild dehydration* (Stookey et al., 2005), *chronic dehydration* (Bennett et al., 2004), or *impending water-loss dehydration* (Hooper et al., 2011).

ASSESSMENT OF THE PROBLEM

Assessment of hydration status consists of determining adequacy of intake, risk identification with attention to specific populations at increased risk, assessment of hydration habits, and evaluation of specific biochemical and clinical indicators. Armstrong, Johnson, Armstrong, and Johnson (2018), in a review of the literature, indicated that the diagnosis of dehydration needs to be based on a combination of history, physical exam, laboratory values, and clinician experience.

Determining Adequate Intake

All older adults should have an individualized fluid goal determined on the basis of a documented standard for daily fluid intake. Numerous standards have been developed (Box 12.1), several based on fluid intake (liquid intake), while others are based on water intake that is inclusive of food and fluid. Gaspar (2011) has compared four of the standards and provides a rationale for the use of the following formula as a recommended water intake standard (from food and fluid): 1,600 mL/m^2 × .75. This formula provides the most individualized approach to the establishment of a water intake recommendation and should be attainable. A nomogram based on this formula was produced to enhance the clinical utilization of the standard and is available in the University of Iowa Guideline noted as a resource.

Risk Identification

Risk for inadequate fluid intake as well as risk for dehydration, primarily among ill or frail older adults across care settings, have been studied. Although there is no single outstanding risk factor for dehydration, several are repeatedly identified: Age, gender, ethnicity, class, and number of medications taken, level of activities of daily living (ADL) dependency, presence of cognitive impairment, presence of medical conditions such as infectious processes, and a prior history of dehydration have all been associated with dehydration in older adults (Mentes & Iowa–Veterans Affairs Nursing Research Consortium [IVANRC], 2000; Iowa Hydration Guideline). In a systematic review of 19 studies, 49 risk factors for dehydration were identified, but only cognitive impairment and fever were significantly associated with dehydration in more than one study (Paulis et al., 2018). Therefore, although single risk factors are discussed, it is likely that clusters of risk factors may be more helpful in clinical settings (Leibovitz et al., 2007).

Increasing age is associated with increased likelihood of dehydration (Ciccone, Allegra, Cochrane, Cody, & Roche, 1998; Lavizzo-Mourey, Johnson, & Stolley, 1988; Marra et al., 2016; Warren et al., 1994) and similarly for inadequate fluid intake (Gaspar, 1988). Namasivayam-MacDonald et al. (2018) reported that for residents in LTC settings, for every 1 year of age there was a decline in fluid intake of 6 mL/d. Ciccone et al. (1998) found that adults aged 85 years and older were three times more likely to have a diagnosis of dehydration on admission to an emergency department than adults aged 65 to 74 years. Older African American and Black adults have higher prevalence rates of dehydration on hospitalization than Caucasian adults (Lancaster, Smiciklas-Wright, Heller,

BOX 12.1

Daily Fluid Goal Formulas

- 1,600 mL/m^2 of body surface per day (Butler & Talbot, 1944; Gaspar, 1988, 1999); more recently, Gaspar (2011) recommended 75% of this standard and has developed a nomogram
- 30 mL/kg body weight with 1,500 mL/d minimum (Chernoff, 1994)
- 1 mL/kcal fluid for adults (National Research Council, 1989)
- 100 mL fluid/kg for the first 10 kg BW, 50 mL fluid/kg for the next 10 kg of BW, and 15 mL fluid/kg for the remaining kilograms of weight (Chidester & Spangler, 1997)
- 1,600 mL/d (Hodgkinson, Evans, & Wood, 2003)
- 1.6 L of drinks for women and 2.0 L of drinks for men daily (Volkert et al., 2018)

BW, body weight.

Ahern, & Jensen, 2003; Warren et al., 1994). A recent study by Mentes, DeVost, and Nandy (2019) reported that Black and African American community-dwelling older adults had better hydration than the Caucasians in the sample. Female gender has been associated with risk of dehydration in nursing home residents (Gaspar, 1988; Lavizzo-Mourey et al., 1988); however, male hospitalized patients had an increased risk for dehydration (Warren et al., 1994), and, more recently, no gender differences were detected in a large database study (Xiao et al., 2004).

In general, individuals in LTC settings are considered to be at increased risk (Lesnik et al., 2017), with one third of residents experiencing a dehydration episode in a 6-month period (Mentes, 2006). However, many of the factors are also characteristic of older adult hospitalized patients as well. See Protocol 12.1 for patient, staff, and family issues that serve as risk factors for dehydration. An example of a tool to determine risk is the Dehydration Risk Appraisal Checklist (Mentes & Wang, 2010) developed for use by nursing home staff members and based on information that could be retrieved from the Minimum Data Set (MDS; Exhibit 12.1).

A screening tool was developed by Oates, Vicky, Plank, and Price (2017) to identify those at risk for inadequate fluid intake among hospitalized older adults. The Northumbria Assessment of Hydration (NoAH) was used as part of a quality improvement project with positive outcomes.

At-Risk Populations

Several groups of patients, based on medical diagnosis, are at increased risk of dehydration. These groups include the chronically mentally ill and stroke, surgical, and end-of-life patients.

Chronically Mentally Ill Patients

Special consideration should be given to chronically mentally ill elders (e.g., individuals with schizophrenia, bipolar disorder, obsessive-compulsive disorder), as they may be at risk for both over- and underhydration. Their antipsychotic medications may blunt their thirst response and put them at increased risk in hot weather for dehydration and heat stroke (Batscha, 1997). In addition, even small increases in their antipsychotic medications may predispose them to neuroleptic malignant syndrome (NMS), of which hyperthermia and dehydration are prominent features (Bristow & Kohen, 1996; Jacobs, 1996; Sachdev, Mason, & Hadzi-Pavlovic, 1997). Polyuria due to lithium treatment in community-dwelling adults with bipolar disorder may also put them at risk for dehydration and

EXHIBIT 12.1

Dehydration Risk Appraisal Checklist

The greater the number of characteristics present, the greater the risk for hydration problems. Please check all that apply.	
>85 years	Female
Significant Health Conditions	
MMSE score <24 (indicating cognitive impairment)	Semidependent in ADL
Dementia diagnosis	Repeated infections
GDS score ≥6 (indicating depression)	History of dehydration
	Urinary incontinence
Medications	
Laxatives	Psychotropics: antipsychotics, antidepressants, anxiolytics
Diuretics	
Intake Behaviors	
BMI <21 or >27	Can drink independently but forgets
Requires assistance to drink	Poor eater
Has difficulty swallowing/chokes	

ADL, activities of daily living; BMI, body mass index; GDS, Geriatric Depression Scale; MMSE, Mini-Mental State Examination.

Source: From Mentes, J. C., & Wang, J. (2010). Measuring risk for dehydration in nursing home residents. *Research in Gerontological Nursing, 31,* 1–9. doi:10.1177/1099800405281607. *Evidence Level IV*. Reprinted with permission from Mentes, J. C., & Kang, S. (2011). Evidence-based protocol: Hydration management. In M. G. Titler (Series Ed.), *Series on evidence-based practice for older adults*. Iowa City, IA: University of Iowa College of Nursing Gerontological Nursing Interventions Research Center, Research Translation and Dissemination Core.

death (Kinahan et al., 2015). In addition, in individuals with persistent mental illness, risks of overhydration stem from a combination of the drying side effects of prescribed psychotropic medications and the individual's compulsive behaviors that result in excessive fluid intake (Cosgray, Davidhizar, Giger, & Kreisl, 1993).

Stroke Patients

There is increasing evidence that dehydration may play an important part in contributing to early cerebral ischemia (Rodriguez et al., 2009), as well as the early recovery from stroke (Kelly et al., 2004). In fact, Kelly et al. found that dehydration in stroke patients was hospital acquired and led to poorer outcomes for recovering stroke patients. Dehydration, signified by increased serum osmolality, led to a 2.8- to 4.7-fold increase in the risk of hospitalized stroke patients acquiring a venous thromboembolism (VTE). Hospitalized patients recovering from stroke should be carefully and continuously monitored for dehydration. Another sequela of stroke is dysphagia, which can cause dehydration (Murray et al., 2015; Whelan, 2001). This appears to be related not only to the dysphagia resulting from the stroke but also the poor palatability of the thickened fluids offered to patients to prevent aspiration (Lin et al., 2014; McGrail & Kelchner, 2015).

Surgical Patients

Prolonged NPO status prior to elective surgery has been linked to increased risk of dehydration and adverse effects such as thirst, hunger, irritability, headache, hypovolemia, and hypoglycemia in surgical patients (Smith, Vallance, & Slater, 1997; Yogendran, Asokumar, Cheng, & Chung, 1995). Crenshaw and Winslow (2002) have found that despite the formulation of national guidelines developed by the American Society of Anesthesiologists Task Force on Preoperative Fasting (Parameters, 2017), patients were still being instructed to fast too long prior to surgery (Crenshaw & Winslow, 2002). In fact, patients may safely consume clear liquids up to 2 hours before elective surgery using general anesthesia, regional anesthesia, or sedation-anesthesia (Parameters, 2017).

End-of-Life Patients

Maintaining or withholding fluids at the end of life remains a controversial issue. Proponents suggest that dehydration in the terminally ill patient is not painful and lessens other noxious symptoms of terminal illness, such as excessive pulmonary secretions, nausea, edema, and pain (dehydration acts as a natural anesthetic; Fainsinger & Bruera, 1997). Some suggest additional benefit from the decreased need to get up to use the restroom and receive bedpans or diaper changes, which could be difficult or painful for someone at the end of life (Mion & O'Connell, 2003). Opponents of this position suggest that associated symptoms of dehydration, such as acute confusion/delirium, are stressful and reduce the quality of life for the terminally ill elder (Bruera, Belzile, Watanabe, & Fainsinger, 1996).

Most research that has been done with terminally ill cancer patients has examined the discomforts of dehydration, including thirst, dry mouth, and agitated delirium. However, research has not demonstrated a link between biochemical markers of dehydration and these various symptoms in terminally ill patients (Burge, 1993; Ellershaw, Sutcliffe, & Saunders, 1995; Morita, Tei, Tsunoda, Inoue, & Chihara, 2001). It has been suggested that several confounding factors influence the uncomfortable dehydration-like symptoms that accompany the end of life. These include the use and dosage of opiates, type and location of cancer, hyperosmolality, stomatitis, and oral breathing (Morita et al., 2001). On the other hand, Bruera et al. (1996) has determined that small amounts of fluids delivered subcutaneously via hypodermoclysis plus opioid rotation were effective in decreasing delirium and antipsychotic use and did not cause edema in terminally ill patients. Bruera et al. (2005) also found, in a 2-day-long pilot study, that parenteral hydration in terminally ill cancer patients leads to statistically significant decreases in hallucination, myoclonus, fatigue, and sedation but that in a larger clinical trial, no benefit from parenteral hydration was found for cancer patients in a hospice setting (Bruera et al., 2012). However, research suggests that artificial hydration does not prolong life (Bruera et al., 2005; Bruera et al., 2012, Meier, Ahronheim, Morris, Baskin-Lyons, & Morrison, 2001; Mitchell, Kiely, & Lipsitz, 1997).

Therefore, it is recommended that maintaining or withholding fluids at the end of life be an individual decision that should be based on the etiology of illness, use of medications, presence of delirium, and family and patient preferences (Bruera et al., 2012, Fainsinger & Bruera, 1997; Morita et al., 2001; Schmidlin, 2008). Schmidlin (2008) and Bruera et al. (2012) recommend early discussions with patients and family on their wishes as well as educating patients on the current knowledge about artificial hydration so that proper, patient-centered care will be provided.

Hydration Habits

Hydration habits may indicate the level of risk for dehydration in older adults. Some hydration habits may have developed over a lifetime, and others are adaptations to

current health status. Four major categories of hydration habits have been identified (Mentes, 2006): those older adults who "can drink," "cannot drink," "will not drink," and older adults who are at the "end of life." Older adults who can drink are those who are functionally capable of accessing and consuming fluids but who may not know what is an adequate intake or may forget to drink secondary to cognitive impairment; older adults who cannot drink are those who are physically incapable of accessing or safely consuming fluids related to physical frailty or difficulty in swallowing. Older adults who will not drink are those who are capable of consuming fluids safely but who do not because of concerns about being able to reach the toilet with or without assistance or who relate that they have never consumed many fluids. Finally, older adults who are terminally ill comprise the end-of-life category. Hydration habits of community-dwelling older adults were explored by Mentes et al. (2019) in relation to hydration status measured by salivary osmolality. From these habits, two latent factors, physical barriers and psychological barriers, were identified. Significant deficiencies in hydration health literacy among community-dwelling elderly were identified by Picetti et al. (2017). Older adults' are not aware of how their habits adversely influence their hydration status. Understanding the hydration habits of older adults can help them and nurses to plan appropriate interventions to improve or ensure adequate intake (Mentes, 2006; Picetti et al., 2017).

Indicators of Hydration Status

A priority for nursing, regardless of clinical setting, is the prevention of dehydration. Unfortunately, many of the standard tests for detection of dehydration confirm a diagnosis of dehydration only after it is too late to prevent the episode. In our fast-paced nursing environments, it is difficult to monitor the fluid intake of all our older patients. Armstrong, Kavouras, Walsh, and Roberts (2016) found that a combination of approaches is needed to diagnose dehydration, and Mentes (2006) noted that serial measurements offer the greatest likelihood of accuracy.

Many studies have used a single test—either biochemical or clinical signs/symptoms—that have insufficient evidence to support diagnostic accuracy (Hooper et al., 2015). Hooper et al. (2016) found that serum osmolality, urine specific gravity, nor any other urinary test was useful to diagnosis dehydration. Yet others have found urine color and specific gravity are reliable indicators of hydration status (not dehydration) in older individuals with adequate renal function in nursing homes and a Veterans Administration Medical Center (Culp, Mentes, & Wakefield, 2003; Mentes, Wakefield, & Culp, 2006). Specifically, the use of urine color, as measured by a urine color chart, can be helpful in monitoring hydration status (Armstrong et al., 1994; Mentes & IVANRC, 2000). The urine color chart has eight standardized colors ranging from *pale straw* (number 1) to *greenish brown* (number 8), approximating urine specific gravities of 1.003 to 1.029 (Armstrong et al., 1994). The urine color chart is most effective when an individual's average urine color is calculated over several days for an individual referent value. If the older person's urine becomes darker from his or her average color, further assessment of recent intake and health status can be conducted, and fluids can be adjusted to improve hydration status before dehydration occurs. Limitations in using urine indices to estimate specific gravity include the following: (a) Certain medications and foods can discolor the urine (Mentes, Wakefield, & Culp, 2006; Wakefield, Mentes, Diggelmann, & Culp, 2002), (b) persons must be able to give a urine specimen for color evaluation, and (c) best results in the use of urine color as an indicator have been documented in older adults with adequate renal function (Mentes, Wakefield, & Culp, 2006). In addition, the timing of collection of urine is also important. In a recent study of younger adults, Perrier et al. (2013) found that a late afternoon (between 4:00 and 8:00 p.m.) specimen best reflected overall hydration status as measured by urine osmolality when compared to a 24-hour urine collection. This would need to be tested with a sample of older adults. Rodrigues et al. (2015) found a 24-hour urine osmolality was negatively associated with hydration score. Johnson and Hahn (2018) make the case for the use of renal indicators for hydration status as the renal system is more responsive to water deficiency as compared to blood levels. They created a composite index, the Fluid Retention Index (FRI), which includes urine color, specific gravity, and urine creatinine. The findings did not support an association of the FRI with serum osmolality.

Bioelectrical impedance analysis (BIA) is a measurement that has been used mostly in the fitness industry to estimate body composition, including body mass index (BMI), TBW, and intracellular and extracellular water. Several nursing studies have used impedance measurements to estimate TBW and intracellular and extracellular water (Culp et al., 2003, 2004). Although mostly used in research, BIA is a noninvasive, reliable method used to estimate body water (Ritz & Source Study, 2001). Because TBW is dependent on weight and body composition, this measure is best used after a baseline value of TBW, intracellular, and extracellular fluid in liters has been documented. Then, deviations from the individual baseline can be noted. In a recent Cochrane Review for diagnostic

accuracy, a single measure of bioelectrical impedance with resistance at 50 Hz was found to be diagnostic of impending dehydration in two studies and equivocal in two studies (Hooper et al., 2015). The findings of Goldberg et al. (2014) also supported the use of BIA as a measure of hydration. Yet the recommendations by the ESPEN Guideline state that the bioelectrical impedance shall not be used to assess hydration status in older adults (Volkert et al., 2018).

Salivary osmolality is an emerging clinical indicator of hydration status that is sensitive in younger healthy adults (Oliver, Laing, Wilson, Bilzon, & Walsh, 2008) and has been tested in a small sample of nursing home residents (Woods & Mentes, 2011) and older hospitalized adults with a mean age of 78 years (Fortes et al., 2015). Salivary osmolality demonstrated 70% sensitivity and 68% specificity for water-loss dehydration as well as 78% sensitivity and 72% specificity for water and solute dehydration in this study (Fortes et al., 2015). Salivary osmolality was recently used to measure hydration status among a group of community-dwelling older adults attending senior centers and one adult day health center. Salivary osmolality values were, on average, higher for these older adults than those reported in younger healthy adults. On average, salivary osmolality values were higher (signaling poorer hydration) in the morning than in the early afternoon, and higher values were associated with slower times on an ambulation test (Mentes et al., 2019).

Indicators of Dehydration

Dehydration is the loss of body water from intracellular and interstitial fluid compartments that is associated with hypertonicity (Mange et al., 1997). Therefore, the most reliable indicators of dehydration are elevated serum sodium, serum osmolality, and BUN–creatinine ratio (Table 12.1). The guidelines of nutrition and fluid intake of the ESPEN recommend that serum osmolality be used as the standard for determining dehydration and impending dehydration (Volkert et al., 2018). The most common clinical assessments of dehydration include the presence of dry oral mucous membranes, tongue furrows, decreased saliva, sunken eyes, decreased urine output, upper body weakness, a rapid pulse (Gross et al., 1992), and tongue dryness (Vivanti, Harvey, & Ash, 2010; Vivanti, Harvey, Ash, & Battistutta, 2008). The ESPEN does not recommend that these clinical indicators be used as a basis for determining hydration status unless the individual has experienced a volume loss as a result of vomiting, diarrhea, or blood loss. Decreased axillary sweat production as a clinical sign of dehydration

TABLE 12.1

Approximate Ranges of Laboratory Tests for Hydration Status

Value Ranges for:	Normal	Impending Dehydration	Dehydration
BUN/Creatinine ratio	20–24		>25
Hematocrit	Male 42%–52%		> normal
	Female 35%–47%		> normal
Serum osmolality	<295 mmol/kg	295–300 mmol/kg	>300 mmol/kg
Serum sodium	135–145 meq/L		>150 meq/L
Urine osmolality	500–700 mOsm	700–1,050 mOsm	>1,050 mmol/kg
Urine specific gravity	1.005–1.019	1.020–1.029	>1.029
Urine color	Pale to medium yellow	Dark yellow	Greenish brown
Amount of urine		800–1,200 mL/d	<800 mL/d

BUN, blood urea nitrogen.

Sources: Armstrong, L. E., Maresh, C. M., Castellani, J. W., Bergeron, M. F., Kenefick, R. W., LaGasse, K. E., & Riebe, D. (1994). Urinary indices of hydration status. *International Journal of Sport Nutrition*, *4*(3), 265–279. doi:10.1123/ijsn.4.3.265. *Evidence Level IV*; Armstrong, L. E., Soto, J. A., Hacker, F. T., Jr., Casa, D. J., Kavouras, S. A., & Maresh, C. M. (1998). Urinary indices during dehydration, exercise, and rehydration. *International Journal of Sport Nutrition*, *8*(4), 345–355. doi:10.1123/ijsn.8.4.345. *Evidence Level IV*; Mentes, J. C., Wakefield, B., & Culp, K. (2006). Use of a urine color chart to monitor hydration status in nursing home residents. *Biological Research for Nursing*, *7*(3), 197–203. doi:10.1177/1099800405281607. *Evidence Level IV*; Metheny, N. (2000). *Fluid and electrolyte balance: Nursing considerations* (4th ed.). St. Louis, MO: Lippincott Williams & Wilkins. *Evidence Level VI*; Wakefield, B., Mentes, J., Diggelmann, L., & Culp, K. (2002). Monitoring hydration status in elderly veterans. *Western Journal of Nursing Research*, *24*(2), 132–142. doi:10.1177/0193945022045798. *Evidence Level IV*; Wallach, J. (2000). *Interpretation of diagnostic tests* (7th ed., pp. 135–141). Philadelphia, PA: Lippincott Williams & Wilkins. *Evidence Level VI*. Adapted with permission from Mentes, J. C., & Kang, S. (2011). Evidence-based protocol: Hydration management. In M. G. Titler (Series Ed.), *Series on evidence-based practice for older adults*. Iowa City, IA: University of Iowa College of Nursing Gerontological Nursing Interventions Research Center, Research Translation and Dissemination Core.

has produced contradictory results, making it an unreliable indicator of dehydration (Eaton, Bannister, Mulley, & Connolly, 1994; Gross et al., 1992), yet recent studies of Kinoshita et al. (2013) and Okuyama and Nishida (2016) have found axillary moisture and temperature (respectively) to be accurate indicators of hydration status. The change in accuracy is probably based on the technology now available to measure these indicators. Assessment of sternal skin turgor as a sign of dehydration has been the mainstay of nursing practice; however, it is also an ambiguous indicator for dehydration in older individuals, with some researchers finding it unreliable because of age-related changes in skin elasticity (Gross et al., 1992) and others finding it reliable (Chassagne, Druesne, Capet, Ménard, & Bercoff, 2006; Vivanti et al., 2008). From a systematic review, Hooper et al. (2015) found that the clinical symptoms/signs of "expressing fatigue" and "missing drinks between meals" were the only measures with the ability to diagnose impending and current dehydration.

In conclusion, the current comparison standard for determining hydration status is serum osmolality, but this standard is not supported by all researchers or clinicians. The use of multiple clinical indicators is advocated by Armstrong et al. (2016) advocated the use of multiple clinical indicators in the assessment of hydration, with Mentes et al. (2006) advising the use of serial measures. The work of Hooper et al. (2015) has indicated that three single tests versus serial testing showed the ability to diagnose impending and current dehydration, including expressing fatigue, missing drinks between meals, and BIA with a resistance of 50 Hz. It was further concluded that a combination of two tests—fatigue and missing drinks—further increased diagnostic accuracy. The development of tools for capturing fluid intake, such as the Drinks Diary, is essential. The potential for technology advancements that will provide for reliable, valid real-time hydration monitoring would allow detection of issues earlier and decrease the risk of dehydration-related morbidity among at-risk populations (Garrett et al., 2018).

CASE STUDY 12.1

Mrs. Chung is an 87-year-old Chinese American woman who was admitted to the hospital for observation secondary to an episode of dehydration. She has resided at Sunny Days Assisted Living Facility for the past month. Staff describe her as fiercely independent despite experiencing some declines in her health recently. Her medical diagnoses include hypertension, for which she receives atenolol 25 mg daily and enalapril 20 mg daily; status post–mild cerebrovascular accident (CVA) with residual left-sided weakness, for which she is taking 80 mg of aspirin daily; osteoarthritis, for which she takes Tylenol Extra Strength twice daily; and cataracts, for which she is reluctant to have surgery. She is cognitively intact and requires only minor assistance with bathing.

Before hospitalization, Mrs. Chung had become more withdrawn and concerned about her health. Her family noticed that she has altered some of her daily routines. For example, she eliminated her daily tea because she is unfamiliar with the new microwave at the assisted care facility (ACF) and hence finds it difficult to heat her water. She stays in bed much of the day, complaining that she does not have any energy. When questioned, she reluctantly admits that she has been having more problems with her long-standing urinary incontinence and she is afraid to leave her room because she is fearful that she will not be able to make it to a bathroom on time. Consequently, she has further restricted the amount of fluid that she consumes on a daily basis.

Mrs. Chung is at high risk for dehydration given that she has recently begun to restrict her fluids because of unfamiliarity with the microwave to heat her water for tea. Older adults from different cultures may wish to have their beverages served at different temperatures. Especially when ill, ethnic older adults may prefer to have warmed beverages. In addition, Mrs. Chung is "treating" her urinary incontinence by restricting her fluids, which places her at risk for dehydration and urinary tract infections. This scenario is not uncommon in older adults struggling to maintain independence. One of the major reasons for admission to a nursing home is the presence of urinary incontinence. Finally, there is some evidence that Mrs. Chung is depressed, which would also place her at risk for dehydration often secondary to decreased food and fluid intake. Additional risk factors include her age (87 years old), gender, and use of an angiotensin-converting enzyme (ACE) inhibitor, which acts on the renin–angiotensin–aldosterone (RAA) system.

Discussion

Interventions to prevent dehydration in Mrs. Chung would include evaluating her for a urinary tract infection and offering her an evaluation for her urinary incontinence that could include use of medications, if indicated, and use of behavioral strategies, including

(*continued*)

CASE STUDY 12.1 (*continued*)

urge inhibition (strategies to prolong urge to urinate) and/or Kegel exercises. Education on the importance of maintaining adequate fluid intake to minimize urinary incontinence is indicated, which should include a discussion about the amount of daily fluids required and the provision of a graduated cup to help her ascertain appropriate amounts. Helping her simplify the use of the microwave and/or attendance at social events at the ACF where fluids are provided could be implemented. Lastly, an evaluation for depression may be indicated if the previous interventions do not improve her mood.

SUMMARY

Dehydration in older adults is a costly yet preventable health problem. Best practices for hydration management have been identified primarily in the nursing home population, with recent attention to the community-dwelling older adult. Establishment of the older adult's individualized goal for water intake and evaluation of the achievement of the goal especially for those identified as being at risk for inadequate intake are essential. Strategies for promoting fluid intake in older adults, regardless of setting, are straightforward yet so necessary. They include providing access to fluids at all times, regularly offering fluids throughout the day, use of a vessel that is easy to handle, assessing fluid preferences and providing the fluid of choice, increasing fluids with each scheduled medication administration, incorporating fluids into activities, and appropriate supervision of personnel who will be providing the fluids. Nursing personnel should assess the older adult's ability to self-manage hydration habits as well as preventing extended periods of time when the older adult does not have access to fluids (as in fasting for a diagnostic test). Regularly offering fluids through fluid rounds, a beverage cart, or other novel means, such as tea time, is another principle of good hydration practice. Accommodating older peoples' preferences for type of beverage and appropriate temperature of beverage has been shown to increase fluid intake. Education and supervision of staff in all aspects of hydration management is the foundation of quality care. Lastly, appropriate supervision of how much fluid per day is required and how assistance is given to older adults who are not capable of drinking themselves to ensure that required amounts are consumed is also key in maintaining adequate hydration. Attention to concerns about toileting is another important issue in helping older adults to maintain adequate hydration. The hydration practices of healthier, community-dwelling older adults are dependent on their hydration literacy. Further study in hydration literacy is needed.



NURSING STANDARD OF PRACTICE

Protocol 12.1: Managing Oral Hydration

I. GOAL

Manage oral hydration to minimize episodes of underhydration and dehydration in older adults

II. OVERVIEW

Maintaining adequate fluid balance is an essential component of health across the life span; older adults are more vulnerable to shifts in water balance, both overhydration and dehydration, because of age-related changes and increased likelihood that an older individual has several medical conditions. Underhydration and dehydration are the more frequently occurring problem.

III. BACKGROUND AND STATEMENT OF THE PROBLEM

A. Definitions
   1. *Dehydration* is depletion in TBW content caused by pathological fluid losses, diminished water intake, or a combination of both. It results in hypernatremia (more than 145 mEq/L) in the extracellular fluid compartment, which draws water from the intracellular fluids (Metheny, 2000). The water loss is shared by all

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Protocol 12.1: Managing Oral Hydration (*continued*)

body-fluid compartments, and relatively little reduction in extracellular fluids occurs. Thus, circulation is not compromised unless the loss is very large.

2. *Underhydration* is a precursory condition to dehydration associated with insidious onset and poor outcomes (Mentes & Culp, 2003). Others have referred to this condition as *mild dehydration* (Stookey, 2005; Stookey et al., 2005), *chronic dehydration* (Bennett et al., 2004), or *impending water-loss dehydration* (Hooper et al., 2011).

Etiological factors associated with dehydration	
Environment: Residing in long-term care as compared with community dwelling (Lesnik et al., 2017; Rodrigues et al., 2015)	
Staff and family characteristics	
Inadequate staff and professional supervision	Kayser-Jones, Schell, Porter, Barbaccia, & Shaw, 1999
Presence of more staff	Namasivayam-MacDonald et al., 2018
Family or caregivers not spending time with patient	Mentes, Chang, & Morris, 2006
Age-related risk factors	
Age-related changes in body composition with resulting decrease in TBW	Bossingham et al., 2005; Lavizzo-Mourey et al., 1988; Metheny, 2000
Decreasing renal function	Lindeman, Tobin, & Shock, 1985
Lack of thirst	Farrell et al., 2008; Kenney & Chiu, 2001; Mack et al., 1994; Miescher & Fortney, 1989; Phillips et al., 1984; Phillips et al., 1991
Poor tolerance for hot weather	Josseran et al., 2009
Risk factors	
Individual characteristics	
Older than 85 years of age	Ciccone et al., 1998; Gaspar, 1999; Goldberg et al., 2014: Lavizzo-Mourey et al., 1988; Mentes et al., 2019; Murray et al., 2015
Female	Gaspar, 1988; Lavizzo-Mourey et al., 1988; Marra et al., 2016; Namasivayam-MacDonald et al., 2018
Semidependent in eating	Gaspar, 1999; Gaspar et al., 2019
Functionally more independent	Gaspar, 1999; Mentes & Culp, 2003
Functionally more dependent (especially with eating)	Botigué et al., 2018; Marra et al., 2016; Mentes et al., 2019; Murray et al., 2015; Namasivayam-MacDonald et al., 2018
Few fluid ingestion opportunities	Gaspar, 1988, 1999; O. F. Jimoh, Brown, Bunn, & Hooper, 2019
Inadequate nutrient intake	Gaspar, 1999; McGrail & Kelchner, 2015
Alzheimer's disease or other dementias or cognitive impairment	Albert, Nakra, Grossberg, & Caminal, 1989, 1994; Botigué et al., 2018; Marra et al., 2016; McGrail & Kelchner, 2015; Namasivayam-MacDonald et al., 2018; Paulis et al., 2018
Four or more chronic conditions	Lavizzo-Mourey et al., 1988
Four medications	Lavizzo-Mourey et al., 1988
Fever	Pals et al., 1995; Paulis et al., 2018; Weinberg et al., 1994

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Vomiting and diarrhea	Wakefield, Mentes, Holman, & Culp, 2008
Individuals with infections	Warren et al., 1994
Individuals who have had prior episodes of dehydration	Mentes, 2006
Depression or loneliness associated with decreased fluid intake as identified by nursing staff	Mentes, Chang, & Morris, 2006
Diuretics: thiazide	Wakefield et al., 2008
Diuretics: loop and thiazide	Lancaster et al., 2003
Risk of pressure ulcer	Botigué et al., 2018
Texture modified diet	Botigué et al., 2018; Painter, Le Couteur, & Waite, 2017
Receiving oral nutritional supplement	Marra et al., 2016
Impaired swallowing and/or dysphagia	Botigué et al., 2018)
Diabetes	Marra et al., 2016

Interventions for Enhancing Hydration Status

A. Risk identification	Mentes & IVANRC, 2000
1. Identify acute situations: vomiting, diarrhea, or febrile episodes	Mentes & IVANRC, 2000
2. Use a tool to evaluate risk	Mentes & IVANRC, 2000
Dehydration Risk Appraisal Checklist (LTC)	Mentes & Wang, 2010
Northumbria Assessment of Hydration (acute care) Risk of insufficient fluid intake	Oates et al., 2017
3. Use a tool to evaluate adequacy of intake: Drink Diary	F. O. Jimoh, Bunn, & Hooper, 2015
B. Acute hydration management	
Monitor input and output	Weinberg et al., 1994
Provide additional fluids as tolerated	Weinberg et al., 1994
Minimize fasting times for diagnostic and surgical procedures	Parameters, 2017
Offer subcutaneous or intravenous fluid in parallel with encouraging oral fluid intake for those experiencing dehydration and who are unable to drink	Volkert et al., 2018

C. Chronic/long-term hydration management

Systematic reviews of evidence have not identified a specific intervention for the management of dehydration and/or inadequate fluid intake (Abdelhamid et al., 2016; Bunn et al., 2016; Herke et al., 2018; Volkert et al., 2018). An individualized resident-centered care plan that considers the following strategies is needed (Volkert et al., 2018)

Provide fluids consistently throughout the day	Bak, Wilson, Tsiami, & Loveday, 2018; Bunn, Jimoh, Wilsher, & Hooper, 2015; Ferry, 2005; Hodgkinson et al., 2003; F. O. Jimoh et al., 2015; O. F. Jimoh et al., 2019; Mentes, Chang, & Morris, 2006; Oates & Price, 2017; Robinson & Rosher, 2002; Simmons, Alessi, & Schnelle, 2001; Volkert et al., 2018
Specific Effective Strategies	
Plan fluid intake as follows: 75%–80% delivered at meals, and 20%–25% delivered during nonmeal times such as medication times and planned nourishment times	Volkert et al., 2018

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Offer a variety of fluids keeping in mind the individual's previous intake pattern	Bunn et al., 2015; Godfrey, Cloete, Dymond, & Long, 2012; Schnelle et al., 2010; Simmons et al., 2001; Volkert et al., 2018; Wilson et al., 2019: Zembrzuski, 1997
Integrate fluid rounds midmorning and late afternoon, where caregiver provides additional fluids	Spangler, Risley, & Bilyew, 1984
Standardize fluid with medication administrations to a prescribed amount; e.g. 180 mL (6 oz.) per administration time.	O. F. Jimoh et al., 2019; Mentes & Culp, 2003
Provide 2–8 oz. glasses of fluid in a.m. and p.m.	Robinson & Rosher, 2002
If taking thickened liquids, encourage intake (water intake lower when taking thickened liquids as compared with thin liquids)	McGrail & Kelchner, 2012, 2015; Painter et al., 2017
Select between-meal snacks that will increase water intake	Marra et al., 2016
Provide fluids between waking and breakfast	O. F. Jimoh et al., 2019
Provide reminders/prompts to drink fluids	Bak et al., 2018; Bunn et al., 2015; Godfrey et al., 2012; Oates & Price, 2017
Offer a variety of fluids with consideration for residents' preference	Godfrey et al., 2012; Mentes, Chang, & Morris, 2006; Robinson & Rosher, 2002; Schnelle et al., 2010; Simmons et al., 2001; Wilson et al., 2019

Interventions and Strategies	**References**
Make drinking opportunity a pleasurable and social experience	Abdelhamid et al., 2016; Cook, Hodgson, Hope, Thompson, & Shaw, 2019; Godfrey et al., 2012
Specific Effective Strategies	
"Happy Hours" in the afternoon, where residents can gather together for additional fluids and socialization	Mentes, Chang, & Morris, 2006; Musson et al., 1990
"Tea Time" in the afternoon, where residents come together for fluids, nourishment, and socialization	Mueller & Boisen, 1989
Encourage resident to have meals in the dining room	Reed, Zimmerman, Sloane, Williams, & Boustani, 2005; Volkert et al., 2018
Create a noninstitutional dining experience	Reed et al., 2005, Volkert et al., 2018
Create a drink-friendly environment	Cook et al., 2019
Ensure utensils and level of assistance are resident centered	
Specific Effective Strategies	
Use of modified fluid containers based on resident's intake behaviors (e.g., ability to hold cup, to swallow)	Bak et al., 2018; Mueller & Boisen, 1989; Reedy, 1988
Use high-contrast tableware during meals for residents with dementia	Dunne, Neargarder, Cipolloni, & Cronin-Golomb, 2004
Provide the appropriate level of assistance to enhance intake	Bunn et al., 2015; Godfrey et al., 2012; Marra et al., 2016
Increase toileting routine (in combination with other strategies)	Bunn et al., 2015; Schnelle et al., 2010; Spangler et al., 1984; Tanaka et al., 2009; Zembrzuski, 2006

Interventions and Strategies	**References**
Ensure care providers (formal and informal) are knowledgeable of hydration needs and management strategies	
Specific Effective Strategies	Bunn et al., 2015
Provide staff with education on hydration management (in combination with other strategies)	Beattie, O'Reilly, Strange, Franklin, & Isenring, 2014; Greene et al., 2018; Oates & Price, 2017; Volkert et al., 2018; Zembrzuski, 2006

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Coordinate staff communication about hydration such as certified nursing assistant (CNA) handoff reports or documentation in nursing care plan.	Mentes, Chang, & Morris, 2006; Ullrich & McCutcheon, 2008
Provide a staffing ratio that allows the needs of the residents to be met	Namasivayam-MacDonald et al., 2018; Reed et al., 2005
Encourage family involvement and support	Mentes, Chang, & Morris, 2006
Promote Self-Management of Hydration	
Provide education to improve individuals' hydration health literacy	Picetti et al., 2017
Individuals who are cognitively intact and physically capable can be taught to use the Drinks Diary to self-monitor their fluid intake.	Jimoh et al., 2015
Assist to establish individuals' fluid intake goal based on the calculated fluid recommendation.	Volkert et al., 2018
Individuals who are cognitively intact and visually capable can be taught how to note changes in their level of hydration through the use of a color chart, to compare with the color of their urine. The chart is most accurate in individuals with better renal function.	Armstrong et al., 1994, 1998; Mentes, Wakefield, & Culp, 2006
Fluid Regulation and Documentation	
Note: Frequency of documentation of fluid intake will vary from setting to setting and is dependent on an individual's condition.	
Document a complete intake recording, including hydration habits	Mentes & IVANRC, 2000
Create fluid volume list of each utensil to accurately calculate fluid consumption	Burns, 1992; Hart & Adamek, 1984
Implement use of the Drinks Diary	F. O. Jimoh et al., 2015

IV. PARAMETERS OF ASSESSMENT

A. Health history	Mentes & IVANRC, 2000
Specific disease states: dementia, congestive heart failure, chronic renal disease, malnutrition, and psychiatric disorders such as depression	Albert et al., 1989; Gaspar, 1988; Warren et al., 1994
Presence of comorbidities: more than four chronic health conditions	Lavizzo-Mourey et al., 1988
Prescription drugs: number and types	Lavizzo-Mourey et al., 1988
Past history of dehydration, repeated infections	Mentes, 2006
B. Physical assessments Complete an exam that includes vital signs, height, weight, BMI (Vivanti et al., 2008), review of systems,	Mentes & IVANRC, 2000
C. Focused assessment on indicators of hydration	
Chief complaint of fatigue	Hooper et al., 2015
D. Laboratory tests (Mentes & Gaspar, 2020)	
Urine specific gravity	Mentes, 2006; Wakefield et al., 2002
Urine color	Mentes, 2006; Wakefield et al., 2002
BUN–creatinine ratio	Mentes & Gaspar, 2020
Serum sodium	Mentes & Gaspar, 2020

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Serum osmolality and a serum osmolality estimation equation based on serum measures of urea, glucose, sodium, and potassium	Siervo, Bunn, Prado, & Hooper, 2014
Salivary osmolality	Fortes et al., 2015
E. Assessment of ingestion behaviors and hydration habits	
Individual fluid-intake behaviors	Mentes, 2006
Subcategory of hydration patterns (can drink, cannot drink, will not drink, end of life)	Mentes, 2006
Missing drinks between meals	Hooper et al., 2015
Screen hospitalized older adults using the NoAH	Oates et al., 2017

V. EVALUATION AND EXPECTED OUTCOMES

A. Maintenance of body hydration (Mentes & Culp, 2003; Robinson & Rosher, 2002; Simmons et al., 2001)
B. Decreased infections, especially urinary tract infections (McConnell, 1984; Mentes & Culp, 2003; Robinson & Rosher, 2002; Murry et al., 2015)
C. Improvement in urinary incontinence (Spangler et al., 1984)
D. Lowered urinary pH (Hart & Adamek, 1984)
E. Decreased constipation (Murray et al., 2015; Robinson & Rosher, 2002)
F. Decreased acute confusion (Mentes et al., 1999)
G. Improved fluid intake
H. Improved hydration health literacy (Picetti et al., 2017)

VI. FOLLOW-UP MONITORING OF CONDITION

A. Urine color chart monitoring in patients with better renal function (Armstrong et al., 1994, 1998; Wakefield et al., 2002)
B. Urine specific gravity checks (Armstrong et al., 1994, 1998; Wakefield et al., 2002)
C. Twenty-four-hour intake recording (Metheny, 2000)
D. Drinks Diary to document fluid intake in individuals who are cognitively intact (F. O. Jimoh et al., 2015)
E. Hydration Health literacy (Picetti et al., 2017)
F. Salivary Osmolality (Volkert et al., 2018)

VII. RELEVANT PRACTICE GUIDELINES

A. Hydration management evidence-based protocol available from the University of Iowa College of Nursing Gerontological Nursing Interventions Research Center, Research Dissemination Core. Authors: Janet Mentes and Phyllis Gaspar, revised 2019.
B. ESPEN (European Society for Clinical Nutrition and Metabolism) guideline on clinical nutrition and hydration in geriatrics (Volkert et al., 2018).
C. Dehydration and Fluid Maintenance in the Long-Term Care Setting Clinical Practice Guideline by The American Medical Directors Association, 2009.

ABBREVIATIONS

BMI	Body mass index
BUN	Blood urea nitrogen
IVANRC	Iowa–Veterans Affairs Nursing Research Consortium
MMSE	Mini-Mental State Examination
NoAH	Northumbria Assessment of Hydration
TBW	Total body water

NOTE

1. Portions of this chapter were adapted with permission from Mentes, J. C., & Gaspar, P. (2019). Evidence-based protocol: Hydration management. In (Series Ed.), *Series on evidence-based practice for older adults*. Iowa City, IA: University of Iowa College of Nursing Gerontological Nursing Interventions Research Center, Research Translation and Dissemination Core.

RESOURCES

Evidence-Based Website for Geriatric Nursing Sponsored by the Hartford Institute for Geriatric Nursing
www.consultgerirn.org

Dehydration Recognition in our Elders (DRIE) study
driestudy.appspot.com
This website is reporting on independent research arising from a Career Development Fellowship to Lee Hooper (NIHR-CDF-2011-04-025) and PhD work by Diane Bunn. Both are supported by the National Institute for Health Research (NIHR). The views expressed in this website and related publications are those of the authors and not necessarily those of the NHS, the National Institute for Health Research, or the Department of Health.

Hydration Check (Urine 8 color Scale)
http://hydrationcheck.com

University of Iowa Evidence-Based Protocols
https://www.uiowacsomaygeroresources.com/

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Nutrition in the Older Adult*

Rose Ann DiMaria-Ghalili

13

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Recognize factors that place the older adult at risk for malnutrition.
2. Discuss methods to screen and assess nutritional status in the older adult.
3. Use appropriate nursing interventions in the hospitalized older adult who is either at risk for malnutrition or has malnutrition.
4. Identify the importance of screening for nutrition risk during transitions in care.

OVERVIEW

Nutritional status is the balance of nutrient intake, physiological demands, and metabolic rate (DiMaria-Ghalili, 2002). However, older adults are at risk of poor nutrition (DiMaria-Ghalili & Amella, 2005). Furthermore, malnutrition, a recognized geriatric syndrome (Institute of Medicine [IOM], 2008), is of concern because it can often be unrecognizable and impacts morbidity, mortality, and quality of life (Chen, Schilling, & Lyder, 2001), and is a precursor for frailty in the older adult. Malnutrition in older adults is defined as "faulty or inadequate nutritional status; undernourishment characterized by insufficient dietary intake, poor appetite, muscle wasting, and weight loss" (Chen et al., 2001, p. 139). In the older adult, malnutrition exists along the continuum of care (Furman, 2006). Older adults admitted to acute care settings from either the community or long-term care settings may already be malnourished or may be at risk for the development of malnutrition during hospitalization. A diagnosis of malnutrition during an acute care stay increases the length of stay (12.6 ± 5 vs. 4.4 ± 1 days), cost of hospitalization ($26,944 vs. $9,485), and services needed on discharge (e.g., home care, long-term care; Corkins et al., 2014). Bedrest is common during the hospital stay, and the associated loss of lean mass that accompanies bedrest can impact the already vulnerable nutritional status of older adults (English & Paddon-Jones, 2010). The IOM (2008) notes that although malnutrition is a problem in older adults, most healthcare professionals, including nurses, have little training concerning the nutritional needs of older adults. Therefore, it is imperative that acute care nurses carefully assess and monitor the nutritional status of older adults to identify the risk factors of malnutrition so that appropriate interventions are instituted in a timely fashion. The focus of this nursing protocol is the discussion of nutrition in aging as it relates to risk factors,

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

implications, and interventions for malnutrition in the older adults.

BACKGROUND AND STATEMENT OF PROBLEM

The prevalence of malnutrition in older adults varies across studies and settings. Using a large probability sample of community-dwelling older adults (60 years and older), 5.9% were malnourished and 56.3% were at risk of malnutrition (DiMaria-Ghalili, Michael, & Rosso, 2013). Researchers report the prevalence of malnutrition in older adults in nursing homes to be between 1.5% and 67% (Bell, Lee, & Tamura, 2015) and between 12% and 70% in hospitals (Heersink, Brown, DiMaria-Ghalili, & Locher, 2010). Limited information is currently available on the prevalence of malnutrition as older adults transition from the hospital to the home. However, older adults do experience declines in nutrition and health status after hospital discharge, which impact the ability to shop and prepare meals, placing them at further nutritional risk after discharge from the hospital (Anyanwu, Sharkey, Jackson, & Sahyoun, 2011).

Marasmus, kwashiorkor, and mixed marasmus–kwashiorkor originally described the subtypes of malnutrition associated with famine, and these terms eventually characterized disease-related malnutrition. In 2012, the Academy of Nutrition and Dietetics and the American Society for Parenteral and Enteral Nutrition published criteria for the identification of adult malnutrition (undernutrition; White et al., 2012). Inflammation is the cornerstone of the new adult disease-related malnutrition subtypes and include "starvation-related malnutrition" in the context of social and environmental circumstances (without inflammation), "chronic disease-related malnutrition" (with chronic inflammation of a mild to moderate degree; e.g., rheumatoid arthritis), and "acute disease or injury-related malnutrition" (with acute inflammation of a severe degree; e.g., major infections or trauma). Defining characteristics focus on energy intake, weight loss, physical findings (loss of body fat, muscle mass, and presence of fluid accumulation), and reduced grip strength. Visceral proteins (e.g., albumin, prealbumin) are negative acute-phase proteins, typically suppressed during an inflammatory state, and are not indicative of nutritional status during inflammation. Consequently, albumin is no longer recommended to identify malnutrition (White et al., 2012). The new adult malnutrition categories underscore the impact of a loss of lean body mass and skeletal muscle associated with the catabolic nature of the inflammatory process (Jensen et al., 2010). Although *sarcopenia* is an age-related loss of muscle mass and muscle strength (Rolland, Van Kan, Gillette-Guyonnet, & Vellas, 2011), bedrest during hospitalization is also associated with a loss of lean body mass, which adversely impacts functional capacity (Rowell & Jackson, 2010).

The risk factors for malnutrition in the older adult are multifactorial and include dietary, economic, psychosocial, and physiological factors (DiMaria-Ghalili & Amella, 2005). Dietary factors include little or no appetite (Carlsson, Tidermark, Ponzer, Söderqvist, & Cederholm, 2005), problems with eating or swallowing (Serra-Prat et al., 2012), eating inadequate servings of nutrients, and eating fewer than two meals a day (Ramic et al., 2011). Limited income may cause restriction in the number of meals eaten per day or dietary quality of meals eaten (Lee & Berthelot, 2010; Samuel et al., 2012). Isolation is also a risk factor as older adults who live alone may lose their desire to cook because of loneliness, and appetite often decreases after the loss of a spouse (Ramic et al., 2011; Stroebe, Schut, & Stroebe, 2007). Impairment in functional status can place the older adult at risk of malnutrition (Oliveira, Fogaca, & Leandro-Merhi, 2009) because adequate functioning is needed to secure and prepare food (DiMaria-Ghalili, 2014). Difficulty in cooking is related to disabilities, and disabilities can hinder the ability to prepare or ingest food (Anyanwu et al., 2011; DiMaria-Ghalili, 2014). Chronic conditions can negatively influence nutritional intake as well as cognitive impairment (Inelmen, Sergi, Coin, Girardi, & Manzato, 2010). Psychological factors are known risk factors of malnutrition. For example, depression is related to unintentional weight loss (Chen, Bai, Huang, & Tang, 2007; Engel et al., 2011). Furthermore, poor oral health (Palacios & Joshipura, 2015) and xerostomia (dry mouth caused by decreased saliva) can impair the ability to lubricate, masticate, and swallow food (Palacios & Joshipura, 2015). Antidepressants, antihypertensives, and bronchodilators can contribute to xerostomia (DiMaria-Ghalili & Amella, 2005). Change in taste (from medications, nutrient deficiencies, or taste bud atrophy) can also alter nutritional intake (DiMaria-Ghalili & Amella, 2005).

Body composition changes in normal aging include increase in body fat, visceral fat stores, and a decrease in lean body mass (Janssen, Heymsfield, Allison, Kotler, & Ross, 2002). Furthermore, the low skeletal muscle mass associated with aging is related to functional impairment and physical disability (Janssen, Heymsfield, & Ross, 2002).

The impact of malnutrition on the health of the hospitalized older adult is well documented. In this population, malnutrition is related to prolonged hospital stay, poor health status, institutionalization, and death (Corkins

et al., 2014). Malnutrition is also related to frailty and impaired functional status (Litchford, 2014).

ASSESSMENT OF THE PROBLEM

Areas of nutrition status assessment in the hospitalized older adult should focus on identification of malnutrition and risk factors for malnutrition not only during hospitalization, but also on hospital discharge. Previously The Joint Commission mandated a nutrition screening be performed within 24 hours of hospital admission for all patients; however, hospitals now determine the frequency for performing these assessments (The Joint Commission, 2018) per institutional policy or standard. The American Society for Parenteral and Enteral Nutrition's Adult Nutrition Care Pathway suggests that a validated nutrition screening tool be completed upon admission (Ukleja et al., 2018). In a recent survey of nurses' nutrition screening and assessment practices (n = 545), nurses reported they are primarily responsible for the initial nutrition screening (Guenter & DiMaria-Ghalili, 2013). Thirty-one percent reported using a validated nutrition assessment tool; the most frequently reported were the Mini Nutritional Assessment (MNA; 49.1%) and the Subjective Global Assessment (32.4%).

The MNA (Guigoz, Vellas, & Garry, 1994) is a comprehensive two-level tool that can be used to screen and assess the older hospitalized patient for malnutrition by evaluating the presence of risk factors for malnutrition in this age group (DiMaria-Ghalili & Guenter, 2008). The MNA-SF (short form) is based on the full MNA, the original 18-item questionnaire. The MNA-SF consists of six questions on food intake, weight loss, mobility, psychological stress or acute disease, presence of dementia or depression, and body mass index (BMI; Kaiser et al., 2010), and can be used as a screening tool. The full MNA provides a more detailed assessment. The validity and reliability of the MNA for use in hospitalized older adults is well documented (Salva et al., 2004). If a patient scores less than 12 on the screen (MNA-SF), then the assessment section should be completed in order to compute the malnutrition indicator score. The MNA-SF is easy to administer and is comprised of six questions. The assessment section requires measurement of midarm muscle and calf circumference. Although these anthropometric measurements are relatively easy to obtain with a tape measure, nurses may first require training in these procedures before incorporating the MNA as part of a routine nursing assessment. Protocols should be established to identify interventions to be implemented once the screening and assessment data are obtained and should include consultation with a dietitian. See "Nutrition in the Elderly" in the "Resources" section for the topic of MNA in nutrition and consultgerirn.org/resources for *Assessing Nutrition in Older Adults* (DiMaria-Ghalili, Sobieski, & Amella, 2019).

Additional assessment strategies include proper measurement of height and weight and a detailed weight history. Height should always be directly measured and never recorded via patient self-report. An alternative way of measuring standing height is knee height (Salva et al., 2004) with special calipers. An alternative to knee height measures is a demi-span measurement, meaning half the total arm span. (For directions on estimating height based on demi-span measurement, see Appendix 2 in *A Guide to Completing the Mini Nutritional Assessment* from the Nestle Nutrition Institute at www.mna-elderly.com/mna_forms.html.)

A calorie count or dietary intake analysis is a good way to quantify the type and amount of nutrients ingested during hospitalization (DiMaria-Ghalili & Amella, 2005). Traditionally, laboratory indicators of nutritional status included measures of visceral proteins such as serum albumin, transferrin, and prealbumin (DiMaria-Ghalili & Amella, 2005). However, these visceral proteins are also negative acute-phase reactants and are decreased during a stressed inflammatory state, limiting the ability to predict malnutrition in the acutely ill hospitalized patient. Monitoring inflammatory markers, such as C-reactive protein (Jensen, Hsiao, & Wheeler, 2012) or interleukin 6 (Jensen & Wheeler, 2012), can help to determine if depleted albumin reflects malnutrition or an inflammatory response. In spite of this, albumin is a strong prognostic marker for morbidity and mortality in the older hospitalized patient (Sullivan, Roberson, & Bopp, 2005).

INTERVENTIONS AND CARE STRATEGIES

The nursing interventions outlined in the protocol focus on enhancing or promoting nutritional intake and range in complexity from basic fundamental nursing care strategies to the administration of artificial nutrition via parenteral or enteral routes. Before initiating targeted nutritional interventions in the hospitalized older adult, it must first be determined whether the older adult cannot eat, should not eat, or will not eat (Sobotka et al., 2009; Ukleja et al., 2018; Volkert et al., 2019). Factors to consider include the gastrointestinal tract (starting with the mouth) working properly without any functional, mechanical, or physiological alterations that would limit the ability to adequately ingest, digest, and/or absorb food. Also, does the older adult have any chronic or acute health condition in which the normal intake of food is contraindicated? Or, is the older adult simply not eating, or is the appetite decreased? If the gastrointestinal tract is functional and can be used to

provide nutrients, then nutritional interventions should be targeted at promoting adequate oral intake.

Nursing care strategies focus on ways to increase food intake as well as ways to enhance and manage the environment to promote increased food intake. When functional or mechanical factors limit the ability to take in nutrients, nurses should obtain interdisciplinary consultations from speech therapists, occupational therapists, physical therapists, psychiatrists, and/or dietitians to collaborate on strategies that would enhance the ability of the older adult to feed himself or herself or to eat. Oral nutritional supplementation has been shown to improve nutritional status in malnourished hospitalized older adults (Joanna Briggs Institute, 2007; Volkert et al., 2019) and should be considered in the hospitalized older adult who is malnourished or is at risk of malnutrition. When used, oral liquid nutritional supplements should be given at least 60 minutes before meals (Wilson, Purushothaman, & Morley, 2002). Specialized nutritional support should be reserved for select situations. If the provision of nutrients via the gastrointestinal tract is contraindicated, then parenteral nutrition via the central or peripheral route should be initiated (Ukleja et al., 2018). If the gastrointestinal tract can be used, then nutrients should be delivered via enteral tube feeding (Ukleja et al., 2018). The exact location of the tube and type of feeding tube inserted depend on the disease state, length of time tube feeding is required, and risk of aspiration. Patients started on specialized nutritional support should be routinely reassessed for the continued need for specialized nutrition support and transitioned to oral feeding when feasible. Also, advance directives, if not completed, should be addressed before initiating specialized nutrition support (see Chapter 7, Healthcare Decision-Making and Chapter 17, Advance Care Planning).

CASE STUDY 13.1

Mr. J.B. is an 83-year-old male admitted to the hospital with community acquired pneumonia. He also has a chronic venous leg ulcer and a history of chronic obstructive pulmonary disease and hypertension. On admission, his standing height is 5 feet 8 inches and he weighs 140 pounds. His BMI is 21.33. He is a widow, describes his health as fair, and uses the community share-a-ride program to shop and attend medical appointments. While he is independent in activities of daily living on admission, he complains of tiring easily after light housekeeping and lost 10 pounds in the past 3 months due to decreased appetite. Upon admission, his MNA-SF score is 7 based on moderate loss of appetite, weight loss greater than 6.6 pounds during the last 3 months, goes out, has suffered an acute event, has no psychological problems, and has a BMI of 21.33. Because his score is below 11, he is at risk for malnutrition, and a complete assessment level of the MNA is performed. His total MNA assessment score is 17.5 based on an assessment score of 10.5 and a screening score of 7.0, indicating he is at risk for malnutrition. Although he is on a regular diet, he only takes in about 50% of his meals. Oral nutritional supplements are ordered twice daily between meals.

Three days into his hospitalization, Mr. J.B. develops sepsis and is transferred to the ICU for 7 days. He remained on a regular diet and his intake dropped to 25% of his meals, and he consumed only 100 mL/d of his oral nutritional supplement. He lost an additional 3 pounds during his hospitalization and became progressively weak due to prolonged bedrest. A decision was made to transfer him to a rehab facility for physical therapy. Upon admission to the rehab facility, his MNA score indicated he was malnourished. During the discharge planning meeting, concerns were raised by the nurse, dietitian, physical therapist, and social worker about Mr. J.B.'s nutritional status and his ability to be able to shop and cook for himself when he transitions to home from the rehab facility. Mr. J.B. was discharged with home care, and a home delivered meal service to provide 3 meals a day for the first 2 weeks after discharge, in addition to oral nutrition supplements. A dietitian reassessed Mr. J.B.'s condition 2 weeks after discharge. His appetite was slowly improving, and he had no further weight loss. While he was able to travel to his medical appointments with the share-a-ride program, he still felt too weak to shop and cook for himself. He continued to receive three home delivered meals per day for an additional month. Six weeks after discharge he gained 2 pounds and was able to shop and prepare light meals for himself. He continued to consume one serving of an oral nutritional supplement per day and was switched to a once daily home delivered meal service.

SUMMARY

Hospitalized older adults are at risk of malnutrition. Nurses should carefully assess and monitor the nutritional status of the older hospitalized patient so that appropriate nutrition-related interventions can be implemented in a timely fashion.

NURSING STANDARD OF PRACTICE

Protocol 13.1: Nutrition in Aging

I. GOAL

Improve in indicators of nutritional status in order to optimize functional status and general well-being and promote positive nutritional status.

II. OVERVIEW

Older adults are at risk of malnutrition, with 39% to 47% of hospitalized older adults being malnourished or at risk of malnutrition (Kaiser et al., 2010).

III. BACKGROUND/STATEMENT OF PROBLEM

A. Definition(s)
   1. Malnutrition: Any disorder of nutritional status, including disorders resulting from a deficiency of nutrient intake, impaired nutrient metabolism, or overnutrition

B. Etiology and/or epidemiology: Older adults are at risk for undernutrition because of dietary, economic, psychosocial, and physiological factors (DiMaria-Ghalili & Amella, 2005).
   1. Dietary intake
      a. Little or no appetite (Carlsson et al., 2005; Ramic et al., 2011)
      b. Problems with eating or swallowing (Serra-Prat et al., 2012)
      c. Eating inadequate servings of nutrients (Ramic et al., 2011)
      d. Eating fewer than two meals a day (Ramic et al., 2011)
   2. Limited income may cause restriction in the number of meals eaten per day or dietary quality of meals eaten (Samuel et al., 2012).
   3. Isolation
      a. Older adults who live alone may lose desire to cook because of loneliness (Ramic et al., 2011; Stroebe et al., 2007)
      b. Appetite of widows decreases (DiGiacomo, Lewis, Nolan, Phillips, & Davidson, 2013)
      c. Difficulty cooking because of disabilities (Anyanwu et al., 2011)
      d. Lack of access to transportation to buy food (DiMaria-Ghalili & Amella, 2005)
   4. Chronic illness
      a. Chronic conditions can affect intake (DiMaria-Ghalili, 2014).
      b. Disability can hinder ability to prepare or ingest food (Anyanwu et al., 2011; Litchford, 2014).
      c. Depression can cause decreased appetite (Engel et al., 2011).
      d. Poor oral health (cavities, gum disease, and missing teeth), and xerostomia, or dry mouth, impairs ability to lubricate, masticate, and swallow food (Palacios & Joshipura, 2015).
      e. Antidepressants, antihypertensives, and bronchodilators can contribute to xerostomia (DiMaria-Ghalili & Amella, 2005).
   5. Physiological changes
      a. Decrease in lean body mass and redistribution of fat around internal organs lead to decreased caloric requirements (Janssen, Heymsfield, Allison, et al., 2002)
      b. Change in taste (from medications, nutrient deficiencies, or taste bud atrophy) can also alter nutritional status (DiMaria-Ghalili & Amella, 2005)

(*continued*)

Protocol 13.1: Nutrition in Aging (*continued*)

IV. PARAMETERS OF ASSESSMENT

A. General: During routine nursing assessment, any alterations in general assessment parameters that influence intake, absorption, or digestion of nutrients should be further assessed to determine whether the older adult is at nutritional risk. These parameters include:
   1. General assessment, including present history, assessment of symptoms, past medical and surgical history, and comorbidities (DiMaria-Ghalili, 2014)
   2. Social history (DiMaria-Ghalili, 2014)
   3. Drug–nutrient interactions: Drugs can modify the nutrient needs and metabolism of older people. Restrictive diets, malnutrition, changes in eating patterns, alcoholism, and chronic disease with long-term drug treatment are some of the risk factors in older adults that place them at risk for drug–nutrient interactions (DiMaria-Ghalili, 2014)
   4. Functional limitations (DiMaria-Ghalili, 2014)
   5. Psychological status (DiMaria-Ghalili, 2014)
   6. Physical assessment: Physical examination with emphasis on oral examination (see Chapter 11, Oral Healthcare in the Older Adult); loss of subcutaneous fat, muscle wasting, and BMI (DiMaria-Ghalili, 2014); and dysphagia

B. Dietary intake: In-depth assessment of dietary intake during hospitalization may be documented with a dietary intake analysis (calorie count; DiMaria-Ghalili & Amella, 2005).

C. Risk assessment tool: The MNA should be performed to determine whether an older hospitalized patient is either at risk of malnutrition or has malnutrition. The MNA determines risk based on food intake, mobility, BMI, history of weight loss, psychological stress, or acute disease, and dementia or other psychological conditions. If score on the MNA-SF is 11 points or less, the in-depth MNA assessment should be performed (DiMaria-Ghalili & Guenter, 2008). See the "Resources" section or go to consultgerirn.org/resources for nutrition information.

D. Anthropometry
   1. Obtain an accurate weight and height through direct measurement. Do not rely on patient recall. If the patient cannot stand erect to measure height, then either a demi-span measurement or a knee-height measurement should be taken to estimate height using special knee-height calipers (DiMaria-Ghalili & Amella, 2005). Height should never be estimated or recalled because of shortening of the spine with advanced age; self-reported height may be off by as much as 2.4 cm (DiMaria-Ghalili & Amella, 2005).
   2. Weight history: A detailed weight history should be obtained along with current weight. Detailed weight history should include a history of weight loss, whether the weight loss was intentional or unintentional, and during what period. A loss of 10 pounds over a 6-month period, whether intentional or unintentional, is a critical indicator for further assessment (DiMaria-Ghalili & Amella, 2005).
   3. Calculate BMI to determine whether weight for height is within normal range: 23 to 30. A BMI below 23 is a sign of undernutrition (Centers for Medicare & Medicaid Services, 2019).

E. Visceral proteins: Serum albumin, transferrin, and prealbumin are visceral proteins traditionally used to assess and monitor nutritional status (DiMaria-Ghalili & Amella, 2005). However, keep in mind that these proteins are negative acute-phase reactants, so during a stress state, the production is usually decreased. In the older hospitalized patient, albumin levels may be a better indicator of prognosis than nutritional status (White et al., 2012). Consider using inflammatory markers (C-reactive protein or interleukin-6) to ascertain whether the changes in albumin are caused by nutritional alterations or an inflammatory state (Jensen et al., 2012; Jensen & Wheeler, 2012).

F. Functional status: Measure handgrip strength using a hand dynamometer (White et al., 2012); review ability to perform ADL and IADL (DiMaria-Ghalili, 2014).

G. Transitional care needs determine the ability of the patient to shop, cook, and feed self after discharge (DiMaria-Ghalili, 2014).

(*continued*)

Protocol 13.1: Nutrition in Aging (*continued*)

V. NURSING CARE STRATEGIES

A. Collaboration (DiMaria-Ghalili & Amella, 2005)
   1. Refer to a dietitian if the patient is at risk of undernutrition or has undernutrition.
   2. Consult with a pharmacist to review the patient's medications for possible drug–nutrient interactions.
   3. Consult with a multidisciplinary team specializing in nutrition.
   4. Consult with a social worker, an occupational therapist, and a speech therapist as appropriate.

B. Alleviate dry mouth
   1. Avoid caffeine; alcohol and tobacco; and dry, bulk, spicy, salty, or highly acidic foods.
   2. If the patient does not have dementia or swallowing difficulties, offer sugarless hard candy or chewing gum to stimulate saliva.
   3. Keep lips moist with petroleum jelly.
   4. Take frequent sips of water.

C. Maintain adequate nutritional intake

   Daily requirements for healthy older adults include 30 kcal/kg of body weight, and 1 to 1.2 g/kg of protein per day (Bauer et al., 2013), with no more than 30% of calories from fat. Caloric, carbohydrate, protein, and fat requirements may differ depending on degree of malnutrition and physiological stress.

D. Improve oral intake
   1. Assess each patient's ability to eat within 24 hours of admission (Jefferies, Johnson, & Ravens, 2011).
   2. Engage in mealtime rounds to determine how much food is consumed and whether assistance is needed (Jefferies et al., 2011).
   3. Limit staff breaks to before or after patient mealtimes to ensure that adequate staff are available to help with meals (Jefferies et al., 2011).
   4. Encourage family members to visit at mealtimes.
   5. Ask family to bring favorite foods from home when appropriate.
   6. Ask about patient food preferences and honor them.
   7. Suggest small, frequent meals with adequate nutrients to help patients regain or maintain weight (Joanna Briggs Institute, 2007).
   8. Provide nutritious snacks (Joanna Briggs Institute, 2007).
   9. Help patient with mouth care and placement of dentures before food is served (Jefferies et al., 2011).

E. Provide conducive environment for meals
   1. Remove bedpans, urinals, and emesis basins from rooms before mealtime.
   2. Administer analgesics and antiemetics on a schedule that will diminish the likelihood of pain or nausea during mealtimes.
   3. Serve meals to patients in a chair if they can get out of bed and remain seated.
   4. Create a more relaxed atmosphere by sitting at the patient's eye level and making eye contact during feeding.
   5. Order a late food tray or keep food warm if the patients are not in their rooms during mealtimes.
   6. Do not interrupt patients for round and nonurgent procedures during mealtimes.

F. Specialized nutritional support (Sobotka et al., 2009; Ukleja et al., 2018; Volkert et al., 2019)
   1. Start specialized nutritional support when a patient cannot, should not, or will not eat adequately and if the benefits of nutrition outweigh the associated risks.
   2. Before initiation of specialized nutritional support, review the patient's advance directives regarding the use of artificial nutrition and hydration.

G. Provide oral supplements
   1. Supplements should not replace meals but should be provided between meals and not within the hour preceding a meal and at bedtime (Joanna Briggs Institute, 2007; Wilson et al., 2002).
   2. Ensure that oral supplement is at the appropriate temperature (Joanna Briggs Institute, 2007).
   3. Ensure that the patient can open oral supplement packaging (Joanna Briggs Institute, 2007).

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Protocol 13.1: Nutrition in Aging (*continued*)

4. Monitor the intake of the prescribed supplement (Joanna Briggs Institute, 2007).
5. Promote a sip style of supplement consumption (Joanna Briggs Institute, 2007).
6. Include supplements as part of the medication protocol (Joanna Briggs Institute, 2007).

H. NPO orders
1. Schedule older adults for tests or procedures early in the day to decrease the length of time they are not allowed to eat and drink.
2. If testing late in the day is inevitable, ask the physician whether the patient can have an early breakfast.
3. See ASA practice guideline regarding recommended length of time patients should be kept NPO for elective surgical procedures.

VI. EVALUATION/EXPECTED OUTCOMES

A. Patient will
1. Experience improvement in indicators of nutritional status.
2. Improve functional status and general well-being.

B. Provider should
1. Ensure that care includes food and fluid of adequate quantity and quality in an environment conducive to eating, with appropriate support (e.g., modified eating aids) for people who can potentially chew and swallow but are unable to feed themselves.
2. Continue to reassess patients who are malnourished or at risk for malnutrition.
3. Monitor for refeeding syndrome.

C. Institution will
1. Ensure that all healthcare professionals who are directly involved in patient care should receive education and training on the importance of providing adequate nutrition.

D. QA/QI
1. Establish QA/QI measures surrounding nutritional management in aging patients.

E. Educational
1. Provided education and training includes
   a. Nutritional needs and indications for nutrition support
   b. Options for nutrition support (oral, enteral, and parenteral)
   c. Ethical and legal concepts
   d. Potential risks and benefits
   e. When and where to seek expert advice
2. Patient and/or caregiver education includes how to maintain or improve nutritional status as well as how to administer, when appropriate, oral liquid supplements, enteral tube feeding, or parenteral nutrition.

VII. FOLLOW-UP MONITORING

A. Monitor for gradual increase in weight over time.
1. Weigh patient weekly to monitor trends in weight.
2. Daily weights are useful for monitoring fluid status.

B. Monitor and assess for refeeding syndrome (Skipper, 2012).
1. Carefully monitor and assess patients the first week of aggressive nutritional repletion.
2. Assess and correct the following electrolyte abnormalities: hypophosphatemia, hypokalemia, hypomagnesemia, hyperglycemia, and hypoglycemia.
3. Assess fluid status with daily weights and strict intake and output.
4. Assess for congestive heart failure in patients with respiratory or cardiac difficulties.

(*continued*)

Protocol 13.1: Nutrition in Aging (*continued*)

5. Ensure caloric goals will be reached slowly, over more than 3 to 4 days, to avoid refeeding syndrome when repletion of nutritional status is warranted.
6. Be aware that refeeding syndrome is not only exclusive to patients started on aggressive artificial nutrition, but may also be found in older adults with chronic comorbid medical conditions and poor nutrient intake started with aggressive nutritional repletion via oral intake.

VIII. RELEVANT GUIDELINES

A. Preoperative nutrition assessment
   1. American Geriatrics Society (2012)
B. Preoperative fasting
   1. American Society of Anesthesiologists (2017)
   2. Lambert and Carey (2015)
C. Nutrition interventions
   1. Bauer et al. (2013)
   2. Sobotka et al. (2009)
   3. Ukleja et al. (2018)
   4. Volkert et al. (2019)

ABBREVIATIONS

ACS	American College of Surgeons
ADL	Activities of daily living
AGS	American Geriatrics Society
ASA	American Society of Anesthesiologists
BMI	Body mass index
IAD	Instrumental activities of daily living
MNA	Mini Nutritional Assessment
NPO	Nothing by mouth
NSQIP	National Surgical Quality Improvement Program
QA/QI	Quality assurance/quality improvement

RESOURCES

Academy of Nutrition and Dietetics

Resources for Older Adults
www.eatright.org/resources/for-seniors

Resources for Professionals
www.eatrightpro.org/practice/practice-resources/malnutrition

Regulatory/Authoritative Sites

Academy of Nutrition and Dietetics
www.eatright.org

AMDA the Society for Post-Acute and Long-Term Care Medicine
https://paltc.org

American Geriatrics Society
www.americangeriatrics.org

American Society for Parenteral and Enteral Nutrition
www.nutritioncare.org

Defeat Malnutrition Today
http://www.defeatmalnutrition.today

Gerontological Advanced Practice Nurses Association
https://www.gapna.org

The Gerontological Society of America
www.geron.org

National Institutes of Health
www.nlm.nih.gov/medlineplus/nutritionforseniors.html

U.S. Department of Health and Human Services
www.hhs.gov

Mini Nutritional Assessment

Nestle Nutrition Institute
www.mna-elderly.com

Nutrition in the Elderly

ConsultGeriRN Website of the Hartford Institute for Geriatric Nursing
consultgerirn.org/resources

Knee-Height Measurement

A Guide to Completing the Mini Nutritional Assessment Short Form (MNA-SF)
https://www.mna-elderly.com/forms/mna_guide_english_sf.pdf

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Family Caregiving*

Deborah C. Messecar

14

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe characteristics and factors that put family caregivers at risk of unhealthy transitions into the caregiving role.
2. Identify key aspects of a family caregiving preparedness assessment.
3. List specific interventions to support family caregivers of older adults to take on their caregiving duties.
4. Identify family caregiver outcomes expected from the implementation of this protocol.

OVERVIEW

Family caregivers are a key link in providing safe and effective transitional care to frail older adults as they move across levels of care (e.g., acute to subacute) or across settings (e.g., hospital to home; Gibson, Kelly, & Kaplan, 2012; Gitlin & Wolff, 2012; Hirschman et al., 2017; Naylor et al., 2017; Toles, Colon-Emeric, Naylor, Asafu-Adjei, & Hanson, 2017). Frail older adults coping with complex chronic conditions are vulnerable to problems with care as they typically have multiple providers and move frequently between and among healthcare settings. Incomplete communication among providers and across healthcare agencies is linked to high-risk care transitions with adverse outcomes and an increased risk of hospital readmission and or length of hospital stay (Geary & Schumacher, 2012; Jencks, Williams, & Coleman, 2009; Kansagara et al., 2016; Naylor et al., 2017). Nurses in collaboration with family caregivers can bridge the gap between the care provided in the hospital and other settings and the care needed in the community. Transitional care for frail older people can be improved if interventions address family inclusion and education, communication exists between healthcare workers and family, and interprofessional communication and ongoing support are available after the transition.

Helping Caregivers Take on the Caregiving Role

Helping the caregiver with the role-acquisition process is a critical nursing function that facilitates good transitional care. Indicators of a healthy assumption of the caregiving role are those factors that either indicate a robust and positive role-acquisition process or signal potential difficulty with assuming the caregiver role. When trying to ascertain what those indicators might be, the following questions about the caregiver role-acquisition process can be posed: What is the nature of the transition? For example, the

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

transition can be changes in the caregiving role or changes in health/illness requiring different levels of care. What are the transition conditions that facilitate or inhibit a healthy transition? What are the patterns of responses that indicate healthy movement through a transition (Geary & Schumacher, 2012)? Because the role-transition process unfolds over time, identifying process conditions that move patient and family members either in the direction of health or on the way to vulnerability and risk allows early assessment and intervention to facilitate healthy outcomes of the caregiving role acquisition (Geary & Schumacher, 2012; Gitlin & Wolff, 2012). If unhealthy role-taking transitions can be identified, then they can be either prevented or ameliorated.

Who Is Likely to Be or Become a Caregiver?

Being a family caregiver is a widespread experience in the United States. Depending on how family caregiving is defined, national surveys estimate that up to 43.5 million people, or 18.2% of the U.S. population, provide care for a chronically ill, disabled family member or friend during any given year (National Alliance for Caregiving [NAC] & American Association of Retired Persons [AARP], 2015). Reflecting an increasing trend, 40% of all family caregivers of adults older than 18 years are men, 60% are women, and the majority are older than 49 years (NAC & AARP, 2015). Among the primary family caregivers of disabled or ill adults older than 65 years, the proportion of male caregivers is lower (about 36.3%, but this number has increased from prior years). Among millennial caregivers of dementia patients, 53% are women and 47% are men, indicating closer gender parity than what is noted among older caregivers (Vega, Aranda, & Rodriguez, 2017). Primary family caregivers usually take care of relatives (85%), and of these, most (49%) care for a parent or in-law (NAC & AARP, 2015). Older adults receiving care were incrementally younger, more diverse, and better educated, compared with the case in prior national caregiving surveys in 2015 versus 2004 and 2009 (Wolff et al., 2018). Their caregivers are primarily spouses and children. The most common caregiver arrangement remains that of an adult female child providing care to an elderly female parent (NAC & AARP, 2015). Many caregivers are older and are at risk of chronic illness themselves. Caregiving duration of 4 years or longer among caregivers is increasing, from 44.8% in 1991 to 60.5% by 2015 (Wolff et al., 2018). In addition, national surveys indicate a trend of a substantial need gap for caregivers to be engaged in conversation with health providers about the care of the care receiver and self-care. More than 84% of caregivers state they could use more information on caregiving topics (NAC & AARP, 2015), yet many barriers to obtaining needed information exist (Werner et al., 2017). Family and friends continue to provide more than 80% of all long-term care services in the country (NAC & AARP, 2015), acting as a critical resource for providing long-term care (National Academies of Sciences, Engineering, and Medicine [NASEM], 2016).

Impact of Unhealthy Caregiving Transitions on Caregiver

Caregiving has documented negative consequences for the caregiver's physical and emotional health (Schultz & Sherwood, 2008). Caregiving-related stress in a chronically ill spouse results in a 63% higher mortality rate than that pertaining to their noncaregiving peers (Schulz & Beach, 1999). The impact of caregiving on health increases with intensity. Among caregivers providing higher hours of care, 22% report that their health is fair or poor (NAC & AARP, 2015). The impact on health from low income is substantial, with caregivers having $30,000 or less in annual income reporting fair or poor health compared to only 7% among those with income greater than $100,000 (NAC & AARP, 2015). Stress from caring for an older adult with dementia has been shown to impact the caregiver's immune system for up to 3 years after his or her caregiving ends (Kiecolt-Glaser et al., 2003) and to contribute to higher reported loneliness accompanied by higher pain, depression, and fatigue (Jaremka et al., 2014). Higher-hour caregivers who live with their care recipients report more emotional stress (52% vs. 35% for lower-hour caregivers or 34% for those who live apart). Caregivers who report high burden and/or provide care for 5 years or more say their health has suffered (NAC & AARP, 2015). Those providing substantial healthcare are more likely to experience both emotional and financial difficulty (Wolff, Spillman, Freedman, & Kasper, 2016). In addition, caring for a close relative is more emotionally stressful. Forty-five percent of spouse and 44% of parent caregivers report symptoms of emotional distress versus 35% caring for another relative or 18% for a nonrelative. In addition to mental health morbidity, family caregivers also experience physical health deterioration. Family caregivers who care for care recipients with chronic conditions suffer more emotional stress, with half or more reporting this outcome (NAC & AARP, 2015). Family caregivers experiencing extreme stress are postulated to age prematurely (Epel & Lithgow, 2014).

BACKGROUND AND STATEMENT OF PROBLEM

Definitions

Family Caregiving

Family caregiving is broadly defined and refers to a broad range of unpaid care provided in response to a health problem or disability of a chronically ill or functionally impaired older family member, partner, friend, or neighbor that exceeds the support usually provided in family relationships (Rabarison et al., 2018; Schumacher, Beck, & Marren, 2006).

Caregiving Roles

Caregiving roles can be classified into a hierarchy according to who takes on the bulk of responsibilities versus only intermittent supportive assistance. Historically, primary caregivers have been defined as those caregivers who tend to provide most of the everyday aspects of care, whereas secondary caregivers have been defined as those who help out as needed to fill the gaps (Cantor & Little, 1985; Penning, 1990; Tennstedt, McKinlay, & Sullivan, 1989). Among caregivers who live with their care recipients, spouses account for the bulk of primary caregivers, whereas adult children are more likely to be secondary caregivers. The range of the family caregiving role includes protective caregiving, like "keeping an eye on" an older adult who is currently independent but at risk, to full-time, round-the-clock care for a severely impaired family member. Healthcare providers may fail to assess the full scope of the family caregiving role if they associate family caregiving only with the performance of tasks.

Caregiver Role Transition

Caregiver role acquisition is a family role transition that occurs through situated interaction as part of a role-making process (Schumacher, 1995). This is the process of taking on the caregiving role at the beginning of caregiving or when a significant change in the caregiving context occurs. Role transitions occur when a role is added to or deleted from the role set of a person—or when the behavioral expectations for an established role change significantly. Role transitions involve changes in the behavior expectations along with the acquisition of new knowledge and skills (Geary & Schumacher, 2012; Naylor et al., 2017; Schumacher, Beidler, Beeber, & Gambino, 2006; Schumacher, Stewart, Archbold, Dodd, & Dibble, 2000). Examples of major role transitions are becoming a new parent, getting a divorce, and changing careers. The acquisition of the family caregiving role is a specific type of role transition that occurs within families in response to the changes in health of a family member who has suffered a decline in his or her self-care ability or health.

Indicators of Healthy Caregiver Role Transitions

The broad categories of indicators of healthy transitions include subjective well-being, role mastery, and well-being of relationships. These are the subjective, behavioral, and interpersonal parameters of health most likely to be associated with healthy role transitions (Schumacher, 1995). *Subjective well-being* is defined as "subjective responses to caregiving role transition" (Schumacher, 1995, p. 219). Subjective well-being includes any pattern of subjective reactions that arise from assuming the caregiver role within the boundaries of the caregiving situation. Examples of some of the more important possible threats to subjective well-being could include role strain and depression. Role mastery is associated with accomplishment of skilled role performance and comfort with the behavior required in a new health-related care situation. Examples of threats to role mastery, which indicate a vulnerability and risk of unhealthy transitions, are role insufficiency and lack of preparedness. *Well-being of relationships* refers to the quality of the relationship between the caregiver and the older adult. Examples of threats to the well-being of relationships are family conflict or a poor quality of relationship with the care receiver.

Family Caregiving Activities

Family caregiving activities include assistance with day-to-day activities, illness-related care, care management, and invisible aspects of care. Day-to-day activities include personal care activities (bathing, eating, dressing, mobility, transferring from bed to chair, and using the toilet) and instrumental activities of daily living (IADL; meal preparation, grocery shopping, making telephone calls, and money management; NAC & AARP, 2015; NASEM, 2016). Illness-related activities include managing symptoms, coping with illness behaviors, carrying out treatments, and performing medical or nursing procedures that include an array of medical technologies (NASEM, 2016; Schumacher, Beidler, et al., 2006; Schumacher et al., 2000). Care management activities include accessing resources, communicating with and navigating the healthcare and social services systems, and acting as an advocate (NASEM, 2016; Schumacher, Beidler, et al., 2006; Schumacher et al., 2000). Invisible aspects of care have been defined as protective actions the caregiver takes to ensure the older

adult's safety and well-being without his or her knowledge (Bowers, 1987; Schumacher, Beck, et al., 2006).

Caregiver Assessment

Caregiver assessment refers to an ongoing iterative process of gathering information that describes a family caregiving situation and identifies the particular issues, needs, resources, and strengths of the family caregiver.

Risk Factors for Unhealthy Caregiving Transitions

Gender

A higher percentage (68%) of female caregivers than of men (38%) provide greater than 21 hours of care per week and had higher odds of providing high-intensity care (Cohen, Cook, Sando, Brown, & Longo, 2017). Male caregivers are more likely to provide care at the lowest level, which is defined as no ADLs and devoting very few hours of care per week (Cook & Cohen, 2018; NAC & AARP, 2015; Pinquart & Sörensen, 2006a). Being female and assisting with more ADL and IADL activities are associated with experiencing burden (Riffin, Van Ness, Wolff, & Fried, 2019). A number of studies have found that female caregivers are more likely than males to suffer from burden, anxiety, depression, and other symptoms associated with emotional stress caused by caregiving (Davies, Sridhar, Newkirk, Beaudreau, & O'Hara, 2012; R. Mahoney, Regan, Katona, & Livingston, 2005; Penning & Wu, 2016; Riffin et al., 2019); lower levels of physical health and subjective well-being than caregiving men (Pinquart & Sörensen, 2006a; Riffin et al., 2019); and are at a higher risk of adverse outcomes (Schulz, Martire, & Klinger, 2005). In the pooled analysis from the Resources for Enhancing Alzheimer's Caregiver Health (REACH) trials, females had higher initial levels of burden and depression (Gitlin et al., 2003). However, Freedman, Cornman, and Carr (2014) found that there are positive aspects of spousal caregiving for older wives that offset other unpleasant aspects of the role. Female spouse caregivers responded to nursing home placement of their care recipient with decreased burden and depression compared with their male counterparts in the New York University caregiver intervention (Gaugler, Roth, Haley, & Mittelman, 2011).

Lesbian, Gay, Bisexual, Transgender, and Queer/ Questioning (LGBTQ)

Approximately 9% of caregivers self-identify as LGBTQ (NAC & AARP, 2015). Men and women are almost equally likely to be caregivers, and men report providing more hours of care than female caregivers (MetLife, 2010). Men in this group report providing more hours (41 vs. 29 hours) of care from comparison samples (MetLife, 2010). The types of care provided by the LGBTQ population are similar to those in the general population. Financial concerns, experiencing loneliness, and declining physical health are reported by much higher percentages than in the non-LGBTQ population (Fredriksen-Goldsen et al., 2011). Sadly, most LGBTQ caregivers and patients feel that their relationships with providers would be jeopardized by revealing their sexual orientation/gender (Fredriksen-Goldsen et al., 2011).

Ethnicity

One important gap in nationally represented survey data about caregiving is the lack of complete and comprehensive data about the prevalence and characteristics among diverse caregivers (NASEM, 2016). Prevalence rates of caregiving vary somewhat by ethnicity. Among the U.S. adult population older than 18 years, 16.9% of White and 20.3% of African American families provide informal care, whereas a slightly lower percentage of Asian Americans (19.7%) and a higher number of Hispanic Americans (21.0%) are engaged in caregiving for persons older than 50 years (NAC & AARP, 2015). Although non-Hispanic Whites currently make up the largest group of older adults, by 2040 it is anticipated that no racial or ethnic group will make up the majority of the population (Frey, 2014). Prior research indicates that the picture for caregiving in other ethnic groups is diverse. In another national survey, which looked only at people older than 70 years, 44% of Latinos were found to receive informal home care compared with 34% of African Americans and 25% of non-Hispanic Whites (Weiss, González, Kabeto, & Langa, 2005). Ethnic differences are also found regarding the care recipient. Among people aged older than 70 years who require care, Whites are the most likely to receive help from their spouses, Hispanics are the most likely to receive help from their adult children, and African Americans are the most likely to receive help from a nonfamily member (National Academy on an Aging Society, 2000).

Studies show that ethnic minority caregivers provide more care (Cohen et al., 2017; Cook & Cohen, 2018; Pinquart & Sörenson, 2005), higher intensity care (Cook & Cohen, 2018), and report worse physical health than White caregivers (Dilworth-Anderson, Williams, & Gibson, 2002; Pinquart & Sörenson, 2005). African American caregivers experience less stress and depression and get more rewards related to caregiving when compared with White caregivers (Cohen et al., 2017; Cook, Snellings, & Cohen, 2018; Cuellar, 2002; Dilworth-Anderson et al., 2002;

Gitlin et al., 2003; Haley et al., 2004; Pinquart & Sörenson, 2005). The use of spiritual coping strategies and informal support might explain this repeatedly noted advantage (Wilks, Spurlock, Brown, Teegen, & Geiger, 2018). Both Hispanics and African Americans report experiencing more positive aspects of caregiving (Roth, Dilworth-Anderson, Huang, Gross, & Gitlin, 2015). However, the interaction between minority status and relationship to the care receiver on caregiving responses in a study on impact of attachment and model of self indicates the possibility that interaction moderates the relation between relationship factors and caregiving responses in African American caregivers (Morse, Shaffer, Williamson, Dooley, & Schulz, 2012). Intervention trials have reported similar differential effects for African American, Hispanic or Latino, and White caregivers (Belle et al., 2006; Graham-Phillips, Roth, Huang, Dilworth-Anderson, & Gitlin, 2016; C. C. Lee, Czaja, & Schulz, 2010). Hispanic and Asian American caregivers exhibit more depression than White caregivers (Gitlin et al., 2003; Pinquart & Sörensen, 2005) and emotional drain (Anthony, John Geldhof, & Mendez-Luck, 2017). In addition, formal services are rarely used by ethnic minorities, which puts them at further risk for negative outcomes (Dilworth-Anderson et al., 2002; Pinquart & Sörensen, 2005). This may also explain why African American caregivers used less intervention services in REACH II (Graham-Phillips et al., 2016). A meta-analysis of three qualitative studies examined African American, Chinese, and Latino caregiver impressions of their clinical encounters around their care receiver's diagnosis of Alzheimer's disease (D. F. Mahoney, Cloutterbuck, Neary, & Zhan, 2005). The primary issues identified in the analysis by D. F. Mahoney, Cloutterbuck, et al. (2005) were disrespect for concerns as noted by African American caregivers, stigmatization of persons with dementia as noted by Chinese caregivers, and fear that home care would not be supported as noted by Latino caregivers. Goins et al. (2011) found among American Indian adults that greater cultural identity and engagement in traditional healing practices are associated with greater likelihood of taking on the caregiving role. Engagement with traditional culture traditions has been suggested as a possible strategy for a culture-based psychosocial intervention (Browne, Ka'opua, Jervis, Alboroto, & Trockman, 2017). These findings indicate a need for greater culturally sensitive communications from healthcare providers.

Age

Several recent studies have found that younger age caregivers compared with their older counterparts are more prone to depressive symptoms and burden from caregiving (Morse et al., 2012; Shankar, Hirschmanm, Hanlon, & Naylorm, 2014). Seventy-nine percent of millennial caregivers report that emotional distress is a major burden for them (Vega et al., 2017). In a subsequent analysis from the REACH I trials, being younger was associated with higher levels of depression for Black and White caregivers but not for Hispanic caregivers (Sörensen & Pinquart, 2005). In the 2009 California Health Interview Survey, self-identified baby boomer caregivers reported engaging in poor health behaviors owing to the demands of providing care (Hoffman, Lee, & Mendez-Luck, 2012). These findings are in contrast to past research that has indicated that spouse caregivers, who tend to be older, have more burden. This may be due to differences in the level of care provided. Older caregivers providing a higher intensity of care were more likely to experience burden (Cook et al., 2018). In REACH II subgroup follow-up analyses of minority caregivers, older African American caregivers experienced a decrease in burden with the intervention compared with younger African American caregivers (C. C. Lee et al., 2010), a finding that could be a result of the fact that older caregivers were more likely to be spouses.

Income and Educational Level

Low income is also related to being an ethnic minority and being "non-White," and the latter are risk factors for poorer health outcomes. Persons who become caregivers may be more likely to have incomes below the poverty level and to be in poorer health, independent of caregiving (Vitaliano, Zhang, & Scanlan, 2003). There continues to be a strong association between low income and providing high-intensity care (Cook & Cohen, 2018). Usually, educational level has been combined with income in most caregiving studies, so there is a lack of data on this variable. One study (Buckwalter et al., 1999) reported that caregivers who were less educated tended to report as slightly more depressed than those who were better educated. This is consistent with the findings from the REACH trial meta-analysis (Gitlin et al., 2003). In the meta-analysis completed by Schulz et al. (2005), caregivers with low incomes and low levels of education were more at risk of adverse outcomes. In one recent study, limited finances were associated with greater burden among caregivers of cognitively impaired elderly adults at the time of hospitalization (Shankar et al., 2014).

Relationship (Spouse, Nonspouse)

Past research conducted primarily among non-Hispanic White samples has shown that caregiving outcomes differ between nonspouse (who are mostly adult children)

and spouse caregivers (Morse et al., 2012; Pinquart & Sörensen, 2004; Shankar et al., 2014). In a meta-analytic comparison study of differences in spouse, adult children, and children-in-law as caregivers of older adults, spouses had more depression, greater burden, and lower well-being. Greater psychological distress among spouses was explained primarily by higher levels of providing care (Pinquart & Sörensen, 2011). Children-in-law viewed the caregiving relationship less positively and had fewer rewards from caregiving (Pinquart & Sörensen, 2011). In other reviews of the literature, authors noted that spousal caregivers have reported higher levels of depression than nonspouses (Gitlin, Corcoran, Winter, Boyce, & Hauck, 2001; Pruchno & Resch, 1989) and that spouses reported less "upset" with the care receiver's behavior than nonspouses, who showed no decrease in "upset." A prior meta-analysis of caregiving studies found that spousal caregivers benefited less from existing interventions than adult children (Sörensen, Pinquart, & Duberstein, 2002).

Quality of Caregiver–Care Receiver Relationship

Disruption in the caregiver and care receiver relationship (Croog, Burleson, Sudilovsky, & Baume, 2006; Flannery, 2002) and/or a poor quality of relationship (Archbold, Stewart, Greenlick, & Harvath, 1990, 1992; Shim, Landerman, & Davis, 2011) can make caregiving seem more difficult even if the objective caregiving situation (e.g., hours devoted to caregiving and number of tasks performed) does not seem to be too demanding. Archbold et al. (1992) reported that the deleterious effects of the lack of preparedness on caregiver strain faded after 9 months; however, a poor relationship with the care receiver remained strongly related to caregiver strain. Reporting a poorer quality of relationship with the care receiver was associated with a 23.5% prevalence of anxiety and 10% prevalence of depression in the R. Mahoney, Regan, et al. (2005) descriptive study.

Lack of Preparedness

Most caregivers are not prepared for the many responsibilities they face and receive no formal instruction in caregiving activities (Moon, 2017; NAC & AARP, 2015). New duties can include complex tasks such as administering medications, managing side effects, monitoring complex chronic conditions, and/or assuming responsibility for new tasks like handling insurance claims and doing personal care. Moorman and Macdonald (2013) found that medical complexity of the care recipients' care is an important contributor to caregiving strain. Yet, although caregivers are called on to assume these many new responsibilities, they often lack the skills needed to do so (Lutz et al., 2017; Schumacher, Beck, et al., 2006). Stewart, Archbold, Harvath, and Nkongho (1993) reported that although healthcare professionals were a caregiver's main source of information on providing physical care, the caregiver received no preparation on how to care for the patient emotionally or deal with the stresses of caregiving. Lack of preparedness can significantly increase the caregiver's perceptions of strain, especially during times of transition from hospital or inpatient rehabilitation to home (Archbold et al., 1990, 1992; Lutz et al., 2017).

Baseline Levels of Burden and Depressive Scores

In a meta-analysis of 84 caregiving studies, Pinquart and Sörensen (2003) found that caregivers have higher levels of stress and depression as well as lower levels of subjective well-being, physical health, and self-efficacy than noncaregivers. The strongest negative effects of caregiving were observed for clinician-rated depression. Differences in perceived stress and depression between caregivers and noncaregivers were larger in spouses than in adult children (Pinquart & Sörensen, 2003). Caregivers of care receivers who have dementia (Pinquart & Sörensen, 2006a) have more problems with symptom management (Butler et al., 2005; Grande, Farquhar, Barclay, & Todd, 2004) and problematic communication (Tolson, Swan, & Knussen, 2002) and have also reported increased burden, strain, and depression across studies.

Physical Health Problems

Vitaliano et al.'s (2003) quantitative review of 23 studies from North America, Europe, and Australia examined relationships of caregiving with several health outcomes. They found that caregivers are at greater risk for health problems than are noncaregivers. These studies included 1,594 caregivers of persons with dementia and 1,478 noncaregivers who were similar in age (mean: 65.6 years old) and sex ratio (65% women, 35% men). In this review, six physiological and five self-reported categories were examined that are indicators of illness risk and illness. The physiological categories included level of stress hormones, antibodies, immune counts/functioning, and cardiovascular and metabolic variables. Caregivers had a 23% higher level of stress hormones (adrenocorticotropic hormone, catecholamines, cortisol, etc.) and a 15% lower level of antibodies (Epstein–Barr virus, herpes simplex, immunoglobulin G test) than did noncaregivers. Comorbid medical illnesses are important because many caregivers are middle-aged to older adults, and they may be ill before they become caregivers. It is interesting to note that the relationship

between caregiver status and physiological risk was stronger for men than women (Vitaliano et al., 2003). High perceived strain was associated with increased mortality, which did not differ by race, gender, or type of caregiving relationship (i.e., child, spouse; Perkins et al., 2013). Zarit et al. found that caregivers who managed their own health poorly were at greater risk for increased stress-related caregiving outcomes (Zarit, Femia, Kim, & Whitlatch, 2010). A recent meta-analysis of 15 U.S. and international caregiving studies found a causal negative effect of caregiving on mental and physical health. The effect was especially pronounced among female, married, and high-intensity caregivers (Bom, Bakx, Schut, & van Doorslaer, 2018).

ASSESSMENT OF THE PROBLEM

Although systematic assessment of the patient is a routine element of clinical practice, assessment of the family caregiver is rarely carried out to determine what help the caregiver may need. In recognition of this need to better educate and support caregivers, AARP promoted the Caregiver Advise, Record, Enable (CARE) Act. The CARE Act requires hospitals to contact caregivers and ensure they receive the appropriate training on the medical and nursing tasks included in the discharge plan (Reinhard & Ryan, 2017; Reinhard, Young, Ryan, & Choula, 2019). In addition to instruction on pertinent medical tasks, effective intervention strategies for caregivers should be based on an accurate assessment of caregiver risk and strengths. According to a broad consensus of researchers and family caregiving organizations (Schumacher, Beck, et al., 2006; Stewart et al., 1993), assessing the caregiver should involve addressing the following topics. These are applicable across settings (e.g., home, hospital) but may not need to be measured in every assessment.

- Initial assessments compared to reassessments (the latter focus on what has changed over time)
- New versus continuing care situations
- An acute episode prompting a change in caregiving versus an ongoing need requiring a focus on services (Family Caregiver Alliance, 2006)

Caregiving Context

The caregiving context includes the background of the caregiver and the caregiving situation. The caregiver's relationship to the care recipient (spouse or nonspouse) is important because spouse and nonspouse caregivers have different risks and needs (Gitlin et al., 2003; Pinquart & Sörensen, 2011; Sörensen et al., 2002). The caregiver's various roles and responsibilities can either take away from or enhance his or her ability to provide care. For example, working caregivers may have to develop strategies to juggle family and work responsibilities, so we need to know what their employment status is (work/home/volunteer; Pinquart & Sörensen, 2006a). The duration of caregiving (Sörensen et al., 2002) can give the clinician clues about how new caregiving is for the caregiver or alert the clinician to the possibility of caregiver exhaustion with the role. Questions about household status, such as how many people are in the home and the existence and involvement of extended family and social support (Pinquart & Sörensen, 2006a), can give the clinician clues about how much support the caregiver has readily available. Depending on the type of impairment of the care receiver, the physical environment of the home or facility where care takes place can be very important (Vitaliano et al., 2003). Determine what the caregiver's financial status is; for example, is he or she getting by, or is the caregiver short of funds to provide for everyday necessities (Vitaliano et al., 2003). Ask about potential resources that the caregiver could choose to use and list these (Pinquart & Sörensen, 2006a). Explore the family's cultural background (Dilworth-Anderson et al., 2002; Goins et al., 2011) and look for clues on how to use this as a resource.

Caregiver's Perception of Recipient's Health and Functional Status

List activities the care receiver needs help with; include both ADL and IADL (Pinquart & Sörensen, 2003, 2006a). Determine whether the care recipient has cognitive impairment. If the answer to this question is "yes," ask whether there are any behavioral problems (Gitlin et al., 2003; Sörensen et al., 2002). The presence of mobility problems can also make caregiving more difficult. Assess this by simply asking whether the care recipient has problems with getting around (Archbold et al., 1990).

Lack of Caregiver Preparedness

Caregivers indicate lack of preparedness is a big problem for them. National surveys of caregivers show that more than 80% to 88% of caregivers would like more information about topics related to caregiving (NAC & AARP, 2015; NASEM, 2016; TransAmerica Institute, 2017). Does the caregiver have the skills, abilities, or knowledge to provide the care recipient with needed care? To assess preparedness, use questions from the Preparedness for Caregiving Scale (PCGS; see consultgerirn.org/resources). The PCGS was developed by Archbold et al. (1990). The concept of preparedness derives from role theory, in which

socialization to a role is assumed to be important for role enactment and performance. The questions prompt caregivers to rate how well prepared they think they are for caregiving in four perspectives of domain-specific preparedness: physical needs, emotional needs, resources, and stress. The clinician can interview the caregiver or ask the caregiver to complete the scale like a survey. The responses to the scale items can also be tallied and averaged for an overall score. If pressed for time, the clinician can simply ask, overall, how well prepared the caregiver thinks he or she is to care for a family member and then follow this with more specific questions if the response indicates preparedness is low. The PCGS was evaluated in a longitudinal correlational study of family caregivers (N = 103) of older patients with chronic diseases (Archbold et al., 1990, 1992). The scale has five Likert-type items with possible responses ranging from 1 (not at all prepared) to 4 (very well prepared). Overall scores are computed by averaging responses to the five items. Scores range from 1.00 to 4.00, the lowest score correlating with least preparedness. Archbold et al. (1992) reported internal reliability (Cronbach's alpha) of 0.72 at 6 weeks and 0.71 at the 9-month interview. Confirmatory factor analysis and reliability studies done with other caregiving populations support the reliability and validity of the PCGS (Petruzzo et al., 2017; Pucciarelli et al., 2014).

Quality of Family Relationships

The caregiver's perception of the quality of the relationship with the care receiver is a key predictor of the presence or absence of strain from caregiving (Archbold et al., 1990). The quality of the relationship can be assessed using the Mutuality scale (Messecar, Parker-Walsch, & Lindauer, 2011) developed by Archbold et al. (1990, 1992). *Mutuality* is defined as the caregiver's perceived quality of the relationship with the care receiver. Questions include the following: How close do you feel to him or her? and How much does he or she express feelings of appreciation for you and the things you do? An overall score can be obtained by calculating the mean across all items—or the questions can be used in an open-ended interview format in which the clinician then probes for more information and history about the relationship. This scale can also be completed via self-administration and then reviewed by the clinician with the caregiver (interview the caregiver apart from the care receiver). For this scale, there is no item that asks about the relationship overall; instead, the items explore several key features of the relationship such as conflict, shared positive past memories, felt positive regard, and positive reciprocity between the caregiver and the care receiver. The questions open the door for the clinician to probe in a gentle way the quality of the relationship. Caregivers rate how they feel about the care recipient, with possible responses ranging from 0 (not at all) to 4 (a great deal). The caregiver's mutuality score is computed by taking the average of the scores on the 15 items. Internal reliability and consistency (Cronbach's alpha) of the scale was 0.91 at both 6 weeks and 9 months from discharge from the hospital (Archbold et al., 1990).

Indicators of Problems With Quality of Care

In Cooper, Selwood, and Livingston's (2008) systematic review of the prevalence of elder abuse and neglect, they concluded that one in four vulnerable elders are at risk of abuse and that only a small percentage of these cases are detected. A study of diagnosis of elder abuse in U.S. emergency departments suggests that improved identification of this problem is needed (Evans, Hunold, Rosen, & Platts-Mills, 2017). Indicators of problems with the quality of care can include the following: evidence of an unhealthy environment, inappropriate management of finances, and demonstration of a lack of respect for the older adult. The nurse's observations can be guided by the Elder Mistreatment Assessment (Boltz, Greenberg, & Fulmer, 2019; Fulmer, 2002), which helps the nurse identify elder abuse and neglect issues (see Elder Mistreatment Assessment instrument at consultgerirn.org/resources). This assessment instrument comprised seven sections that review signs, symptoms, and subjective complaints of elder abuse, neglect, exploitation, and abandonment (Fulmer, Paveza, Abraham, & Fairchild, 2000; Fulmer, Street, & Carr, 1984; Fulmer & Wetle, 1986). There is no "score," but the older adult should be referred to social services if there is evidence of mistreatment; a complaint by the older adult; or if there is high risk or probable abuse, neglect, exploitation, or abandonment of the older adult. Please also refer to Chapter 13, Nutrition in the Older Adult.

Caregiver's Physical and Mental Health Status

The caregiver's perception of his or her own health (Pinquart & Sörensen, 2006a, 2007) is one of the most reliable indicators of a physical health problem. Depression or other emotional distress (e.g., anxiety) can be assessed using the Center for Epidemiological Studies—Depression Scale Revised (CESD-R; see cesd-r.com/about-cesdr; Eaton, Muntaner, Smith, Tien, & Ybarra, 2004; Pinquart & Sörensen, 2006a, 2007; Sörensen et al., 2002). The CESD-R was initially designed as a screen for the community dwelling at risk for developing major depressive symptomatology. It has been used widely in intervention studies

with family caregivers, where it has been self-administered. In 2004, the tool was revised; however, the revised scale has been scored so that the same range of values still applies. The CESD-R website contains all the information needed to use the tool, which is in the public domain. For each of the 20 items, participants rate frequency of occurrence during the past week on a 4-point scale from 0 (not at all or less than 1 day) to 3 (nearly every day for 2 weeks). In order to have the same range as the original, the values for the top two responses (5–7 days and nearly every day) give the same value of 3. Scores range from 0 to 60, with a higher score indicating the presence of a greater number and frequency of depressive symptoms. A score of 16 or higher has been identified as discriminatory between groups with clinically relevant and nonrelevant depressive symptoms (Fulmer et al., 2000; Radloff, 1977).

Burden or strain can be assessed using the Modified Caregiver Strain Index (MCSI; see consultgerirn.org/resources, Family Caregiving; Onega, 2018). Preexisting burden or strain places caregivers at greater risk for poor outcomes, such as depression and poor health, and may prevent them from benefiting from interventions (Onega, 2018; Perkins et al., 2013; Schulz & Beach, 1999; Vitaliano et al., 2003). The Modified CSI is a tool that can be used to quickly identify families with potential caregiving concerns. It is a 13-question tool that measures strain related to care provision. There is at least one item for each of the following major domains: financial, physical, psychological, and social and personal. Positive responses to seven or more items on the index indicate a greater level of strain. Internal consistency reliability is high (Cronbach's alpha = 0.86), and construct validity is supported by correlations with the physical and emotional health of the caregiver and with subjective views of the caregiving situation. A positive screen (seven or more items positive) on the MCSI indicates a need for more in-depth assessment to facilitate appropriate intervention.

Rewards of Caregiving

Although early family caregiving research focused almost exclusively on negative outcomes of caregiving, clearly, there are many positive aspects of providing care. Spouses can be drawn closer together by caregiving, which can be an expression of love. Caregivers caring for a parent with Parkinson's or Alzheimer's who had positive experiences in caregiving reported fewer feelings of being overwhelmed or distressed by their situations (Habermann, Hines, & Davis, 2013). Child caregivers can feel a sense of accomplishment from helping their adult parents. The important contribution to caregiver well-being that rewards of caregiving can make led to the development of a new measure of this important concept. An 11-item scale called the Positive Aspects of Caregiving (PAC) was developed during a national Alzheimer's interventions trial (Tarlow et al., 2004). In a national sample of caregivers, both Hispanics and African American caregivers reported experiencing more positive rewards from caregiving, indicating rewards are perceived or experienced quite differently by caregivers from different backgrounds or distinct demographic subgroups (Roth et al., 2015). Caregivers should be encouraged to explore and list their perceived benefits of caregiving (Archbold et al., 1995). These can include the satisfaction of helping a family member, developing new skills and competencies, and/or improved family relationships.

Self-Care Activities for the Caregiver

Self-care activities can include things like setting aside time to exercise, having time for oneself, and obtaining respite. Even if the caregiver does not use this strategy, ask him or her to think about strategies that would work for him or her. Caregivers need to be reminded that self-care is not a luxury but a necessity. At a minimum, caregivers need to learn how to put themselves first, manage stress, socialize, and get help.

INTERVENTIONS AND CARE STRATEGIES

Definitions

Psychoeducational Interventions

Psychoeducational interventions involve a structured program geared toward providing information about the care receiver's disease process and about resources and services, as well as training caregivers to respond effectively to disease-related problems, such as memory and behavior problems in patients with dementia or depression and anger in patients with cancer. Use of lectures, group discussions, and written materials is always led by a trained leader. Support may be part of a psychoeducational group, but it is secondary to the educational content. Use of technology such as phones, Internet, video contact, and interactive voice recognition to support caregivers as they take on new caregiving responsibilities is included in this category.

Supportive Interventions

This category subsumes both professionally led and peer-led unstructured support groups focused on building rapport among participants and creating a space in which to discuss problems, successes, and feelings regarding caregiving.

Respite or Adult Day Care

Respite care is given either in-home or as site-specific supervision, assistance with ADL, or skilled nursing care designed to give the caregiver time off.

Psychotherapy

This type of intervention involves a therapeutic relationship between the caregiver and a trained professional. Most psychotherapeutic interventions with caregivers follow a cognitive behavioral approach.

Interventions to Improve Care Receiver Competence

These interventions include memory clinics for patients with dementia and activity therapy programs designed to improve affect and everyday competence.

Multicomponent Interventions

Interventions in this group included various combinations of educational interventions, support, psychotherapy, and respite in Sörensen et al.'s (2002) and Pinquart and Sörensen's (2006a) meta-analyses. Individual studies carried out after the 2002 meta-analysis include nursing management and interprofessional care interventions and REACH II.

Overview

Past reviews of caregiver interventions, such as support groups, individual counseling, and education, confirm that there is no single, easily implemented, and consistently effective method for eliminating the stresses and/or strain of being a caregiver (Knight, Lutzky, & Macofsky-Urban, 1993; Toseland & Rossiter, 1989). In 2002, Sörensen and colleagues performed a meta-analysis on the effects of a second generation of 78 caregiver intervention studies. The most consistent significant improvements in all outcome domains (burden, depression, well-being, ability and knowledge, and care receiver symptoms) assessed in the meta-analysis resulted from psychotherapy and caregiver psychoeducational interventions aimed at improving caregiver knowledge and abilities or skill building. They followed this up with a meta-analysis of 127 studies with 5,930 participants to examine what works in caregiving interventions (Pinquart & Sörensen, 2006b) and found significant effects for psychoeducational, supportive and counseling, and multicomponent interventions. Another systematic review of respite interventions demonstrated only small effects on caregivers with clear benefits for only certain subgroups (Mason et al., 2007). Multicomponent interventions, which combined features of psychotherapy and knowledge or skill building, had the largest effect on burden and, in addition, were effective in improving well-being, ability, and knowledge. Translational efforts to use some of these multicomponent documented approaches can advance proven strategies (Gitlin, Marx, Stanley, & Hodgson, 2015). Some new interventions are being tested that empower caregivers by supporting them and their care receivers through the transition from hospital to home. Family-centered Function-focused Care (Fam-FCC) promotes a family caregiver partnership to build their skills to help promote the functional recovery of older adults (Boltz, Resnick, Chippendale, & Galvin, 2014). The Fam-FFC intervention had a significant impact on caregiver preparedness and other functional outcomes for the older adult, and is now being tested in a multisite, cluster-randomized controlled trial (Boltz, Kuzmik, et al., 2018). The effects of different types of interventions on selected indicators of unhealthy caregiver transitions from the meta-analyses and studies completed since 2002 are presented in Table 14.1.

Other studies of psychotherapy and psychoeducational interventions fit the same pattern of results (Akkerman & Ostwald, 2004; Berry, Grant, Elliott, Edwards, & Fine, 2012; Bishop et al., 2014; A. Burns et al., 2005; Coon, Thompson, Steffen, Sorocco, & Gallagher-Thompson, 2003; Gitlin, Winter, Dennis, Hodgson, & Hauck, 2010; G. M. Harris, Durkin, Allen, DeCoster, & Burgio, 2011; Hébert et al., 2003; Hepburn et al., 2005; Judge, Yarry, Looman, & Bass, 2013; Lavretsky et al., 2013; Martire et al., 2010; Mittelman, Roth, Clay, & Haley, 2007; Mittelman, Roth, Coon, & Haley, 2004; Mittelman, Roth, Haley, & Zarit, 2004; Rodriguez-Sanchez et al., 2013; Zarit et al., 2011). A very recent meta-analysis explored the use of cognitive behavioral therapy (CBT) and mindfulness interventions (M. Lee et al., 2019). CBT interventions were the most promising, with the largest significant effect, and mindfulness interventions were moderately significant. Psychoeducational interventions had small significant effects and emotional support, and a range of other multicomponent interventions had insignificant effects. All of these interventions address key negative aspects of caregiving: being overwhelmed with the physical demands of care, feeling isolated, not having time for oneself, having difficulties with the care recipient's behavior, and dealing with one's own negative responses.

There are several characteristics across interventions that seem to have a moderating effect on caregiving outcomes. Focusing the caregiver training exclusively on the care receiver to alter his or her symptoms has almost no effect on the caregiver (Agren, Evangelista, Hjelm, & Stromberg, 2012; Flynn Longmire et al., 2014; Pinquart &

TABLE 14.1

Effects of Different Types of Interventions on Indicators of Unhealthy Caregiver Transitions

Type of Intervention	Burden or Strain	Depression, Distress, or Lack of Well-Being	Lack of Preparedness
Psychoeducation	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002).	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)
	Significant decrease in burden (Griffiths et al., 2016)	Significant decrease in depressive symptoms (Griffiths et al., 2016)	
Skill building	Decreased burden—six studies (Acton & Winter, 2002)	Decreased depression—six studies (Acton & Winter, 2002)	Increased knowledge—nine studies (Acton & Winter, 2002)
		Significant reduction in depressive symptoms (Gallagher-Thompson et al., 2003)	14% improved reaction to CR symptoms (Hébert et al., 2003)
		Decreased bother, anxiety, depression (D. F. Mahoney, Tarlow, & Jones, 2003)	Significant increase in preparedness for caregiving (Boltz et al., 2014)
		Decreased depression (Coon et al., 2003)	
		Decreased distress (Hepburn et al., 2005)	
		Improved quality of life (Bishop et al., 2014)	
		Improved depression when the caregiver reports engaging in exemplary care activities (G. M. Harris et al., 2011)	
	Improved strain (Judge et al., 2013)	Improved psychosocial outcomes (Judge et al., 2013)	
		Decreased depressive symptoms (Berry et al., 2012)	
Supportive interventions	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)	Preserved self-rated health (Mittelman et al., 2007)	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)
Psychotherapy	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)
	Decreased objective burden	Decreased anxiety (Akkerman & Ostwald, 2004)	Some improved reaction to CR symptoms (A. Burns et al., 2005)
		Decreased depression with yogic meditation (Lavretsky et al., 2013)	
		Improved mental health (Rodriguez-Sanchez et al., 2013)	
		Decreased depression with CBT and mindfulness intervention (M. Lee et al., 2019)	

(*continued*)

TABLE 14.1

Effects of Different Types of Interventions on Indicators of Unhealthy Caregiver Transitions (*continued*)

Type of Intervention	Burden or Strain	Depression, Distress, or Lack of Well-Being	Lack of Preparedness
Respite	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)	
		Decreased depression—three studies (Acton & Winter, 2002)	
	Small effect (Mason et al., 2007)	Small effect (Mason et al., 2007)	
		Stress lowered on days respite used (Zarit et al., 2011)	
Focus on CR		Significant effect (Sörensen et al., 2002)	
		COPE: functioning improved for CR but no significant CG improvement (Gitlin et al., 2010)	COPE: no significant CG improvement in confidence (Gitlin et al., 2010)
		Treating CR depression decreased burden (Martire et al., 2010)	
	No effect (Agren et al., 2012)	No effect (Agren et al., 2012)	
	No effect (Flynn Longmire et al., 2014)	Distress decreased (Flynn Longmire et al., 2014)	
		No improvement in emotional health (Sherwood et al., 2012)	
Multicomponent—added to this category	Large significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)	Improved distress and depression (Bass, Clark, Looman, McCarthy, & Eckert, 2003; Callahan et al., 2006)	Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)
	REACH II interventions decreased burden (Elliott, Burgio, & Decoster, 2010)	REACH II interventions decreased depression levels, improved self-rated health (Elliott et al., 2010)	
	Significant decrease in burden in TCARE (Montgomery, Kwak, Kosloski, & O'Connell Valuch, 2011)	Significant decrease in depression in TCARE (Montgomery et al., 2011)	
Nursing and interprofessional care management—includes hospital or rehabilitation at-home and primary care	Improved carer strain (Burton & Gibbon, 2005)	Less burden (Crotty, Whitehead, Miller, & Gray, 2003)	
	Decreased burden/strain—two studies (Acton & Winter, 2002)	Less strain (R. Harris, Ashton, Broad, Connolly, & Richmond, 2005)	
	REACH interventions overall decreased burden (Gitlin et al., 2003)	More strain after intervention (Wade et al., 2003)	

(*continued*)

TABLE 14.1

Effects of Different Types of Interventions on Indicators of Unhealthy Caregiver Transitions (*continued*)

Type of Intervention	Burden or Strain	Depression, Distress, or Lack of Well-Being	Lack of Preparedness
	Decreased burden (Kalra et al., 2004)	Significant decrease in depressive symptoms (Eisdorfer et al., 2003)	
	Burden and strain were responsive to intervention (Schulz et al., 2005)	Decreased depression, distress, anxiety—four studies (Acton & Winter, 2002)	
		Decreased anxiety and depression (Kalra et al., 2004)	
		Decreased depression (Mittelman, Roth, Coon, et al., 2004)	
		Decreased reaction ratings (Mittelman, Roth, Haley, et al., 2004)	
		Clinically significant decreases in depression and anxiety (Schulz et al., 2005)	
		Significant effect (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)	
		Higher role rewards (Li et al., 2003)	
		Caregiver affect improved (Gitlin, Hauck, Dennis, & Winter, 2005)	
		Well-being worse in control group (R. Burns, Nichols, Martindale-Adams, Graney, & Lummus, 2003)	
Focus on physical or emotional health of CG		Decreased psychological distress (King, Baumann, O'Sullivan, Wilcox, & Castro, 2002)	
		Decreased depression and anxiety (Waelde, Thompson, & Gallagher-Thompson, 2004)	

CBT, cognitive behavioral therapy; CG, caregiver; COPE, Care of Persons With Dementia in Their Environments; CR, care receiver; REACH, Resources for Enhancing Alzheimer's Caregiver Health; TCARE, Tailored Caregiver Assessment and Referral.

Sörensen, 2006b; Sörensen et al., 2002; Sherwood et al., 2012). Agren et al.'s (2012) psychoeducation intervention had no impact on the caregiver's perceived control, health, depression, or burden. However, some new psychoeducation interventions leveraging Internet technology seem to show more promise. Tele-Savvy, an Internet-based version of the in-person, evidence-based psychoeducation Savvy Caregiver Program (SCP) for dementia caregivers, significantly reduced burden and depressive symptoms among a small sample of 22 caregivers (Griffiths, Whitney, Kovaleva, & Hepburn, 2016). This intervention is being further tested in a national clinical trial. In the Sörensen et al. (2002) meta-analysis, group interventions were less effective in improving caregiver burden than individual and mixed interventions, which is consistent with Knight et al. (1993) but inconsistent with the meta-analysis performed by Yin, Zhou, and Bashford (2002). Length of an intervention appears to be important in alleviating caregiver depression and care receiver symptoms. Caregivers do less well with shorter interventions regarding depression because they lose the supportive aspects of prolonged contact with a group or a professional before they can benefit.

Characteristics of the caregiver are also associated with intervention effectiveness. Some caregivers benefit less from interventions than others do. For example, Sörensen et al. (2002) found that spouse caregivers benefited less from interventions than did adult children. Table 14.2 presents caregiver characteristics associated with various indicators of unhealthy caregiver transitions.

TABLE 14.2

Effects of Different Types of Caregiver Characteristics on Indicators of Unhealthy Caregiver Transitions

Characteristics of Caregiving Situation	Burden	Depression or Lack of Well-Being	Lack of Preparedness
CR has dementia	Less effective (Sörensen et al., 2002)	Less effective (Sörensen et al., 2002)	Less effective (Sörensen et al., 2002)
Adult child CGs	Greater improvement (Sörensen et al., 2002)	Greater improvement (Sörensen et al., 2002)	Greater improvement (Sörensen et al., 2002)
		Nonspouses did better (Gitlin et al., 2003)	
Spouse CGs	Smaller improvement (Sörensen et al., 2002)	Smaller improvement (Sörensen et al., 2002)	Smaller improvement (Sörensen et al., 2002)
		Wives with low mastery and high anxiety benefited the most (D. F. Mahoney et al., 2003)	
		Cuban husbands improved more on depressive symptoms (Eisdorfer et al., 2003)	
	REACH II spouse CGs improved quality of life (burden) for African Americans only (Belle et al., 2006)	REACH II spouse CGs improved quality of life (depression) for African Americans only (Belle et al., 2006)	
		Wives improved more on burden and depression after CR nursing home placement (Gaugler et al., 2011)	
		Married caregiving caused poor physical and mental health (Bom et al., 2018).	
Older CGs	Greater improvement (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)	No effects (Sörensen et al., 2002)	Greater improvement (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)
	Higher risk for burden (Schulz et al., 2005)	Higher risk for depression (Schulz et al., 2005)	
	Older African American CGs improved more (C. C. Lee et al., 2010; Sörensen & Pinquart, 2005)	Older African American CGs improved more (C. C. Lee et al., 2010; Sörensen et al., 2005)	
		Greater improvement in well-being (Sörensen et al., 2002)	
Female CGs	Greater improvement (Pinquart & Sörensen, 2006b; Sörensen et al., 2002)	Females benefit more (Gallagher-Thompson et al., 2003; Pinquart & Sörensen, 2006b)	Greater improvement (Sörensen et al., 2002)
	Better improvement (Gitlin et al., 2003)	Cuban daughters improved more on depressive symptoms (Eisdorfer et al., 2003)	
	Higher risk for burden (Schulz et al., 2005)	Higher risk for depression (Schulz et al., 2005)	
		Females caregiving caused poor physical and mental health (Bom et al., 2018).	

(*continued*)

TABLE 14.2

Effects of Different Types of Caregiver Characteristics on Indicators of Unhealthy Caregiver Transitions (*continued*)

Characteristics of Caregiving Situation	Burden	Depression or Lack of Well-Being	Lack of Preparedness
Ethnicity	African American CGs had lower levels of caregiver burden (Pinquart & Sörensen, 2005)	Latinos benefit as much (Eisdorfer et al., 2003)	Hispanic and Asian American CGs were more depressed; African American CGs had lower levels of depression (Pinquart & Sörensen, 2005)
	African American CGs' spiritual coping improved their resilience though did not decrease burden (Wilks et al., 2018)	Cuban husbands and daughters improved more on depressive symptoms (Eisdorfer et al., 2003)	
		Hispanics did better (Gitlin et al., 2003)	
	REACH II Hispanics and Whites decreased burden compared to African Americans though all groups improved (Elliott et al., 2010; Graham-Phillips et al., 2016)	REACH II Hispanics and Whites decreased depression compared to African Americans though all groups improved (Elliott et al., 2010; Graham-Phillips et al., 2016)	
		REACH II Hispanics and African Americans greater rewards of caregiving (Roth et al., 2015)	
Lower education	Better improvement (Gitlin et al., 2003)	Better improvement (Gitlin et al., 2003)	
	Higher risk for burden (Schulz et al., 2005)	Higher risk for depression (Schulz et al., 2005)	

CG, caregiver; CR, care receiver; REACH, Resources for Enhancing Alzheimer's Caregiver Health.

Interventions With Little Effect

Some intervention approaches have been consistently disappointing, showing either no significant effects or limited responses. In H. Lee and Cameron's (2004) update of the Cochrane Database Review, reanalysis of three trials of respite care found no significant effects of respite on any outcome variable. Interventions focused on medication management of the care receiver's dementing condition (Lingler, Martire, & Schulz, 2005) and/or targeted at managing problematic behavior (Livingston, Johnston, Katona, Paton, & Lyketsos, 2005) were similarly disappointing. A meta-analysis of habit training for the management of urinary incontinence interventions showed that not only were there no significant differences in incontinence between the intervention and control groups, but also that caregivers found the intervention labor intensive (Ostaszkiewicz, Johnston, & Roe, 2004).

In Acton and Winter's (2002) and Cook and colleagues' meta-analyses of dementia, caregiving studies; small, diverse samples; lack of intervention specificity; diversity in the length, duration, and intensity of the intervention strategies; and problematic outcome measures led to nonsignificant results for many tested interventions (Acton & Winter 2002; Cooke, McNally, Mulligan, Harrison, & Newman, 2001). They also reported that two thirds of the interventions they examined did not show any improvement in any outcome measures. Their analysis was hampered by lack of detailed description of the interventions in the studies they examined. Study limitations have also been a factor leading to disappointing results for some innovative caregiving interventions for caregivers of care receivers with other long-term, debilitating illnesses. For example, interventions designed to teach arthritis management as a couple (Martire et al., 2003) to decrease

the gap between the caregiver's expectations and the care receiver's actual functional abilities with skill-building and nurse-coached pain management all had disappointing results because of either small sample sizes or the complexity of the problems they were designed to address (Martin-Cook, Davis, Hynan, & Weiner, 2005; Schumacher et al., 2002). According to Price, Hermans, and Grimley Evans (2000), modification interventions for wandering have never been adequately tested because of the many flaws identified in the existing published research; outcome measurement has also been problematic. More distal outcomes, such as depression, perceived stress, caregiver strain, and self-efficacy less directly related to the actual intervention, are less likely to change significantly (Bourgeois, Schulz, Burgio, & Beach, 2002; Burgio, Stevens, Guy, Roth, & Haley, 2003) than outcomes that are more specific to the intervention (Hébert et al., 2003).

Caregivers caring for care receivers who have conditions that worsen substantially over time (dementia, heart failure, Parkinson's disease, and stroke) have reported either less improvement, no improvement, or increased strain after intervention (Agren et al., 2012; Forster et al., 2001; Pinquart & Sörensen, 2006b; Sörensen et al., 2002; Wright, Litaker, Laraia, & DeAndrade, 2001). Across many studies, Sörensen et al. (2002) reported that interventions with caregivers of dementia patients are less successful than for other caregivers. They also noted that if levels of caregiving are relatively high and cannot be reduced, as is the case for dementia caregivers, then burden and depression are less amenable to change as well. A multidisciplinary rehabilitation program for patients with Parkinson's disease resulted in no improvement in depression for caregivers after treatment (Trend, Kaye, Gage, Owen, & Wade, 2002). A meta-analysis of hospital-at-home care for patients with stroke reported no evidence from clinical trials to support a radical shift in the care of patients with acute stroke from hospital-based care (Langhorne et al., 2000). Individual studies that examined other psychoeducational and/or support and counseling interventions for stroke caregivers (albeit with relatively small samples) found no significant changes between the intervention and control groups (Clark, Rubenach, & Winsor, 2003; Gräsel, Biehler, Schmidt, & Schupp, 2005; Larson et al., 2005). Only an intensive, multicomponent skills-training intervention significantly decreased burden anxiety and depression for this category of caregivers (Kalra et al., 2004). A number of family-based and symptom-management interventions for patients with cancer have also found no significant intervention effects (Hudson, Aranda, & Hayman-White, 2005; Kozachik et al., 2001; Kurtz, Kurtz, Given, & Given, 2005; Northouse, Kershaw, Mood, & Schafenacker, 2005; Wells, Hepworth, Murphy, Wujcik, & Johnson, 2003), or the effects were not sustainable (Northouse et al., 2013). In several of these studies, there was a large dropout rate among the intervention participants because of the rapidly deteriorating condition of the care receivers.

Resources for Enhancing Alzheimer's Caregiver Health

The REACH project was designed to test promising interventions for enhancing family caregiving for persons with dementia and overcome several of the limitations of prior research (Schulz et al., 2003). More than 1,200 caregivers participated at six sites nationwide. The sample was more diverse than most caregiving studies because of the multisite design: participants were 56% White, 24% African American, and 19% Latino (Wisniewski et al., 2003). Six sites participated in this trial nationwide. The following six interventions were tested:

1. A 12-month, computer-mediated automated interactive voice response intervention designed to assist family caregivers managing care receivers with dementia (D. F. Mahoney et al., 2003)
2. A psychoeducational (skill-building) approach modeled after community-based support groups tailored to be sensitive to ethnic groups tested (Gallagher-Thompson et al., 2003)
3. A manual-guided care-recipient–focused behavior management skill training and caregiver-focused, problem-solving training intervention tailored to the cultural preferences of White and African American caregivers (Burgio et al., 2003)
4. A family therapy intervention designed to enhance communication between caregivers and other family members by identifying existing problems in communication and facilitating changes in interaction patterns (Eisdorfer et al., 2003)
5. Two primary care interventions delivered over a period of more than 24 months, which included patient behavior management only and patient behavior management plus caregiver stress and coping (R. Burns et al., 2003)
6. In-home occupational therapy visits designed to help families modify the environment to reduce caregiver burden (Gitlin et al., 2005)

When the results from the REACH interventions were pooled, overall interventions decreased the burden significantly compared to the control conditions (Gitlin

et al., 2003). Only the family therapy with computer technology intervention was effective in reducing depressive symptoms. Interventions were superior to control conditions on burden for women and caregivers with lower education. Interventions had greater impact on depression among Hispanics, nonspouses, and caregivers with lower education.

REACH II followed up on REACH I, but, unlike the first set of studies, which implemented a variety of interventions at six sites, REACH II implemented the same two interventions at each of five participating sites. REACH II specifically implemented a multicomponent intervention and tested new tools for assessing caregivers at risk for adverse outcomes. Intervention participants received individual risk profiles and the REACH intervention through nine in-home and three telephone sessions for more than 6 months. Caregivers receiving REACH II reported better self-rated health, sleep quality, physical health, and emotional health than for those caregivers not receiving the intervention. Findings supported using a structured, multicomponent skills-training intervention that targeted caregiver self-care behaviors as one of five target areas. Overall, REACH II improved self-reported health status and decreased burden and bother in racially and ethnically diverse caregivers of people with dementia (Elliott et al., 2010). An analysis of the findings by sociodemographic groups indicated that caregiver's age and religious coping moderated the effects of the intervention for Hispanics and Blacks. The older Hispanic and Black caregivers who received the intervention reported a decrease in caregiver burden from baseline to follow-up (C. C. Lee et al., 2010). However, subsequent exploration of the reasons why REACH II overall was less effective for African Americans than for Hispanic or White caregivers found that African Americans received less intervention contact (Graham-Phillips et al., 2016). Findings from the REACH studies support the use of multicomponent interventions tailored to specific caregiving characteristics.

Aspects of Interventions That Improve Effectiveness

A key conclusion of the REACH I and II trials and several of the meta-analyses (Elliott et al., 2010; Gitlin et al., 2003; Pinquart & Sörensen, 2006b; Schulz et al., 2005; Sörensen et al., 2002) reviewed in this chapter was that family caregiver interventions need to be multicomponent and tailored. Multicomponent interventions have the potential to include a repertoire of various strategies that target different aspects of the caregiving experience. In focus groups conducted during a caregiving clinical trial, Farran et al. (2004) identified and cataloged the information and skills caregivers reported they needed to respond to their own needs or the caregiving process. This included care receiver issues such as managing difficult behaviors, worrisome symptoms, personal care problems, and caregiver concerns such as managing competing responsibilities and stressors, finding and using resources, and handling their emotional and physical responses to care (Farran et al., 2004). *Tailored interventions* are interventions that are crafted to match a specific target population; for example, spouse caregivers of patients with Alzheimer's disease and their specific caregiving issues and concerns identified through assessment (Archbold et al., 1995; Horton-Deutsch, Farran, Choi, & Fogg, 2002). The Tailored Caregiver Assessment and Referral (TCARE) protocol is a manualized care management protocol specifically designed for care managers working with caregivers (Montgomery et al., 2011). Shifting from a traditional focus on the patient to a more family-centered approach and assessment is more helpful (Beeber & Zimmerman, 2012; Bowen, MacLehose, & Beaumont, 2011). Interventions that are individualized or tailored in combination with skill building demonstrated the best evidence of effectiveness (Gitlin et al., 2008, 2010; Pusey & Richards, 2001). Among the psychoeducation interventions, some of the most effective were predicated on a skill-building approach (Gallagher-Thompson et al., 2003; Hepburn, Tornatore, Center, & Ostwald, 2001). Collaboration or a partnership model with the caregiver is also a key component of making the tailoring process more effective (Harvath et al., 1994). Programs that work collaboratively with care receivers and their families and are more intensive and modified to the caregiver's needs are also more successful (Brodaty, Green, & Koschera, 2003). Clinicians interested in the translation of evidence-based programs into sustainable community-based programs should review reports of the ongoing challenges to be expected with such projects (Teri et al., 2012).

Nursing Care Strategies

1. *Identify content and skills needed to increase preparedness for caregiving.*
   Psychoeducational skill-building interventions include information about the care needed by the care receiver and how to provide it, as well as coaching on how to manage the caregiving role. Tasks associated with taking on the caregiving role include dealing with change, juggling competing responsibilities and stressors, providing and managing care, finding and using resources, and managing the physical and emotional responses

to care (Acton & Winter, 2002; Boltz, Resnick, et al., 2014; Farran, Loukissa, Perraud, & Paun, 2003; Farran et al., 2004; Gitlin et al., 2003; Lutz et al., 2017; Pinquart & Sörensen, 2006b; Sörensen et al., 2002).

2. *Form a partnership with the caregiver before generating strategies to address issues and concerns.*
   The goal of this partnership is blending the nurse's knowledge and expertise in healthcare with the caregiver's knowledge of the family member and the caregiving situation. Each party brings essential knowledge to the process of mutual negotiation between the family and the nurse. Together, they develop ideas to address the issues and concerns that are most salient for the caregiver and care receiver. One strategy that can be used in the hospital setting is to interview the caregiver using the Family Preferences Index developed by Li et al. (2003) to assess the family member's preferences to participate in care while the older adult is hospitalized (Boltz, Resnick, et al., 2014; Brodaty et al., 2003; Gitlin et al., 2005; Harvath et al., 1994; Nolan, 2001). A checklist to elicit and engage the perspectives of older adults and their caregivers at medical visits can be used to enhance communication (Wolff et al., 2014).
3. *Identify the caregiving issues and concerns on which the caregiver wants to work and generate strategies.*
   Multiple strategies should be generated for each caregiving issue and concern. One of the most important findings from the review of literature on caregiving is that multicomponent interventions are superior to narrow, single-approach problem-solving (Acton & Winter, 2002; Boltz, Resnick, et al., 2014; Gitlin et al., 2005; Sörensen et al., 2002). Several Level II individual studies are presented in Table 14.1.
4. *Assist the caregiver in identifying strengths in the caregiving situation.*
   Not all outcomes from caregiving are negative, and caregiving can be rewarding for some caregivers who derive pride and satisfaction from the important role they are filling. Incorporating pleasurable activities into the daily routine or incorporating something that is either fun or meaningful into some caregiving task is a way of enhancing caregiving. Even in really difficult situations, there may be some positive benefit derived such as satisfaction in meeting an important commitment and/or recognition of personal growth (Archbold et al., 1995; Roth et al., 2015).
5. *Assist the caregiver in finding and using resources.*
   Navigating the healthcare system is one of the most difficult skills caregivers have to master (Archbold et al., 1995; Boltz, Resnick, et al., 2014; Farran et al., 2004; Schumacher et al., 2002). Caregivers rarely know how to translate a need that they have into a request for help from the healthcare system. Learning how to speak to healthcare providers, how to negotiate billing, and how to request help with transportation—all of these tasks can be overwhelming. For some caregivers, the Internet and other online sources of support and information can be helpful.
6. *Help caregivers identify and manage their physical and emotional responses to caregiving.*
   We know that caregiving is sometimes associated with deterioration of the caregiver's health or significant depression (Schulz et al., 2005). Generating strategies to take care of the caregiver is just as important as the strategies for caring for the care recipient.
7. *Use an interprofessional approach when working with family caregivers.*
   Multicomponent interventions have the strongest record in terms of alleviating some of the global negative consequences of caregiving. Involving a team of other health professionals helps the nurse and family generate new ideas for strategies and brings a fresh perspective to the idea-generating process (Acton & Winter, 2002; Belle et al., 2006; Elliott et al., 2010; Farran et al., 2003, 2004; Gitlin et al., 2003; Sörensen et al., 2002). Several Level II studies are presented in Table 14.1.

CASE STUDY 14.1

Alison Walsh is the oldest of two children, and the only one who still lives in the same city as her widowed mother. She describes her relationship with her mother as very strained and without much love—only discipline. Her mother, who recently suffered a stroke and is considered marginal for staying home by her neurologist, is expecting that Alison will move in and take care of her. In fact, Alison's mother has virtually no resources for any other option. Alison's mother is being discharged today from the hospital. Alison says she would feel hard-pressed to take on all of the new care that her mother will require, including having to do baths and many, if not all, of her ADL. In addition, she feels her relationship with her mother is so poor she does not understand why she should have to be the caregiver at this time when she has her own problems. Adding to her difficulties, Alison has only one other sibling to call on for help, and he lives more

(*continued*)

CASE STUDY (*continued*)

than 2,000 miles away in another city. Her husband has health problems as well, and his care takes considerable time.

As a child caregiver, Alison is at higher risk for depression or anxiety. The goal of intervention with Alison will be to identify and address aspects of her caregiving situation amenable to modification. The possible targets for intervention will vary from one caregiver to another, and it is important that the approach be tailored. Addressing aspects of caregiving that are strong predictors of unhealthy caregiver transitions, such as a lack of preparedness, stress and strain in the relationship, and overall burden, can help the nurse tailor the caregiver interventions. In this case study, only three parameters of assessment (lack of preparedness, poor relationship quality, and need to find rewards of caregiving) will be addressed along with some suggested strategies for addressing the concerns indicated.

First, in Alison's case, caregivers may be reluctant to raise concerns about their lack of preparedness to the nurse. They may connect lack of preparedness with being embarrassed about their own lack of understanding, or they may simply not know what it is they do not know. For example, in Alison's case, she may not realize that formal resources could be tapped to provide some of the personal care that she feels unable or unwilling to perform. Exploration of her readiness to provide care will help Alison raise her concerns so that they can be fully addressed.

Second, a lack of mutuality (the positive quality of the relationship between caregiver and care recipient) is very predictive of future and sustained reported difficulty with caregiving. Alison has a difficult relationship with her mother now and a history of a poor-quality relationship from childhood. This puts her at risk for experiencing more strain from caregiving. Alison is aware that her relationship with her mother is difficult, but she may not realize how much this is adding to her strain. Alison will need to think about strategies to get support and help to deal with her feelings.

Third, although in Alison's situation there might not seem to be any rewards of caregiving, it is important to ask about these anyway. There are two very important reasons for nurses to explore positive aspects of caregiving with the caregiver; caregivers want to talk about them, and these factors will be an important indicator of the quality of care provided to the care recipient. Nurses need to encourage an increase in positive affect (i.e., feelings such as gratitude, forgiveness, and the like) while, at the same time, working on decreasing negative feelings such as depression, anxiety, and guilt.

SUMMARY

Outcomes Specific to Caregiving

The goal of the guideline is to reduce the likelihood of unhealthy transitions to the caregiving role by lowering caregiver strain, depression, and poor physical health for caregivers. Indicators of problems with this include reports of depression and/or fatigue, increased use of over-the-counter and prescription medications, increased use of health services, neglect of own health, and substance abuse. Increased focus on the caregiver system as the unit of service should increase the nurse's confidence in working with family caregivers.

Outcomes Specific to Patient

These include improvement (where possible) in patient functional status, nutrition, and hygiene. Improved symptom management for care recipients with significant chronic disease is also a desired outcome. This could include better pain management for care recipients with cancer, improved glycemic control for care recipients with diabetes, and/or diminished problematic behaviors for care recipients with dementia. The emotional well-being of the care recipient should also be an outcome of interventions to aid the caregiver. Decreased use of emergency services and increased use of formal care supports are system outcomes that might be expected.



NURSING STANDARD OF PRACTICE

Protocol 14.1: Family Caregiving

I. GOAL

To identify viable strategies to monitor and support family caregivers

II. OVERVIEW

Family caregivers provide more than 80% of the long-term care for older adults in this country. Caregiving can be difficult, time-consuming work added on top of job and other family responsibilities. If the caregiver suffers negative consequences from the caregiving role and these are not mitigated, increased morbidity and mortality may result for the caregiver. Not all outcomes from caregiving are negative; there are many caregivers who report rewards from caregiving.

III. BACKGROUND AND STATEMENT OF PROBLEM

A. Definitions

1. *Family caregiving* is broadly defined and refers to a broad range of unpaid care provided in response to illness or functional impairment to a chronically ill or functionally impaired older family member, partner, friend, or neighbor that exceeds the support usually provided in family relationships (Rabarison et al., 2018; Schumacher, Beck, et al., 2006).
2. Caregiver role transitions: *Caregiver role acquisition* is a family role transition that occurs through situated interaction as part of a role-making process (Schumacher, 1995). This is the process of taking on the caregiving role at the beginning of caregiving or when a significant change in the caregiving context occurs. Role transitions occur when a role is added to or deleted from the role set of a person or when the behavioral expectations for an established role change significantly (NAC & AARP, 2015).
3. Indicators of healthy caregiver role transitions: The broad categories of indicators of healthy transitions include subjective well-being, role mastery, and well-being of relationships. These are the subjective, behavioral, and interpersonal parameters of health most likely to be associated with healthy role transitions (Geary & Schumacher, 2012; NAC & AARP, 2015; Naylor et al., 2017).
4. Family caregiving activities include assistance with day-to-day activities, illness-related care, care management, and invisible aspects of care. Day-to-day activities include personal care activities (bathing, eating, dressing, mobility, transferring from bed to chair, and using the toilet) and IADL (meal preparation, grocery shopping, making telephone calls, and money management; NAC & AARP, 2015; NASEM, 2016). Illness-related activities include managing symptoms, coping with illness behaviors, carrying out treatments, and performing medical or nursing procedures that include an array of medical technologies (Schumacher, Beidler, et al., 2006; Schumacher et al., 2000). Care management activities include accessing resources, communicating with and navigating the healthcare and social services systems, and acting as an advocate (Schumacher et al., 2000). Invisible aspects of care are protective actions the caregiver takes to ensure the older adult's safety and well-being without the elder's knowledge (Bowers, 1987; Schumacher, Beck, et al., 2006).
5. Caregiving roles can be classified into a hierarchy according to who takes on the bulk of responsibilities versus only intermittent supportive assistance. Primary caregivers tend to provide most of the everyday aspects of care, whereas secondary caregivers help out as needed to fill the gaps (Cantor & Little, 1985; Penning, 1990; Tennstedt et al., 1989). Among caregivers who live with their care recipients, spouses account for the bulk of primary caregivers, whereas adult children are more likely to be secondary caregivers. The range of the family caregiving role includes protective caregiving, like "keeping an eye on" an older adult who is currently independent but at risk, to full-time, around-the-clock care for a severely impaired family member. Healthcare providers may fail to assess the full scope of the family caregiving role if they associate family caregiving only with the performance of tasks.
6. *Caregiver assessment* refers to an ongoing iterative process of gathering information that describes a family caregiving situation and identifies the particular issues, needs, resources, and strengths of the family caregiver.

(*continued*)

Protocol 14.1: Family Caregiving (*continued*)

B. Etiology and/or epidemiology of risk factors associated with unhealthy caregiving transitions
   1. Just being a caregiver puts an individual at increased risk of higher levels of stress and depression and lower levels of subjective well-being and physical health (Pinquart & Sörensen, 2006a, 2007; Vitaliano et al., 2003).
   2. Female caregivers on average provide more direct care and report higher levels of burden and depression (Cohen et al., 2017; Cook & Cohen, 2018; Gitlin et al., 2003; Riffin et al., 2019).
      LGBTQ caregivers report more financial concerns, loneliness, and declining physical health than non-LGBTQ caregivers and are wary of revealing their orientation/gender to their providers (Fredriksen-Goldsen et al., 2011).
   3. Ethnic minority caregivers provide more care, use less formal services, and report worse physical health than White caregivers (Cohen et al., 2017; Cook & Cohen, 2018; Cook et al., 2018; Dilworth-Anderson et al., 2002; NAC & AARP, 2015; Pinquart & Sörensen, 2006a, 2007).
   4. African American caregivers experience less stress and depression and get more rewards from caregiving than White caregivers (Cohen et al., 2017; Cook et al., 2018; Cuellar, 2002; Dilworth-Anderson et al., 2002; Gitlin et al., 2003; Haley et al., 2004; Pinquart & Sörensen, 2004), but younger or nonspouse caregivers do not respond as well to interventions (Belle et al., 2006; C. C. Lee et al., 2010).
   5. Hispanic and Asian American caregivers exhibit more depression (Gitlin et al., 2003; Pinquart & Sörensen, 2004) and emotional drain (Anthony et al., 2017), particularly among young Hispanic caregivers (C. C. Lee et al., 2010). But Hispanic and African American caregivers report more positive aspects of caregiving (Roth et al., 2015).
   6. Less-educated caregivers report more depression (Buckwalter et al., 1999; Gitlin et al., 2003).
   7. Spouse caregivers report higher levels of depression than nonspouse caregivers (Pinquart & Sörensen, 2004; Pruchno & Resch, 1989), but appear to benefit more from interventions (Elliott et al., 2010).
   8. Caregivers who have a poor-quality relationship with the care recipient report more strain (Archbold et al., 1990; Croog et al., 2006; Flannery, 2002).
   9. Caregivers who lack preparedness for the caregiving role also have increased strain (Archbold et al., 1990, 1992; Moon, 2017; NAC & AARP, 2015).
   10. Caregivers of care recipients who have dementia have more strain and burden (Pinquart & Sörensen, 2003).

IV. PARAMETERS OF ASSESSMENT

A. Caregiving context
   1. Caregiver relationship with care recipient (spouse, nonspouse; Elliott et al., 2010; Gitlin et al., 2003; NAC & AARP, 2015; Sörensen et al., 2002)
   2. Caregiver roles and responsibilities
      a. Duration of caregiving (Sörensen et al., 2002)
      b. Employment status (work/home/volunteer; Pinquart & Sörensen, 2004)
      c. Household status (number in home, etc.; Pinquart & Sörensen, 2004)
      d. Existence and involvement of extended family and social support (Pinquart & Sörensen, 2004)
   3. Physical environment (home, facility; Gitlin et al., 2010; Vitaliano et al., 2003)
   4. Financial status (Vitaliano et al., 2003)
   5. Potential resources that caregiver could choose to use—list (Pinquart & Sörensen, 2004)
   6. Family's cultural background (Browne et al., 2017; Dilworth-Anderson et al., 2002; Goins et al., 2011)

B. Caregiver's perception of health and functional status of care recipient
   1. List activities care receiver needs help with; include both ADL and IADL (Pinquart & Sörensen, 2004)
   2. Presence of cognitive impairment—if yes, any behavioral problems (Gitlin et al., 2003; Sörensen et al., 2002)
   3. Presence of mobility problems—assess with single question (Archbold et al., 1990)

C. Caregiver preparedness for caregiving
   1. Does caregiver have the skills, abilities, or knowledge to provide care recipient with needed care (see PCGS at consultgerirn.org/resources)?

(*continued*)

Protocol 14.1: Family Caregiving (*continued*)

D. Quality of family relationships
   1. The caregiver's perception of the quality of the relationship with the care receiver (see Mutuality scale; Archbold et al., 1990; Messecar et al., 2011)
E. Indicators of problems with quality of care
   1. Unhealthy environment
   2. Inappropriate management of finances
   3. Lack of respect for older adult (see EAI at www.consultgerirn.org/resources)
F. Caregiver's physical and mental health status
   1. Self-rated health: single item—asks what the caregiver's perception of his or her health is (Pinquart & Sörensen, 2006a, 2007).
   2. Health conditions and symptoms
      a. Depression or other emotional distress (e.g., anxiety; Pinquart & Sörensen, 2003, 2006a, 2007; Sörensen et al., 2002; see cesd-r.com/cesdr)
      b. Reports of burden or strain (Schulz & Beach, 1999; Vitaliano et al., 2003; see Caregiver Strain Index at www.consultgerirn.org/resources—Family Caregiving topic)
   3. Rewards of caregiving
      a. List perceived benefits of caregiving (Archbold et al., 1995)
      b. Satisfaction of helping family member
      c. Developing new skills and competencies
      d. Improved family relationships
   4. Self-care activities for caregiver
      a. Attending to own healthcare needs
      b. Getting exercise
      c. Taking time off
      d. Seeking support
      e. Getting proper rest and nutrition

V. NURSING CARE STRATEGIES

A. Identify content and skills needed to increase preparedness for caregiving (Acton & Winter, 2002; Boltz, Kuzmik, et al., 2018; Farran et al., 2003; Gitlin et al., 2003; Pusey & Richards, 2001; Schumacher, Beidler, et al., 2006; Schumacher et al., 2000; Sörensen et al., 2002).
B. Form a partnership with the caregiver before generating strategies to address issues and concerns (Boltz, Kuzmik, et al., 2018; Brodaty et al., 2003; Gitlin et al., 2003; Harvath et al., 1994).
C. Invite participation in care while in the hospital using the Family Preferences Index, a 14-item approach to exploring caregivers' personal choices for participating in the care of hospitalized older adult family members to determine preferences to provide care (Messecar, Powers, & Nagel, 2008).
D. Identify the caregiving issues and concerns on which the caregiver wants to work and generate strategies (Acton & Winter, 2002; Boltz, Kuzmik, et al., 2018; Gitlin et al., 2003; Schumacher, Beidler, et al., 2006; Sörensen et al., 2002).
E. Assist the caregiver in identifying strengths in the caregiving situation (Archbold et al., 1995).
F. Assist the caregiver in finding and using resources (Archbold et al., 1995; Boltz, Kuzmik, et al., 2018; Farran et al., 2004; Schumacher et al., 2002).
G. Help caregivers identify and manage their physical and emotional responses to caregiving (Schulz & Beach, 1999). Screen for strain using the MCSI (Onega, 2018).
H. Use an interprofessional approach when working with family caregivers (Acton & Winter, 2002; Farran et al., 2003, 2004; Gitlin et al., 2003; Sörensen et al., 2002).

(*continued*)

Protocol 14.1: Family Caregiving (*continued*)

VI. EVALUATION OF EXPECTED OUTCOMES

A. Outcomes specific to caregiving transitions
   1. Lower caregiver strain
   2. Decreased depression
   3. Improved physical health

B. Outcomes specific to patient
   1. Quality of family caregiving
   2. Care recipient's functional status, nutrition, hygiene, and symptom management
   3. Care recipient's emotional well-being
   4. Decreased occurrence of adverse events such as increased frequency of emergent care

ABBREVIATIONS

ADL	Activities of daily living
EAI	Elder Assessment Instrument
IAD	Instrumental activities of daily living
PCGS	Preparedness for Caregiving Scale

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RESOURCES

Caregiver Strain Index
https://consultgeri.org/try-this/general-assessment/issue-14

CESD-R
http://cesd-r.com/cesdr

Elder Assessment Instrument (EAI)
https://consultgeri.org/try-this/general-assessment/issue-15

Preparedness Scale
https://consultgeri.org/try-this/general-assessment/issue-28.pdf

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Issues Regarding Sexuality in Older Adults*

Elaine E. Steinke

15

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe an older adult's interest in sexuality.
2. Identify barriers and challenges to sexual health among older adults.
3. Discuss normal and pathological changes of aging and their influence on sexual health.
4. Identify interventions that may help older adults achieve sexual health.

OVERVIEW

Sexuality is central to being human throughout life, and the expression of basic human needs includes intimacy, emotional expression, and love (World Health Organization [WHO], 2017, p. 3). Moreover, it encompasses sex, gender roles, and sexual orientation, and influencing factors include the "interaction of biological, psychological, cognitive, social, political, cultural, ethical, legal, historical, religious, and spiritual factors" (WHO, 2017, p. 3). *Sexual health* "requires a positive, responsible approach to sexuality and sexual relationships as well as pleasurable, safe sexual experiences that are free from coercion, discrimination or violence," with sexual rights to express one's sexuality and protection from discrimination as important to this definition (WHO, 2017, p. 3). Sexual health contributes to the satisfaction of physical needs; however, sexual contact fulfills many social, emotional, and psychological components of life as well. This is evidenced by the fact that human touch and a healthy sex life may evoke feelings of joy, romance, affection, passion, and intimacy, whereas despondency and depression often result from an inability to express one's sexuality (Buttaro, Koeniger-Donohue, & Hawkins, 2014). When this occurs, *sexual dysfunction*, defined as impairment in normal sexual functioning during desire, excitation, and/or orgasmic phases of the sexual response cycle, may result (Steinke, 2017b). There are several subtypes of sexual dysfunction, including delayed ejaculation, erectile disorder, female orgasmic disorder, female sexual interest/arousal disorder, genitopelvic pain/penetration disorder, male hypoactive sexual desire disorder, premature ejaculation, and substance/medication-induced sexual dysfunction (American Psychiatric Association, 2013).

It is frequently assumed that sexual desire and the frequency of sexual encounters begin to diminish later in life. In today's youth-focused society, sexuality in the context of aging is often believed to be impossible and is not openly discussed. Older adults may feel invisible in

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

regard to sexuality, and although this might not impact personal sexual expression, it may call into question social legitimacy and social norms in regard to later life sexuality, indirectly affecting sexual expression (Gewirtz-Meydan et al., 2018). In contrast, results of a large study of adults across generational groups (N = 962) revealed that aging sexual stigma was relatively low with moderately permissive attitudes, with no significant difference by age group or generational cohort, although older men tended to have higher sexual stigma scores compared to women (Syme & Cohn, 2016). The results of this study suggest that acceptance of aging sexuality may be improving.

Negative views of sexuality in aging often occur in healthcare settings, and healthcare providers may not recognize the importance of sexual quality of life, or assess sexual function. A systematic review of older adults' experiences with healthcare providers in recognizing sexual health status revealed that while older adults viewed sexuality as important, healthcare providers appeared disinterested or lacked understanding of sexual health of older adults (Bauer, Haesler, & Fetherstonhaugh, 2016). This may result in the older adult not seeking help for sexual problems or fearing not being taken seriously, and results in missed opportunities for healthcare providers in effective management of sexual problems, education, and counseling. Despite the negative stereotypes, sexual identity and the need for intimacy do not disappear with increasing age, and older adults do not morph into celibate, asexual beings. Physical intimacy is an important individual right, including in older age. Likewise, safety and protection from sexual abuse are key issues that are often underrecognized (Buttaro et al., 2014). This presents both ethical and legal issues, and it is important for nurses to recognize the potential for sexual abuse in all older adults, particularly in those who are less able to resist such abuses because of physical incapacity, psychological vulnerability, or cognitive impairment (see Chapter 9, Assessing Cognitive Function in the Older Adult).

Recognizing that older adults have a need for physical intimacy and that many wish to remain sexually active as they age is essential in promoting sexual quality of life. In a U.S. national poll on healthy aging, current sexual activity overall was 40%, with 46% of those aged 65 to 70, 39% of those aged 71 to 75, and 25% of those aged 76 to 80 being sexually active, with men (51%) more sexually active than women (31%), and 54% of the sample stating that sex was important to their overall quality of life (Solway, Clark, Singer, Kirch, & Malani, 2018). In partnered older adults (N = 9,164), reported sexual frequency and satisfaction revealed that high sexual frequency and high satisfaction occurred in 34.5% of the sample, and low frequency and low satisfaction in 43.5%, with high frequency and low satisfaction (10.4%) and low frequency and high satisfaction (11.6%) also noted (Gillespie, 2017). In U.S. adults aged 57 to 85 (N = 1,656), sexual frequency was two to three times per month (22%), once per month or less (29.2%), and no sex in the last year (27.7%), illustrating that older adults do indeed continue to be sexually active (Stroope, McFarland, & Uecker, 2015). Being sexually active has been associated with greater life enjoyment, improved quality of life, and greater sexual well-being (Flynn & Gow, 2015; Santos-Iglesias, Byers, & Moglia, 2016; Smith et al., 2018).

BACKGROUND AND STATEMENT OF PROBLEM

Despite the persistence of sexual patterns throughout the life span, there is limited research and information to assist nurses in assessing or intervening to promote sexual health among older adults. Contributing to this disconnect is the lack of societal recognition of sexuality as a continuing human need and a factor that perpetuates lack of sexual assessment and intervention among the older population. Other factors impacting sexual health include the presence of normal and pathological aging changes; environmental barriers to sexual health; special problems of the older adult that interfere with sexual fulfillment, such as cognitive impairment; and comorbid conditions that may impair the ability to be sexually active. Although sexuality in aging has often been overlooked in general, some literature addresses sexual activity and sexual concerns across the adult life span for diagnoses such as heart disease and cancer. For example, two scientific statements from the American Heart Association are available to help nurses and other providers in sexual counseling of cardiac patients and their partners (Levine et al., 2012; Steinke et al., 2013), and the American Society of Clinical Oncology guideline provides interventions to address sexual problems in those with cancer (Carter et al., 2018). Although resources are available for selected medical conditions, the widespread adoption of sexual counseling in practice remains problematic.

Nurses' Views Toward Sexuality and Aging

Nurses' hesitancy to discuss sexuality with older adults has a significant impact on the sexual health of this population. Maes and Louis (2011) reported that only 2% of nurse practitioners (N = 500) always conducted a sexual history, and 23.4% never or seldom did so in patients aged 50 years and older, although most reported comfort and confidence in sexual history taking. A survey of advanced practice registered nurses, doctors of osteopathy, medical

doctors, and physician assistants that was conducted in one Midwestern U.S. state found that 42.78% did not routinely assess sexual health in older adults, with 45.64% reporting it difficult to proactively assess sexual health and 41.8% reported experiencing barriers in completing a sexual assessment with older adults (Harding & Manry, 2017). Lack of training was a barrier to sexual health assessment in practice. For nurse practitioners and physicians in primary care (N = 278), good to moderate knowledge (84.2%) in addressing sexual concerns was noted, although only 3% believed they had sufficient knowledge about sexuality in aging (Hughes & Wittmann, 2015). In a small Canadian study of primary care physicians, physicians were significantly more likely to discuss sexual health with older adults aged 50 to 75 years than those over age 75 for both men and women (Pascoal, Slater, & Guiang, 2017). Topics more likely to be discussed related to medical problems such as erectile dysfunction, sexually transmitted infections, grief, and performance anxiety for men, and atrophic vaginitis, bleeding, pain, and lack of interest for women. Barriers to discussing sexual health included lack of time (83%), addressing multiple comorbid conditions (61%), believing that the person was not interested in sex (47%), and lack of expertise for such discussions (42%), indicating that increasing providers' knowledge may be an important strategy (Pascoal et al., 2017). Similarly, in a qualitative study of primary care physicians, physicians refrained from asking patients about sexual function or problems, keeping the focus of the appointment on medical problems, and when sexual problems were addressed, the approach was to offer medications for sexual dysfunction, with few physicians offering any type of sexual counseling (Levkovich, Gewirtz-Meydan, Karkabi, & Ayalon, 2018).

General discomfort among nurses when discussing sexuality, lack of experience in the assessment and management of sexual dysfunction among older adults, and lack of confidence (East & Hutchinson, 2013) often prevent nurses from addressing the sexual needs of this population. A disparity exists between nurses' readiness and willingness to discuss sexual needs and concerns with clients (East & Hutchinson, 2013). Various factors influence sexual discussions, such as lack of privacy, personal attitudes, and embarrassment. Although inadequate knowledge by nurses has been reported, a study of nurses' attitudes and beliefs revealed that 92% of nurses understood the impact of diseases and treatment on sexual function, and nearly two thirds stated that they felt both comfortable with and responsible for such discussions, but the majority did not discuss sexual concerns in practice (80%) and most lacked the confidence (60%) to do so (Saunamäki, Andersson, & Engström, 2010). Moreover, the sexuality of older adults is generally excluded from sparse gerontological curricula, and sexual assessment is viewed as less important than other assessments. A study of senior nursing students revealed that knowledge, attitudes, and self-efficacy were positively associated with sexual healthcare and that those nursing students with greater sexual knowledge had more positive attitudes, leading to more confidence in providing sexual healthcare in practice (Sung, Huang, & Lin, 2015). Additionally, results support the role of nurse educators to not only provide knowledge and skills for sexual assessment and counseling, but to also help students develop appropriate attitudes toward older adult sexuality. Without education and experience in managing sensitive issues around sexuality, health professionals are often not comfortable discussing sexual issues with older adults. Healthcare providers may lessen discomfort when addressing sexual issues by increasing their knowledge on the subject, practicing effective communication strategies to increase comfort in sexual discussions, and introducing this dimension of health into routine assessment and management protocols.

Nurses' understanding of sexuality should be broadened beyond that of a relationship between just men and women. Many clients within various healthcare systems are LGBT adults, and these alternative sexual preferences require respect and consideration. Negative media portrayals and gender stereotyping are pervasive not only in regard to older adult sexuality, but particularly for those who are gay (Garrett, 2014). A study of transgender individuals and their interaction with healthcare professionals illustrated a pattern of disrespect by healthcare professionals in regard to their sexuality, based on negative attitudes and stereotypes, that can lead to discriminatory treatment (Lindroth, 2016). Therefore, nurses are in key positions as first-line care providers to focus on health promotion in those who are LGBTQ and to proactively work to reduce and eliminate healthcare disparities and barriers. Health-promotion strategies should address such areas as HIV/AIDS; safe sex; hepatitis immunization and screening; alcohol use and substance abuse; sexually transmitted infections (STI); physical abuse, anxiety, and depression; as well as wellness exams such as prostate, testicular, breast, cervical, and colon cancer (Lim, Brown, & Justin Kim, 2014). Prevention focused on heart health, physical fitness, tobacco cessation, and diet are important for all older adults (see Chapter 32, HIV Prevention and Care for the Older Adult and Chapter 33, LGBTQ Perspectives for Older Adult Care).

Older adults in the United States who live with HIV/AIDS face considerable challenges, including stereotyping, prejudice, and discrimination related to real or perceived

sexual orientation, and this contributes to anxiety, depression, and higher risk sexual behaviors (Cahill & Valadéz, 2013). Conversely, older gay men with a same-sex domestic or married partner have a more positive affect and less depression (Cahill & Valadéz, 2013). Older women with HIV face unique challenges, including physiological changes with menopause, changing social roles, and changes in self-image, as well as stigma, negative attitudes, and discrimination, not only from their families and community, but also from healthcare professionals (Narasimhan, Payne, Caldas, Beard, & Kennedy, 2016). Sexual health education is a crucial intervention. Proactive screening and assessment are critical in the older HIV population, as is effective management that includes treatment of any mental health conditions and comorbidities.

Normal and Pathological Aging Changes

The "sexual response cycle," or the organized pattern of physical response to sexual stimulation, changes with age in both women and men. After menopause, a loss of estrogen in women results in significant sexual changes. This deficiency frequently results in the thinning of the vaginal walls and decreased or delayed vaginal lubrication, which may lead to pain during intercourse (Levin, 2015). Additionally, the labia atrophies, the vagina shortens, and the cervix may descend downward into the vagina and cause further pain and discomfort. Moreover, vaginal contractions are fewer and weaker during orgasm, and after sexual intercourse is completed, women return to the prearoused stage faster than they would at an earlier age. There can be changes in sexual desire, loss of clitoral sensations, fewer orgasms, and changes in the depth of orgasm, although some women report greater sexual desire and responsiveness (Spadt & Kusturiss, 2016). The result of these physiological age-related changes in women is the potential for significant alterations in sexual health and sexual dysfunction that have traditionally received little attention from individual healthcare providers. The genitourinary syndrome of menopause is characterized by "vaginal dryness, irritation/burning/itching of the vulva or vagina; diminished lubrication, dyspareunia, or discomfort with sexual activity; postcoital bleeding; reduced arousal, orgasm, and desire; dysuria; and urinary frequency or urgency," (p. 1418), and in a study of 423 postmenopausal women with this syndrome, 70.7% had vaginal symptoms (Moral et al., 2018). The pain resulting from anatomical changes and vaginal dryness may result in the avoidance of sexual relationships in order to prevent painful intercourse. Inquiring about genitourinary changes and menopausal symptoms is an important area for assessment by nurses and physicians, in order to design effective interventions (Mitchell & Waetjen, 2018).

Men also experience decreased hormone levels, mainly a gradual decline in testosterone, which has been associated with decreased frequency and weaker orgasms, a longer refractory period between erections, less forceful and reduced amount of ejaculate, and erectile dysfunction (Syme, 2014; Yeap, Araujo, & Wittert, 2012). Men may experience fatigue, loss of muscle mass, depression, and a decline in libido. As a result of normal aging changes, older men require more direct stimulation of the penis to experience erection, which is somewhat weaker as compared to that experienced in earlier ages. Declining levels of testosterone in the aging man have more far-reaching implications, having been associated with reduced sexual activity, frailty, dyslipidemia, atherosclerosis, vascular disease, insulin resistance, metabolic syndrome, cardiovascular events, and overall mortality, although further study is needed to establish causal relationships (Hsu et al., 2017; Panach-Navarrete & Martínez-Jabaloyas, 2017; Yeap et al., 2012). Frailty in an older population has been associated with impaired sexual functioning and distress, as well as erectile dysfunction (Lee et al., 2013), illustrating the importance of evaluating sexual health and sexual activity, as well as managing comorbid conditions with the goal of improving both overall and sexual health.

Bodily changes, such as wrinkles and sagging skin, may cause both older women and men to feel insecure about initiating a sexual encounter and maintaining emotionally secure relationships. Perceptions of body image and sexual self-esteem often influence sexual interest and sexual activity, perhaps even more so for women than men (Syme, 2014). Sensory dysfunction can also lead to decline in sexual activity for some older adults (Zhong, Pinto, Wroblewski, & McClintock, 2018). In addition, attitudes, beliefs, and lack of knowledge contribute to misperceptions about sexuality, changes in sexual function, sexual risk taking, and prevention. Cultural influences on attitudes and beliefs are often grounded in Western beliefs that youth and beauty are of higher value and that sexuality in older adulthood is nonexistent, shameful, or disgusting (Merghati-Khoei, Pirak, Yazdkhasti, & Rezasoltani, 2016; Syme, 2014). In contrast, one study that examined the role of religion and sexuality found that religious influence contributed to greater satisfaction with the frequency of sexual activity, as well as physical and emotional satisfaction with sex, but with the latter finding only in men, illustrating the positive influence of religion on one's sexual life (Iveniuk, O'Muircheartaigh, & Cagney, 2016). Being physically active has been associated with higher sex drive, increased sexual activity, and less sexual dysfunction,

while poor sleep contributed to less sexual activity, sexual dissatisfaction, and more sexual dysfunction (Allen & Desille, 2017); thus, nurses can take a proactive role in promoting a healthy lifestyle, which, besides overall health benefits, can support sexual function. In addition to normal aging changes, both chronic illness and a number of medical conditions have been associated with poor sexual health and functioning in the older population. Cardiovascular disease, diabetes, chronic respiratory diseases, and cancer can impact sexual desire and sexual function (Merghati-Khoei et al., 2016). A study of 100 women with chronic illness presenting at internal medicine clinics revealed that 65% had sexual dysfunction, including painful intercourse, reluctance to engage in sex, orgasmic problems, and sexual dissatisfaction. Predictors of sexual dysfunction included older age; menopause; unemployment; and experiencing fatigue, sleep problems, and pain and weakness in extremities (Mollaoğlu, Tuncay, & Fertelli, 2013). In a large Danish study across cardiac diagnoses (N = 1,549), sexual difficulties were experienced by 55% of men and 29% of women, with greater difficulties reported by those of older ages; diagnosed with heart failure, diabetes, or hypertension; taking beta-blocker medications; or having anxiety or depression (Rundblad et al., 2017). Sexual problems with heart failure are prevalent, ranging from 60% to 87%, and many individuals with heart failure cease sexual activity, estimated at 25%; sexual problems include decreased interest in or fear of having sex, orgasmic problems, or erectile dysfunction (Jaarsma, 2017). Changes in sexual function with stroke are common, with decline in sexual activity, sexual dissatisfaction, and sexual dysfunction, including decreased libido, decreased vaginal lubrication in women, orgasmic problems, or erectile dysfunction in men (Dusenbury, Palm Johansen, Mosack, & Steinke, 2017). Diabetic women treated with insulin were more likely to report problems with vaginal lubrication and orgasm than nondiabetic women (Copeland et al., 2012). In 200 men with type 2 diabetes mellitus, 60% had erectile dysfunction, which was significantly associated with older age, fasting plasma glucose, hemoglobin A1c (HbA1c), creatinine level, and systolic blood pressure (Sharifi, Asghari, Jaberi, Salehi, & Mirzamohammadi, 2012). In addition, significant predictors of erectile dysfunction were older age and taking calcium channel blocker medications. Decreased sexual desire and satisfaction were prevalent among persons with type 2 diabetes (Pedersen et al., 2015).

Sexual dysfunction is prevalent in cancer survivors, with 41% reporting a decline in sexual function and 52% with altered body image (Averyt & Nishimoto, 2014). In colorectal cancer, rates may be higher because of the impact of surgery, radiation, and chemotherapy on sexual function. Changes in sensation, vascular scarring, decreased vaginal lubrication, urinary or fecal incontinence, erectile dysfunction, and symptoms such as fatigue or nausea may interfere with sexual function. In men with postradical prostatectomy, sexual dysfunction often includes erectile dysfunction, reduced sexual frequency, diminished sexual desire, and orgasmic difficulties; both psychoeducational and psychotherapeutic interventions have positively impacted coping and sexual function in several studies cited in this systematic review (Lassen, Gattinger, & Saxer, 2013). Additionally, proactively providing education and counseling before surgery can assist with sexual rehabilitation and coping with the loss of erectile function in the couple's relationship, and providing resources for treatment can be useful; of note, 77% of couples in a small study rejected the approach of using erectile aids, which can be helpful in maintaining sexual function and illustrating the importance of sexual assessment and counseling (Wittmann et al., 2015).

The presence of depression among older adults impacts sexual health, in that depression often causes a decline in desire and ability to perform, exacerbated by its treatment. Lee et al. (2013) found that men who were prefrail or frail had higher depression scores and more erectile dysfunction, and depression mediated almost half of the total effect related to frailty and sexual distress. In a systematic review, those with urgency urinary incontinence faced considerable challenges in maintaining sexuality and overall quality of life, impacting psychological well-being (anxiety and depression), daily activities, sexual function, and work productivity (Coyne et al., 2013). In contrast, positive psychological well-being was associated with more sexual activity and physical tenderness in community-dwelling older adults with a partner, although unpartnered adults had lower psychological well-being scores (Freak-Poli et al., 2017). The presence of anxiety, depression, and psychological well-being should be assessed among older adults and considered for the impact of these emotional and psychological factors on sexual health (see Chapter 19, Late-Life Depression and Chapter 25, Urinary Incontinence in the Older Adult).

Medications used to treat commonly occurring medical illnesses among older adults also impact sexual function. Two of the major groups of medications include antidepressants and antihypertensives. Selective serotonin reuptake inhibitors (SSRI) are commonly used to treat depression and have been linked with sexual dysfunction, although this is likely underreported (Trenque et al., 2013). A meta-analysis of data extracted from 63 studies and more than 26,000 patients treated for major depressive disorder with second-generation antidepressants revealed that

citalopram and paroxetine contributed to statistically significant higher risk of sexual dysfunction, whereas bupropion conferred lower risk of sexual dysfunction (Reichenpfader et al., 2014). In patients with antidepressant-treated anxiety or depressive disorders, impaired sexual function occurred with fluoxetine and sertraline, while better sexual function was noted with mirtazapine (Preeti, Jayaram, & Chittaranjan, 2018). Cardiac medications that contribute to sexual dysfunction include beta-blockers (exception: nebivolol), cardiac glycosides, and diuretics, with mixed results in studies related to alpha blockers, angiotensin-converting enzyme inhibitors (ACEI), and calcium channel blockers; certain drugs exert a negative effect, and others have a positive impact on sexual function in some studies (La Torre, Giupponi, Duffy, Conca, & Catanzariti, 2015; Nicolai et al., 2014). Those taking beta-blockers and thiazide diuretics appear to be at greatest risk of sexual dysfunction (Bohdana & Vrublová, 2014). Overall, angiotensin receptor blockers (ARB) and statins do not appear to contribute to sexual problems in most studies. In a study of cardiac patients and medications, first and third generation beta-blockers, class I calcium channel blockers, vasodilators, diuretics overall, and loop diuretics negatively affected sexual activity, with significant predictors of change in sexual activity with the number of medications taken, education level, and income; for each additional medication, patients were 13% less likely to be as sexually active as before, illustrating the cumulative effect of multiple medications on sexual function (Steinke, Mosack, & Hill, 2015).

Special Issues Related to Older Adults and Sexuality

Cognitively impaired older adults continue to have sexual needs and desires that may present a challenge to nurses. A review of older adults' cognitive functioning and sexual behavior indicated that those older adults engaging in sexual activity tended to have better overall cognitive function; the ability to think abstractly may be important in continuing a sexual relationship (Hartmans, Comijs, & Jonker, 2014). In community-dwelling older adults, those without cognitive impairment engaged in more sexual activity and physical tenderness (>50% for women) compared to those with cognitive impairment (Freak-Poli, Licher, Ryan, Ikram, & Tiemeier, 2018). Conversely, forgetfulness, poor decision-making, and problems with cognitive sequencing may negatively affect sexual function (Hartmans et al., 2014). In men, sexual activity was significantly associated with number sequencing and recall, while in women only recall was associated with sexual activity (Wright & Jenks, 2016). Hypersexuality appears to be rare among cognitively impaired elderly, and apathy or indifference toward sexual activity may be more prominent (Hartmans et al., 2014; see Chapter 9, Assessing Cognitive Function in the Older Adult, and Chapter 21, Dementia: Assessment and Care Strategies).

Continuing sexual needs often manifest in inappropriate sexual behavior. Sexual behaviors common to cognitively impaired older adults may include cuddling, touching of the genitals, sexual remarks, propositioning, grabbing and groping, using obscene language, masturbating without shame, aggression, and irritability. Inappropriate sexual behavior can also lead to elder abuse, and those most likely to be victims are those who are cognitively impaired, although research is limited and such behavior likely underreported (Lichtenberg, 2014). Nurses have an ethical responsibility to be cognizant of the potential for abuse, and to report and intervene promptly to maintain the safety of the older adult victim.

Masturbation is a method by which cognitively impaired men and women may become sexually fulfilled. Nurses in long-term care facilities may assist older adults to improve sexual health by providing an environment in which the older adult may masturbate in private. Accurate assessment and documentation of the ability of cognitively impaired older adults to make competent decisions regarding sexual relationships with others while in long-term care are essential. If the resident has been determined to be incapable of decision-making, then the healthcare staff must prevent the cognitively impaired resident from unsolicited sexual advances by a spouse, partner, or other residents.

Environmental settings may also influence sexuality among older adults. Normally, engaging in sexual intercourse occurs within the privacy of one's bedroom; however, for some older adults, extended care facilities are a substitute for what one called *home*. Residents of extended care facilities face obstacles regarding their sexuality such as lack of opportunity, lack of an available partner, poor health, feeling sexually undesirable, and guilt for having these sexual feelings (Lichtenberg, 2014; Steinke, 2017a). In a study of Polish nursing home residents (N = 85), mutual respect and being able to depend on one's partner were important relationship factors (Mroczek, Kurpas, Gronowska, Kotwas, & Karakiewicz, 2013). Those reporting sexual tension that occurred occasionally or once per week or less relieved sexual tension through sexual contact with long-term partners, masturbation, watching erotic videos, walking, and engaging in diversionary activities. Sexual intercourse was reported by 34% of respondents (Mroczek et al., 2013). Negative staff attitudes and beliefs regarding residents' sexual activity often interfere with the expression of sexuality in long-term care settings. Often,

only married couples receive the privacy needed for sexual activity (Mroczek et al., 2013). In a systematic review, findings revealed that nursing homes often do not have policies regarding residents' sexual activity, despite most nursing home staff believing that residents' sexual needs should be supported (Aguilar, 2017). Of note, actions taken were often punitive, such as calling the family or a staff meeting, and overlooking addressing environmental barriers such as lack of privacy and the discomfort of staff in supporting residents' sexuality (Aguilar, 2017).

Healthcare providers are in a unique position to assess and manage HIV among the older population. The shift in the focus of HIV/AIDS care is in managing this chronic condition and its related comorbidities. Negative attitudes and stereotypes often result in greater social isolation and lack of social support by family and friends, with the older adult often more reliant on formal care providers (Cahill & Valadéz, 2013). In addition, greater attention to sexual health education regarding HIV risk in the older population is needed among elders and healthcare providers. The use of simulation and standardized patients with nursing students to increase awareness of culturally competent care of the LGBT community resulted in increased confidence in assessment and providing care to patients regardless of sexual orientation and gender identity (Hickerson, Hawkins, & Hoyt-Brennan, 2018), illustrating a realistic, proactive approach to education in a safe environment for discussion of sensitive topics (see Chapter 32, HIV Prevention and Care for the Older Adult).

ASSESSMENT OF THE PROBLEM

A model to guide sexual assessment and intervention is available and has been well used among younger populations since the 1970s. The Permission, Limited Information, Specific Suggestion, Intensive Therapy (PLISSIT) model (Annon, 1976) begins by first seeking permission (P) to discuss sexuality with the older adult. Because many sexual disorders originate in feelings of anxiety or guilt, asking permission may put the client in control of the discussion and facilitate communication between the healthcare provider and the client. This permission may be gained by asking general questions such as "I would like to begin to discuss your sexual health; what concerns would you like to share with me about this area of function?" Questions to guide the sexual assessment of older adults are available on many healthcare assessment forms. The next step of the model affords an opportunity for the nurse to share limited information (LI) with the older adult. In the case of older adults, this part of the model affords healthcare providers the opportunity to dispel myths of aging and sexuality and to discuss the impact of normal and pathological aging changes, as well as medications on sexual health. The next part of the model guides the nurse to provide specific suggestions (SS) to improve sexual health. In so doing, nurses may implement several of the interventions recommended for improved sexual health, such as safe-sex practices, more effective management of acute and chronic diseases, removal or substitution of causative medications, environmental adaptations, or need for discussions with partners and families. The final part of the model calls for intensive therapy (IT) when needed for clients whose sexual dysfunction goes beyond the scope of nursing management. In these cases, referral to a sexual therapist is appropriate.

Sexual assessments will be most effective using open-ended questions such as "Can you tell me how you express your sexuality?" "What concerns you about your sexuality?" "How has your sexuality changed as you have aged?" "What changes have you noticed in your sexuality since you have been diagnosed or treated for disease?" "What thoughts have you had about ways in which you would like to enhance your sexual health?" The loss of relationships with significant, intimate partners is, unfortunately, common among older adults and often ends communication about the importance of self to the person experiencing the loss. This greatly impacts the older adult's sexual health. Asking the older adult about past and present relationships in his or her life will help to aid this assessment.

Barriers to sexual health should be assessed, including normal and pathological changes of aging, medications, and psychological problems such as depression. Moreover, lack of knowledge and understanding about sexuality, loss of partners, and family influence on sexual practice often present substantial barriers to sexual health among older adults. Nurses should assess for the presence of physiological changes through a health history, review of systems, and physical examination for the presence of normal and aging changes that impact sexual health. Older adults may view the normal changes of aging and their subsequent impact on appearance as embarrassing or indicative of illness. This may result in a negative body image and a reluctance to pursue sexual health. It is important for nurses to consider the impact of normal and pathological changes of aging on body image and assess their impact frequently.

As discussed earlier, there are a number of medical conditions that have been associated with poor sexual health and functioning, including depression, cardiac disease, diabetes, stroke, osteoporosis, cancer, and chronic obstructive pulmonary disease (Merghati-Khoei et al., 2016). Effective assessment of these illnesses using open-ended

health history questions, review of systems, physical examination, and appropriate lab testing will provide necessary information for appropriate disease management and improved sexual function.

Assessing the impact of medications among older adults, especially those commonly used to treat medical illnesses, such as antidepressants and antihypertensives, is essential. Potential medications should be identified by reviewing the client's medication bottles, and the client should be questioned about the potential impact of these medications on sexual health. If the medication is found to have an impact on sexual health, alternative medications should be considered. The older adult should also be questioned in regard to the use of alcohol because this substance also has a potential impact on sexual response.

INTERVENTIONS AND CARE STRATEGIES

Following a thorough assessment of normal and pathological aging changes, as well as environmental factors, a number of interventions may be implemented to promote the sexual health of older adults. These interventions fall into several broad categories, including (a) education regarding age-associated change in sexual function, (b) compensation for normal aging changes, (c) effective management of acute and chronic illness affecting sexual function, (d) removal of barriers associated with difficulty in fulfilling sexual needs, and (e) special interventions to promote sexual health in cognitively impaired older adults.

Client Education

The most important intervention to improve sexuality among the older population is education. It is important to remember that sexuality was likely not addressed in formal educational systems as the older adults developed and was rarely discussed informally. Older adults may possess dated values that impact sexual action, freedom, and desires and lead to both sexual frustration and conflict. Knowledge is essential to the successful fulfillment of sexuality for all people.

The incidence of HIV infection was 17% of those aged 50 years and older in the United States in 2016, although HIV diagnoses declined by 7% between 2011 and 2015 for those aged 50 and older, with older adults often diagnosed later in the disease process (Centers for Disease Control and Prevention [CDC], n.d.). In 2015, there were an estimated 298,200 people over age 55 with HIV, and 2,749 died from the disease. This underscores the significant risk of HIV transmission in the older age group and the need for effective teaching regarding safe-sex practices. Teaching about the use of condoms to prevent the transmission of sexually transmitted diseases is essential. Older adults are more likely to have AIDS at the time of diagnosis, resulting in later treatment and potentially greater immune system damage (CDC, n.d.). Thus, it is essential to provide older adults with safe-sex information provided by the CDC, and for healthcare professionals to proactively discuss safe-sex practices with older adults and to assess HIV status and well as that for other STIs (Spadt & Kusturiss, 2016; see Chapter 32, HIV Prevention and Care for the Older Adult).

Compensating for Normal Aging Changes

Assisting older adults to compensate for normal aging changes related to sexual dysfunction will greatly lessen the impact of these changes on sexual health. Among women, the discussion of anatomical changes in sexual anatomy will help them anticipate these changes in sexuality. For example, a water-based vaginal lubricant and information on techniques to enhance sexual arousal can be provided (Spadt & Kusturiss, 2016). Topical estrogen is often used to treat vaginal dryness and low libido (Clayton & Harsh, 2016). In men, delayed response and the increased length of time needed for erections and ejaculations are among normal changes of aging, which older adults may not be aware of. When older adults understand the impact of normal aging changes, they then understand the need to plan for more time and direct stimulation in order to become aroused.

One of the most important preventive measures that older adults may undertake to reduce the impact of normal aging changes on sexual health is to continue to engage in sexual activity (Gillespie, 2017). Among older men and women, sexual activity was associated with greater life enjoyment, with sexual activities including sexual intercourse and frequent kissing, petting, or fondling (Smith et al., 2018), and the frequency of sexual activity significantly predicted quality of life (Flynn & Gow, 2015) and sexual well-being, satisfaction, and interest (Santos-Iglesias et al., 2016). Planning for more time during sexual activities; being sensitive to changes in one another's bodies; the use of aids to increase stimulation and lubrication; the exploration of foreplay, masturbation, sensual touch, and different sexual positions, along with education about these common changes associated with sex and aging, may help immensely. By doing so, changes in sexual response patterns are less likely to occur. Eating healthy foods, getting adequate amounts of sleep, exercising, using stress-management techniques, and not smoking are also very important to sexual health.

Effective Management of Acute and Chronic Illness

Effective management of both acute and chronic illnesses that impair sexual health is also important. Interventions that improve sexual health are incorporated within the current interventions to treat disease. In other words, effective disease management using primary, secondary, and tertiary interventions will not only effectively treat the disease but also result in improved sexual health. Consequently, better glucose control among diabetics enhances circulation and may increase arousal and sexual response. Appropriate treatment of depression with medication and psychotherapy will enhance desire and sexual response. Although treatment of depression may help to improve libido and sexual dysfunctions, such as orgasmic disorders, medications to treat depression often impact sexual function by lowering libido and causing orgasmic disorders. Choosing antidepressants with less impact on sexual function, when possible, is an important consideration. For example, mirtazapine supported normal sexual function, while fluoxetine impaired sexual function (Preeti et al., 2018). Antidepressants more likely to contribute to sexual problems are those in the drug classes of SSRIs or serotonin norepinephrine reuptake inhibitors (SNRI), while bupropion, mirtazapine, nefazodone, and vilazodone are associated with less sexual dysfunction (Clayton, Croft, & Handiwala, 2014). When considering medication within any class of drug for those older adults who continue to be sexually active, choosing a drug with less sexual side effects or using the lowest dose of a medication with known sexual side effects may help support sexual function.

Phosphodiesterase-5 inhibitors (PDE5-I), such as sildenafil citrate, vardenafil, tadalafil, and avanafil, play a significant role in the treatment of erectile dysfunction that occurs with aging and are effective and well-tolerated treatments; each vary as to time of onset and duration of action (Marchese, 2017). Patients with diabetes may be less responsive to a PDE5-I because of decreased nitric oxide and low testosterone levels; men with cardiac disease should be evaluated for any cardiac risk before being prescribed PDE5-I (Marchese, 2017). As noted previously, a number of medications may adversely affect sexual function in the older adult. Thorough evaluation of prescribed and over-the-counter medications is important in providing optimal medication management with the least sexual side effects and in patient education.

Both older adults and nurses may be hesitant to discuss sexual problems, so it is important for nurses to be proactive and bring up the topic of sex. A few targeted questions are often all that is needed to determine interest in sexual activity, sexual concerns, and sexual problems experienced, either related to medications or to a particular chronic disease. For example, a nurse might ask: "What concerns do you have about resuming sexual activity?" "Are you satisfied with the frequency and nature of your sexual activities" "How important is it for you to engage in sexual activity with your partner?" "What sexual activities are most important to you?" "Are there sexual activities that you have been unable to engage in?" and/or "Have you noticed any change in sexual desire that has affected your ability to be sexually active?" Asking these and similar questions is an important step in guiding management of sexual problems (also see "Assessment of the Problem" section for other suggested questions). In addition, ask questions to evaluate infection risk, such as number of sexual partners in the past year; whether sexual activity includes men, women, or both; history of sexually transmitted infections; and preventive practices; and also evaluate any current or potential for sexual abuse, such as coercion or unwanted sexual touching (Granville & Pregler, 2018). Recognition of the continuing sexual needs of older adults among nurses is essential to ongoing dialogue about sexual problems.

Removal of Barriers to Sexual Health

One of the greatest barriers to sexual health among older adults lies with some nurses' persistent beliefs that older adults are not sexual beings, although there may be some improvement in attitudes toward sexuality in aging; a systematic review indicated that nursing home staff believed that residents' sexual needs should be supported, noting that nurses with more positive attitudes were older, had more work experience, and had formal and informal education on sexuality (Aguilar, 2017). In contrast, nursing home management encouraged staff to show an "anti-sexuality attitude" in managing residents' sexual behavior. Nurses should be encouraged to open lines of communication in order to effectively assess and manage the sexual health needs of aging individuals with the same consistency as other bodily systems and treat alterations in sexual health with available evidence-based strategies.

An essential intervention to promote sexual health in this population is to educate nurses and nursing students regarding the continuing sexual needs and desires persisting throughout the life span. Education regarding older adult sexuality as a continuing human need should be included in multidisciplinary education and staff development programs. Educational sessions may begin by discussing prevalent societal myths around older adult

sexuality, developing knowledge about sexuality in aging, identifying strategies to assess and manage sexual concerns, and including role-playing opportunities to increase self-efficacy in discussing and assessing older adults' sexuality (Sung et al., 2015). Nurses should be encouraged to discuss their own feelings about sexuality and its role in the life of older adults. Moreover, the development and implementation of policies and procedures to manage sexual issues of older adult clients is important throughout environments of care (Aguilar, 2017).

Environmental adaptations to ensure privacy and safety among long-term care and community-dwelling residents are essential. Arrangements for privacy must be made so the dignity of older adults is protected during sexual activity (Wallace, 2012). For example, nurses may assist in finding other activities for the resident's roommate so that privacy may be obtained or in securing a common room that may be used by the older adults for private visits. Call lights or telephones should be kept within reach during sexual activity, and adaptive equipment, such as positioning devices or trapezes, may need to be obtained. Interventions, such as providing rooms for privacy and offering consultations for residents regarding evaluation and treatment of their sexual problems, are a few of the many ways this may be accomplished (Steinke, 2017a).

Families are an integral part of the interdisciplinary team. However, for older couples, especially those in relationships with new partners, it is often difficult for families to understand that their older relative may have a sexual relationship with anyone other than the person they are accustomed to the individual being with. A family meeting, with a counselor if needed, is appropriate in order to help the family understand and accept the older adult's decisions about the relationship. Open communication between the resident, long-term care staff, and the family is essential (Yelland & Stanfield, 2018). The ability to give consent, the cognitive status of the resident, and the safety of sexual activity is inherent in this discussion.

Special Interventions to Promote the Sexual Health of Cognitively Impaired Older Adults

Cognitively impaired older adults continue to have sexual needs and desires but may lack the capacity to make appropriate decisions regarding sexual relationships. Accurate, regular assessment and documentation of the ability to make informed decisions regarding sexual relationships must be conducted by the interdisciplinary team (Lichtenberg, 2014; Yelland & Stanfield, 2018). If the older adult is not capable of making competent decisions, participation in sexual relationships may be considered abusive with the potential for sexual exploitation, particularly if the older adult is unable to communicate comfort level with the relationship or unable to say no to unwanted sexual advances (Lichtenberg, 2014). On the other end of the spectrum, nurses should not attempt to prevent sexual relationships and may play an important role in promoting sexual health among older adults who are cognitively competent to make decisions regarding sexual relationships. In these cases, nurses should implement all necessary interventions to promote the sexual health of older adult clients.

Inappropriate sexual behavior, such as public masturbation, disrobing, or making sexually explicit remarks to other patients or healthcare professionals, may be a warning sign of unmet sexual needs among older adults. In these situations, a full sexual assessment should be conducted using clear communication and limit setting. Following this, a plan should be developed to manage this behavior while providing the utmost respect and preserving the dignity of the client. Providing an environment in which the older adult may pursue his or her sexuality in private may be a simple solution to a difficult problem (Steinke, 2017a; Yelland & Stanfield, 2018). Allowing the resident to view pornographic material or engage in masturbation can be appropriate outlets for sexual expression (Yelland & Stanfield, 2018). For residents with cognitive dysfunction, interventions include redirecting behavior, reorientation, adapting the environment, seating the resident making sexual advances in a different area during social gatherings, pants without zippers for male residents who tend to expose or fondle themselves in public, education and explanation that such behavior is inappropriate, counseling, and using same-sex caregivers (Benbow & Beeston, 2012). Medication management might be considered, and it includes antidepressants, antipsychotics, anticholinesterases, and anticonvulsants after first evaluating the benefit versus risk (see Chapter 24, Reducing Adverse Drug Events in the Older Adult). In addition, supportive management in an institutional setting is crucial. Having established policies regarding sexual behavior for those who are cognitively intact as well as those who are cognitively impaired, an environment that facilitates open discussion, and education and support of staff are clearly important strategies (Lichtenberg, 2014; see Chapter 9, Assessing Cognitive Function in the Older Adult, and Chapter 21, Dementia: Assessment and Care Strategies).

CASE STUDY 15.1

Mrs. Jones is a highly functioning 79-year-old widow, recently admitted to a nursing home with mild cognitive impairment (MCI). She began a friendship with Mr. Carl, who is cognitively intact and wheelchair bound. Mr. Carl is married to a woman who resides outside the facility. The nursing staff has noticed more and more intimate touches among the two residents and is concerned about Mrs. Jones's competency to make the decision to participate in this increasingly intimate relationship. Moreover, general concern about the sexual relationship within a long-term care setting prevails among the nursing staff.

The first step in this situation is to conduct a full assessment to determine Mrs. Jones's capacity to participate in this intimate relationship. The right to her autonomy is complicated by the presence of MCI and must be explored further. The question remains: Does Mrs. Jones have the decisional capacity to participate in an intimate relationship?

The actual and projected outcomes of the intimate relationship would require assessment to determine what nursing actions are required regarding this relationship. If an assessment of Mrs. Jones finds that she is incapable of understanding the consequences of her relationship with Mr. Carl, then she must be protected from unsolicited sexual advances by a spouse, partner, or other residents. However, if the assessment leads nurses to believe that Mrs. Jones and Mr. Carl understand the risks and consequences of their relationship, then the right to autonomy prevails.

Discussion

If clinicians determine that the older adults have the decisional capacity to consent to a sexual relationship, then a comprehensive health history, review of systems, and physical examination to determine normal and pathological changes of aging that may play a role in this sexual relationship must be conducted. Appropriate lab work for the potential presence of sexually transmitted diseases should be included. A care plan focusing on the need to promote sexual health for this couple should be developed. Teaching regarding normal and pathological aging changes and the impact of these changes, as well as medications, on sexual function should be conducted. Normal changes of aging must be compensated for, and diseases affecting sexual response should be treated with medications that will not impact sexual health. Safety from the transmission of sexually transmitted diseases and privacy should be provided for the residents, ensuring that their dignity is respected at all times.

SUMMARY

One of the most prevalent societal myths of aging is that older adults are no longer interested in sex. It is commonly believed that older adults no longer have any interest or desire to participate in sexual relationships. Because sexuality is considered mainly a young person's activity, often associated with reproduction, society does not usually associate older adults with sex. In the youth-oriented society of today, many consider sexuality among older adults to be distasteful and prefer to assume that sexuality among the older population does not exist. However, despite popular belief, sexuality continues to be important, even in the lives of older adults.

Although the sexual health of older adults has been largely ignored in the past decades, evolving images of older adults as healthy and vibrant members of society may result in a decrease in the prevalence of myths of this population as nonsexual beings. Changes in the societal image of older adults as asexual celibate beings will greatly enhance the removal of barriers to sexual health in the older population. Improved assessment and management of normal and pathological changes of aging and appropriate environmental adaptations and management of special issues of sexuality and aging will also result in improved sexual health in the older population. Oral erectile agents also play a substantial role in enhanced sexual health among older adults.

The fulfillment of sexual needs may be just as satisfying for older adults as it is for younger people. However, several normal and pathological changes of aging complicate sexuality among older adults. Environmental changes may create further barriers to sexual expression among older adults. Despite the many barriers to achieving sexual health among an aging population, nurses are in a critical position to understand sexual needs and capabilities in later life and assist older adults in developing compensatory strategies for improving sexual health in order to have the best possible sexual life. If these strategies and interventions are undertaken, increased awareness and acceptance of older adults' sexuality will ultimately take place, and the concept of sex in old age will no longer be such a shocking topic.



NURSING STANDARD OF PRACTICE

Protocol 15.1: Sexuality in the Older Adult

I. GOAL

To enhance the sexual health of older adults

II. OVERVIEW

Although it is generally believed that sexual desires decrease with age, researchers have identified that sexual desires, thoughts, and actions continue throughout all decades of life. Human touch and healthy sex lives evoke feelings of joy, romance, affection, passion, and intimacy, whereas despondency and depression often result from an inability to express one's sexuality. Healthcare providers play an important role in assessing and managing normal and pathological aging changes in order to improve the sexual health of older adults.

III. BACKGROUND AND STATEMENT OF THE PROBLEM

A. Definitions
   1. *Sexuality* is a central aspect of being human throughout life that encompasses intimacy, emotional expression, gender identities and roles, and sexual orientation, and is influenced by biological, psychological, cognitive, and other factors (WHO, 2017).
   2. *Sexual health* is a state of physical, emotional, mental, and social well-being related to sexuality, with a positive, responsible approach to sexuality and sexual relationships (WHO, 2017).
   3. *Sexual dysfunction* is an impairment in normal sexual functioning (Steinke, 2017b).

B. Etiology and/or epidemiology
   1. Many older adults continue to be sexually active, resulting in greater life enjoyment, quality of life, and sexual well-being (Flynn & Gow, 2015; Santos-Iglesias et al., 2016; Smith et al., 2018).
   2. Despite the continuing sexual needs of older adults, many barriers prevent sexual health among older adults.
   3. Healthcare providers often lack knowledge and comfort in discussing sexual issues with older adults (Bauer et al., 2016; Hughes & Wittmann, 2015; Maes & Louis, 2011).
   4. Older adults may be LGBT; alternative sexual preferences must be respected, and protective strategies discussed (Lim et al., 2014; See Chapter 33, LGBTQ Perspectives for Older Adult Care).
   5. The older population is more susceptible to many disabling medical conditions. A number of chronic conditions are associated with poor sexual health and functioning, including depression, cardiac disease, stroke and aphasia, chronic respiratory disease, cancer, and diabetes, that make sexuality difficult.
   6. Medications used among older adults, especially those commonly used to treat medical illnesses, also impact sexuality such as cardiac medications and antidepressants (Nicolai et al., 2014; Reichenpfader et al., 2014; Trenque et al., 2013).
   7. Normal aging changes, such as a higher frequency of vaginal dryness in women and erectile dysfunction in men, make sexual health difficult to achieve (Hsu et al., 2017; Levin, 2015; Spadt & Kusturiss, 2016; Syme, 2014; Yeap et al., 2012).
   8. Environmental barriers also present barriers to sexual health among older adults (Aguilar, 2017; Lichtenberg, 2014; Mroczek et al., 2013).

IV. ASSESSMENT

A. The PLISSIT model (Annon, 1976) begins by first seeking permission (P) to discuss sexuality with the older adult. The next step of the model affords an opportunity for the nurse to share limited information (LI) with the older adult. Specific suggestions (SS) and interventions to improve health are then provided. Referral to intensive therapy (IT) may be needed for those with more complex sexual problems.

(*continued*)

Protocol 15.1: Sexuality in the Older Adult (*continued*)

B. Ask open-ended questions such as "Can you tell me how you express your sexuality?" or "What concerns you about your sexuality?" and "How has your sexuality changed as you have aged?"
C. Assess for presence of physiological changes through a health history, review of systems, and physical examination for the presence of normal and aging changes that impact sexual health.
D. Review medications among older adults, especially those commonly used to treat medical illnesses that also impact sexuality such as antidepressants and antihypertensives.
E. Assess medical conditions that have been associated with poor sexual health and functioning, including depression, cardiac disease, stroke, chronic respiratory disease, cancer, and diabetes.

V. NURSING CARE STRATEGIES

A. Communication and education
   1. Discuss normal age-related physiological changes.
   2. Address how the effects of medications and medical conditions may affect one's sexual function.
   3. Facilitate communication with older adults and their families regarding sexual health as desired, including the following:
      a. Encourage family meetings with open discussion of issues if desired.
      b. Teach about safe-sex practices.
      c. Discuss use of condoms to prevent transmission of STIs and HIV (CDC, n.d.; Spadt & Kusturiss, 2016; see Chapter 32, HIV Prevention and Care for the Older Adult).
B. Health management
   1. Perform a thorough patient assessment.
   2. Conduct a health history, review of systems, and physical examination.
   3. Effectively manage chronic illness.
   4. Improve glucose monitoring and control among diabetics.
   5. Ensure appropriate treatment of depression and screening for depression (see Chapter 19, Late-Life Depression).
   6. Discontinue and substitute medications that may result in sexual dysfunction, or try lower doses or a different drug class (e.g., ARB instead of ACEI; antidepressants such as mirtazapine or bupropion).
   7. Accurately assess and document older adults' ability to make informed decisions (see Chapter 7, Healthcare Decision-Making).
   8. Participation in sexual relationships may be considered abusive if the older adult is not capable of making decisions or sexual activity is not consensual (Lichtenberg, 2014).
C. Sexual enhancement
   1. Compensate for normal changes of aging, including engaging in regular sexual activity, being sensitive to changes in one another's bodies, and the use of aids to increase stimulation and lubrication (Gillespie, 2017; Smith et al., 2018).
      a. Females
         i. Use of artificial water-based lubricants (Spadt & Kusturiss, 2016)
         ii. Use of topical estrogen (Clayton & Harsh, 2016)
      b. Males
         i. Recognizing the possibility for more time and direct stimulation for arousal caused by aging changes; use of oral erectile agents for erectile dysfunction (Marchese, 2017)
   2. Environmental adaptations
      a. Ensure privacy and safety among long-term care and community-dwelling residents (Steinke, 2017a; Wallace, 2012; Yelland & Stanfield, 2018).

(*continued*)

Protocol 15.1: Sexuality in the Older Adult (*continued*)

VI. EXPECTED OUTCOMES

A. Patients will:
   1. Report high quality of life as measured by a standardized quality-of-life assessment.
   2. Be provided with privacy, dignity, and respect surrounding their sexuality.
   3. Receive communication and education regarding sexual health as desired.
   4. Be able to pursue sexual health free of pathological and problematic sexual behaviors.

B. Nurses will:
   1. Include sexual health questions in their routine history and physical.
   2. Frequently reassess patients for changes in sexual health.

C. Institutions will:
   1. Include sexual health questions on intake and reassessment measures.
   2. Provide education on the ongoing sexual needs of older adults and appropriate interventions to manage these needs with dignity and respect.
   3. Provide a supportive environment that facilitates sexual discussions among staff and clients.
   4. Provide needed privacy for individuals to maintain intimacy and sexual health (e.g., in long-term care).

VII. FOLLOW-UP MONITORING OF CONDITION

Sexual outcomes are difficult to directly assess and measure. However, with the demonstrated link between sexual health and quality of life, quality-of-life measures, such as the Medical Outcomes Study SF-36 Health Survey (RAND Health Care, n.d.), may be used to determine the effectiveness of interventions to promote sexual health. Retrieved from https://www.rand.org/health-care/surveys_tools/mos/36-item-short-form.html

ABBREVIATIONS

ACEI	Angiotensin-converting enzyme inhibitor
ARB	Angiotensin receptor blocker
CDC	Centers for Disease Control
LGBT	Lesbian, gay, bisexual, transgender
PDE5-I	Phosphodiesterase-5 inhibitor
PLISSIT	Permission, limited information, specific suggestion, intensive therapy
SNRI	Serotonin norepinephrine reuptake inhibitor
SSRI	Selective serotonin reuptake inhibitors
STI	Sexually transmitted infection
WHO	World Health Organization

RESOURCES

AARP, Sex & Intimacy
https://www.aarp.org/home-family/sex-intimacy

American Association of Sexuality Educators Counselors and Therapists
http://www.aasect.org

American Psychological Association
https://www.apa.org/pi/aging/resources/guides/sexuality.aspx

Mayo Clinic
https://www.mayoclinic.org/healthy-lifestyle/sexual-health/in-depth/sexual-health/art-20046698

https://www.mayoclinic.org/healthy-lifestyle/sexual-health/in-depth/senior-sex/art-20046465

MedlinePlus
http://www.nlm.nih.gov/medlineplus/sexualhealthissues.html

National Institutes on Aging
https://www.nia.nih.gov/health/sexuality-later-life
https://www.nia.nih.gov/health/topics/sexuality

Urology Care Foundation
https://www.urologyhealth.org/search?term=sexuality

World Health Organization
http://www.who.int/reproductivehealth/en

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Elder Mistreatment Detection*

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16

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Educate nurses and other healthcare professionals about elder mistreatment (EM).
2. Identify risk factors that make older adults vulnerable to mistreatment.
3. Discuss the deleterious effects EM may have on older adults' overall health status.
4. Provide a framework for identifying, reporting, and managing cases of EM.

OVERVIEW

Elder mistreatment (EM) is the debilitating and potentially fatal outcome of actions including neglect, abuse, exploitation, and abandonment of older adults. The World Health Organization (WHO) has defined elder mistreatment (EM) as "a single, or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person" (n.d.). In 2014, the U.S. Department of Justice consulted 750 stakeholders to enhance public and private response to EM (Connolly, Brandl, & Breckman, 2014). Through that work, experts are increasingly recognizing the human, social, and economic impact of EM. The prevalence of EM will grow with the aging of the population, and society needs to be aware of and ready to prevent EM. By 2030, the population of Americans aged 65 and over is projected at 73 million, comprising 21% of the U.S. population. In the year 2030, all baby boomers will be older than 65, and by 2035, older adults are projected to outnumber children for the first time in history (Vespa, Medina, & Armstrong, 2018). This has serious implications for older persons, who need care and support for their well-being. This dramatic increase in the older adult population will be reflected in rates of EM. Technological advances of the past century have increased the life span, and with that, the number of chronic diseases an older person is likely to have, therefore requiring greater caregiving needs in their activities of daily living (ADL) and management of care (Centers for Disease Control and Prevention, 2018).

The impact of EM takes a physical, emotional, and fiscal toll on the victims. The National Center on Elder Abuse (NCEA) estimates the direct medical costs associated with violent injuries to older adults at over $5 billion. The annual financial loss by victims of elder financial exploitation has been estimated at nearly $3 billion in 2009, a 12% increase from 2008 (Roberto & Teaster, 2011). EM

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

researchers agree that as the population continues to age, cases of EM will reach epidemic levels (National Research Council, 2003). Most nurses have likely provided care for an older adult suffering from EM without knowing it. Therefore, it is imperative for nurses to become better educated about EM and its complexities.

Nurses in the inpatient setting play an important role in recognizing EM. By virtue of the size of the nursing workforce, which is the largest of any of the health professions, nurses are in a unique and optimal position to assess, identify, and intervene in cases of EM. Educating nurses to recognize signs and symptoms of EM can help prepare them to identify and provide appropriate resources and support for these patients (Bryant & Benson, 2015). The identification of EM should be a regular part of any geriatric assessment, and nursing curricula should include the requisite content to ensure that all graduates have adequate knowledge and skills to assess and detect mistreatment. Many have suggested that mandatory EM training be a prerequisite for relicensure. EM is often multifactorial, so it is important to recognize it as the interplay among characteristics of the abused, the perpetrator, and environmental factors (Killick & Taylor, 2009). Nurses may have difficulty in correctly assessing EM owing to the overlay of symptoms from chronic illness that can create both false negative and false positive findings in older adults (Lachs & Pillemer, 2015). Further, cases of EM may be challenging for nurses because they may be complicated by denial on the part of the perpetrator and the older adult, refusal of services by the victim, and fears that an accusation of EM may actually worsen the situation. Significant ethical dilemmas may arise because nurses may struggle between their obligation to ensure the older person's well-being and their uncertainty in diagnosing EM (Daly, Schmeidel Klein, & Jogerst, 2012). The development and use of EM protocols that are grounded in evidence-based research is crucial to ensure that EM cases are properly handled by nurses and other healthcare professionals.

BACKGROUND AND STATEMENT OF PROBLEM

A 2017 systematic review estimated that 15.7% of older adults are subjected to some form of EM. The authors note that research to date has been conducted primarily in higher income countries and suggest the need for evidence from low- and middle-income countries (Yon, Mikton, Gassoumis, & Wilber, 2017). The National Elder Abuse Incidence Study, conducted over 20 years ago, is still referenced and estimates that there are more than 500,000 new cases of EM annually (Tatara et al., 1998). Another national study in the United States estimated the prevalence of EM within a 1-year period to be approximately 11% (Acierno et al., 2010). Currently, 44 states and the District of Columbia have legally required mandated reporting, and nurses, as mandatory reporters, have an obligation to report suspected cases of EM to appropriate state agencies; all reports made in good faith are confidential.

In the United States, there is substantial variability related to how cases of EM are reported and managed. There can be varying methods of investigation and intervention, state by state (Jogerst et al., 2003). In a systematic review, one third of healthcare professionals believe they detected a case of EM; however, only about 50% of that group actually reported the case (Cooper, Selwood, & Livingston, 2009). Similarly, another study found that despite 68% of emergency medical services staff indicating they felt they had encountered a case of EM in the past year, only 27% actually made a report (Jones, Walker, & Krohmer, 1995). Healthcare professionals believe that they will not face penalties for noncompliance in reporting, and those that observe their peers not participating in reporting EM are less likely to report themselves (DeLiema, Navarro, Enguidanos, & Wilber, 2015). This, coupled with a lack of awareness of EM among older adults (Naughton, Drennan, & Lafferty, 2014), creates barriers to determining the scope of EM and may have serious detrimental effects for victims of EM. The implementation of an interdisciplinary approach, leveraging the unique perspectives of first responders, triage providers, nurses, physicians, social workers, and case managers, can be a solution to the challenges of identifying and reporting EM (Rosen, Hargarten, Flomenbaum, & Platts-Mills, 2016). Patients visiting the emergency department give providers another important opportunity to identify EM (Rosen et al., 2016). Paramedics or first responders are also important allies in the detection of EM. They have a unique opportunity to observe the older person's home and determine if there are reasons to suspect EM.

Types of EM

Six types of mistreatment are generally included under the umbrella term of EM. Table 16.1 describes each form of EM and offers examples of each.

EM is the outcome of the actions of abuse, neglect, exploitation, or abandonment, and can be further classified as intentional or unintentional. For example, intentional neglect is a conscious disregard for caretaking duties that are inherent for the well-being of an older adult. Unintentional neglect might occur when caregivers lack the knowledge and resources to provide quality care; for example, a caregiver unfamiliar with an older adult's medication

TABLE 16.1

Forms of Elder Mistreatment

Type of EM	Definition	Examples
Physical abuse	The use of physical force that may result in bodily injury, physical pain, or impairment	Hitting, beating, pushing, shoving, shaking, slapping, kicking, burning, inappropriate use of drugs, and physical restraints
Sexual abuse	Any form of sexual activity or contact without consent, including with those unable to provide consent	Unwanted touching, rape, sodomy, coerced nudity, and sexually explicit photographing
Emotional/ psychological abuse	The infliction of anguish, pain, or distress through verbal or nonverbal acts	Verbal assaults, insults, threats, intimidation, humiliation, harassment, and enforced social isolation
Financial abuse/ exploitation	The illegal or improper use of an elder's funds, property, or assets	Cashing a person's checks without authorization or permission; forging a signature; misusing or stealing money or possessions; coercing or deceiving a person into signing any document; and the improper use of conservatorship, guardianship, or power of attorney
Caregiver neglect	The refusal or failure to fulfill any part of a person's obligations or duties to an older adult, including social stimulation	Refusal or failure to provide life's necessities such as food, water, clothing, shelter, personal hygiene, medicine, comfort, and personal safety
Self-neglect	The behavior of an elderly person that threatens his or her own health or safety; disregard of one's personal well-being and home environment	Refusal or failure to provide oneself with adequate food, water, clothing, shelter, personal hygiene, medication (when indicated), and safety precautions

EM, elder mistreatment.

Source: Adapted from Fulmer, T., & Greenberg, S. (n.d.). *Elder mistreatment & abuse*. Retrieved from https://consultgeri.org/geriatric-topics/elder-mistreatment-and-abuse

may be unaware of its importance (Rosen, Stern, Elman, & Mulcare, 2018).

Neglect, whether intentional or unintentional, is recognized as the most common form of EM. It is common to see that older adults with greater functional impairments endure more severe neglect as they have a greater number of care needs (Burnes, Pillemer, & Lachs, 2016). The NAMRS Report (Aurelien et al., 2018) indicates that the highest type of EM reported was attributed to self-neglect, followed by neglect, at approximately 60% and 16%, respectively.

It is being debated to whether self-neglect should be included as a type of EM. Some associate self-neglect as a form of self-determination and consider any attempt to coerce older adults into unwanted actions as another form of abuse. Having made this point, self-neglect has been associated with several disturbing outcomes on the older person's physical and psychological well-being as well as higher mortality rates and increased utilization of healthcare services (Dong, 2017). In cases of neglect by a caregiver, older adults identified family members as the most likely perpetrators. Shockingly, neglect was seen as a "quasi-acceptable" form of abuse, whereas physical and emotional/psychological EM was viewed as extreme and harsh. Much more research is needed on neglect by caregivers.

Theories of EM

Theories for why EM occurs inform the assessment and detection of EM. The concepts of risk and vulnerability are extremely relevant to EM. A study conducted with patients recruited through emergency departments in two major cities used a risk-and-vulnerability framework (Fulmer et al., 2005). The purpose of this study was to identify factors within the older adult–caregiver relationship that may put them at risk for neglect. The theoretical framework used in this study was the risk-and-vulnerability model, which posits that neglect is caused by the interaction of factors both external and internal to the older person. The risk and vulnerability model was adapted to EM by Frost and Willette (1994) and provides an appropriate lens through which to examine EM (Frost & Willette, 1994; Fulmer et al., 2005). *Vulnerability* is determined by characteristics within the older adult such as poor health status, impaired cognition, and history of EM that may make him or her

more likely to be a victim of EM (Frost & Willette, 1994). *Risks* refer to factors in the environment that may predispose an older adult to EM and may include characteristics of caregivers such as health and functional status, as well as a lack of resources and social isolation (Fulmer et al., 2005). It is the interaction between risk and vulnerability that can predispose some older adults to EM (Killick & Taylor, 2009). The risk and vulnerability model and other models have been adapted from the health and social sciences literature in an effort to generate plausible theories of EM. However, there has been no clear consensus on one theory that explains EM (Fulmer, Guadagno, Bitondo Dyer, & Connolly, 2004). Other examples of theories include the following:

1. *Situational theory*: This theory was first used to explain causes of child abuse. The situational theory promotes the idea that stressful family conditions contribute to mistreatment. Thus, EM may be viewed as a consequence of caregiver strain resulting from the overwhelming tasks of caring for a vulnerable or frail older adult (Straus, 1971).
2. *Psychopathology of the abuser*: This posits that mistreatment stems from a perpetrator's own battle with psychological illness such as substance use, depression, and other mental disorders (Gelles & Straus, 1979).
3. *Social exchange theory*: This theory speculates that the long-established dependencies present in the victim–perpetrator relationship are responses developed within the family that then continue into adulthood (Gelles, 1983).
4. *Social learning theory*: Developed by Bandura (1978), this theory attributes mistreatment to learned behavior on the part of the perpetrator or victim from either his or her family life or the environment.
5. *Political economy theory*: This theory focuses on how older adults are often disenfranchised in society as their prior responsibilities and even their self-care are shifted onto others (Walker, 1981).

The development of interventions and strategies that cross multiple theoretical frameworks is likely to be the most clinically appropriate strategy (National Research Council, 2003).

Dementia and EM

Older adults with dementia are particularly vulnerable to EM. Chances of developing dementia increase exponentially with age, doubling approximately every 5 years past the age of 65 (Fang & Yan, 2018). The World Alzheimer Report (Prince et al., 2015) documents that the number of older adults with dementia will double to 74.7 million by 2030 and triple to 131.5 million by 2050 across all nations. Because of the cognitive deficits associated with dementia, it is difficult to screen for EM in this population. The older adult with dementia may not be able to provide a reliable history, and signs of EM may be masked or mimicked by disease (Fulmer et al., 2005). Those providing care for older adults with dementia are at particular risk for caregiver strain and burnout. High levels of caregiver burnout may be reflected by high levels of emotional exhaustion, depersonalization, and a sense of lack of personal achievement, leading to poor outcomes (Yan, 2014).

Caregiving for a person with dementia poses several challenges: increased need for supervision and personal care, managing behavioral disturbances, personality changes, and the loss of ability to communicate with loved ones effectively (Jennings et al., 2015). A study was conducted to characterize the unmet needs of caregivers managing patients with dementia-related problems. It was reported that 32% of caregivers were confident in their ability to manage dementia-related problems, 19% were aware of community services that help provide care, only 28% reported support from the provider, while 38% reported a high level of caregiver strain, and 15% presented with moderate to severe depressive symptoms (Jennings et al., 2015). The provision of effective education, helpful tools, and supporting resources to caregivers leads to lower caregiver strain and a higher quality of patient care.

Objective assessment alone cannot capture all cases of EM as many go unreported, and, thus, policies are needed that combine objective measures and interviews with both the older adult and the caregiver together and separately (Cooper, Selwood, & Livingston, 2008). Some caregivers may be forthcoming with admission of EM, and many may ask for help in developing coping strategies and plans of care to provide better care for care recipients (Wiglesworth et al., 2010).

EM in Racial/Ethnic Minorities

Research suggests that racial/ethnic differences might exist in the prevalence of EM; however, these differences are poorly understood (Laumann, Leitsch, & Waite, 2008). The U.S. Census Bureau estimates that, by 2050, racial/ethnic minorities will account for nearly 42% of all older adults (U.S. Census Bureau, 2018). Racial and ethnic minorities face persistent health disparities and inequitable healthcare primarily because of social and economic constraints, language barriers, and differing cultural norms (U.S. Department of Health and Human Services, n.d.). Studies have found especially high rates of EM in Latino

older adults (DeLiema, Gassoumis, Homeier, & Wilber, 2012). Risk factors for EM identified in one sample of Latino older adults included younger age, higher education level, and prior history of abuse, whereas years living in the United States were associated with a higher risk of caregiver neglect (DeLiema et al., 2012). Latino older adults also have a higher likelihood of emotional abuse compared to Caucasians (Burnes et al., 2016). Several studies indicate that EM may be higher in African Americans (Beach, Schulz, Castle, & Rosen, 2010; Dong, Simon, & Evans, 2013). EM seems to be a problem among Asian older adults as well. The most common forms of EM experienced by Chinese and Korean older adults were caregiver neglect and emotional/psychological EM (Dong, Chang, Wong, Wong, & Simon, 2011; Lee, Kaplan, & Perez-Stable, 2014). There are further evidences that suggest that Chinese older adults have limited knowledge of community resources for EM (Dong et al., 2011).

Some racial/ethnic groups are reluctant to share EM experiences with outsiders because it is not the norm to involve strangers in family affairs. Also, immigrant families that are undocumented are unwilling to report, fearing authorities that could compromise their family's welfare (DeLiema et al., 2015). There is a need for more research on the prevalence of EM and on culturally appropriate strategies for addressing EM among racial/ethnic minority older adults.

ASSESSMENT OF THE PROBLEM

Nearly 30 years ago, the American Medical Association (AMA, 1992) released a set of guidelines and recommendations on the assessment and management of EM. The guidelines have been updated but they are not systematically used to detect and care for EM victims. Even then, the AMA urged providers to screen all older adults for EM (AMA, 1992). Today, many, but not all, hospitals include EM screening as part of the admission process for all patients older than 65 years. Assessment of EM presents providers with several challenges: Victims may conceal or be unable to clearly articulate the events, chronic illness in older people creates both false negative and positive findings during evaluation, cultural and language barriers exist, and some cases may take long periods of time for conclusive determination of EM (Lachs & Pillemer, 2015). Reportings of EM remain low because healthcare professionals lack training, education, experience, and adequate guidelines for accurate assessment and management of EM (Hoover & Polson, 2014). Concern exists that increasing education on assessment of EM will lead to higher rates of false positive cases and, therefore, cause undue disruption in the system. However, one systematic review of 32 studies revealed healthcare professionals were more inclined to report detected cases of EM than those who had little or no education (Cooper et al., 2008).

The complexity and variation within most cases of EM make it difficult to describe the profile of a perpetrator or victim. The literature consistently shows that victims of EM may be less likely to meet their own care needs because of cognitive and physical deficits (Cannell, Manini, Spence-Almaguer, Maldonado-Molina, & Andresen, 2014; Dong, Simon, & Evans, 2012; Dong et al., 2013). This may help explain the higher mortality rates in cases of EM (Schofield, Powers, & Loxton, 2013). A link between childhood abuse or abuse in young adulthood has been associated with physical and sexual EM later in life. Individuals who were sexually abused before the age of 60 were 294% more likely to be victims of physical and sexual abuse in late life (Brozowski & Hall, 2010). Recent findings suggest that victims of EM report poor overall health (Cannell et al., 2014; Cisler, Amstadter, Begle, Hernandez, & Acierno, 2010).

Older adults may not self-report EM for several reasons, including embarrassment (Kosberg, 2014), worry that they might incur further harm by the perpetrator (Pickering & Rempusheski, 2014), fear of being placed in a nursing home (Jackson & Hafemeister, 2014), and not believing that they would receive help after exposing the abuse (DeLiema et al., 2015). Community members' reluctance to recognize and report EM, particularly when they perceive the options for intervention to be lacking, also contributes to the underreporting of EM (Roberto, Teaster, McPherson, Mancini, & Savla, 2015). Overall, perpetrators are more likely to be family members, male, living with the victim, have mental or physical health issues, have a history of substance abuse, socially isolated, unemployed or having financial problems, and under major stress (Lachs & Pillemer, 2015).

While assessing for EM, older adults should be seen separately from their caregivers in order to avoid fear of speaking out and disclosing caregiver abuse (Hoover & Polson, 2014). Special attention should be paid to both physical and psychological signs of EM. Discrepancies between severity of signs and symptoms and the description of how they occurred should be carefully noted. Researchers have documented that physically abused older adults are more likely to have significantly larger bruises and falsely identify the cause of their injuries. The characteristics of bruising in victims of EM have been studied, and bruises that occur as a result of physical elder mistreatment were found to be larger and on the face, lateral right arm, or posterior torso (including back, chest, lumbar, and

gluteal regions) (Wiglesworth et al., 2009). Other possible indicators of physical abuse include unexplained fractures, bruises, cuts, welts, and burns that require further exploration (Mosqueda & Olsen, 2015).

Signs and symptoms of EM may vary depending on the type of abuse. Table 16.2 provides strategies for assessment of each type of EM. Victims of sexual abuse are more likely female, and healthcare providers must observe for bruising on the breasts and/or genitalia, vaginal or anal bleeding, and torn or stained underclothing (Carney, 2015). Ageist attitudes among healthcare professionals may limit the cases of sexual abuse that are identified because older adults are rarely thought of as the usual victims of sexual abuse (Vierthaler, 2008). One estimate of sexual

TABLE 16.2

Assessment of Elder Mistreatment

Type of Mistreatment	Questions Used to Assess Type of EM	Physical Assessment and Signs and Symptoms
Physical abuse	Has anyone ever tried to hurt you in any way?Have you had any recent injuries? Are you afraid of anyone? Has anyone ever touched you or tried to touch you without permission? Have you ever been tied down? In case of suspected evidence of physical abuse (i.e., black eye), ask: ■ How did that get there? ■ When did it occur? ■ Did someone do this to you? ■ Are there other areas on your body like this? ■ Has this ever occurred before?	Assess for: Bruises (more commonly bilaterally to suggest grabbing), black eyes, welts, lacerations, rope marks, fractures, untreated injuries, bleeding, broken eyeglasses, use of physical restraints, sudden change in behavior Note whether a caregiver refuses an assessment of the older adult alone. Review any laboratory tests. Note any low- or high-serum prescribed drug levels. Note any reports of being physically mistreated in any way.
Emotional/ psychological abuse	Are you afraid of anyone? Has anyone ever yelled at you or threatened you? Has anyone been insulting you and using degrading language? Do you live in a household where there is stress and/or frustration? Does anyone care for you or provide regular assistance to you? Are you cared for by anyone who abuses drugs or alcohol? Are you cared for by anyone who was abused as a child?	Assess cognition, mood, affect, and behavior. Assess for: Agitation, unusual behavior, level of responsiveness, and willingness to communicate. Delirium Dementia Depression Note any reports of being verbally or emotionally mistreated.
Sexual abuse	Are you afraid of anyone? Has anyone ever touched you or tried to touch you without permission? Have you ever been tied down? Has anyone ever made you do things you did not want to do? Do you live in a household where there is stress and/or frustration? Does anyone care for you or provide regular assistance to you? Are you cared for by anyone who abuses drugs or alcohol? Are you cared for by anyone who was abused as a child?	Assess for: Bruises around breasts or genital area; sexually transmitted diseases; vaginal and/or anal bleeding or discharge; torn, stained, or bloody clothing/undergarments Note any reports of being sexually assaulted or raped.

(*continued*)

TABLE 16.2

Assessment of Elder Mistreatment (*continued*)

Type of Mistreatment	Questions Used to Assess Type of EM	Physical Assessment and Signs and Symptoms
Financial abuse/ exploitation	Who pays your bills? Do you ever go to the bank with him or her? Does this person have access to your account(s)? Does this person have power of attorney? Have you ever signed documents you did not understand? Are any of your family members exhibiting a great interest in your assets? Has anyone ever taken anything that was yours without asking? Has anyone ever talked with you before about this?	Assess for: Changes in money handling or banking practice, unexplained withdrawals or transfers from patient's bank accounts, unauthorized withdrawals using the patient's bank card, addition of names on bank accounts/cards, sudden changes to any financial document/will, unpaid bills, forging of the patient's signature, appearance of previously uninvolved family members Note any reports of financial exploitation.
Caregiver neglect	Are you alone a lot? Has anyone ever failed you when you needed help? Has anyone ever made you do things you did not want to do? Do you live in a household where there is stress and/or frustration? Does anyone care for you or provide regular assistance to you? Are you cared for by anyone who abuses drugs or alcohol? Are you cared for by anyone who was abused as a child?	Assess for: Dehydration, malnutrition, untreated pressure ulcers, poor hygiene, inappropriate or inadequate clothing, unaddressed health problems, nonadherence to medication regimen, unsafe and/or unclean living conditions, animal/insect infestation, presence of lice and/or fecal/urine smell, and soiled bedding Note any reports of feeling mistreated.
Self-neglect	How often do you bathe? Have you ever refused to take prescribed medications? Have you ever failed to provide yourself with adequate food, water, or clothing?	Assess for: Dehydration, malnutrition, poor personal hygiene, unsafe living conditions, animal/insect infestation, fecal/urine smell, inappropriate clothing, nonadherence to medication regimen

EM, elder mistreatment.

Source: Fulmer, T., & Greenberg, S. (n.d.). *Elder mistreatment & abuse*. Retrieved from https://consultgeri.org/geriatric-topics/elder-mistreatment-and-abuse

abuse in older adults notes a .9% prevalence (Cannell et al., 2014).

The aforementioned categories of EM present with physical manifestation, while victims of neglect and financial abuse have subtle manifestation such as failure to keep appointments or fill prescriptions, weight loss, and frequent visits to the emergency department for diseases that should be controlled that make detection hard but are relevant to clinicians (Lachs & Pillemer, 2015).

Since the 1970s, a number of screening instruments have been developed to detect EM. Some are more suitable for the inpatient setting where disrobing for physical assessment would be expected. Screens used in the outpatient setting or home are necessarily different. The Elder Assessment Instrument (EAI) developed by Fulmer et al. (2004) is a 41-item screening instrument that requires training on administration but has been shown to be effective in busy inpatient settings (Perel-Levin & World Health Organization, 2008). The most recent version of the EAI-R is considered more appropriate for inpatient and outpatient clinics because it relies on both objective and subjective assessment by the clinician. This assessment includes a survey of general appearance, assessment for dehydration, physical and psychological markers, or pressure ulcers in addition to subjective information reported by the older adult.

The Hwalek–Sengstock Elder Abuse Screening Test (HS-EAST) is a 15-item instrument that relies on self-report from older adults and is documented as appropriate for detecting physical abuse, vulnerability, and high-risk situations. Some instruments focus on the caregiver, but an advantage of HS-EAST is the focus on the older adult's history. It is regarded as appropriate for use in the hospital

setting and can be easily administered by nurses (Fulmer et al., 2004; Perel-Levin & World Health Organization, 2008). If a positive screen is noted, a detailed physical assessment and medical history should be completed to substantiate possible EM. Referral to experts in trauma or geriatrics should take place for the most comprehensive assessment.

In addition to these screening instruments for EM, there are other reliable and valid instruments that can aid nurses in identifying older adults at risk for EM. Physical and cognitive impairments contribute to vulnerability of abuse among older adults (Roberto, 2016). The Katz Index of Independence in ADL and/or the Lawton Instrumental Activities of Daily Living (IADL) scale may help in identifying older adults with functional deficits (Dong et al., 2012). Similarly, with higher rates of depression in victims of EM, the Geriatric Depression Scale (GDS) may be a useful instrument for nurses to use in the inpatient setting (Greenberg, 2019). The GDS is an easy-to-administer 15-item screening instrument that is effective at distinguishing depressed older adults (Greenberg, 2019). Perpetrators of EM often report higher levels of caregiver strain. The Modified Caregiver Strain Index (MCSI) is a reliable and self-administered instrument that can assist in assessing caregivers that may benefit from interventions to alleviate stress involved with caregiving demands (Onega, 2013).

The process of identifying cases of self-neglect is oftentimes more challenging than other types of EM. Assessing self-neglect is complicated but can be improved with proper identification and intervention, especially in emergency departments as victims get evaluated by multiple providers (Rosen et al., 2018). Most instruments require in-depth assessments of home life and rely on objective findings. Nevertheless, data suggest that detection of self-neglect in the inpatient setting is, unfortunately, made easier because by the time these cases reach the hospital, they are often very severe (Mosqueda et al., 2008). Utilization of Emergency Medical Services (EMS) helps with the identification of neglect. EMS providers are typically first in the patient's home and may have critical information about the home environment and interpersonal dynamics between the patient and his or her caregiver, can observe for hazards like hoarding, inappropriate temperature setting, vermin fenestration, or utilities that are not working. They can also check the refrigerator for food, identify expired or unmarked medication, and detect evidence of drug or alcohol abuse. This is possible because 911 calls are unplanned and give perpetrators little time to clean up (Rosen et al., 2018). Some signs of self-neglect may include evidence of poor nutrition; dehydration; changes in weight; poor hygiene and appearance such as soiled clothing, uncombed hair, debris in teeth; poor adherence to medical treatments such as unfilled prescriptions; refusing to perform dressing changes; poor glucose monitoring; and so forth (Cohen, Halevi-Levin, Gagin, & Friedman, 2006; Naik, Teal, Pavlik, Dyer, & McCullough, 2008; Turner, Hochschild, Burnett, Zulfiqar, & Dyer, 2012). Objective measures as well as questioning of the older adult about health patterns and activities of self-care are also important factors in detecting self-neglect because they can provide important information about the older adult's attitudes and opinions.

INTERVENTIONS AND CARE STRATEGIES

Victims of EM often interact with health systems, and it is therefore vital to have appropriate screening processes and care plans in place (Dong, 2015). Nurses should work with a multidisciplinary team (MDT) to generate appropriate interventions on a case-by-case basis (Pickens & Dyer, 2016). Institutions should develop clear guidelines for practitioners to follow when cases of EM are identified (De Donder et al., 2011; Sandmoe & Kirkevold, 2011). Referral to appropriate community organizations is vital to ensure safe discharges for suspected victims of EM. MDTs work most effectively when they have a clear sense of their respective responsibilities and contributions to the work. Various providers from differing disciplines can provide innovative insights to managing cases of EM.

Education of the public is essential to ensure communities have an awareness and sense of resources if they see or fear EM. Adult protective service (APS) workers are especially skilled at helping those who lack the cognitive capacity to consent to interventions, and in developing a plan for safe discharge and care. Emergency contact information should be provided to all older persons at risk for EM along with community resources. Services should be offered not only to victims of EM but also to their suspected perpetrators. MDTs provide individualized care plans, caregiver counseling and education, formal links to community support organizations, and guidance on advance planning (Jennings et al., 2015). Helping caregivers gain a better understanding of proper care techniques may help alleviate cases of EM.

In order to address gaps in identification and response to EM, The John A. Hartford Foundation, in partnership with The Gordon and Betty Moore Foundation, funded a planning grant in 2016 to establish a National Collaboratory to Address Elder Mistreatment. This group, comprised of national experts in EM from the University of Southern California School of Medicine, the Massachusetts Executive Office of Elder Affairs, the University of Texas, and Weill-Cornell College of Medicine, along with Education Development Center, serving as the

collaboratory convener, designed and prototyped an integrated Elder Mistreatment Care Model focused on the emergency department.

A prototype model was developed consisting of four core elements:

1. Emergency Department Assessment Profile
2. Staff training modules
3. Brief screening and response tools
4. Road map for leveraging community resources to support referral and follow-up

Each core element was designed with significant input and feedback from national experts and clinical sites with a clear focus on feasibility of implementation in settings with fewer resources.

In 2018, The John A. Hartford Foundation approved Phase II, which aims to:

1. Prepare materials and finalize sites for care model implementation
2. Test the feasibility of the model at six sites, including rural and low-resource hospital emergency departments
3. Position the model for a next phase focused on national dissemination

In order to address the significant unmet needs of older adults experiencing EM, this proposal builds on a successful planning grant and increasing national interest. The program aims to implement, and viably test, the prototype EM model focused on the emergency department and prepare for national dissemination.

Because hospital stays are usually brief, long-term interventions occur mostly in community settings. A systematic review revealed that community-based interventions tend to concentrate on the situational theory of EM by focusing on education, counseling, and social support for perpetrators of EM to help them cope with the stress of caregiving (Ploeg, Fear, Hutchison, MacMillan, & Bolan, 2009). However, even these community-based interventions have shown mixed results in terms of effectiveness in addressing the risk of EM recurrence; depression and self-esteem in older adults; and levels of caregiver strain, stress, and depression in caregivers (Ploeg et al., 2009). In a study of EM referral cases, only 84% of older adults with suspected EM were offered services (Clancy, McDaid, O'neill, & O'brien, 2011). The most common services offered were additional monitoring, home support, and counseling. Older adults were generally willing to accept additional services, with 75% of those suspected of being victims of EM agreeing to further intervention (Clancy et al., 2011). This suggests that older adults may be open to additional support in cases of suspected EM. However, older adults might continue to experience EM even after the close of an APS investigation (Jackson & Hafemeister, 2013). This may be because of continued contact with the perpetrator or because the perpetrator received no legal consequences following investigation. Similarly, a social worker–lawyer intervention for EM victims found that EM was more likely to continue in the case of female victims, married victims, and those who lived with the perpetrator (Rizzo, Burnes, & Chalfy, 2015). Repeat cases of EM can be limited by placing the victims in a safe harbor or a shelter to avoid proximity with their perpetrators when they are willing. In 2012, The Weinberg Center launched the SPRiNG (Shelter Partners: Regional. National. Global.) Alliance to create shelters that are flexible and adaptable to existing community-based resources, particularly assisted living facilities and skilled nursing facilities (The Weinberg Center for Elder Justice, 2019). For victims of EM, these shelters can provide a way for abuse to cease and the process of healing to begin.

In the inpatient setting, patients are assumed to have the autonomy to refuse medical treatments and participate in the management of their own care as long as they are deemed to be able to provide informed consent. However, what can be done if the older adult is refusing to perform activities considered essential for his or her health and well-being? The answer, at the moment, is very little. If the older adult has the cognitive capacity to make decisions about his or her own self-care, healthcare professionals must respect the autonomy of the older person and not resort to infantilization or coercive services.

It is difficult to evaluate the success of interventions implemented in inpatient settings. The nature of discharges reduces the ability of hospital staff to follow up on cases of EM. Not all suspected victims of EM will return to the same acute care institution for repeat visits, and confidentiality issues can restrict information sharing among healthcare professionals.

CASE STUDY 16.1

Mr. Campo is an 83-year-old male admitted to a medical unit for change in mental status. His 79-year-old wife is at his bedside. On admission assessment, the nurse notices Mr. Campo is confused, weak, and pale. He is also underweight with a body mass index (BMI) of 16.4 kg/m^2. When asked about the change in his cognitive status, Mrs. Campo reports that Mr. Campo

(*continued*)

CASE STUDY 16.1 (*continued*)

was diagnosed with early Alzheimer's dementia and gastric cancer last year. He has become more confused in the past 2 days. Mrs. Campo states she would have brought her husband to the emergency department sooner but that their son, José, said she should not worry about it because of his dementia.

His vital signs are as follows: blood pressure of 93/52 mmHg, heart rate of 115 beats per minute, respiratory rate of 23 breaths per minute, and a temperature of 100.8°F. He is unable to verbalize a pain score; however, he does not appear to be in pain at this moment.

On performing an EM assessment, the nurse gathers the following information from Mrs. Campo: Her husband has lost a total of 25 pounds in recent months and has been refusing to eat for the past week. Mrs. Campo's mobility is limited because of multiple sclerosis and their neighbor who used to accompany them to medical visits has moved away. Their son, José, had to move in with them a year ago after he lost his job. Mr. Campo and his son have never had a good relationship and often argue about their living arrangement. This has the entire family very depressed. Mrs. Campo also reveals that José is frequently inebriated but denies having a drinking problem. Moreover, José refuses to take Mr. Campo to see his primary care provider, stating that these health changes are "just because he's so old."

Mr. Campo is now on intravenous hydration and is being followed by a dietitian. His vital signs and mental status have improved. Further testing reveals that Mr. Campo has an esophageal tumor, which may be the cause of his anorexia.

Discussion

This may be considered a case of neglect and/or psychological/emotional abuse. José knows that Mr. Campo's health has deteriorated, yet he refuses to seek proper medical attention for his father. He also argues with his father often and may be abusing alcohol. From Mrs. Campo's report, there is no evidence of other forms of EM; however, the case should be investigated further. Although the nurse has yet to meet José, there are a number of signs to indicate that neglect or psychological/emotional abuse may be occurring in this home. As a mandated reporter, the nurse should report this case if he or she suspects any form of EM is present.

A number of risk factors are present in this family to alert the nurse to possible EM. For example, Mr. Campo has cognitive deficits because of dementia and is frail because of his cancer diagnosis. In addition, his wife has functional deficits because of her multiple sclerosis. Also, she reports feeling depressed by her current situation and lacks a strong support system.

The nurse should discuss the case with Mr. Campo's medical team as well as his social worker. The dietitian could provide the family with information about Mr. Campo's nutritional needs. The nurse should collaborate with the family and interdisciplinary team to identify community services for this family.

SUMMARY

With a rapidly aging population, cases of EM will become more prevalent. Nurses are in a powerful position to take leadership roles in the creation of EM MDTs and the resultant screening and care planning approaches necessary for the well-being of the older adult. As the largest healthcare profession, nursing can use their multiple roles and clinical settings to develop an understanding and appreciation for the complexities of detecting and addressing cases of EM. The recognition of markers of EM is an important step in guaranteeing that older adults receive high-quality care. The different manifestations and types of EM are a challenge but with a fulsome appreciation of the evidence and concerted effort, the best strategies for nursing intervention can be developed into appropriate clinical practice guidelines for consistent assessment and management of EM. The strategies in this chapter serve as a framework to help nurses navigate this complex clinical syndrome.

As advocates, nurses should ensure that their institutions have guidelines in place for managing suspected cases of EM.

NURSING STANDARD OF PRACTICE

Protocol 16.1: Detection of Elder Mistreatment

I. GOAL

Determine best practices in identifying and responding to cases of EM.

II. OVERVIEW

With the projected increase in the population of older adults worldwide and the rise in medical and technological advances, it is anticipated that older adults will continue to live longer. Therefore, it is expected that cases of EM, although currently underreported, will rise. As patient advocates and providers of care, nurses serve an important function in the screening and treatment of cases of EM. However, current data show that nurses and other healthcare professionals do not report all cases of EM they encounter because of lack of knowledge either about manifestations of EM or about how reporting and investigation by state agencies function.

III. BACKGROUND/STATEMENT OF PROBLEM

A. Definitions

1. *Elder mistreatment*: "Intentional actions that cause harm or create serious risk of harm (whether harm is intended) to a vulnerable elder by a caregiver or other person who is in a trust relationship to the elder," or "failure by a caregiver to satisfy the elder's basic needs or to protect himself or herself from harm" (NRC, 2003, p. 1). There are conflicting casual theories of EM.
2. *Physical abuse:* "The use of physical force that may result in bodily injury, physical pain, or impairment" (NCEA, 2008).
3. *Sexual abuse:* Any form of sexual activity or contact without consent, including with those unable to provide consent (NCEA, 2008).
4. *Emotional/psychological abuse*: "The infliction of anguish, pain, or distress through verbal or nonverbal acts" (NCEA, 2008).
5. *Financial abuse/exploitation:* "The illegal or improper use of an elder's funds, property, or assets" (Naik et al., 2008).
6. *Caregiver neglect:* "The refusal or failure to fulfill any part of a person's obligations or duties to an" older adult, including social stimulation (NCEA, 2008).
7. *Self-neglect:* The behavior of an older adult that threatens his or her own health or safety. Disregard of one's personal well-being and home environment (NCEA, 2008).
8. *Risk-vulnerability model:* This model posits that neglect is caused by the interaction of factors within the older adult and his or her environment. The risk and vulnerability model adapted to EM by Frost and Willette (1994) provides a good lens through which to examine EM. *Vulnerability* is determined by characteristics within the older adult that increase his or her risk of being abused by caregivers, such as poor health status, impaired cognition, and history of abuse. *Risks* refer to factors in the environment that may predispose an older adult to EM and may include characteristics of caregivers, such as health and functional status, as well as a lack of resources and social isolation (Fulmer et al., 2005).
9. *Situational theory:* This theory was first used to explain causes of child abuse. The situational theory promotes the idea that stressful family conditions contribute to mistreatment. Thus, EM may be viewed as a consequence of caregiver strain because of the overwhelming tasks of caring for a vulnerable or frail older adult (Straus, 1971).
10. *Psychopathology of the abuser:* This posits that mistreatment stems from a perpetrator's own battle with psychological illness, such as substance use, depression, and other mental disorders (Gelles & Straus, 1979).

(*continued*)

Protocol 16.1: Detection of Elder Mistreatment (*continued*)

11. *Social exchange theory:* This theory speculates that the long-established dependencies present in the victim–perpetrator relationship are responses developed within the family that then continue into adulthood (Gelles, 1983).
12. *Social learning theory:* This was developed by Bandura (1978), and this theory attributes mistreatment to learned behavior on the part of the perpetrator or victim from either family life or the environment.
13. *Political economy theory:* This theory focuses on how older adults are often disenfranchised in society as their prior responsibilities and even their self-care are shifted onto others (Walker, 1981).

B. Characteristics of victims
   1. Decreased ability to complete ADL and more physically frail (Dyer et al., 2000; Frost & Willette, 1994; Peisah et al., 2009)
   2. Cognitive deficits such as dementia (Dong et al., 2012; Fulmer et al., 2005; Gorbien & Eisenstein, 2005; Naik et al., 2008)
   3. History of trauma earlier in life (Brozowski & Hall, 2010; DeLiema et al., 2012; Draper et al., 2008; Fulmer et al., 2005)
   4. Depression and other mental disorders, as well as an increased sense of hopelessness (Dong et al., 2012; Dyer et al., 2000; Fulmer et al., 2005; Johannesen & LoGiudice, 2013)
   5. Social isolation and lack of support systems (Acierno et al., 2010; Cannell et al., 2014; Draper et al., 2008; Dyer et al., 2000; Peisah et al., 2009)
   6. History of substance abuse (Dyer et al., 2000; Peisah et al., 2009)

C. Characteristics of perpetrators
   1. Most commonly, family members
   2. Long history of conflict with the victim (Krienert, Walsh, & Turner, 2009)
   3. Lived with victim for an extended time (Rizzo et al., 2015; Wiglesworth et al., 2010)
   4. Higher rates of caregiver strain (Strasser, Smith, Weaver, Zheng, & Cao, 2013; Wiglesworth et al., 2010)
   5. History of mental illness and substance abuse (Jackson & Hafemeister, 2013; Wiglesworth et al., 2010)
   6. Depression and other mental disorders (Giurani & Hasan, 2000; Johannesen & LoGiudice, 2013; Wiglesworth et al., 2010)
   7. Social isolation and lack of support systems (Wiglesworth et al., 2010)

D. Etiology and/or epidemiology
   1. Data from the National Research Council (2003) suggest that more than two million older adults suffer from at least one form of EM annually.
   2. The National Elder Abuse Incidence Study estimates that more than half a million new cases of EM occurred in 1996 (NCEA, 1998).
   3. Even though 44 states and the District of Columbia have legally required mandated reporting, EM is severely underreported. There is a lack in uniformity across the United States on how cases of EM are handled (NCEA, 1998).
   4. NCEA (1998) estimates that only 16% of cases of abuse are actually reported.
   5. The National Council on Elder Abuse revealed that neglect accounts for approximately half of all cases of EM reported to APS. About 39.3% of these cases were classified as self-neglect, and 21.6% were attributed to caregiver neglect, including both intentional and unintentional (NRC, 2003).
   6. More than 70% of cases received by APS are attributed to cases of self-neglect with those older than 80 years thought to represent more than half of these cases (Burnes, Rizzo, Gorroochurn, Pollack, & Lachs, 2016).

IV. PARAMETERS OF ASSESSMENT

A. See Table 16.2.

(*continued*)

Protocol 16.1: Detection of Elder Mistreatment (*continued*)

V. NURSING CARE STRATEGIES

A. Detailed screening is important to assess for risk factors for EM using a combination of physical assessment, subjective information, and data gathered from screening instruments (Perel-Levin & World Health Organization, 2008).
B. Strive to develop a trusting relationship with the older adult as well as the caregiver. Set aside time to meet with each individually (Perel-Levin & World Health Organization, 2008).
C. Use of interdisciplinary teams with a diversity of experience, knowledge, and skills can lead to improvements in the detection and management of cases of EM. Early intervention by interdisciplinary teams can help lower the risk for worsening abuse and further deficits in health status (Jayawardena & Liao, 2006; Rizzo et al., 2015; Wiglesworth et al., 2010).
D. Institutions should develop guidelines for responding to cases of EM (De Donder, De Witte, Brosens, Dierckx, & Verté, 2015; Perel-Levin & World Health Organization, 2008; Sandmoe & Kirkevold, 2011; Wiglesworth et al., 2010).
E. Institutions should implement culturally appropriate strategies for identifying and addressing EM in racial/ethnic minority older adults (Horsford, Parra-Cardona, Schiamberg, & Post, 2011).
F. Educate victims about patterns of EM such that EM tends to worsen in severity over time (Phillips, 2008).
G. Provide older adults with emergency contact numbers and community resources (Lachs & Pillemer, 1995).
H. Refer to appropriate regulatory agencies.

VI. EVALUATION AND EXPECTED OUTCOMES

A. Reduction of harm through referrals, use of interdisciplinary interventions, and/or relocation to a safer situation and environment (Jackson & Hafemeister, 2013; Rizzo et al., 2015).
B. Victims of EM verbalize an understanding of how to access appropriate services.
C. Caregivers use services, such as respite care or treatment, for mental illness or substance use.
D. If possible, evaluate progress in relationships between the caregiver and the older adult through screening instruments such as the Modified CSI and GDS among other tools freely available at consultgerirn.org.
E. Institutional establishment of clear and evidence-based guidelines for management of EM cases.

VII. FOLLOW-UP MONITORING OF CONDITION

A. Follow-up monitoring in the acute care setting is limited compared to the follow-up that may be performed in the community or long-term care settings.

VII. RELEVANT PRACTICE GUIDELINES

A. American Medical Association (AMA). (1992). *Diagnostic and treatment guidelines on elder abuse and neglect*. Chicago, IL: Author.

ABBREVIATIONS

ADL	Activities of daily living
APS	Adult Protective Services
CSI	Caregiver Strain Index
EM	Elder mistreatment
GDS	Geriatric Depression Scale
NCEA	National Center on Elder Abuse
NRC	National Research Council

RESOURCES

Administration on Aging
http://www.aoa.gov

Elder Justice Roadmap
https://www.justice.gov/file/852856/download

Elder Mistreatment Assessment
http://consultgerirn.org/resources

Journal of Elder Abuse & Neglect
http://www.informaworld.com/smpp/title~content=t792303995~db=all

National Center on Elder Abuse
https://ncea.acl.gov/Suspect-Abuse/Abuse-Types.aspx

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Advance Care Planning*

17

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and Marie Boltz

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Distinguish instruction directives and appointment directives in terms of their strengths and weaknesses.
2. Describe assessment parameters that would ensure that older adults receive advance directive information.
3. Identify strategies to ensure good communication about advance directives among patients, families, and healthcare professionals.
4. Guide a discussion of the benefits and burdens of various treatment options to assist proxy treatment decision-making.
5. Describe measurable outcomes to be expected from implementation of this practice protocol.

OVERVIEW

One of the most important yet difficult situations healthcare professionals face is decision-making about care for those who can no longer communicate their health goals, values, and treatment preferences. Surrogate decision-making has particular relevance in the geriatric setting because the decisional capacity of older adults may be diminished, fluctuating, or lapsed. Precisely because individuals may lack the capacity to participate in discussions when decisions about treatment are required, advance care planning (ACP) has become an increasingly important priority. ACP enables individuals with decisional capacity to prospectively articulate their health goals, values, and treatment preferences so that they can be communicated and honored when the ability to make and communicate decisions has lapsed. It must be emphasized, however, that addressing ACP should not wait until one is at an advanced age or dying. Because it promotes the control of their future by responsible adults, it should be an integral part of routine healthcare for every age at every stage of health.

One indispensable ACP tool is the advance directive, a simple and effective mechanism for the clear and legally enforceable documentation of these important decisions; all capable adults are empowered to complete such a document. Although healthcare professionals agree that all decisionally capacitated individuals should be encouraged to execute advance directives, the right *not* to do so must also be respected. When patients and residents are engaged in discussion about ACP, they should be informed and reassured that neither their providers nor the facilities in which they receive treatment will condition care or

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

make assumptions about their care preferences if they do not have an advance directive.

BACKGROUND

Advance directives are legal instruments intended to secure an individual's ability to set out prospective instructions regarding healthcare. Conceived during the 1970s, they responded to the concern that patients who had lost the ability to make healthcare decisions might be subjected to medical interventions they would not have chosen, especially at the end of life. The 1990 federal Patient Self-Determination Act (PSDA) codified the right to conduct ACP by requiring all healthcare facilities that receive federal funds to offer patients or residents the opportunity to execute advance directives and assistance in doing so.

Although all 50 states and the District of Columbia have statutory and/or case law governing advance directives and all states honor them, their standards and restrictions differ (Olick, 2012; see also advance directives by state link in the Resources section). Although advance directives are useful whenever substitute decision-making is required, they are most often invoked in the geriatric and critical care settings, as disease trajectory declines and the end-of-life approaches.

TYPES OF ADVANCE DIRECTIVES

Advance directives commonly come in two varieties—instruction directives, also known as living wills, and appointment directives, also known as healthcare proxies or durable powers of attorney for healthcare. In different ways, they provide direct access to patient preferences, enabling caregivers and families to rely on the most immediate and authentic of the decision-making standards. The first advance directive was the instruction directive or living will, a written set of value-neutral instructions about specified medical, surgical, or diagnostic interventions the individual *would* or *would not* want under particular circumstances, usually at the end of life. The structure of the document typically has a trigger phrase, such as "If I am ever in an irreversible coma... " or "If I am ever terminally ill...," followed by instructions related to treatment in the specified circumstances.

Because the living will presents explicit articulation of the patient's previously expressed preferences, it is assumed to provide helpful guidance to family and caregivers about what she or he would choose in current circumstances. As became apparent, however, this type of directive is significantly limited by the fact that it is a static document that requires an individual to anticipate, often years in advance, some future medical condition(s) and determine the preferred treatment(s). Quality-of-life assessments and care preferences evolve over time, however, and it is not unusual for patients to change their minds about medical interventions that they thought they would or would never be able to tolerate.

Moreover, these documents do not always mean what they say. A living will that states, "I don't ever want to be on dialysis" probably does not mean, "I don't want three dialysis treatments if they will return me to baseline kidney function." What the individual probably means is, "I don't want to be on dialysis for the rest of my life." But living wills typically do not provide that kind of nuanced interpretation. Finally, this type of directive usually refers only to end-of-life care. The result is a set of instructions that reflect what the patient *believed* and *tried to communicate* at a *particular time* about what she *thought she would want under different circumstances* at a *later time*. Because of their significant limitations, living wills are most appropriate for someone without trusted friends or family to make surrogate decisions in the event of her or his incapacity.

The preferred advance directive is the appointment directive, also known as a healthcare proxy or a durable power of attorney for healthcare (DPOAHC). This document enables a capacitated individual to legally appoint another person to make medical decisions on her or his behalf after capacity has been lost. Depending on the type of appointment directive and the jurisdiction, the designated person may be known as a *healthcare agent, proxy, representative,* or *power of attorney (POA)*. For purposes of this discussion, the term *healthcare agent* will be used to represent any person legally appointed to make surrogate healthcare decisions. Appointment of an *alternate agent* is also recommended as a backup in the event the agent is unavailable or unable to make decisions on the patient's behalf.

The appointment directive is preferred over the instruction directive because it authorizes decision-making in the event of *temporary* or *permanent* incapacity and enables greater flexibility in responding to unanticipated or rapidly changing medical conditions. Although the agent is generally required to honor the patient's previously expressed care preferences, if those instructions do not apply to or are inconsistent with the patient's current health needs, the agent is empowered to exercise judgment and use his knowledge of the patient's health goals, values, preferences, and decision history to make choices that promote the patient's best interest. Because the agent and alternate agent have the same decisional authority as the patient once the powers are activated, he or she may make any and all care decisions the patient could make if

capable. Moreover, the authority of the agent and alternate supersedes that of anyone else (except a court-appointed guardian), including next of kin. This scope of authority presupposes a patient–agent relationship characterized by trust; familiarity with the patient's goals, values, and preferences; and the agent's willingness to exercise judgment and make often difficult decisions in the patient's interest.

As noted in Chapter 7, Healthcare Decision-Making, appointing a healthcare agent requires a lower level of capacity than that needed to make the often complex decisions the agent will make. All the individual must be able to do is understand that, at some future time, another person will be needed to make care decisions on her or his behalf and consistently designate the same person. Assessing this level of capacity can be as simple as asking, "If you couldn't make decisions about your care, who would you trust to do it?" Return in 30 minutes, ask the same question, and, if the same person is named, that is sufficient. The importance of this provision, especially in the geriatric setting, is that even patients with diminished or fluctuating capacity who are unable to make complex medical decisions may still be able to appoint an agent and an alternate to assume this responsibility.

As noted previously, one type of appointment directive is the DPOAHC, but the term POA, when applied to advance healthcare planning, can cause confusion. Powers of attorney are delegations of legal authority for specified tasks. Often, a well-meaning person will show up in the clinical setting, clutching a document, and saying, "I'm the POA, so I'm responsible for making decisions." Encourage staff to read the document. Very often, it will be a POA for banking or real estate or some other nonmedical responsibilities. Unless the document includes "healthcare decisions" or similar language, the document should be returned to the person with the explanation that the delegated powers do not include healthcare decision-making (Post & Blustein, 2015).

A key presumption of the appointment directive is that the individual and the appointed agent(s) have engaged in candid and comprehensive discussions about the individual's goals, values, and treatment preferences (Span, 2015). The literature reveals that older adults with a DPOAHC or other advance directive are less likely to die in a hospital or receive unwanted or nonbeneficial care in comparison with those without an advance directive that provides insight into treatment preferences and guidance in making decisions about care (Silveira, Kim, & Langa, 2010). Some states require the agent's signature on the advance directive as confirmation that he is aware of the appointment and has accepted the decision-making responsibilities that are entailed. In states without that requirement, however, healthcare agents may first learn of their appointment when they are called from an emergency department.

Although an instruction directive, such as a living will, typically addresses treatment decisions at the end of life, the appointment directive becomes activated anytime the individual has a *temporary* or *permanent* loss of decisional capacity, as might be associated with trauma, illness, states of diminished awareness or impaired cognition (e.g., dementia, stroke, and delirium), alcohol or other substance use or abuse, elective or emergency surgery, or any other condition that impairs decisional capacity. In these situations, a healthcare agent has the legal authority to infer or interpret the patient's treatment preferences in real time, based on current medical circumstances and likely prognosis, as well as knowledge of the patient's goals, values, and preferences. These decisions address a wide range of clinical issues and are not restricted to decisions about forgoing life-sustaining measures as death nears. In essence, the agent is able to say, "If Mama had known then what we know now about her condition and prognosis, this is what she would have decided."

In the absence of an advance directive, the care team typically turns to informal surrogates, usually family, for guidance and consent in care planning. *Family consent laws* are state-specific statutes that set out the state-approved decision-making hierarchy—the order in which persons are authorized to make decisions on behalf of a patient who lacks decisional capacity and has not appointed a healthcare agent by means of an advance directive or DPOAHC.

Variations in Advance Directives

Some states have a combined directive that provides for the appointment of a healthcare agent and an alternate agent, as well as optional instructions regarding treatment specifics. A section on organ donation ("anatomical gift") has been added to the advance directives in some states, enabling the expression of preferences about organ donation. Some states limit the authority of the appointed agent or alternate to activate these preferences, unless this person is also the identified decision-maker(s) for organ donation, a distinct statutory authority that is separate from the agent's rights and responsibilities to make decisions about the patient's treatment.

Instructional/medical directives have been suggested to address specific clinical situations and interventions. Individuals must decide prospectively which interventions they would want in the context of four scenarios: coma with virtually no chance of recovery; coma with a small chance of recovery but restored to an impaired physical

and mental state; advanced dementia and a terminal illness; and advanced dementia. Among the interventions are cardiopulmonary resuscitation (CPR), artificial nutrition and hydration (ANH), dialysis, invasive diagnostic tests, antibiotics, and blood transfusion. This type of directive shares and even exacerbates the problems with living wills by requiring individuals to anticipate hypothetical clinical conditions and make choices about interventions she or he may or may not understand. In addition, the instructional/medical directive does not address the patient's desired goals of care, willingness to allow a short-term intervention, or treatment choices associated with stage of chronic illness or exacerbation.

Five Wishes® is a hybrid directive that provides the opportunity to communicate decisions about (a) the person I want to make care decisions for me when I cannot, (b) the kind of medical treatment I do or do not want, (c) how comfortable I want to be, (d) how I want people to treat me, and (e) what I want my loved ones to know. For many people, this is an accessible and nonthreatening way to frame the issues. Five Wishes is currently recognized in 42 states and is available in 28 languages (Aging with Dignity, 2019). The "values statements" embedded in the Five Wishes document generally do not explore or express the patient's understanding of the benefits and burdens of various treatments, sometimes making it difficult to act on the patient's wishes and preferences (Lo & Steinbrook, 2004).

ADVANCE DIRECTIVES AND DECISION-MAKING

The literature reveals that quality-of-life concerns, family influence, and pragmatism inform most adults' decisions to create an advance directive (Crisp, 2007). Older adults who execute advance directives tend to believe that their physicians know their wishes and do not feel that the directive would constrain their care. Those who do not create an advance directive tend to prefer that their families make decisions for them and may not appreciate the decision-making flexibility provided by an advance directive (Beck, Brown, Boles, & Barrett, 2002). Among participants of the original Framingham Heart Study, almost 70% discussed their end-of-life care preferences and advance directives with someone, but not necessarily a physician or other healthcare provider. More than half had a healthcare proxy or living will; slightly less than half had both types of directives. Most respondents wanted a comfort care plan at the end of life, but few agreed to forgo life-sustaining treatment interventions (e.g., ventilator and feeding tube) and said they would endure a burdensome health status (e.g., intense pain, confusion, and forgetfulness) in order to prolong life (McCarthy et al., 2008).

The literature also reveals the relationship between ACP and the degree to which individuals' care preferences are known, understood, and followed. Surrogate decision-makers for hospice patients who talked with their surrogates about their end-of-life treatment wishes demonstrated greater understanding of the patients' preferences than the surrogates of patients who did not have these discussions (Engelberg, Patrick, & Curtis, 2005). Although surrogate decision-making by families demonstrated greater accuracy than primary physicians in predicting older patients' preferences for life-sustaining treatments in hypothetical scenarios, having an advance directive did not necessarily improve congruence between patients' wishes and decisions made for them by others (Coppola, Ditto, Danks, & Smucker, 2001).

Studies have revealed that surrogate decision-makers do not necessarily make treatment choices that reflect patients' preferences (Ditto et al., 2001; Mitchell, Berkowitz, Lawson, & Lipsitz, 2000). Although a small study found that communication between patients and their agents improved the accuracy of agent representations of patient preferences (Barrio-Cantalejo et al., 2009), a meta-analysis of surrogate decision-making did not find that prior discussion between patient and agent improved agent accuracy in representing patient preferences (Shalowitz, Garrett-Mayer, & Wendler, 2006). Lack of concordance between patients' stated wishes and physicians' orders, however, was not shown to be simply a denial of patient rights; rather, physicians may have been relying on additional information to guide their treatment decisions (Hardin & Yusufaly, 2004).

Advance directives and high-quality end-of-life care have been associated with patients dying in their preferred location (e.g., at home or in hospice rather than in an acute care hospital), less likelihood of being burdened with an unwanted respirator or feeding tube, fewer concerns about family/significant others being informed about what to expect, and good communication with the healthcare team (Bakitas et al., 2008; Detering, Hancock, Reade, & Silvester, 2010; Kwak & Noh, 2018; Teno, Gruneir, Schwartz, Nanda, & Wetle, 2007). Patients with advanced illness requiring end-of-life care who were randomized to an Advanced Illness Coordinated Care Program reported increased satisfaction with care and communication, completed more advance directives, and their surrogates reported fewer support problems than patients receiving standard care (Engelhardt et al., 2006). As reported in a similar study (Teno et al., 2007), no difference was found in survival rates between the experimental and control

groups. Unmet needs were reported, however, for adequate pain management and emotional support for patient and family (Teno et al., 2007).

Factors considered important by older patients with regard to their medical decision-making and ACP included their religious beliefs, dignity, physical comfort, dependency, and finances (Hawkins, Ditto, Danks, & Smucker, 2005). Few patients indicated a desire to document their specific medical treatment preferences, but they highly valued verbal communication about these matters. Spouse surrogates were less likely than child surrogates to believe that prospective documentation of treatment preferences was necessary and more likely than child surrogates to consider financial issues important. Most patients accorded their surrogate considerable leeway in decision-making. Patients indicated greater confidence in their child surrogates' understanding of their wishes than in the understanding of their spouse surrogates. An association between recent hospitalization and reduced desire to receive life-sustaining interventions (e.g., CPR, artificial nutrition, and hydration) was noted during an interview conducted just after recovery, but returned to baseline several months after hospitalization. These results challenge assumptions about the stability of treatment preferences and the temporal context during which treatment decisions are made (Ditto, Jacobson, Smucker, Danks, & Fagerlin, 2006; Hawkins et al., 2005).

Surrogate decision-making has traditionally been grounded in the notion that an individual's characteristic preferences, long-held values, and cherished convictions provide the touchstone for decisions made on her or his behalf when capacity has lapsed. ACP, in general, and advance directives, in particular, have been held to be reliable guides for surrogate decision-making because they authentically reflect the choices and principles that have given the individual's life meaning.

A thought-provoking debate within the bioethics community challenges the justification for adhering to previously articulated preferences that may not adequately meet the markedly different needs of a now-incapacitated individual. Commentators have argued that persons with advanced dementia are, in effect, different people in terms of their health status and interests, for whom care decisions should be based on their current needs and preferences rather than their prior instructions (Blustein, 1999; Dresser, 1995; Huang, Shyu, Weng, Chen, & Hsu, 2018; Post & Blustein, 2015). Ultimately, the ethical analysis would seem to rest on the imperative to preserve the dignity of the individual currently before us, as well as that of the individual she was.

Research Advance Directives

The notion of a research advance directive has been suggested because of the ethical implications of including in research studies participants with dementia who cannot provide informed consent (National Bioethics Advisory Commission, 1998). A research advance directive must be executed while the individual still has decisional capacity and must contain a detailed description and confirmation that the individual understands the purpose of research, including the concepts of risk, benefit, and burden. At the time of recruitment for a research study, the appointed surrogate decision-maker must determine whether the individual's previously articulated intention to participate in research is congruent with the proposed research.

A study involving individuals with moderate dementia and their family surrogate sought to learn whether the patients wanted to retain decision-making control of their participation in future research or allow their surrogates to make the decision at the time of recruitment. Although many but not all individuals authorized their surrogates to make future decisions about research participation, surrogates did not always want to make these decisions (Stocking et al., 2006).

Psychiatric Advance Directives

Psychiatric advance directives are written by decisionally capable individuals who want to articulate their preferences about psychiatric treatment so that these preferences may be communicated and honored during periods when decisional capacity has lapsed. Research has shown that, given the opportunity to meet with a trained facilitator, adults with psychiatric disorders demonstrated sufficient capacity to make and document treatment decisions (Elbogen et al., 2007). Psychiatric outpatients have demonstrated a desire for assistance in creating an advance directive. This population tends to be female; non-White; with limited autonomy and, a history of self-harm, arrest, and perceived pressure to take psychiatric medications (Swanson, Swartz, Ferron, Elbogen, & Van Dorn, 2006). Patients who complete a psychiatric advance directive typically exhibit good insight and reliably keep their outpatient mental health treatment appointments (Swanson et al., 2006).

Psychiatric advance directives in which patients identified their preferred psychiatric medications predicted not only that the medications were likely to be prescribed but also that medication adherence persisted over time (Wilder, Elbogen, Moser, Swanson, & Swartz, 2010). Most psychiatrists, psychologists, and

social workers agreed that psychiatric advance directives would be helpful for patients with severe mental illness who are capable of creating them. The positive attitude of these mental health professionals is also supported by their knowledge that their respective state laws do not require them to follow a directive that contains a patient's refusal of appropriate mental health treatment or a request for treatment that is not clinically indicated (Elbogen et al., 2006).

Verbal Advance Directives

Although courts tend to prefer written advance directives, oral directives are typically respected, especially in emergency situations, and can be persuasive in a judicial decision about withholding life-sustaining treatment. Some states permit patients to verbally designate a healthcare agent in discussion with their physicians, rather than executing a written directive (Lo & Steinbrook, 2004). In determining the validity of a verbal advance directive, courts seek information about whether the statement was made by a mature person who understood the underlying issues, in a deliberate rather than casual or emergency context, was consistent with characteristic values and statements exhibited in other aspects of the individual's life, including religious or philosophical convictions, and addressed the specific medical condition necessitating a decision (Lo & Steinbrook, 2004). What might seem like an offhand comment made by a patient in a practitioner's office or at the bedside should be recorded for just such an occasion, when clear and convincing evidence of the individual's wishes may be required.

A review examined studies, published between 1990 and 2018, of the knowledge or confidence of nurses and nursing students regarding advance directives or of education on advance directives in nursing curricula. Fewer than half of working nurses demonstrated knowledge, confidence, or both regarding advance directives, and nursing programs that cover advance directives at all typically devote only 1.5 hours or less to this issue (Miller, 2018). Clearly, nursing programs need more education specifically about advance directives, and more research is needed to determine what educational methods can successfully address nurses' knowledge and confidence deficits.

OTHER TYPES OF ACP

In addition to advance directives, other mechanisms enable prospective medical decision-making in specific circumstances.

Do-Not-Resuscitate Orders

Almost all diagnostic and therapeutic interventions require the informed consent of a decisionally capable patient or an authorized surrogate on behalf of a patient lacking decisional capacity. The few exceptions include emergency treatment that, if delayed, would result in significant harm or death, interventions to manage pain and other symptoms, and CPR. In the event of cardiopulmonary arrest, consent to resuscitation is presumed unless a physician enters a do-not-resuscitate (DNR) order, which is a specific order to refrain from performing CPR. Because of their life-and-death implications, most jurisdictions require DNR orders to have explicit informed consent, with few carved-out exceptions. Absent a DNR order, the patient's code status is presumed to be "full code" and, in the event of cardiopulmonary arrest, CPR must be performed.

Determining, communicating, and honoring a patient's code status often causes moral distress for caregivers, especially nurses. Care professionals are often conflicted and believe that CPR should not be instituted when it is considered medically futile, will not provide clinical benefit to the patient, or when death is inevitable and impending. Even in these situations, however, patients or surrogates often insist on CPR because of the misperception, fueled by television and film dramas, that it is always effective in restarting cardiac function. In the interest of clarity and accuracy, an increasing number of states have changed the name of the order from DNR to DNAR—do not *attempt* resuscitation.

Decisionally capable individuals or surrogates on behalf of incapacitated individuals have the right to *consent to or refuse* any proposed medical intervention. State-specific Natural Death Acts codify the right of capable patients to decline unwanted life-sustaining interventions, a right supported by the U.S. Supreme Court (*Cruzan v. Director*, 1990). Accordingly, capable patients and surrogates have the right to refuse CPR by consenting to a DNR order after they have been informed and demonstrate their understanding of the implications, including the relevant benefits, burdens, and risks. Because these are *medical orders* written by *physicians*, they are not considered advance directives, which are *patient*-generated statements of care preference.

Not uncommonly, conflict arises between and among patients, families, and care professionals regarding the necessity and appropriateness of DNR orders. For example, a physician may be unwilling to write a DNR order requested by a patient or surrogate because forgoing CPR would be considered clinically inappropriate. In this

situation, the physician is required to notify the requestor that the order will not be entered and offer to transfer the patient's care to a physician willing to write the order.

The more typical scenario is a patient who has consented to a DNR order suffering a cardiopulmonary arrest and a hysterical family member imploring the care team, "You must save my loved one!" Too often, the patient is resuscitated, and the code status is changed to full code with the reasoning, "When the patient can't make decisions, we always turn to the family." Reframing this dynamic is essential to the fundamental ethical obligation to respect patient autonomy. A medical order consented to by a capable patient is a compact between the patient and the care team. The patient's consent implicitly expresses confidence that his or her wishes will be honored, and the care team implicitly promises, "When you are at your most vulnerable and cannot advocate for yourself, we will advocate for you." Accordingly, a DNR order consented to by a family member, healthcare agent, or other surrogate on behalf of an incapacitated patient may subsequently be modified or rescinded by an authorized surrogate. A DNR order consented to by a *decisionally capable patient*, however, *may be rescinded or modified only by the patient.* The rare exception is when *a healthcare agent appointed by the patient* determines that, in the context of *current changed clinical realities, the patient would have rescinded or modified the DNR order.*

Out-of-hospital DNR orders can protect individuals at home, as well as in long-term care, rehab facilities, or other nonacute care settings from unwanted and clinically inappropriate CPR. Like in-hospital DNR orders, these are written by physicians based on clinical assessment and consented to by capable patients or surrogates. In one study, interest in and consent to DNR orders by patients on palliative home care programs were associated with sleep and incontinence problems, acceptance of their clinical condition and impending death, and their wish to die at home (Brink, Smith, & Kitson, 2008).

Artificial Nutrition and Hydration

ANH poses ethical, legal, and cultural challenges, primarily because of the traditional association between nourishing and nurturing. Before the PSDA became law, the U.S. Supreme Court ruled that capable patients have a constitutionally protected right to refuse unwanted medical treatment, a category in which the Court included ANH (*Cruzan v. Director*, 1990). Thus, ethical and legal reasoning that considers ANH the same as any other medical treatment recognizes no distinction between withholding and withdrawing life-sustaining measures, including ANH.

Powerful emotional and cultural influences persist, however, and are reflected in the varying state-specific legal evidentiary rules and procedures required to forgo or discontinue ANH. Some states hold that healthcare agents may not make decisions about forgoing ANH unless explicitly authorized to do so by the patient's advance directive. Some DPOAHC documents include a statement that the patient may check to verify that the POA is aware of the patient's wishes about ANH, without indicating the nature of those wishes. Living will statutes in some states regard ANH as a medical treatment, whereas other states consider it a comfort measure (Gillick, 2006). Given states' varying legislation, nurses need to be aware of the relevant laws of the state in which they practice and what those laws require, permit, and prohibit. They should also understand the extent to which patients and their surrogates are correctly informed about the clinical benefits and burdens of ANH at the end of life; the palliative alternatives; the cultural, religious, and language influences that may equate forgoing ANH with "starving" the patient to death; and strategies to address those concerns.

Orders for Life-Sustaining Treatment (POLST/MOLST)

An entirely different type of ACP is a consolidated set of medical orders for life-sustaining interventions. Originated in Oregon in 1995, this is a decision-making model that has been adopted by or is in development in approximately 40 states, which accounts for the variety of names (e.g., Physician or Practitioner or Pennsylvania Orders for Life-Sustaining Treatment [POLST], Medical Orders for Life-Sustaining Treatment [MOLST], Louisiana Physician Orders for Life-Sustaining Treatment [LaPOLST]; Span, 2015). In the interest of simplicity, the term *POLST* is used in this discussion to refer to all documents of this type.

Although POLST is a legal mechanism for ACP, it is fundamentally different from advance directives, and, as noted in the following, distinguishing them is crucial to their proper implementation.

- Advance directives are *statements of patient intention, not medical orders*. Thus, an advance directive that stipulates, "If I am ever in one of the following three clinical conditions, I would not want cardiopulmonary resuscitation" is not a DNR order. That instruction may be translated into a DNR order by a physician if forgoing resuscitation is deemed clinically indicated. In contrast, POLST is a consolidated set of *medical orders* that are immediately actionable.

- *Every decisionally capable person 18 years of age or older* should have an advance directive, regardless of health status. POLST is intended for a subsection of the population, *individuals who have life-limiting illnesses and, typically, are expected to live 1 year or less.*
- Advance directives become *active only when the individual is determined to have lost decisional capacity.* POLST is *active from the moment it is signed*.

POLST is a comprehensive and specific product of discussion between a practitioner and a capacitated individual or the authorized surrogate for an incapacitated individual. It begins with a statement about the goals of care, which inform decisions about medical interventions, including CPR, airway management, ANH, hospitalization, and symptom management. Precisely because of the life-limiting nature of the individual's illness(s), POLST orders respond to current rather than anticipated or hypothetical clinical circumstances. The specificity of the POLST protocol provides guidance in honoring the individual's preferences, such as wishing to die at home or in a nursing facility, rather than a hospital; wanting to be alert, even if that means incomplete pain relief; and declining intubation in the event of respiratory compromise.

The literature reveals that, for appropriate individuals, POLST enables greater specificity and accuracy in communicating end-of-life care preferences in comparison with advance directives (Bomba & Vermilyea, 2006). Nursing home residents who have completed POLST are more likely to have documented their preference for limited life-sustaining measures and are less likely to be hospitalized if they have specified comfort measures only. There is no evidence of differences in symptom assessment or management between residents who have completed POLST and those who have not (Hickman et al., 2010).

DECISIONAL CAPACITY TO ENGAGE IN ACP

A threshold consideration is assessing the decisional capacity of individuals to engage in the various types of ACP. Chapter 7, Healthcare Decision-Making, includes an in-depth discussion of decisional capacity, its assessment, and its implications for healthcare decision-making. The following section considers the role of capacity assessment in ACP.

As noted in Chapter 4, Organizational Approaches to Promote Person-Centered Care, capacity is decision specific because different decisions require different levels of capacity. To suggest that, because an individual lacks sufficient capacity to make a complex treatment decision, he lacks the capacity to make other treatment decisions risks disenfranchising and disempowering him from any participation in planning his healthcare. To promote the exercise of patient autonomy to the fullest extent while protecting patients from the harms of deficient decision-making, capacity assessment typically employs a sliding scale based on the notion of risk. The greater the risk attached to a decision, the higher the level of capacity required to honor the decision.

Chapter 7, Healthcare Decision-Making explains that decisional capacity refers to an individual's ability to (a) understand and process information about diagnosis, prognosis, and proposed treatment options; (b) weigh the benefits, burdens, and risks of the options; (c) apply a set of values; (d) arrive at a decision that is consistent over time; and (e) communicate the decision. The sliding scale assessment strategy has particular application in the setting of ACP. An individual lacking the capacity to execute a living will or an instructional/medical directive may still have sufficient capacity to create a healthcare proxy or other type of appointment directive (Mezey, Leitman, Mitty, Bottrell, & Ramsey, 2000). The former task requires the individual to envision and make decisions about complex hypothetical clinical scenarios; the latter task requires only that the individual understand that someone else will make healthcare decisions on his behalf and consistently designate the same person.

Benefit–Burden–Risk Assessment

All healthcare decision-making invokes an analysis that considers the intended and unintended consequences of a particular intervention; identifies the potential benefits, burdens, and risks; estimates the likelihood that they will occur; and weighs their importance to the patient. Based on this information, the analysis determines whether the likely benefits of the intervention will outweigh the burdens and risks. Not uncommonly, patients or surrogates are encouraged to consent to tests or treatments that are uncomfortable, burdensome, and even risky. The ethical justification is the conviction that the benefits, including clinical improvement, palliation, or improved function, will not only result but will outweigh the burdens and risks. Making the benefit–burden–risk assessment an integral part of care planning is a safeguard against performing tests and treatments because they are available rather than indicated.

Patients are not necessarily consistent in their treatment preferences, especially if the degree of burden or the chance of avoiding death is unclear. Patients exhibit varying degrees of readiness for ACP, including communication with their families, other surrogates, and physicians about their health goals and the execution of

an advance directive. Prior experience with healthcare decision-making can influence a patient's perceptions of and readiness to engage in ACP (Fried, Bullock, Iannone, & O'Leary, 2009; Fried, O'Leary, Van Ness, & Fraenkel, 2007). An appointed agent can be assisted to infer how the now-incapacitated patient would likely evaluate the benefits and burdens based on knowledge of the patient's values, preferences, and past behavior. Nurses can helpfully ask the agent, "If Mama could join this discussion, knowing what we know about her condition, prognosis, and treatment options, what would she say?" "Faced with similar situations in the past, how did she decide?" "What did she say when her brother was very ill?" Higher congruence between patient and agent regarding patients' end-of-life care preferences has been associated with a nurse-led discussion intervention: Patients in the experimental group were more knowledgeable about life-sustaining measures, less willing to receive these interventions for a new, serious medical event, and less willing to live in a state of poor health (Schwartz et al., 2002).

The rationale for forgoing (either withholding or withdrawing) a treatment is eliminating a burdensome intervention that has neither produced nor is expected to produce the desired clinical result. Under these circumstances, analysis reveals that the burdens and risks significantly outweigh any compensating benefit. As discussed in Chapter 7, Healthcare Decision-Making, surrogate decision-making standards include *substituted judgment*, used when knowledge of the patient's goals, values, preferences, and decision-making history can be used to infer her or his likely decision about current clinical conditions, and the *best interest* standard, used when making decisions for a patient whose goals, values, and preferences are unformed or unknown. In guiding the process, nurses may ask, "What does this patient have to gain or lose as a result of this intervention?" "In what ways will this patient be better or worse off as a result of having or not having this treatment?"

CULTURAL PERSPECTIVES ON ACP

The notion of ACP and written directives is not universally accepted. In some cultures, the close-knit family may consider an advance directive intrusive, irrelevant, or a refusal, if not a legal denial, of care. Many in African American and other minority populations do not view an appointment directive as relevant, nor do they regard a DNR order as a summative value statement (Cox et al., 2006). Disinterest in creating an advance directive may reflect a present-day rather than a future orientation, and unwillingness to write about, speak of, or plan for death is a pervasive cultural influence on decisions not to engage in ACP. Likewise, deference to physician authority, the family's role in protecting the patient from the burdens of life-and-death decision-making, and spiritual obligations or beliefs can exert a powerful influence on the willingness to address future healthcare.

Studies indicate different life-sustaining treatment preferences and decision-making contexts among racial and ethnic groups (Cox et al., 2006). Overall, Asian and Hispanic patients tend to prefer family-centered decision-making, in contrast to White and African American patients' preference for patient-directed decision-making (Kwak & Haley, 2005). Many studies have shown that White patients are more comfortable discussing treatment preferences, executing an advance directive, refusing certain life-sustaining treatments, and appointing healthcare agents than Black or Hispanic patients (Hopp & Duffy, 2000). Much of the reluctance of minority populations can be traced back to a regrettable history of exploitation in the clinical and research settings. Advance directive completion is more concentrated among White patients with higher education and income levels than among Black and Hispanic patients with low-income levels and less than a high school education (Mezey et al., 2000). In comparison with White patients, Latino patients are less likely to complete an advance directive or communicate their preferences, even though there are no other differences between the groups with regard to advance directive preferences (Froman & Owen, 2005).

In contrast, African American patients have been shown more likely to want life-sustaining treatments to forestall death. The literature reveals that some African American patients perceive advance directives as a legal way to deny access to treatment and care and tend to be more skeptical about the healthcare system than Mexican Americans and Euro-Americans (Perkins, Geppert, Gonzales, Cortez, & Hazuda, 2002). Among African American patients, spirituality and beliefs that conflict with palliative care goals, views of suffering, death and dying, and mistrust of the healthcare system discourage creation of advance directives (Bullock, 2006; Gerst & Burr, 2008; Johnson, Kuchibhatla, & Tulsky, 2008; Morrison, Zayas, Mulvihill, Baskan, & Meier, 1998). An intervention study using same-race peer mentors to discuss ACP with dialysis patients demonstrated a significant positive effect on Black patients but not on White patients. Positive outcomes included greater comfort in discussion, increased completion of advance directives, and enhanced feelings of well-being (Perry et al., 2005).

Cultural assimilation, as well as diversity, makes even basic assumptions about why people do and do

not create advance directives very difficult. When patients and healthcare professionals are from different ethnic backgrounds, the value systems that inform ACP and decision-making may conflict, often creating ethical and interpersonal tensions (Gao, Sun, Ko, Kwak, & Shen, 2015). Older Japanese American patients in the United States have been shown to prefer making their own decisions about forgoing life-sustaining measures, whereas older Japanese patients residing in Japan tend to defer decision-making to their physicians and families (Matsui, Braun, & Karel, 2008). Subtle themes that resonate with elder Japanese patients include feelings about being a burden to others, family obligations to support the dying person, and the overall utility of an advance directive as a means to reduce conflict without being intrusive (Bito et al., 2007). High religiosity, strong family decision-making history, and belief that the family should support the patient's wishes have been negatively correlated with advance directive creation in many cultural groups, including patients of Bosnian (Searight & Gafford, 2005), Asian Indian (Doorenbos & Nies, 2003), and Malaysian heritage (Htut, Shahrul, & Poi, 2007). Predictors of advance directive completion for multiethnic urban seniors include what investigators called "modifiable factors," such as an established relationship with a primary care physician and their doctor's willingness to initiate the ACP discussion, being knowledgeable about ACP, recognizing the family role in decision-making, and prior experience with decisions about mechanical ventilation (Morrison & Meier, 2004).

NURSES' ROLES IN ACP

All capable adult patients, regardless of their gender, religion, socioeconomic status, diagnosis, or prognosis, should be engaged in discussion about ACP and provided with information and assistance in creating advance directives. Rather than focusing on "The Conversation," these discussions should occur regularly as part of routine healthcare. Unlike interviews, they are most effective as patient-centered exchanges of information between patients and their care professionals.

Nurses have an essential role in assessing their patients' understanding of ACP and its importance at every age and stage of health. They can be crucial in reframing ACP as a way for responsible adults to control their healthcare future, rather than something reserved for the end of life. Providing accurate information about advance directives, the right to refuse as well as consent to treatment, palliative care, and hospice can counteract misinformation and apprehension about measures that permit rather than promote death. Oncology nurses tend to be more knowledgeable about advance directives than about the PSDA and the relevant laws in their respective states. They reported lacking confidence in their knowledge and ability to assist patients in creating advance directives (Jezewski et al., 2005). The ability to accurately distinguish treatment refusal and treatment withdrawal, assisted dying, and euthanasia was associated with being college educated, White, and having had prior experience as a healthcare agent for another person (Silveira, DiPiero, Gerrity, & Feudtner, 2000). They reported viewing their role as patient advocates, especially for adequate pain management at the end of life, despite knowing that it may hasten death.

Patients have reported that they complete advance directives to ease their family's financial and emotional burden and facilitate decision-making. They want to discuss ACP, including end-of-life care, but they expect their healthcare professionals to initiate these discussions. Indeed, ACP discussions between patients and their primary care physicians were found to be a statistically significant predictor of patient satisfaction with their primary medical doctors (Tierney et al., 2001). Community-dwelling older patients receiving care in a general medical clinic were more likely to create an advance directive when they had received ACP information by mail before their appointments and their physicians had received a reminder to discuss ACP. Patients in the control group, whose physicians had received only a reminder to document having asked their patients whether they had advance directives, were less likely to create directives (Heiman, Bates, Fairchild, Shaykevich, & Lehmann, 2004).

When medical residents caring for hospitalized older adults were surveyed about their attitude, skills, and knowledge regarding ACP, they were found to have incomplete, often inaccurate, understanding of patients' decision-making processes, which influenced their willingness to have ACP discussions (Gorman, Ahern, Wiseman, & Skrobik, 2005). Training in ACP not only improved the residents' knowledge of and comfort in discussing advance directives, but also positively influenced patients' interest in creating directives (Alderman, Nair, & Fox, 2008). Case managers reportedly vary in their knowledge about ACP, as well as their skills, response to family involvement and patient receptivity, and the ACP support they provide patients with (Black & Fauske, 2007). Physicians have found advance directives that address hospitalization and emergency treatment to be most useful, but they also report that these directives are not always available, especially

in emergency departments (Cohen-Mansfield & Lipson, 2008; Weinick, Wilcox, Park, Griffey, & Weissman, 2008).

A persistent myth, especially in minority populations, and one influenced by a history of abuse and denial of healthcare, is that an advance directive signals "do not treat," "withdraw life-sustaining measures," or, in some instances, "provide all interventions to keep me alive." Another pervasive belief is that, as soon as care professionals take possession of an advance directive, all its provisions, including discontinuing life-sustaining measures, will be implemented. This may explain why families will often acknowledge that the patient has an advance directive but not bring it to the care-providing facility until the end of life is near. Families, agents, and other surrogates should be helped to understand that the patient's preferences and instructions are applicable only in the indicated clinical circumstances.

Some patients erroneously believe that a lawyer is needed to execute an advance directive and that each state has only one specific advance directive document that must be used. In fact, state-approved directives may vary slightly, and individuals need only ensure that their directives are consistent with the approved model in their respective states. Absent an appointed healthcare agent or alternate, the default surrogate decision-maker is drawn from a state-approved hierarchy of family members authorized to serve as authorized healthcare surrogates. Typically, the list runs from those in closest relation to the individual to those more distantly related. This reflects the recognition in tradition and law that family plays a central role in making important decisions and the presumption that family is likely to know the individual's goals, values, and preferences. The reality in many cases is that families disagree or might be unaware of the patient's wishes. Nurses are in a position to identify potential family conflict and to act to mitigate the effects of misinformed or delayed treatment decisions.

The language of some advance directives can be confounding, especially for those with limited literacy. Randomized to a standard advance directive form (12th-grade reading level) or one that had been modified to address literacy needs (fifth-grade reading level with graphics), most English- and Spanish-speaking patients preferred the modified form, resulting in a greater number of completed advance directives in the experimental group (Sudore et al., 2007). Most community-dwelling older adults were found to understand the purposes of various treatments but understood less about potential outcomes, and vague terms, such as, *improvement* or *vegetable*, were idiosyncratically interpreted (Porensky & Carpenter, 2008).

ACP INTERVENTIONS AND STRATEGIES

One way for nurses to begin discussion about ACP when caring for older adults is to engage the patient and/or healthcare agent in discussion about the quality of life valued by the patient, the importance of preserving or prolonging life, and how the patient's illness (and, ultimately, death) will affect others emotionally, financially, and in other significant ways. Some patients might want to focus on the quality of living, whereas others, nearing the end of life, may target the quality of their dying. Some might want to talk about where and from whom they prefer to receive care, including at the end of life. Some may fear their dependence on others, whereas some may find that inevitability more tolerable. Those considering hospice may specify a preference for receiving those services at home or an inpatient facility. Patients, families, agents, and others important to the patient might need encouragement and support in expressing what they each fear most and what will be important as death approaches.

Communication About ACP

Under state laws, The Joint Commission standards, and patient bills of rights, patients have the right to have a qualified interpreter translate and transmit their discussions with their healthcare professionals. The interpreter may be the only person who recognizes subtleties in language, signaling that patients and their families may have a totally different understanding than the care team of words like *health, illness, improvement,* and *decline*; what a treatment is expected to accomplish; and how dying and death are acknowledged clinically and culturally. If ACP or advance directives are associated with end of life, they are likely to be resisted as topics of conversation. If telling or contemplating "bad news" is culturally prohibited, it may be difficult to discuss end-of-life planning. Sensitive terms and concepts are not value neutral; nuance and syntax can make all the difference. Although a translator may provide literal word-for-word translation, an interpreter communicates fact and nuance, explanation and rationale.

Families should not be responsible for communicating between or among languages. Deliberately or inadvertently, facts may be omitted, shaded, or emphasized to protect or influence patient decisions. If it is difficult to translate medical terms and concepts from English to English (i.e., medical jargon to lay language), it is infinitely harder to do it while bridging language and cultural differences. Families should be reassured that their most important job is providing support and advice, which is why The Joint Commission standards and hospital policies require trained interpreters when patients are more comfortable in another language.

CASE STUDY 17.1

Mrs. R is an 88-year-old woman, widowed for 22 years, who lived alone with little family contact before her admission to the nursing home 2 years ago. At that time, after consultation with her physician, she consented to an out-of-hospital DNR order. She had several comorbidities, including severe chronic obstructive pulmonary disease (COPD) and chronic renal failure (blood urea nitrogen [BUN] = 58); mild to moderate dementia (Mini-Mental State Exam score of 20/30); mild depression (by Geriatric Depression Scale [GDS] score); and had lost 22 pounds, putting her below her ideal body weight (IBW).

Mrs. R now requires one-person assistance with all personal care needs and bruises easily. Her prognosis is poor, and the goals of care are symptom management with a focus on comfort. She has had multiple hospitalizations for pneumonia, most recently 10 weeks ago, after which she had further weight loss and developed a grade II pressure ulcer on her right hip. She is receiving the standard meds for COPD, anxiety, sleeping problems, and appetite stimulation. Recent discussion about her quality of life by the interdisciplinary team noted that she no longer attends parties, Sabbath candle lighting, or discussion groups, all of which she used to enjoy. Beginning 6 months ago, Mrs. R has seemed unable to make decisions about her healthcare, and her decisional capacity appears to fluctuate in relation to her O_2 saturation.

Five years ago, Mrs. R executed a living will that stipulated "aggressive comfort care, including ventilatory support" in the event she experienced respiratory distress, but no documentation addresses her preferences about being hospitalized if she has another COPD exacerbation, which is to be expected given the trajectory of the disease.

Two days ago, Mrs. R began to have stertorous breathing, a nonproductive cough, and episodes of diaphoresis. She appears exhausted, her solid food intake is minimal, and she becomes very dyspneic when taking small sips of fluid. A chest x-ray was equivocal and will be repeated today. Her current vital signs are: temperature: 100.8° F, pulse oximetry: 82%; pulse and blood pressure within normal limits. The nursing home has the resources to provide oxygen, intravenous (IV) fluids, and antibiotics.

Discussion

This case is complicated by the instructions in the living will, which illustrate the weaknesses of the instruction directive. These instructions were written before Mrs. R's disease trajectory had reached a terminal state; they may not be applicable to her clinical condition or in her best interest because disease-directed measures are likely to be more burdensome than beneficial. How and by whom will the balance of benefits and burdens of hospitalization be assessed against remaining in the nursing home for palliative care? What was Mrs. R envisioning when she created her living will, and what would she decide if she could do so now?

The nursing assistants, who have been very involved in Mrs. R's care, believe that she should be hospitalized, based on their knowledge of and affection for her. The professional staff argue from prognostications about the burdens and risks of ventilatory support, especially if it becomes permanent, as well as the likely multiple skin breakdowns that will occur if she is hospitalized. The standard of substituted judgment used by surrogates is not available because the living will is silent about her goals, values, and desired quality of life, and no close or trusted person is available to provide insight into what she would decide in the current situation. The best interest standard asks what a surrogate thinks would promote Mrs. R's well-being. At this point, the benefit–burden risk assessment becomes a critical part of the discussion.

However, Mrs. R's living will does not provide the necessary information or insight to confidently make decisions on her behalf. It stipulates "aggressive comfort care," without explaining what that meant to her. It mentions "ventilatory support" in the event of respiratory distress but does not specify whether she would find it tolerable as a long-term intervention or agree to it only as a temporary measure.

Mrs. R would have been much better served had she completed an appointment directive, authorizing a healthcare agent and alternate to make these decisions in real time after consultation with her physicians. Understanding her goals, values, and preferences, her agent would have been able to address the following questions: What is the potential for improvement or return to baseline? Would intubation prolong a life she would find acceptable or merely prolong her dying? Would intubation and hospitalization be responding to

(*continued*)

CASE STUDY 17.1 (*continued*)

Mrs. R's needs or institutional anxiety? To what extent can the facility provide a quality of life with comfort and safety that might meet Mrs. R's interests at this time, even if this life quality were different from that which the staff previously enjoyed with her? In what way would hospitalization benefit Mrs. R and how might it harm her? What role might the administration of morphine play in relieving symptoms of air hunger, even though it risks shortening life? Mrs. R's agent would be authorized to make decisions that her instructions do not address or to even depart from instructions that do not apply to her current medical condition.

After discussion with an ethics consultant during an interdisciplinary meeting that included Mrs. R's family, the nursing home medical and nursing directors, the nursing assistants responsible for her care, and the director of social work who knows her well, a consensus decision was made not to hospitalize Mrs. R. The decision was guided by the clinical facts, the nursing home's ability to provide the necessary resources, Mrs. R's stated wishes for "aggressive comfort care," the likely downward trajectory of COPD, and reflection about Mrs. R's deteriorated condition after each hospitalization. Mechanical ventilation was determined likely to be more of a burden than a benefit at this point in her illness, one that would be inconsistent with a focus on comfort, which could be provided in familiar surroundings with judicious use of medication and intensive nursing care.

This case illustrates that ACP is not a static one-time event. Whether an individual's wishes and preferences are expressed in an advance directive or verbally, they must be documented and periodically reviewed whenever there is a change of clinical condition, life style, healthcare agent, goals, values, and/or preferences. The ability to reach consensus through discussion that addressed the concerns of all caring professionals while keeping the focus resident centered was key to arriving at a clinically and ethically principled, goal-driven plan of care.

SUMMARY

Discussions about ACP should occur over time, at every age and stage of health. Having such discussions shortly after hospitalization for an acute event can refocus on the goals of care and indicate where care can most effectively be provided (Happ et al., 2002). Rather than choosing specific interventions or technologies of life-sustaining treatment, nurses can help refocus the discussion with patients or residents, families, and agents on the health goals, values, and preferences; the characteristics of an acceptable quality of life, including comfort and function; and valued life activities. Among the things that nurses do better than anyone else is help individuals, their families, and other surrogates create a decision-making framework that enables care planning that most authentically and effectively meets patient/resident-centered needs and interests.

An environment conducive to meaningful ACP discussions requires appropriate time and location. An emergency admission is not an ideal time for thoughtful deliberation about these important matters. Distribution of advance directive forms without discussion, commonly done in hospital admission offices at the time of an elective admission, does not provide sufficient information or assistance in completing them, which is why nursing homes tend to wait 2 weeks before discussing advance directives with new residents. Many studies report that the most effective intervention for ACP is verbal information exchanged over several interactive sessions with healthcare professionals (Bravo, Dubois, & Wagneur, 2008; Tamayo-Velázquez et al., 2010), including the opportunity to ask questions (Jezewski, Meeker, Sessanna, & Finnell, 2007). Passive use of printed material and lack of opportunity to receive assistance in understanding directives do not promote their creation (Ramsaroop, Reid, & Adelman, 2007). Ultimately, however, the most effective way to encourage ACP is to reframe the perceptions of healthcare professionals and the lay public, disconnecting ACP from end of life and making it an integral part of routine healthcare throughout the entire therapeutic continuum.



NURSING STANDARD OF PRACTICE

Protocol 17.1: Advance Directives

I. GUIDING PRINCIPLES

1. All decisionally capable persons have the right to decide, in consultation with their healthcare providers, what will be done with their bodies.
2. All individuals are presumed to have decision-making capacity unless and until they are determined to lack this capacity.
3. All adults who can participate in a conversation, either verbally or through alternate means of communication, should be offered the opportunity to engage in ACP and document their healthcare goals and preferences.
4. Healthcare professionals can promote enhanced quality of life for older patients and residents, including care at the end of life, by encouraging ACP and the creation of advance directives.

II. BACKGROUND

A. Education about ACP and advance directives
   1. Patients clearly indicate that they want information about advance directives.
   2. Patients indicate that they want nurses and physicians to engage them in discussions about ACP and advance directives.
   3. Despite indications of interest in ACP, only 19% to 36% of Americans have completed an advance directive.
   4. Documentation of treatment preferences is insufficient unless individuals discuss their health goals and values with their healthcare providers, families, and appointed healthcare agents.

B. Advance directives
   1. Enable capable individuals to designate and legally appoint trusted persons—a healthcare agent/representative/proxy/POA and one or more alternates—who will be authorized to make healthcare decisions on behalf of the individuals during any period of temporary or permanent decisional incapacity.
   2. Ensure legal mechanisms that enable capable individuals to articulate and document their health goals and preferences regarding the kind of medical care they would or would not want in specified clinical circumstances if they lack the capacity to make or communicate their decisions.
   3. Provide guidance for healthcare professionals, families, and surrogate decision-makers about healthcare decisions that reflect an individual's goals, values, and preferences.
   4. Provide immunity from civil and criminal liability for healthcare professionals, families, and appointed healthcare agents who follow in good faith the provisions of advance directives.

C. Types of advance directives
   1. An *appointment directive* (also known as a healthcare proxy or DPOAHC) enables a decisionally capable individual to designate and legally appoint trusted persons—a healthcare agent/representative/proxy/POA and one or more alternates—who will be authorized to make healthcare decisions on behalf of the individual during any period of temporary or permanent decisional incapacity. An appointment directive enables the agent or alternate to confer with the care team in real time and respond to clinical conditions that are changing or were unanticipated by the now-incapacitated individual. Because the agent and alternate will have the same decisional authority as the individual to start, stop, or forgo treatment, the appointment directive is the preferred type of advance directive.
   2. An *instruction directive* (also known as a living will) enables a decisionally capable individual to provide instructions about medical treatment that would or would not be acceptable in specified clinical circumstances, typically at the end of life. The provisions of a living will are limited to what the individual *thought* that he or she *might want* in clinical circumstances that *have not yet occurred.*

(*continued*)

Protocol 17.1: Advance Directives (*continued*)

D. An instructional or medical directive is intended to compensate for the weaknesses of living wills by posing hypothetical medical scenarios and asking the individual to indicate specific medical interventions that would or would not be acceptable. They suffer from the same limitations as living wills.
E. Verbal advance directives are honored in some states if there is clear and consistent evidence of the capable individual's preferences for care in current specific clinical circumstances. Legal rules governing oral advance directives vary by state.

III. ASSESSMENT PARAMETERS

A. All decisionally capable adults, regardless of age or health status, should be engaged in discussion about ACP and asked whether they have created advance directives. If they have an advance directive, a copy should be requested for the medical record. If they have not created an advance directive, information and assistance should be offered.
B. Discussions about ACP and advance directives should be an integral part of routine healthcare throughout the arc of the healthcare continuum.
C. Discussions about advance directives should be conducted in the patient's preferred language to promote the exchange of information, questions, and answers.
D. Discussions should be conducted with sensitivity to the individual's health status, capacity to understand and process information, and degree of interest in participating in care planning.
E. Because capacity is decision specific rather than global, individuals who have been determined to lack the capacity to make specific decisions may still have the capacity to make less complex decisions or to designate an agent and alternate(s) to make healthcare decisions on their behalf.
F. When an advance directive has been completed:
    1. A copy of the document should be accessible in real time in the patient's current medical record.
    2. The primary care doctor should have a copy of the directive and be familiar with its provisions.
    3. The appointed healthcare agent and alternate agent(s) should have copies of the document and be familiar with its provisions.
    4. The directive should be reviewed periodically by the individual in consultation with the primary care doctor to determine whether it reflects the patient's current health status and preferences.

IV. CARE STRATEGIES

A. Nurses should assist patients/residents, appointed agents, and families in addressing ACP, including end-of-life care issues.
B. Patients should be encouraged to discuss their health goals, values, preferences, and concerns with their primary care physician, family, or other trusted surrogates.
C. In some instances, patients/residents may be more willing to discuss their health goals, values, preferences, and concerns with a nurse or clergy than a family member or other surrogate, and should be supported in doing so.
D. Patients should be assessed for their capacity to understand and process the provided information about their health status, prognosis, and treatment options.
E. Nurses must be mindful of and sensitive to the factors of race, culture, ethnicity, and religion that can influence the healthcare decision-making process. The fact that patients from non-Western cultures may not subscribe to Western notions of autonomy does not mean that these patients may not want to talk about their treatment preferences or concerns, or that they would not have conversations with their families about these matters.
F. Patients'/residents' decisions not to complete an advance directive must be respected, with the understanding that these decisions will be revisited at a later time. They should be reassured that they will not be abandoned or receive substandard care if they elect not to formulate an advance directive at this time.

(*continued*)

Protocol 17.1: Advance Directives (*continued*)

G. Nurses should be aware of the institution's mechanisms for resolving conflicts between and among the patient/resident, family members, and the appointed healthcare agent or alternate, and should assist the parties in using these resources to achieve resolution.
H. Nurses should be aware of the professional(s) responsible for managing introduction, explanation, assistance in creating, and storage of advance directives in their institution. These responsibilities may include checking with the patient/resident to ensure that a copy of the advance directive has been given to the primary healthcare provider(s), the appointed agent and alternate(s), and that the patient/resident is carrying a wallet-size card that includes advance directive and agent/alternate contact information.

V. EVALUATION OF EXPECTED OUTCOMES

To determine whether implementation of this protocol has influenced the type, as well as the number, of advance directives created, changes should be measurable and contribute to the facility's ongoing quality-improvement program. Special attention should be paid to the following:

A. Documentation in medical records of:
   1. Whether patients have been engaged in discussion about ACP and advance directives
   2. What was learned during the discussions about patients' health goals, values, preferences, and concerns
   3. Whether patients have completed advance directives
B. Presence of advance directives in patients' medical records, including
   1. Whether copies of patients' advance directives are in their medical records
   2. Whether the directives are easily accessible for reference by the care team
C. The use of trained or certified interpreters to assist staff in ACP discussions with patients whose primary language is not English
D. The number of requests by nurses for ethics committee consultation regarding questions, concerns, or conflicts related to advance directives

ABBREVIATIONS

ACP	Advance care planning
DNR	Do not resuscitate
DPOAHC	Durable power of attorney for healthcare
POA	Power of attorney

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RESOURCES

Advance Directives by State
https://www.nhpco.org/patients-and-caregivers/advance-care-planning/advance-directives/downloading-your-states-advance-directive/

American Nurses Association (ANA)
www.nursingworld.org

ANA Center for Ethics and Human Rights
https://www.nursingworld.org/practice-policy/nursing-excellence/ethics/

- Code for Nurses with Interpretive Statements
- Position statements on assisted suicide and active euthanasia, do-not-resuscitate, comfort and relief, Patient Self-Determination Act
- Selected bibliographies on ethical issues such as end-of-life decisions, forgoing artificial nutrition and hydration, nursing ethics committees, and assisted suicide and euthanasia

American Society for Bioethics + Humanities
www.asbh.org

Caring Connections
A program of the National Hospice and Palliative Care Organization (NHPCO) includes Partnership for Caring, Inc. (formerly, Choice in Dying)
http://www.caringinfo.org

- Questions and answers: advance directives and end-of-life decisions; medical treatments and your advance directives; artificial nutrition and hydration and end-of-life decision-making; do-not-resuscitate orders and end-of-life decisions
- Video: *Whose Death Is It, Anyway?* (PBS special)

End-of-Life Nursing Education Consortium (ELNEC), American Association of Colleges of Nursing
https://www.aacnnursing.org/ELNEC

Five Wishes
https://fivewishes.org

Palliative Care Network of Wisconsin: Fast Facts and Concepts
https://www.mypcnow.org/fast-facts/

Washington State Medical Association, Physician's Orders for Life-Systaining Treatment (POLST)
https://wsma.org/WSMA/Resources/Advance_Care_Planning/POLST/WSMA/Resources/Advance_Care_Planning/POLST/POLST.aspx?hkey=7abf485a-3dfa-472f-8cf2-1a274562150f

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Clinical Interventions

III

Chapter 18 Preventing Functional Decline in the Acute Care Setting

Chapter 19 Late-Life Depression

Chapter 20 Delirium: Prevention, Early Recognition, and Treatment

Chapter 21 Dementia: Assessment and Care Strategies

Chapter 22 Pain Management in the Older Adult

Chapter 23 Assessing, Managing, and Preventing Falls in Acute Care

Chapter 24 Reducing Adverse Drug Events in the Older Adult

Chapter 25 Urinary Incontinence in the Older Adult

Chapter 26 Prevention of Catheter-Associated Urinary Tract Infection

Chapter 27 Physical Restraints and Side Rails in Acute and Critical Care Settings

Chapter 28 Preventing Pressure Injuries and Skin Tears

Chapter 29 Optimizing Mealtimes for Persons Living With Dementia

Chapter 30 Disorders of Sleep in the Older Adult

Chapter 31 The Frail Hospitalized Older Adult

Chapter 32 HIV Prevention and Care for the Older Adult

Chapter 33 LGBTQ Perspectives for Older Adult Care

Preventing Functional Decline in the Acute Care Setting*

Marie Boltz, Barbara Resnick, and Elizabeth Galik

18

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Discuss the functional trajectory of the hospitalized older adult.
2. Identify risk factors for functional decline.
3. Describe the influence of the care environment on physical function.
4. Discuss systemic interventions to optimize physical function of hospitalized older adults.

OVERVIEW

As described in Chapter 10, Assessment of Physical Function in the Older Adult, functional decline is a common complication in hospitalized older adults, even in those with good baseline function (Gill, Allore, Gahbauer, & Murphy, 2010), and frequently begins prior to hospitalization (Boltz, Chippendale, Lee, & Trotta, 2018). Loss of physical function is associated with poor long-term outcomes, including increased likelihood of being discharged from a hospital to a nursing home setting (Fortinsky, Covinsky, Palmer, & Landefeld, 1999), increased morbidity and mortality (Rozzini et al., 2005), increased rehabilitation costs, and decreased long-term functional recovery (Boyd, Xue, Guralik, & Fried, 2005; Boyd et al., 2008; Volpato et al., 2007). The immobility associated with functional decline results in infections, pressure ulcers, falls, and nonelective rehospitalizations (Gill, Allore, & Guo, 2004).

The promotion of function is a basic gerontological tenet, and functional recovery is perceived by older adults as a quality outcome of hospitalization (Boltz, Capezuti, Shabbat, & Hall, 2010). Moreover, older adults and their families have the expectation that a hospital stay and the associated bed rest will not result in functional decline but instead promote recovery and the resumption of normal roles and activities post hospitalization. Although the acute care setting, with its focus on correcting the admitting medical problem, typically prioritizes nursing tasks, such as medication administration, coordination of care, and documentation over the promotion of function as a clinical outcome, there is growing awareness of the need to attend to the functional status of the hospitalized older adult (Nolan & Thomas, 2008; Resnick, Galik, Wells, Boltz, & Holtzman, 2015). This chapter addresses the trajectory of change in physical function during the acute care stay, the factors associated with functional decline, and function-promoting

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

interventions that can potentially modify these factors. Finally, a clinical practice protocol to guide a unit-level approach to function-focused care (FFC; Protocol 18.1: Function-Focused Care Interventions) is provided.

PHYSICAL FUNCTION AS A CLINICAL MEASURE

Functional decline may result from the acute illness and can begin from preadmission and continue after discharge. In a seminal study, Covinsky et al. (2003) evaluated the changes in the performance of activities of daily living (ADL) prior to and after hospitalization of older adults with medical illness. More than one third declined in ADL function between baseline (2 weeks before admission) and discharge. This included the 23% of patients who declined between baseline and admission, and failed to recover to baseline function between admission and discharge, and the 12% of patients who did not decline between baseline and admission but declined between hospital admission and discharge. Older adults aged 85 years and older comprised the age cohort that demonstrated the most functional loss, with rates exceeding 50%.

In their examination of the functional trajectory of hospitalized older adults, Wakefield and Holman (2007) also assessed function at baseline, as well as on admission and day 4. The largest change in functional status was a decline in ADL from baseline to the time of admission; ADL did not return to baseline during the first 4 days in the hospital. The older adults whose ADL scores declined during hospitalization (regardless of the baseline status) were more likely than others to die within 3 months of discharge.

The results of these studies demonstrate that ADL status is unstable in a large percentage of older adults during an acute illness (Covinsky, Pierluissi, & Johnston, 2011). Consequently, Covinsky et al. (2003) suggest that an older adult's functional trajectory is a critical "vital sign" and an important prognostic marker and indicator to guide care delivery and transitional care. Baseline function may serve as a useful benchmark when developing discharge goals. Older adults who have sustained loss of ADL function prior to admission would, ideally, have rehabilitation as a goal of their hospital care. For those patients who have acquired ADL disability from admission to discharge, aggressive postacute rehabilitation plans could be mobilized with the goal of promoting return to baseline function.

PATIENT RISK FACTORS FOR FUNCTIONAL DECLINE

Intrinsic vulnerabilities to functional decline include prehospitalization functional status (McCusker, Kakuma, & Abrahamowicz, 2002; Zisberg et al., 2011), the presence of two or more comorbidities, and having had a hospitalization or emergency department visit in the previous 12 months (Covinsky et al., 2011; McCusker et al., 2002). Symptoms of depression both before and during hospitalization have also been associated with dependence in basic ADL at discharge and 30 and 90 days after discharge (Covinsky, Fortinsky, Palmer, Kresevic, & Landefeld, 1997). Cognitive impairment, including delirium, increases the risk of functional decline in the older adults during and after hospitalization (Boltz, Resnick, Capezuti, Shuluk, & Secic, 2012; Inouye, Schlesinger, & Lydon, 1999; McCusker et al., 2002).

The aggregate number of geriatric conditions present at hospital admission determines a patient's individual risk of functional deterioration (Buurman, van Munster, Korevaar, de Haan, & de Rooij, 2011). Polypharmacy, fall risk, use of an indwelling urinary catheter, urinary incontinence, vision impairment, and hearing loss (Buurman et al., 2012) are associated with a high risk of functional decline that persists 12 months after hospitalization. The patient's fear of falling (Boltz, Resnick, Capezuti, & Shuluk, 2014), self-efficacy, outcome expectations (McAuley et al., 2006), and views on physical activity during hospitalization (Boltz, Capezuti, & Shabbat, 2011; Brown et al., 2007) influence the level of engagement in physical activity and mobility in older adults in general and thus may influence acute care functional outcomes.

THE CARE ENVIRONMENT AND FUNCTION

A social ecological perspective assumes that the physical, social, and organizational environments contribute to patient outcomes, including functional measures (Galik, 2010). The hospital environment, with its emphasis on biomedical interventions for acute medical and surgical problems, is challenged to "fit" the complex physical, social, and psychological circumstances that predispose the hospitalized older adult to functional decline. Parke and Chappell (2010) recommend that the older adult–hospital environment fit be viewed through four dimensions: care processes, social climate, policy and procedure, and environment.

Hospital Care Processes

Hospitalization is associated with significantly greater loss of total, lean, and fat mass as well as strength in older persons. These effects appear particularly important in persons hospitalized for 8 days or more per year (Alley et al., 2010). Hospitalization itself may also pose risks for functional decline because of the deleterious effects of bed rest and restricted activity (Gill, Allore, Holford, & Guo, 2004).

Bed rest results in loss of muscle strength and lean muscle mass (Kortebein, Ferrando, Lombeida, Wolfe, & Evans, 2007), decreased aerobic capacity (Kortebein et al., 2008), diminished pulmonary ventilation, altered sensory awareness, reduced appetite and thirst, and decreased plasma volume (Creditor, 1993; Harper & Lyles, 1988; Hoenig & Rubenstein, 1999). Brown, Redden, Flood, and Allman (2009) describe bed rest and low mobility as an "underrecognized epidemic." In their study of hospitalized older veterans, they used accelerometers to measure activity level. Despite the fact that the majority were able to walk independently (78%), 83% of the measured hospital stay was spent lying in bed.

Another study (Brown, Friedkin, & Inouye, 2004) that evaluated the outcomes associated with mobility found that bed rest in older adults was ordered at some point during hospitalization in 33% of the patients. Almost 60% of the observations indicated no documented medical reason for the bed rest. Physicians' orders for bed rest were present on the date of bed rest for only 92 (52%) of the 176 observations. Low mobility (defined as having an average mobility level of bed rest or bed to chair for the entire hospitalization) was compared to high mobility (ambulation two or more times with partial or no assistance, on average). The low mobility group had a statistically significant higher rate of ADL decline, new institutionalization, and death. Similarly, Zisberg et al. (2011) found that low versus high in-hospital mobility was associated with worse functional status at discharge and at 1-month follow-up, even in older adults who were functionally stable prior to admission.

Doherty-King, Yoon, Pecanac, Brown, and Mahoney (2014) shadowed RNs for two to three 8-hour periods using handheld computer tablets to collect data on frequency and duration of mobility events (standing, transferring, walking to and from the patient bathroom, walking in the patient room, and walking in the hallway) that occurred in the nurse's presence. They found that nurses infrequently initiated mobility events for hospitalized older patients and most often engaged patients in low-level activity (standing and transferring). Other research indicated that illness severity and reason for admission did not explain low levels of mobility, measured by a step-activity monitor (Fisher et al., 2011). A recent study using accelerometry indicated that low mobility often persists; 64% of patients demonstrated no change in the first 2 weeks post discharge, and increase in ambulation frequency was positively correlated with higher Katz Activities of Daily Living Index scores, gait speed, and lower fear of falls score (King et al., 2019).

Care processes associated with immobility include physical restraints and "tethering devices," such as catheters, intravenous lines, and medication, which contribute to delirium and/or cause sedation (Boltz, Resnick, Capezuti, Shabbat, & Secic, 2011; Brown, Roth, Peel, & Allman, 2006; Resnick et al., 2016). Additionally, there is a tendency for staff to perform ADL for patients who could participate or do it for themselves, placing older adults at risk for loss of self-care ability (Boltz, Resnick, et al., 2011). This "doing for" as opposed to promoting functional independence is often associated with a lack of understanding of the patient's underlying capability (Resnick, Galik, Boltz, & Pretzer-Aboff, 2011). Interprofessional rounds support a functional approach, with the goal of preventing functional decline and discharging the older adult to the least restrictive setting. Key elements to be addressed include functional assessment (baseline, admission, current ADL status, and physical capability), alternatives to the use of potentially restrictive devices and agents, and a plan for progressive mobility and engagement in ADL (Boltz, Resnick, Chippendale, & Galvin, 2014). Additionally, protocols that support delirium prevention and abatement, and optimize nutrition, particularly regarding protein intake, while minimizing adverse effects of selected procedures (e.g., urinary catheterization) and medications (e.g., sedative–hypnotic agents) contribute to positive functional outcomes (Kleinpell, 2007).

Social Climate

Leadership commitment to rehabilitative values is essential to support a social climate conducive to the promotion of function (Boltz, Capezuti, et al., 2011; King & Bowers, 2013). Older adults have identified that respectful, encouraging communication and engagement in decision-making is important to facilitating independence (Boltz et al., 2010; Jacelon, 2004). Staff education that addresses the physiology, manifestations, and prevention of hospital-acquired deconditioning, assessment of physical capability, rehabilitative techniques, use of adaptive equipment, minimizing risk of sarcopenia, interprofessional collaboration, and communication that motivates are required to support a function-promoting philosophy (Boltz, Capezuti, et al., 2011; Gillis, MacDonald, & MacIsaac, 2008; Resnick, Galik, Boltz, et al., 2011). Nursing staff have also described the need for well-defined roles, including areas of accountability for follow-through for function-promoting activities (Boltz, Capezuti, et al., 2011; King & Bowers, 2011). Clear communication of patient needs among staff and dissemination of data (e.g., compliance with treatment plans and functional outcomes) also support these activities (Resnick et al., 2015).

Policies and Procedures

To foster function-promoting care, policies are needed that clearly define staff roles in assessing physical function and cognition and that implement identified interventions. Other supporting policies address identification and storage of sensory devices (e.g., glasses, hearing aids/amplifiers) and mobility and other assistive devices (Boltz, Capezuti, et al., 2011; Boltz, Resnick, et al., 2011). Indicative of the low priority placed on mobility promotion is the common process of restricting the patients' ability to walk to tests and procedures within the hospital.

Environment

Acute care environments directly impact patient function and physical activity. The bed is often the only accessible furniture in the room, and the height of toilets, beds, and available chairs does not always fall within the range in which transfers and function are optimized (Capezuti et al., 2008). Accessible functional seating and safe walking areas with relevant destination areas promote functional mobility. Adequate lighting, nonglare flooring, door levers, and handrails (including in the patient room) are basic requirements to promote safe mobility (Betrabet Gulwadi & Calkins, 2008; Ulrich et al., 2008). Environmental enhancements to promote orientation include large-print calendars and clocks (Kleinpell, 2007) and control of ambient noise levels, especially in critical care units (Gabo, 2003).

INTERVENTIONS TO PROMOTE PHYSICAL FUNCTION

Support for Cognition

Cognition and physical function are closely linked in older adults. The ability to engage in ADL and physical activity requires varying types and degrees of cognitive capability, including memory, executive function, visual–spatial ability, and praxis. Therefore, an appraisal of the older adult's cognition (baseline, admission, and ongoing) is an essential activity associated with promoting physical function (see Chapter 9, Assessing Cognitive Function in the Older Adult) in order to develop, implement, and evaluate a plan to promote the maximum physical functioning (Coelho, Santos-Galduroz, Gobbi, & Stella, 2009; Yu, Kolanowski, Strumpf, & Eslinger, 2006).

Interventions to prevent, detect, and manage delirium are associated with improved cognition and are thus integral components of a plan to prevent functional decline (Foreman, Wakefield, Culp, & Milisen, 2001). Liberal visiting hours and familiar items brought in from home (e.g., photos, blankets) provide meaningful sensory input, and, along with control of excessive noise and attention to sleep hygiene, enhance function-promoting interventions (Landefeld, Palmer, Kresevic, Fortinsky, & Kowal, 1995). Diversional activities, such as TV, movies, and word games, are associated with "keeping the mind active" and engagement in self-care and physical activity (Boltz et al., 2010). For patients with cognitive challenges, including dementia, activity kits that include tactile, auditory, and visual items enhance cognitive integration, perceptual processing, and neuromuscular strength as well as providing solace and an opportunity for emotional expression and relief from boredom. Activity kits can include a wide range of items such as audiotapes and nontoxic art supplies. In addition, items such as pieces of textured fabric, clothes to fold, tools, and key-and-lock boards are included for the person with more advanced dementia (McCabe, 2019; Glantz & Richman, 2007). For more information, see Chapter 20, Delirium: Prevention, Early Recognition, and Treatment.

Older adults with cognitive impairment can benefit from function-promoting interventions with demonstrated improvements in physical and cognitive function (Boltz, Chippendale, Resnick, & Galvin, 2015b). An understanding of the person's values, past experiences, and relationships supports meaningful communication to motivate them, along with the use of humor and verbal cues (Galik, Resnick, & Pretzer-Aboff, 2009). In addition, teamwork with other nursing staff, rehabilitative staff, medical providers, and families was considered a key component in facilitating self-care and physical activity (Boltz, Chippendale, Resnick, & Galvin, 2015a; Boltz, Resnick, Chippendale, et al., 2014).

Adapted communication techniques are necessary to accommodate receptive difficulties associated with cognitive impairment, including dementia. This might include the use of external amplification for someone who may not have hearing aids or may not be able to use the hearing aids as well as adapting communication techniques with the patient. The ability to participate in ADLs is often more preserved than clinicians believe, as activities such as washing the face, brushing one's teeth, and walking rely on psychomotor memory, which is preserved even in those with moderate to severe cognitive impairment. Communicating with short simple verbal requests and visual cues, and modeling the activity, can be helpful in promoting independence in ADL (e.g., assisting the person to the sink, setting the person up to brush his or her teeth, handing the person a toothbrush, and modeling the behavior; Resnick, Galik, Boltz, et al., 2011).

Physical Therapy and Exercise

Interventions such as physical therapy and individualized, targeted exercise programs as soon as possible post admission have all been tested as ways in which physical activity could be increased and deconditioning and functional decline in hospitalized older adults prevented. A single-blinded randomized controlled trial was conducted in a tertiary metropolitan hospital involving 180 acute general medical patients aged 65 years or older (Jones et al., 2006). In addition to usual physiotherapy care, the intervention group performed an exercise program for 30 minutes, twice daily, with supervision and assistance provided by an allied health assistant (AHA). In older adults with low admission ADL scores (modified Barthel Index score ≤48), there was improvement in function among individuals exposed to the exercise interventions versus those who were not. Similarly, an individually tailored exercise program to maintain functional mobility, prescribed and progressed by a physical therapist, and supervised by an AHA, provided in addition to usual physiotherapy care, was associated with reduced likelihood of referral for nursing home admissions (Nolan & Thomas, 2008). Despite the known benefit of staying engaged in function and physical activity when hospitalized, a 2007 Cochrane review (de Morton, Keating, & Jeffs, 2007) concluded that, in general, patient participation in these programs has been poor. Challenges to feasibility and implementation of these interventions include competing care demands (e.g., test schedules), illness severity, short hospital stays, a general unwillingness of patients to consent to or actively participate in exercise interventions, and a persistent belief among patients that bed rest will assure recovery (Brown, Peel, Bamman, & Allman, 2006; de Morton, Keating, Berlowitz, Jackson, & Lim, 2007; de Morton et al., 2007; Resnick, Wells, Brotemarkle, & Payne, 2014).

Functional Mobility Programs

Among the most common forms of physical activity encouraged in acute care settings are functional mobility programs. Mobility is conceptualized as a continuum progressing from bedbound to independent walking (Callen, Mahoney, Wells, Enloe, & Hughes, 2004). The benefits of interventions aimed at promoting functional mobility have recently received growing attention. A literature review conducted by Kalisch, Soohee, and Dabney (2013) identified benefits of mobility programs in four areas: (a) physical outcomes (less delirium, pain, urinary discomfort, difficulty voiding, urinary tract infection, deep vein thrombosis, fatigue, and pneumonia, as well as increased walking and ADL performance, and ventilator-free days), (b) psychological outcomes (less depression, anxiety, and symptom distress, as well as increased comfort and satisfaction), (c) social outcomes (improved quality of life and independence), and (d) organizational outcomes (decreased length of stay, mortality, and cost).

Tucker, Molsberger, and Clark (2004) demonstrated the feasibility of a "Walking for Wellness" program that consisted of a patient education program, a screening process to identify patients who would benefit from physical therapy, and daily walking assistance from cross-trained transportation staff. Walking opportunities included "walking trails" marked inside the hospital, with markers placed every 10 feet at the baseboard of the hallways providing a measure of walking distance as well as a visual incentive for patients walking in the halls. Unless otherwise indicated by the medical provider, the goal for participants was to walk in the hallways two to three times a day with trained escorts, nursing staff, family, or friends. Weitzel and Robinson (2004) developed an educational program for nursing assistants on a medical unit that emphasized promoting the functional status of hospitalized elders. Content included therapeutic communication, promotion of functional mobility, skin care, and eating/feeding problems. Discharge destination (home or nursing home) and length of stay were compared for patients before and after implementation. There was a significant reduction in the length of stay (2.4 days) and an increase in the percentage of patients discharged to the home setting.

The positive association between mobility and shorter lengths of stay was also supported in an acute care for elderly (ACE) unit, where ambulation was measured by a step monitor (Fisher et al., 2011). Patients on the ACE unit who had shorter stays tended to ambulate more on the first complete day of hospitalization and had a markedly greater increase in mobility on the second day than patients with longer lengths of stay.

To address motivational issues, Mudge, Giebel, and Cutler (2008) evaluated a functional mobility program enhanced with cognitive interventions. This research team used an individualized, graduated exercise and mobility program with an activity diary, progressive encouragement of functional independence by nursing staff and other members of the multidisciplinary team, and cognitive stimulation sessions in older adults aged 70 years and older on a medical unit. The intervention group had greater improvement in functional status than the control group, with a median modified Barthel Index improvement of 8.5 versus 3.5 points ($p = .03$). In the intervention group, there was a reduction in delirium (19.4% vs. 35.5%, $p = .04$) and a trend toward reduced falls (4.8% vs. 11.3%, $p = .19$; Mudge et al., 2008).

In patients recovering from hip surgery, functional mobility programs are enhanced with measures to prevent postoperative complications. Siu, Penrod, et al. (2006) and Siu, Boockvar, et al. (2006) found that positive processes related to mobilization (including time from admission to surgery, mobilization to and beyond the chair, use of anticoagulants and prophylactic antibiotics, pain control, physical therapy, catheter and restraint use, and active clinical issues) were associated with improved locomotion and self-care at 2 months post discharge. Patients who experienced no hospital complications and no readmissions retained benefits in locomotion at 6 months. Olson and Karlsson (2007) demonstrated that interventions focused on skin care, pain control, and progressive ambulation yielded improved functional discharge outcomes. See Chapter 40, Care of the Older Adult With Fragility Hip Fracture.

Critical Care Initiatives to Prevent Functional Decline

The geriatric imperative to support physical function has also been recognized in critical care, and studies are emerging that examine mobility promotion in the critically ill patient, including older adults. A study conducted in a respiratory intensive care unit (RICU) examined the feasibility of early mobility as well as its safety in six activity-related adverse events: fall to knees, tube removal, systolic blood pressure greater than 200 mmHg, systolic blood pressure less than 90 mmHg, oxygen desaturation less than 80%, and extubation. There were less than 1% activity-related adverse events; the majority of survivors (69%) were able to ambulate farther than 100 feet at RICU discharges (Bailey et al., 2007).

A retrospective cohort study of an interdisciplinary quality-improvement program showed positive results of an early mobility program implemented in a Trauma and Burns Intensive Care Unit. Pre- and postpatient data from the trauma registry showed a decrease in airway, pulmonary, and vascular complications (including pneumonia and deep vein thrombosis) after the early mobility program (Clark, Lowman, Griffin, Matthews, & Reiff, 2013). Another study, led by physical therapists, demonstrated, in a randomized controlled trial, that a daily exercise session using a bedside cycle ergometer in critically ill patients improved 6-minute walking distance, isometric quadriceps force, and the subjective feeling of functional well-being at hospital discharge (Burtin et al., 2009).

Nurse-led mobility protocols have increased the rate of ambulation of patients in critical care units. A multidisciplinary team developed and implemented a mobility order set with an embedded algorithm to guide nursing assessment of mobility potential. Based on the assessments, the protocol empowers the nurse to consult physical therapists or occupational therapists when appropriate. Daily ambulation status reports were reviewed each morning to determine each patient's activity level (Drolet et al., 2013). Similarly, a mobility team (critical care nurse, nursing assistant, physical therapist) in a medical intensive care unit initiated a mobility protocol for patients with acute respiratory failure. The protocol consisted of progressive mobility interventions ranging from passive range of motion for unconscious patients, to active, assistive, and active range-of-motion exercises, to functional activities such as transfer to edge of bed; safe transfers to and from bed, chair, or commode; seated balance activities; pregait standing activities (forward and lateral weight shifting, marching in place); and ambulation. As compared to usual care (passive range of motion only), protocol patients were out of bed earlier (5 vs. 11 days, $p \leq .001$), had therapy initiated more frequently in the intensive care unit (91% vs. 13%, $p \leq .001$), and had similar low complication rates. For protocol patients, the intensive care unit length of stay was 5.5 versus 6.9 days for usual care ($p = .025$), and the length of hospital stay for protocol patients was 11.2 versus 14.5 days for usual care ($p = .006$). (The intensive care unit/length of hospital stay was adjusted for body mass index, acuity, and use of a vasopressor.) There were no adverse events during an intensive care unit mobility session and no cost difference between the protocol and usual care costs (Morris et al., 2008).

Function-Focused Care: A Multimodal Intervention

FFC is a comprehensive, system-level approach that prioritizes the preservation and restoration of functional capability. It is predicated on the philosophy that physical function is as important a treatment goal as correcting the acute admitting problem and recognizes the multifactorial nature of functional decline (Resnick, Galik, & Boltz, 2013). FFC utilizes a philosophy of care in which nurses acknowledge older adults' physical and cognitive capabilities with regard to function and integrate functional and physical activities into all-care interactions. The components of FFC are as follows:

- Assessment of environment and policy/procedures that act as facilitators and barriers for patients to engage in function and physical activity
- Education of nursing staff and other members of the interprofessional team (e.g., social work, physical therapy) on rehabilitative approaches

- Education of patients and families regarding FFC
- Establishing FFC goals, including discharge goals based on capability assessments, communication with other members of the team (e.g., medicine, physical therapy), and input from patients
- Interprofessional team addresses risk factors that impact goal achievement (e.g., cognitive status, anemia, nutritional status, pain, fear of falling, fatigue, medications, and drug side effects such as somnolence) to optimize patient participation in functional and physical activity
- Mentoring and motivation provided by a nurse change agent (e.g., geriatric resource nurse) using theoretically based interventions that monitor and motivate the nursing staff to provide FFC and thereby help the nurses to motivate patients to engage in functional and physical activities

Resnick, Galik, Enders, et al. (2011) demonstrated that nurses were willing to be engaged in an FFC educational intervention on both medical–surgical and trauma units (Resnick et al., 2015) and showed improvements in knowledge and outcome expectations associated with FFC. Further, FFC interactions between patients and nurses have demonstrated a decrease in the overall loss of ADL function from baseline to discharge (Boltz et al., 2012).

Given that family caregivers play a significant role in influencing the physical activity of hospitalized older adults (Boltz, Resnick, et al., 2011), FFC has been expanded to actively engage the family caregiver in the planning, implementation, and evaluation of care aimed at promoting functional recovery. The goal of this educational empowerment model (family-centered FFC [Fam-FFC]) is to improve functional outcomes of the patient and prepare the family caregiver for discharge, without increasing caregiver strain or negatively affecting the relationship with the patient (mutuality) or the family affective response. Fam-FFC demonstrated feasibility in a pilot study of 97 patient and family caregiver (FCG) dyads. Patients exposed to Fam-FFC demonstrated improved ADL performance, walking performance, and delirium severity, and fewer 30-day hospital readmissions. FCGs who participated in Fam-FFC reported better preparedness for caregiving, less anxiety, and less depression from admission to 2 months post discharge, with no significant increases in strain or decreased mutuality (Boltz, Resnick, Chippendale, et al., 2014). A second pilot study ($N = 86$) found that patients with dementia who were exposed to Fam-FFC demonstrated improvements in ADL performance and less delirium symptoms at 2 months post discharge (Boltz et al., 2015b). FCGs who participated in Fam-FFC showed a significant increase in preparedness for caregiving and less anxiety but no significant differences in depression, strain, and mutuality.

In addition to considering baseline function and the influence of family caregivers in supporting functional recovery, experts posit that the older adults' functional goals are critical in driving the treatment plan. Additionally, there is a need to consider assessments that can measure multiple domains of functioning in older adults, including social function and cognitive function (Liebzeit, King, Bratzke, & Boltz, 2018).

CASE STUDY 18.1

TS is an 80-year-old man who was admitted from an assisted living (AL) facility to the emergency department (ED) after he was found on the floor. His workup is negative for fractures and head trauma. His admitting diagnoses include pneumonia, anemia, and dehydration. His past medical history, per his daughter's report, is remarkable for mild hypertension, treated with hydrochlorothiazide (HCTZ) and captopril, and dementia. On admission, TS was somnolent but able to respond to his name. He is receiving intravenous (IV) antibiotics and hydration. As an alternative to the use of a restraint, the IV site is "camouflaged" with dressing wrap and covered with his sweater so as not to cue him to remove it.

The admitting nurse learns from his daughter and the staff at the AL facility that TS's normal or baseline function is that he is independent in ambulation, continent (though, at times, he has trouble in wayfinding), and needs verbal cues ("prompting") to get dressed and bathe. After hydration, TS becomes more alert. He is able to respond to one-step commands and is moving all extremities, with good range of motion. The primary nurse keeps the daughter informed of his condition and the need to promote mobility and self-care. The interprofessional team makes rounds that afternoon, and, with his daughter's and TS's involvement, develops the following plan:

- Monitor confusion assessment method (CAM) and mental status when he is able to respond.
- Daughter is to bring in familiar robe, shoes, and family photo; she also plans to complete social profile, "all about me," to be shared with hospital staff.
- Glasses were labeled with his name and placed on TS.

(*continued*)

CASE STUDY 18.1 (*continued*)

- No restraints; adjustable-height low bed, in low position, then adjusted to lower leg length to promote safe transfers.
- Switch to oral antibiotics; cap IV when able to take sufficient fluids by mouth.
- Assist out of bed for meals, starting that evening.
- In the morning, attempt to ambulate to bathroom, not to be left unattended. Ambulate as tolerated in room and progress to hallway ambulation three times a day.
- Use pressure-reducing mattress.
- Assist, cue, and redirect as needed during meal; monitor for aspiration.
- Encourage self-care during bathing; cue as needed.
- Anemia workup.
- Plan to discharge back to AL at baseline level of function; estimated discharge in 48 to 72 hours.
- The staff at the AL facility will receive a full report on his condition and progress. A plan for a structured routine that includes planned walking, self-care, and involvement in his preferred activities will be developed with input from his daughter.

Discussion

The case study demonstrates decision-making that recognizes the potential of TS to return to his baseline physical function. The interprofessional team implements measures to correct his delirium and prevent avoidable complications (falls and pressure ulcers) that could negatively impact his function. The plan to promote physical activity and independence in ADL is adapted to his cognitive impairment. His daughter is engaged in his care, and the nurse leverages this support to benefit TS.

SUMMARY

Hospitalization poses many challenges to the functional health of older adults. However, functional decline is not inevitable. Interventions formerly perceived to be relevant only to the rehabilitation setting are slowly being recognized as integral to the care and treatment of the older adult in the acute setting. FFC employs nursing care practices that acknowledge the older person's capabilities and potential, while positively modifying the care environment to prevent avoidable functional decline.

NURSING STANDARD OF PRACTICE

Protocol 18.1: Function-Focused Care Interventions

I. GOAL

To help nurses collaborate with the interdisciplinary team to implement interventions that maximize the older adult's functional abilities and performance. This protocol can be used in combination with Protocol 10.1.

II. OBJECTIVE

As stated in Chapter 6, Age-Related Changes in Health: To restore or maximize physical functioning, prevent or minimize decline in ADL function, and plan for transitions of care.

III. BACKGROUND

A. Functional decline is a common complication in hospitalized older adults, even in those with good baseline function (Gill et al., 2010).

B. Loss of physical function is associated with poor long-term outcomes, including increased likelihood of being discharged to a nursing home setting (Fortinsky et al., 1999), increased mortality (Boyd et al., 2005; Rozzini et al., 2005), increased rehabilitation costs, and decreased functional recovery (Boyd et al., 2005, 2008; Volpato et al., 2007). The immobility associated with functional decline results in infections, pressure ulcers, falls, a persistent decline in function and physical activity, and nonelective rehospitalizations.

(*continued*)

Protocol 18.1: Function-Focused Care Interventions (*continued*)

C. Functional decline may result from the acute illness and can begin before admission (Fortinsky et al., 1999) and continue after discharge. Baseline function serves as a useful benchmark when developing discharge goals (Wakefield & Holman, 2007).
D. Patient risk factors for functional decline include prehospitalization functional loss; the presence of two or more comorbidities; taking five or more prescription medications; having had a hospitalization or emergency department visit in the previous 12 months; depression; impaired cognition, including delirium; pain; nutritional problems; adverse medication effects; fear of falling; low self-efficacy, outcome expectations, and attitudes toward functional independence; and views on hospitalization (Boltz, Resnick, Capezuti, Shabbat, & Secic, 2011; Brown et al., 2007; Buurman et al., 2011, 2012; Inouye et al., 1999; McAuley et al., 2006; McCusker et al., 2002).
E. Bed rest results in loss of muscle strength and lean muscle mass, decreased aerobic capacity, diminished pulmonary ventilation, altered sensory awareness, reduced appetite and thirst, and decreased plasma volume (Creditor, 1993; Harper & Lyles, 1988; Hoenig & Rubenstein, 1999; Kortebein et al., 2007, 2008). Care processes, such as curtailing mobility, imposing restraints, and tethering devices, which are associated with low mobility, lead to a higher rate of ADL decline, new institutionalization, and death (Boltz et al., 2010; Boltz, Resnick, et al., 2011; Brown et al., 2004, 2009; Zisberg et al., 2011).
F. Interprofessional rounds support promotion of function by addressing functional assessment (baseline and current), evaluate potentially restrictive devices and agents, and yield a plan for progressive mobility (Boltz, Resnick, Chippendale, et al., 2014).
G. Leadership commitment to rehabilitative values is essential to support a social climate conducive to the promotion of function (Boltz, Capezuti, et al., 2011; King & Bowers, 2013).
H. FFC educational intervention on medical–surgical units has shown improvements in knowledge and outcome expectations associated with function-promoting care (Resnick, Galik, Enders, et al., 2011; Resnick, Galik, Boltz, et al., 2011; Resnick et al., 2015).

IV. FUNCTION-FOCUSED CARE INTERVENTIONS

A. Hospital care processes (Boltz, Resnick, Chippendale, et al., 2014; Jacelon, 2004; Resnick, Galik, Enders, et al., 2011)
   1. Evaluation of leadership commitment to rehabilitative values
   2. Interprofessional rounds that address functional assessment (baseline and current), evaluate potentially restrictive devices and agents, and yield a plan for progressive mobility
   3. Well-defined roles, including areas of accountability for assessment and follow-through for function-promoting activities
   4. Method of evaluating communication of patient needs among staff
   5. Process of disseminating data (e.g., compliance with treatment plans and functional outcomes)
B. Policy and procedures to support function promotion (Boltz et al., 2010; Boltz, Capezuti, & Shabbat, 2011, 2015b; Kleinpell, 2007)
   1. Protocols that minimize adverse effects of selected procedures (e.g., urinary catheterization) and medications (e.g., sedative–hypnotic agents) contribute to positive functional outcomes
   2. Supporting policies: identification and storage of sensory devices (e.g., glasses, hearing aids/amplifiers), mobility devices, and other assistive devices
   3. Discharge policies that address the continuous plan for function promotion
C. Physical design (Betrabet Gulwadi & Calkins, 2008; Boltz, Resnick, Capezuit, & Shuluk, 2014; Boltz et al., 2015b; Capezuti et al., 2008; Ulrich et al., 2008)
   1. Toilets, beds, and chairs at appropriate height to promote safe transfers and function
   2. Functional and accessible functional furniture and safe walking areas with relevant/interesting destination areas with distance markers
   3. Adequate lighting, nonglare flooring, door levers, and handrails (including in the patient room)
   4. Large-print calendars and clocks to promote orientation

(*continued*)

Protocol 18.1: Function-Focused Care Interventions (*continued*)

5. Control of ambient noise levels
6. Policy on storage of glasses and hearing aids, access to sensory aids, hearing amplifiers and magnifiers

D. Education of nursing staff and other members of the interdisciplinary team (e.g., social work, physical therapy) regarding (Boltz et al., 2010; Boltz, Capezuti, et al., 2011; Gillis et al., 2008; Resnick, Galik, Enders, et al., 2011):
   1. The physiology, manifestations, and prevention of hospital-acquired deconditioning
   2. Assessment of physical capability
   3. Rehabilitative techniques, use of adaptive equipment
   4. Interprofessional collaboration
   5. Engagement in decision-making
   6. Communication that motivates is associated with a function-promoting philosophy.

E. Education of patients and families regarding FFC, including the benefits of FFC, the safe use of equipment, and self-advocacy (Boltz, Resnick, Chippendale, et al., 2014; Boltz et al., 2010, 2015b; Resnick et al., 2015)

F. Clinical assessment and interventions (Boltz et al., 2015b; Boltz, Capezuti, et al., 2011; Boltz, Resnick, Chippendale, et al., 2014; Nolan & Thomas, 2008; Resnick, Galik, Enders, et al., 2011; Wakefield & Holman, 2007)
   1. Assessment of physical function and capability (baseline, at admission, and daily) and cognition (at a minimum daily)
   2. Establishing functional goals based on assessments and communication with other members of the team and input from patients
   3. Social assessment: history, roles, values, living situation, methods of coping
   4. Addressing risk factors that impact goal achievement (e.g., cognitive status, anemia, nutritional status, pain, fear of falling, fatigue, medications, and drug side effects such as somnolence) by the interprofessional team optimizes patient participation in functional and physical activities
   5. Developing discharge plans that include carryover of functional interventions and addressing the unique preferences and needs of the patient

V. EXPECTED OUTCOMES

A. Patients will:
   1. Be discharged functioning at their maximum level

B. Providers can demonstrate:
   1. Competence in assessing physical function and developing an individualized plan to promote function, in collaboration with the patient and the interprofessional team
   2. Physical and social environments that enable optimal physical function for older adults
   3. Individualized discharge plans

C. Institution will experience:
   1. A reduction in incidence and prevalence of functional decline
   2. Reduction in the use of physical restraints, prolonged bed rest, and Foley catheters
   3. Decreased incidence of delirium and other adverse events (pressure ulcers and falls)
   4. An increase in prevalence of patients who leave the hospital at baseline or with improved functional status
   5. Physical environments that are safe and enabling
   6. Increased patient satisfaction
   7. Enhanced staff satisfaction and teamwork

VI. RELEVANT PRACTICE GUIDELINES

Several resources are now available to guide adoption of evidence-based nursing interventions to enhance function in older adults.

1. Agency for Healthcare Research and Quality (AHRQ). *National guideline clearinghouse*. Retrieved from http://www.guideline.gov
2. McGill University Health Centre Research & Clinical Resources for Evidence Based Nursing (EBN). Retrieved from http://www.muhc-ebn.mcgill.ca

(*continued*)

Protocol 18.1: Function-Focused Care Interventions (*continued*)

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4. Registered Nurses Association of Ontario (RNAO). *Clinical practice guidelines program*. Retrieved from http:/www.rnao.org/Page.asp?PageID=861&SiteNodeID=270&BL_ExpandID
5. University of Iowa Hartford Center of Geriatric Nursing Excellence (HCGNE). *Evidence-based practice guidelines*. Retrieved from http://www.nursing.uiowa.edu/sites/default/files/documents/hartford/EBP%20Guideline%20Catalog.pdf

ABBREVIATIONS

ADL	Activities of daily living
FFC	Function-focused care

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Late-Life Depression*

Glenise McKenzie
and Kathryn Sexson

19

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Discuss the major risk factors for late-life depression.
2. Discuss the consequences of late-life depression.
3. Identify the core competencies of a systematic nursing assessment for depression with older adults.
4. Identify nursing strategies for older adults with depression.

OVERVIEW

Contrary to popular belief, depression is not a normal part of aging. Depression in late life interferes with a person's ability to function, decreases quality of life, increases risk of morbidity and mortality (including suicide), and increases use of healthcare services (Taylor, 2014). Despite associated negative outcomes, depression in all adults, especially in adults greater than 65 years of age, continues to be underrecognized, misdiagnosed, and subsequently undertreated (Olfson, Blanco, & Marcus, 2016). Nurses in all healthcare settings are pivotal to the early recognition of depression and the facilitation of older patients' access to mental healthcare. This chapter presents an overview of unipolar late-life depression, with emphasis on age-related assessment considerations, clinical decision-making, and nursing intervention strategies. A standard-of-practice protocol for use by nurses in practice settings is presented.

BACKGROUND

Late-life depression is a term that includes older adults with a history of depressive disorders in earlier years as well as those who develop symptoms for the first time in later life. Depression may range in severity from mild symptoms (subsyndromal) to severe symptoms (major depressive episode), both of which can persist over time and both of which present negative functional outcomes in older adults (Haigh, Bogucki, Sigmon, & Blazer, 2018; Laborde-Lahoz et al., 2015). Suicidal ideation, psychotic features (especially delusions), and excessive somatic concerns (hypochondriasis) frequently accompany more severe depression in older adults when compared to younger adults with depression (Grayson & Thomas, 2013; Hegeman, de Waal, Comijis, Kok, & van de Mast, 2014). Comorbid anxiety and depression are common and have been associated with more severe symptoms, decreases in

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

memory, poorer treatment outcomes (Beattie, Pachana, & Franklin, 2010), and increased rates of suicidal ideation (Sareen et al., 2005).

While the prevalence of depression in community-dwelling older adults is lower when compared to that in middle-aged adults, depression in later life is associated with increased chronicity (rate of relapse is higher; Haigh et al., 2018). Lifetime prevalence of major depressive disorders is 13.7%, and an additional 13.8% have subsyndromal depression (symptoms negatively impact function and quality of life but do not meet criteria for major depressive disorder; Laborde-Lahoz et al., 2015). The prevalence of clinically significant depressive symptoms in adults older than 60 years of age varies depending on the clinical context; for example, it has been documented that 5% to 10% of older adults in primary care, one third of older adults post critical care hospitalization, and up to one half of older adults in their first year after placement in a nursing home are diagnosed with depression (Jackson et al., 2014; Laborde-Lahoz et al., 2015; Neufeld, Freeman, Joling, & Hirdes, 2014). Increased chronicity in late-life depression is associated with higher age, coexisting medical conditions, functional impairment, and external locus of control; Licht-Strunk et al., 2009).

MAJOR AND MINOR DEPRESSION

The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*; American Psychiatric Association [APA], 2013) lists the criteria for the diagnosis of a major depressive disorder, the most severe form of depression. These criteria are frequently used as the standard by which older patients' depressive symptoms are assessed in clinical settings. Five criteria (or more) from a list of nine must be present nearly every day during the same 2-week period and must represent a change from previous functioning: (a) depressed, sad, or irritable mood; (b) anhedonia or diminished pleasure in usually pleasurable people or activities; (c) feelings of worthlessness, self-reproach, or excessive guilt; (d) difficulty with thinking or diminished concentration; (e) suicidal thinking or attempts; (f) fatigue and loss of energy; (g) changes in appetite and weight; (h) disturbed sleep; and (i) psychomotor agitation or retardation. For this diagnosis, at least one of the five symptoms must include either depressed mood, by the patient's subjective account or observation of others, or markedly diminished pleasure in almost all people or activities. Concurrent medical conditions are frequently present in older patients and should not preclude a diagnosis of depression; indeed, there is a high incidence of medical comorbidity. The *DSM-5* also provides criteria for persistent depressive disorder (dysthymia), which increases the risk of developing a major depression and manifests with depressive symptoms that occur on a majority of days for at least 2 years.

Major depression symptoms seem to be as common among older as among younger cohorts. A review of depressive criteria found diagnostic thresholds (number and type of symptoms) to be consistent between older adults (age 60 years and older) and middle-aged adults (age 40 years and older; Anderson, Slade, Andrews, & Sachdev, 2009). However, older adults may report somatic or physical symptoms more readily than depressed mood, and it may be difficult to distinguish somatic or physical symptoms associated with acute or chronic physical illness (Haigh et al., 2018). For instance, disturbed sleep may be associated with chronic lung disease or congestive heart failure. Diminished energy or increased lethargy may be caused by an acute metabolic disturbance or drug response. Therefore, a challenge for nurses in acute care hospitals and other clinical settings is not to overlook or disregard somatic or physical complaints while also "looking beyond" such complaints to assess the full spectrum of depressive symptoms in older patients.

Minor depression or subsyndromal depression is diagnosed in patients with clinically significant symptoms (causing impairment or distress) that do not meet *DSM-5* standard criteria for major depression or persistent depressive disorder. The *DSM-5* (APA, 2013, p. 183) classifies minor depression as an "other specified depressive disorder with insufficient symptoms" (depressed mood plus 1–3 other symptoms of major depression that are at least 2 weeks in duration). Minor depression is at least two to three times as common as major depression for older adults in the community and is most prevalent for older adults residing in long-term care settings (Meeks, Vahia, Lavretsky, Kulkarni, & Jeste, 2011). Additionally, 8% to 10% of older adults with untreated minor depression develop major depression within 1 year, and less than one third with minor depression have a remission of symptoms after 1 year (Meeks et al., 2011). Major and minor depressive symptoms are associated with serious consequences for older adults, and the majority will not improve without treatment.

DEPRESSION IN LATE LIFE IS SERIOUS

Evidence suggests that late-life depression is associated with poorer health outcomes, including higher rates of morbidity and mortality. Depression (major and minor) is associated with serious negative consequences for older adults, especially for frail older patients, such as those recovering from a severe medical illness or those in nursing homes (Mezuk, Edwards, Lohman, Choi, & Lapane, 2012). Negative

health consequences of depression for older adults include increased risk of cardiovascular disease, musculoskeletal diseases, lung diseases, cancer, lowered pain tolerance, anxiety, cognitive impairment, and increased healthcare use (Bock et al., 2016; Hegeman et al., 2014; Laborde-Lahoz et al., 2015). Depression can influence decision-making capacity and may be the cause of indirect life-threatening behavior such as refusal of food, medications, or other treatments in older patients (McDade-Montez, Christensen, Cvengros, & Lawton, 2006; Stapleton, Nielsen, Engelberg, Patrick, & Curtis, 2005). These observations suggest that accurate diagnosis and treatment of depression and related comorbidities in older patients may reduce morbidity and mortality rates in this population. It is in the clinical setting, therefore, that screening procedures and assessment protocols have the most direct impact.

Depression is a predictor of late-life suicide (Rorup, Deeg, Poppelaars, Kerkhof, & Onwuteaka-Philipsen, 2011). Suicide is the 10th leading cause of death across the age span in the United States with an age-adjusted rate in 2017 of 14 per 100,000 (Hedegaard, Curtin, & Warner, 2018). Suicide rates have increased in recent years for males and females in all age groups, inclusive of 65- to 70-year-olds (rate in 2017: 24.7 per 100,000; Hedegaard et al., 2018). Physical illness and functional impairment are associated with an increase in suicide in older adults, and it appears that this relationship is further strengthened by comorbid depression (Rorup et al., 2011). Studies have also shown that contact between suicidal older adults and their primary care provider is common, with half of older suicide victims seeking care within 1 month of committing suicide (Luoma, Martin, & Pearson, 2002).

DEPRESSION IN LATE LIFE IS MISUNDERSTOOD

Barriers to care for older adults with depression exist at many levels. In particular, some older adults refuse to seek help because of perceived stigma of mental illness (Conner et al., 2010). Others may simply accept their feelings of profound sadness without realizing that they are clinically depressed. Depressive disorders may also be missed because of overlapping anxiety disorders and/or various somatic or dementia-like symptoms or because the patient or the provider believes that depression is a "normal" response to medical illness, hospitalization, relocation to a nursing home, or other stressful life events (Haigh et al., 2018; Taylor, 2014). However, depression—major or minor—is not a necessary or normative consequence of life adversity (Haigh et al., 2018). When depression occurs after an adverse life event and negatively impacts function, it represents pathology that should be treated.

CAUSE AND RISK FACTORS

Several biological and psychosocial factors have been associated with increased risk for late-life depression. Medical comorbidity is a significant risk factor for depression in older patients and commonly co-occurs in older adults. This factor represents a major difference from depression in younger populations (Alexopoulos, Schultz, & Lebowitz, 2005). Biological contributors to depression in late life include cancer, vascular disease, general health (obesity, pain, new medical illness, insomnia, prior depression, history of suicide attempt, and poor health status), dementia (Alzheimer and vascular dementia), diabetes mellitus, Parkinson's disease, arthritis, and urological problems (Aziz & Steffens, 2013; C. Q. Huang, Dong, Lu, Yue, & Liu, 2010; Vink, Aartsen, & Schoevers, 2008; see Exhibit 19.1). Neuroanatomic correlates (volume reduction in hippocampus, orbitofrontal cortex, putamen, and thalamus) have also

EXHIBIT 19.1

Physical Illnesses Associated With Depression in Older Patients

Metabolic disturbances
- Dehydration
- Azotemia, uremia
- Acid–base disturbances
- Hypoxia
- Hyponatremia and hypernatremia
- Hypoglycemia and hyperglycemia
- Hypocalcemia and hypercalcemia

Endocrine disorders
- Hypothyroidism and hyperthyroidism
- Hyperparathyroidism
- Diabetes mellitus
- Cushing's disease
- Addison's disease

Infections
- Viral
  - Pneumonia
  - Encephalitis
- Bacterial
- Pneumonia
- Urinary tract
- Meningitis
- Endocarditis

Gastrointestinal disorders
- Malignancy (especially pancreatic)
- Irritable bowel
- Other organic causes of chronic abdominal pain, ulcer, diverticulosis
- Hepatitis

Genitourinary disorders
- Urinary incontinence

Musculoskeletal disorders
- Degenerative arthritis

Osteoporosis with vertebral compression or hip fractures
- Polymyalgia rheumatica
- Paget's disease

Neurological disorders
- Cerebrovascular disease
- Transient ischemic attacks
- Stroke
- Dementia (all types)
- Intracranial mass
- Primary or metastatic tumors
- Parkinson's disease

(*continued*)

EXHIBIT 19.1

Physical Illnesses Associated With Depression in Older Patients (*continued*)

- Other
  - Tuberculosis
  - Brucellosis
  - Fungal meningitis
  - Neurosyphilis

Cardiovascular disorders

- Congestive heart failure
- Myocardial infarction, angina

Pulmonary disorders

- Chronic obstructive lung disease
- Malignancy

Other illness

- Anemia (of any cause)
- Vitamin deficiencies
- Hematologic or other systemic malignancy
- Immune disorder
- Alcohol dependence
- Chronic pain
- Fibromyalgia
- Chronic fatigue

Sources: Data from Alexopoulos, G. S., Schultz, S. K., & Lebowitz, B. D. (2005). Late-life depression: A model for medical classification. *Biological Psychiatry*, 58, 283–289. doi:10.1016/0006-3223(88)90038-8; Cole, M. G. (2005). Evidence-based review of risk factors for geriatric depression and brief preventive interventions. *Psychiatric Clinics of North America, 28*(4), 785–803. doi:10.1016/j.psc.2005.09.010; Goodwin, G. M. (2006). Depression and associated physical diseases and symptoms. *Dialogues in Clinical Neuroscience*, *8*(2), 259–265. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3181771

been associated with late-life depression (Sexton, Mackay, & Ebmeier, 2013). The link between late-life depression and cognitive impairment is thought to be bidirectional. For example, a history of depression doubles the risk of developing dementia in late life, and cognitive symptoms of severe depression can be misinterpreted as symptoms of an early-stage dementia (Morimoto & Alexopoulous, 2013). Those with functional disabilities, especially those with new functional loss, such as stroke survivors, are also at increased risk (Mitchell et al., 2017).

Psychosocial risk factors for depression in late life include personality attributes (personality disorder, low self-efficacy), life stressors (trauma, low income, less education, poor functional status, disability), and social stressors (bereavement, loneliness, lack of a confidante, impaired social support, being a caregiver; Aziz & Steffens, 2013; Cole, 2007; Heisel, Links, Conn, van Reekum, & Flett, 2007; Pinquart & Sorensen, 2004; Vink et al., 2008). It is interesting to note that in a meta-analysis of the impact of negative life events on depression in older adults, Kraaij, Arensman, and Spinhoven (2002) found that although specific negative life events (e.g., death of significant others, illness in self or spouse, or negative relationship events) were moderately associated with increases in depression, the total number of negative life events and daily hassles had the strongest relationships with depression in older adults. This suggests that clinicians should pay close attention to the accumulation of negative life events and daily hassles when developing programs and targeting interventions to mitigate depression in older adults who are at risk for developing depression.

DEPRESSION AMONG DIVERSE POPULATIONS OF OLDER ADULTS

Beyond comorbid conditions, social influences may contribute to the complexity of diagnosis, treatment, and outcomes. For example, Cohen et al. (2006) identified a tendency of individuals of lower socioeconomic status to respond poorly to pharmacological interventions. Rates of depression among diverse populations of older adults are not well understood. The APA (2017) reports rates of depression in Blacks (24.6%) and Hispanics (19.6%), with both groups having more persistent symptoms than their White counterparts. Similarly, Kales and Mellow (2006) found lower rates of depression and higher rates of psychotic diagnoses among African American older adults. In a systematic review of studies of older Asian immigrants, Kuo, Chong, and Joseph (2008) found that the prevalence of depression among Asian Americans ranged from 18% to 20%, with significant variability among different Asian minority groups. For example, studies of Vietnamese older adults estimated depression at 50%, whereas studies of older Japanese Americans estimated depression at 3%. Depression was linked to gender, recent immigration status, English proficiency, acculturation, service barriers, and social support. Jimenez, Alegria, Chen, Chan, and Laderman (2010) found that Latinos and Afro-Caribbean older adults had higher rates of depressive disorders than their non-Latino White counterparts and that immigrant Latinos had higher rates of dysthymia than those born in the United States.

Baker and Whitfield (2006) reported that depressive symptoms were significantly associated with increased physical impairment among older Blacks. Williams et al. (2007) found that when African American and Caribbean Blacks experience a major depressive disorder, it is usually untreated, more severe, and more disabling than for non-Hispanic Whites. In addition, barriers exist in ethnically diverse populations, impacting access to treatment, including lack of insurance, economic barriers, stigma, lack of diversity among healthcare providers, dearth of culturally competent providers, language barriers, and distrust in the system (APA, 2017). Furthermore, significant disparities exist in the quality of mental health services received

by minority older adults (Pickett, Bazelais, & Bruce, 2014; Virnig et al., 2004). A study of managed care enrollees revealed that minority older adults received substantially less follow-up for mental health problems following hospitalization (Virnig et al., 2004).

Health disparities are clearly found between LGBTQ+ older adults and their heterosexual peers. The Institute for Research on Poverty (2014) found people who live in poverty to be at greater risk for mental health disorders. Nearly one third of LGBTQ+ older adults are economically disadvantaged, living below 200% of the federal poverty level, with bisexual and transgender subgroups significantly below (48.2% and 47.5%, respectively; Muraco et al., 2014) compared to approximately 26% of all adults aged 65 and older (O'Brien, Wu, & Baer, 2010). Wight, LeBlanc, Meyer, and Harig (2015) found older LGBTQ+ males who experienced "internalized gay ageism" to be associated with more depressive symptoms. Muraco and colleagues (2014) assessed effects of gender identity on depressive symptoms in transgender adults over 50 and found them to be at significantly higher risk than their nontransgender peers. Those experiencing lifetime victimization were also found to have greater depressive symptoms (Fredriksen-Goldsen et al., 2013). Those individuals who have been diagnosed with HIV have been found to be significantly more likely to develop depressive symptoms (Do et al., 2014). While the social stigma associated with sexual orientation places individuals at higher risk for depressive symptoms, increased social network size and higher levels of social support were found to lower the odds of depressive symptoms (Fredriksen-Goldsen et al., 2013).

Although misdiagnosis and subsequent inappropriate treatment can lead to poor health outcomes for diverse populations of older adults (Kales & Mellow, 2006), it is not clear that "simple" bias alone can explain the disparities in depression management that exist. For example, Beals et al. (2005) point out that differences in the social construction of depressive experiences may confound the measurement of depression in ethnic older adults. Older American Indians may be reluctant to endorse symptoms of depression because cultural norms associate these complaints with weakness (Beals et al., 2005). In a thoughtful analysis of health disparities, Cooper, Beach, Johnson, and Inui (2006) explore the complex interactions and relationships between patients and providers that frame the context in which disparities can occur. They point out that many historical, cultural, and class-related factors can influence the development of therapeutic relationships between providers and patients. Until more research clarifies the symptom pattern of late-life depression in minority populations (Sadule-Rios, 2012), it is important that clinicians be culturally sensitive and open to atypical presentations of depression that warrant closer scrutiny.

ASSESSMENT OF THE PROBLEM

Early recognition of depression is enhanced by targeting high-risk groups of older adults for assessment methods that are routine, standardized, and systematic by use of both a depression screening tool and individualized depression assessment or interview (Smith, Haedtke, & Shibley, 2015). It can be challenging to differentiate depressive symptoms from dementia symptoms because cognitive impairment is frequently a symptom of depression and significant cognitive impairment in older depressed adults has been implicated in later development of dementia. Therefore, assessment for presenting symptoms indicative of both depression and dementia requires focused attention on the historical progression of symptoms, and getting collateral information from a reliable informant (family or caregiver) and using a screening tool sensitive to change in mood symptoms in cognitively impaired individuals is recommended (Steffens, 2008).

DEPRESSION SCREENING TOOLS

In 2016, the United States Preventive Services Task Force (USPSTF) updated their recommendations to include screening for depression in all adults (Siu & USPSTF, 2016), and in 2011 the Centers for Medicare and Medicaid (CMS) included it in their value-based care initiative. Because older adults may not present with the same symptoms as younger adults (Haigh et al., 2018), it is important that screening for depression among older adults is incorporated into routine health assessments. In a recent meta-analysis (comparing 11 studies with a combined sample of 2,000 subjects), the authors reported that depressive symptoms in older adults are more likely to include agitation, somatic complaints (especially gastrointestinal symptoms), and hypochondriasis and less likely to include feelings of guilt or low sexual interest in contrast to younger adults with depression (Hegeman, Kok, Van der Mast, & Giltay, 2012). Nursing assessment of depression in older patients can be facilitated by the use of a screening tool designed to detect symptoms of depression. Several depression screening tools have been developed for use with older adults; this review focuses on two common screening tools used with cognitively intact older adults in hospital, clinic, and long-term care settings and one common tool for older adults with cognitive impairment. The Geriatric Depression Scale—Short Form (GDS-SF; Sheikh & Yesavage, 1986) takes a few minutes to complete and

was developed specifically for older adults. The GDS-SF is written in a simple yes/no format with 15 items that can be self-administered or administered by a clinician; a score of 5 or more is considered a positive screen for depression. The GDS has been shown to be valid in inpatient and outpatient settings, with an 84% sensitivity and 95% specificity (Glover & Srinivasan, 2013). Given the brevity, focus, and validity of GDS-SF, it is a good choice for either inpatient or outpatient populations (Mitchell et al., 2010).

The Patient Health Questionnaire-9 (PHQ-9) is evidence based and was originally designed for use in primary care settings (Kroenke & Spitzer, 2002). The PHQ-9 is recommended for screening cognitively intact older adults for depressive symptoms in primary care, nursing homes, and community settings and can be either self- or clinician administered (Richardson, He, Podgorski, Tu, & Conwell, 2010; Smith et al., 2015; Siu & USPSTF, 2016). The nine items of the PHQ-9 correspond with the *DSM-5* (APA, 2013) major depressive disorder criteria, and scores are based on frequency as well as number of symptoms (scores less than 5 suggest no depression; 5–9 = mild depression; 10–14 = moderate depression; and 20–27 = severe depression). Sensitivity and specificity of the PHQ-9 have both been reported to be more than 80%. The PHQ-9 has also been abbreviated to include just the first two items (PHQ-2) that ask about depressed mood and loss of pleasure (anhedonia); the PHQ-2 has similar sensitivity and specificity to the PHQ-9 (Kroenke, Spitzer, & Williams, 2003; Richardson et al., 2010). Overall, the PHQ is easy to administer, valid in cognitively intact older adults in different settings, and can also be used to monitor response to treatment (Richardson et al., 2010; Smith et al., 2015). The PHQ is not recommended for screening older adults with cognitive impairment.

The Cornell Scale for Depression in Dementia (CSDD) is an interviewer-rated scale that was developed specifically to detect symptoms of depression in older adults with dementia (Alexopoulos, Abrams, Young, & Shamoian, 1988). The CSDD contains 19 items, and a score of 12 or greater suggests depression in an individual with dementia. Screening tools are helpful in identifying depressive symptoms in older adults, but because older adults may not present with the classic symptoms of depression, they do not replace the need for a comprehensive nursing assessment.

INDIVIDUALIZED ASSESSMENT AND INTERVIEW

Central to the individualized depression assessment and interview is a focused assessment of the full spectrum of symptoms (nine) for major depression as delineated by the *DSM-5* (APA, 2013). Furthermore, patients should be asked directly and specifically if they have been having suicidal ideation—that is, thoughts that life is not worth living—or if they have been contemplating or have attempted suicide. The number of symptoms, type, duration, frequency, and patterns of depressive symptoms, as well as a change from the patient's normal mood of functioning, should be noted. Additional components of the individualized depression assessment include evidence of psychotic thinking (especially delusional thoughts), anniversary dates of previous losses or stressful events, previous coping style (specifically alcohol or other substance abuse), relationship changes, physical health changes, a history of depression or other psychiatric illness that required some form of treatment, a general loss and crises inventory, and any concurrent life stressors. Subsequent questioning of the family or caregiver is recommended to obtain further information about the older adult's verbal and nonverbal expressions of depression. However, increased screening for depression alone is not enough. For example, despite the Centers for Medicare and Medicaid's decision to reimburse for depression screening in 2011 (CMS, 2011), the rates of suicide have continued to climb, reaching 20.1 per 100,000 in those 85 and older (Drapeau & McIntosh, 2018).

DIFFERENTIATION OF MEDICAL OR IATROGENIC CAUSES OF DEPRESSION

Once depressive symptoms are recognized, medical- and drug-related causes should be explored. As part of the initial assessment of depression in the older patient, it is important to obtain and review the medical history and physical and/or neurological examinations. Key laboratory tests should also be obtained and/or reviewed and include thyroid-stimulating hormone levels, chemistry screen, complete blood count, and medication levels, if needed. An electrocardiogram, serum B12, a urinalysis, and serum folate should also be considered to assess for coexisting medical conditions. These conditions may contribute to depression or might complicate treatment of the depression (Taylor, 2014; see Exhibit 19.2). In medically ill older patients, who frequently have multiple medical diagnoses and are prescribed multiple medications, these contributing factors in the case of depression are a major imperative in nursing assessment. In collaboration with the patient's provider, efforts should be directed toward treatment, correction, or stabilization of associated metabolic or systemic conditions. When medically feasible, depressogenic medications should be eliminated, minimized, or substituted by those that are less depressogenic (Dhondt et al., 1999;

EXHIBIT 19.2

Drugs Used to Treat Physical Illness That Can Cause Symptoms of Depression in Patients

Analgesics
- Narcotic
- Morphine
- Codeine
- Meperidine
- Pentazocine
- Propoxyphene

Antiepileptics
- Topiramate
- Phenobarbital
- Vigabatrin

Antifungals
- Amphotericin-B

Antihypertensives
- Reserpine
- Methyldopa
- Propranolol
- Clonidine
- Hydralazine
- Guanethidine
- Thiazide diuretics[a]

Antimalarials
- Mefloquine

Antimicrobials
- Sulfonamides
- Isoniazid

Antiparkinsonian agents
- L-Dopa
- Amantadine

Antivirals
- Interferon-a
- Efavirenz

Cardiovascular agents
- Digoxin
- Lidocaine[b]
- Amiodarone[d]

Hypoglycemic agents[c]
- Corticosteroids
- Estrogens

Nonnarcotic
- Indomethacin

Others
- Cimetidine
- Cancer chemotherapeutic agents

[a] By causing dehydration or electrolyte imbalance.
[b] By causing toxicity.
[c] By causing hypoglycemia.
[d] By causing hypothyroidism.

Source: Data from Celano, C.M., Freudenreich, O., Fernandez-Robles, C., Stern, S. A., Cara, M. A., & Huffman, J. C. (2011). Depressogenic effects of medications: A review. *Dialogues in Clinical Neuroscience, 13*(1), 109–125. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3181967

Taylor, 2014). Even when an underlying medical condition or medication is contributing to the depression, treatment of that condition or discontinuation or substitution of the offending agent alone is often not sufficient to resolve the depression, and antidepressant medication is often needed.

INTERVENTIONS AND CARE

The goals of treating depression in older patients are to decrease depressive symptoms, reduce relapse and recurrence, improve functioning and quality of life, improve medical health, and reduce mortality and healthcare costs. Significant and equivalent improvements in depressive symptoms occur with both pharmacotherapy and psychotherapy interventions (individually or in combination) in older adult populations (Pinquart, Duberstein, & Lyness, 2006). In addition, treatment of depression improves pain and functional outcomes in older adults (Lin et al., 2003). Recurrence of depression in older adults is a serious problem and has been associated with reduced responsiveness to treatment and higher rates of cognitive and functional decline (Driscoll et al., 2005). Although antidepressants are effective in community-dwelling older adults, evidence demonstrates this efficacy is reduced when compared to the case in younger adults (Tedeschini et al., 2011). Older adults, however, tend to have higher rates of relapse following treatment (Kok & Reynolds, 2017). Therefore, continuation of treatment to prevent early relapse and longer-term maintenance treatment to prevent later occurrences is important. Even in those patients with depression who have a comorbid medical illness, treatment response can be good (Kok & Reynolds, 2017). (this also corrects the placement of the punctuation) However, the efficacy of antidepressants in people with cognitive impairment remains unclear (Kok & Reynolds, 2017). Depressed older patients who have mild cognitive impairment may be at greater risk of developing dementia if their depression goes untreated (Modrego & Ferrandez, 2004).

Regardless of the setting, older patients who exhibit the number of symptoms indicative of a major depression, specifically suicidal thoughts or psychosis, and who score *above* the established cutoff score for depression on a depression screening tool (e.g., 5 on the GDS-SF or 8–10 on the PHQ-9) should be referred for a comprehensive psychiatric evaluation. Older patients with less severe depressive symptoms without suicidal thoughts or psychosis but who also score more than the cutoff score on the depression screening tool (e.g., 5 on the GDS-SF or 8–10 on

the PHQ-9) should be referred to available psychosocial services (i.e., psychiatric liaison nurses, geropsychiatric advanced practice nurses, social workers, psychologists, a clergy member) for psychotherapy or other psychosocial therapies, as well as to determine whether medication for depression is warranted. It is also important to note that older adults at risk for depression may benefit from brief psychosocial interventions that focus on preventing the development of major depression (Lee et al., 2012), with increased social activity interventions being most effective (Forsman, Jane-Llopis, Schierenbeck, & Wahlbeck, 2009; Forsman, Nordmyr, & Wahlbeck, 2011). Findings have been mixed for prevention efforts focused specifically on minor depression (Krishna et al., 2013).

The type and severity of depressive symptoms influence the type of treatment approach. In general, more severe depression, especially with suicidal thoughts or psychosis, requires intensive psychiatric treatment, including hospitalization, medication with an antidepressant or antipsychotic drug, electroconvulsive therapy (ECT), and intensive psychosocial support (Taylor, 2014). Less severe depression without suicidal thoughts or psychosis may require treatment with psychotherapy or medication, often on an outpatient basis. Collectively, these data also suggest that patients who have depression complicated by multiple medical and psychiatric comorbidities may benefit from a referral to an interdisciplinary treatment team with specific expertise in geropsychiatry.

TREATMENT FOR LATE-LIFE DEPRESSION

The four major categories of treatment for depression in older adults are (a) lifestyle change (exercise and diet), (b) somatic therapies (e.g., pharmacotherapy, ECT, and light therapy), (c) psychosocial interventions (e.g., cognitive behavioral, psychodynamic, social engagement, and reminiscence therapy), and (d) collaborative care interventions. A compelling body of evidence supports the efficacy of these diverse treatment modalities for older adults with depression.

Lifestyle-Change Interventions

In less severe depression, lifestyle change (physical exercise and diet) may be effective and carries a lower risk of adverse effects compared to those related to pharmacological interventions. Physical exercise has been established as an effective treatment for depression in the general population, and this includes depressed older adults who are physically able to participate (Schuch et al., 2016). Reviews of physical exercise interventions have concluded that exercise programs decrease depressive symptoms and improve quality of life in older adults with major and minor depression when compared to control conditions (Catalan-Matamoros, Gomez-Conesa, Stubbs, & Vancampfort, 2016; Seong-Hi, Kuem Sun, & Chang-Bum, 2014). Tai chi and qigong are specific meditative exercise methods that may also decrease depressive symptoms and reduce stress (Rogers, Larkey, & Keller, 2009; Wang et al., 2010). Studies showing potential benefits of improved nutrition and diet supplements on depressive symptoms across the life span are building (Opie et al., 2017; Sanhueza, Ryan, & Foxcroft, 2013). For example, a vitamin D3 supplementation and improvement in depressive symptoms in older adults have been reported, but more studies are needed in order to make any solid recommendations (Farrington & Moller, 2013). Fish oil and folic acid supplementation have also shown promising results in the limited studies that included older adults (Nyer et al., 2013). Although lifestyle changes (increase in exercise and a healthy diet) are well supported and reasonable nursing recommendations, they may be inadequate in older adults with more significant depressive symptoms. Additional interventions, such as pharmacotherapy and psychotherapy, may also be necessary.

Somatic Therapy in Treatment of Late-Life Depression

Somatic therapy for remission of the symptoms of late-life depression includes pharmacotherapy, ECT, and light therapy. Pharmacotherapy or ECT is shown to be efficacious and is recommended for more severe depression. Pharmacotherapy and light therapy may also be recommended for older adults with less severe symptoms and for individuals who have not responded to nonpharmacological treatments (Kok, 2013).

Pharmacotherapy

In a meta-analysis of 80 controlled trials, antidepressants were found effective for treating depression in older adults, and all classes of antidepressants were reported to be superior to placebo (Kok, Nolen, & Heeren, 2012). Unlike younger adults, older adults may take 8 to 16 weeks of therapy to achieve a full antidepressant response (Frank, 2014; Solai, Mulsant, & Pollock, 2001). The selective serotonin-reuptake inhibitors (SSRIs) are considered the first-line pharmacotherapy for late-life depression, based on their relatively low side-effect profile and low cost (Kok, 2013; Taylor, 2014). SSRIs have been effective in treating poststroke depression (Chen, Guo, Zhan, & Patel, 2006; Hackett, Anderson, House, & Xia, 2008) and depression in persons with Alzheimer's disease (Thompson,

Herrmann, Rapoport, & Lanctôt, 2007). A systematic review of the literature found that although SSRIs are generally well tolerated in older adults, a significant minority experience serious side effects, including nausea, vomiting, dizziness, drowsiness, and increased risk of gastrointestinal bleeding, falls, and fractures (Van Damme, Declercq, Lemey, Tandt, & Petrovic, 2018). The SSRI Citalopram has a black-box warning as it may cause QTc prolongation (FDA prescribing information). Judicious use of tricyclic antidepressants (TCAs) may be an effective alternative for older adults who cannot tolerate SSRIs (Kok, 2013). Important side effects of the TCAs include anticholinergic symptoms, arrhythmia, and orthostatic hypotension. Serotonin and noradrenaline reuptake inhibitors (SNRIs) are another alternative to SSRIs when the SSRI is ineffective or contraindicated. This drug class is also effective in treating peripheral neuropathy and may be a drug of choice when trying to limit polypharmacy. In the depressed patient suffering from insomnia or anorexia, mirtazapine may be considered as it causes sedation and increased appetite (Ancoli-Israel & Ayalon, 2006; Fox, Treadway, Blaszczyk, & Sleeper, 2009).

Older patients should be closely monitored for therapeutic response to and potential side effects of antidepressant medication to assess whether dose adjustment of antidepressant medication may be warranted. Kok et al. (2012) reported that about two thirds of older adults with depression require a change or augmentation to initial treatment to achieve remission. Whenever possible, monotherapy is recommended to minimize drug side effects. Although, in general, it is advised to start antidepressant medication at low doses in older patients, it is also necessary to increase doses to ensure that older adults with persistent depressive symptoms receive adequate treatment and appropriate follow-up (Kok, 2013).

Electroconvulsive Therapy

In the case of older adults who are unable to take antidepressants for treatment of late-life depression, clinicians are increasingly looking to the use of ECT to reduce symptoms of depression and improve function. ECT involves the induction of a mild, therapeutic seizure under general anesthesia. It is an accepted treatment option for older adults with depression, especially older adults with severe depression that is resistant to pharmacotherapy or has psychotic features, severe weight loss, or anorexia (Navarro et al., 2008; Spaans et al., 2015). In fact, because of the relatively low side-effect profile, some researchers suggest that ECT should be considered a first-line treatment (Plakiotis, Barson, Vengadasalam, Haines, & O'Connor, 2013). In a systematic review of literature on maintenance of ECT, Van Shaik et al. (2010) found that long-term ECT use was not associated with long-term increases in cognitive impairment. Autobiographical memory is affected, but is improved or restored within 6 months of treatment (Verwijk et al., 2012). ECT is well tolerated in older adults, even older adults with cardiac conditions (Haigh et al., 2018).

Light Therapy

Chang, Liu, Chen, and Tsai (2018) conducted a systematic review and meta-analysis on the efficacy of light therapy on nonseasonal depression in older adults. Their findings indicate that bright white or pale blue light therapy significantly reduced the severity of geriatric depression and are similar to the findings of Wu, Sung, Lee, and Smith (2015), who examined the effect of light therapy on persons with depression in the nursing home. Based on their review, Chang and colleagues (2018) also postulate that administering therapy in the morning increases the effectiveness of treatment. Lieverse and colleagues (2011) tested the efficacy of pale blue light therapy, approximately 7,500 LUX, in decreasing depressive symptoms in older adults with major depression. This 3-week randomized trial compared bright light treatment with placebo (dim light) in 89 older adults with nonseasonal depressive disorder. The intervention was well tolerated and showed a positive treatment response (58% vs. 34%). A small pilot study in long-term care also reported significant improvement in mood when comparing bright light treatment versus placebo effects (Royer et al., 2012). This continues to be a promising area for further research and consideration when working with older adults who are depressed.

Psychosocial Approaches

The term *psychosocial* encompasses a wide array of approaches. This section provides an overview of the three major psychosocial approaches used in studies with older adult populations: (a) cognitive/behavioral, (b) psychodynamic, and (c) reminiscence or life-review therapy. Support for nonpharmacological (including psychosocial) approaches in the treatment of late-life depression has been increasing, although reviewers continue to report limitations due to methodological challenges (Apóstolo, Bobrowicz-Campos, Rodrigues, Castro, & Cardoso, 2016). Current meta-analysis has also demonstrated the utility of working closely with caregivers—whether family or staff—to introduce psychosocial interventions with resulting reduction in depression in persons with dementia

(Orgeta, Qazi, Spector, & Orrell, 2014). There is also a small but growing body of evidence related to the use of psychosocial approaches aimed at decreasing depression in older adults associated with comorbid illnesses impacting physical dysfunction (Frost, Bauernfreund, & Walters, 2018).

Cognitive/Behavioral

Cognitive and/or behavioral therapies seek to change the cognitive and/or behavioral context in which depression occurs through the use of various specific techniques such as providing new information, teaching problem-solving strategies, correcting skills deficits, modifying ineffective communication patterns, or changing the physical environment. Although specific treatment protocols vary, Cognitive Behavioral Therapy (CBT) approaches tend to be active and focused on solving specific, current day-to-day problems, rather than seeking global personality change in the client. Based on a large and growing evidence base, CBT has been shown to be effective in decreasing depression in clinically depressed older adults with major, dysthymic, and minor depression (Gould, Coulson, & Howard, 2012). Studies of computerized delivery of CBT with older adults are limited; however, there are promising findings, and older individuals may be less likely to drop out than younger individuals (Crabb et al., 2012). Psychotherapeutic interventions for older adults (without dementia) living in nursing facilities are limited; however, a recent systematic review reported positive evidence for CBT in depressed older adults living in nursing homes (Simning & Simons, 2017). Training caregivers (family or paid caregivers) to use CBT approaches (improved communication, increasing pleasant events, and problem-solving behaviors) has also been shown to decrease depression and related behaviors in older adults with dementia (Teri, McKenzie, & LaFazia, 2005). Gallagher-Thompson and Coon (2007) also identified CBT interventions as effective in decreasing depression in the older adults who are caregivers for older adult family members. Behavioral Activation (BA) therapy, delivered by nurses and aimed at increasing and sustaining functional and pleasurable experiences and environments, is a promising intervention currently under investigation (Janssen et al., 2017). Comprehensive reviews of nonpharmacological treatments reported that individual and group CBT interventions, and problem-solving therapy compared to usual treatment, significantly reduced depression for people with physical comorbidities (Frost, Bauernfreund, & Walters, 2018; Rizzo, Creed, Goldberg, Meader, & Pilling, 2011).

Psychodynamic

Psychodynamic approaches focus on establishing a therapeutic relationship as a mechanism of change as well as on examining the historical causes of current client mood and behavior. The client's psychological insight and ongoing emotional experience are considered critical for psychological progress. Evidence for the effectiveness of psychodynamic approaches with older adults has continued to build (Apóstolo et al., 2016; Renn & Areán, 2017). In a meta-analysis, a medium effect size was reported for psychotherapy in reducing symptoms of depression in older adults who reside in residential care settings (Cody & Drysdale, 2013) and a moderate to strong effect size for community-dwelling older adults with an acute depressive disorder (A. X. Huang, Delucchi, Dunn, & Nelson, 2015). A systematic review of the impact of psychotherapy on symptoms of community-dwelling older adults with minor (subthreshold) depression also found psychotherapy to be effective, safe, and cost-effective (Lee et al., 2012). Additionally, Bharucha, Dew, Miller, Borson, and Reynolds (2006) reviewed 18 studies of psychodynamic approaches ("talk therapy") with residents of long-term care settings and reported significant positive outcomes on measures of depression, hopelessness, and self-esteem. Marital and family therapy may also be beneficial in treating older adults with depression, especially older spouses engaged in caregiving (Buckwalter et al., 1999).

Reminiscence

In reminiscence therapy, older adults are encouraged to remember the past and to share their memories, either with a therapist or with peers, as a way of increasing self-esteem and social intimacy. It is often highly directive and structured, with the therapist picking each session's reminiscence topic. According to a meta-analysis that included 128 trials with older adult participants, reminiscence interventions showed moderate improvement in depression when compared to control groups, and effects were maintained at 6-month follow-up (Pinquart & Forstmeier, 2012). In two recent meta-analyses, group delivery of reminiscence showed significant improvement in depressive symptoms when compared to control interventions; however, the long-term impacts were not consistent (Elias, Neville, & Scott, 2015; Song, Shen, Xu, & Sun, 2014). Nursing interventions to encourage reminiscence include asking patients directly about their past or by linking events in history with the patient's life experience. The use of photographs, old magazines, scrapbooks, and other objects can also stimulate discussion.

Psychosocial interventions for suicide prevention in this at-risk population are generally focused on the risk

factor of depression, and some have shown promising results (Okolie, Dennis, Thomas, & John, 2017). Treatment of depression has been associated with decreased suicidal ideation in older adults (Bruce et al., 2004; Szanto, Mulsant, Houck, Dew, & Reynolds, 2003). Lapierre and colleagues (2011) reported a few studies in their review focused on improving protective factors (e.g., resilience) and noted the potential utility of increasing protective factors for reducing depression in older adults. For example, positive social relationships (Neufeld, Hirdes, Perlman, & Rabinowitz, 2015) and church attendance (Rushing, Corsentino, Hames, Sachs-Ericsson, & Steffens, 2013) may provide protection against suicidal ideation for some older adults. Van Orden and colleagues (2014) found that the desire for death and a sense that life is not worth living is not a normative finding among older adults. The evidence is limited, but does support that assessment for a desire for death is an important part of mental status assessment for older adults in order to identify those individuals who may be at risk for suicide and would benefit from closer attention to their individual risks and protective factors.

In summary, psychosocial treatments have been found effective and safe in decreasing depression and potentially decreasing suicide-related thoughts in cognitively intact older adults. There is also empirical evidence for the efficacy of cognitive behavioral-based therapies and reminiscence therapy in decreasing depression both in individuals with cognitive impairment and in their caregivers (Orgeta et al., 2014).

Collaborative Care

Collaborative depression care programs are generally comprised of scheduled patient follow-ups, intensified interprofessional communication, a formal treatment plan, and focus on multiprofessional teams that include nurses trained as care or case depression managers and have been effective in improving outcomes for older adults with depression (Dham et al., 2017; Dreizler, Koppitz, Probst, & Mahrer-Imhof, 2014; Hall & Reynolds, 2014). A meta-analysis that included 14 studies (4,440 participants) comparing nurse-delivered collaborative depression care approaches to usual care for older adults with chronic illness found a moderate impact on depression severity that remained at follow-up (Ekers et al., 2013).

Ethnic minority older adults experienced improved treatment of depression when treated by an interdisciplinary treatment team (Davis, Deen, Bryant-Bedell, Tate, & Fortney, 2011), as did low-income older adults (Areán, Gum, Tang, & Unützer, 2007). Similarly, patients with multiple comorbid medical conditions responded positively to a collaborative approach to depression management (Harpole et al., 2005). Although older adults with comorbid anxiety disorders took longer to respond to treatment, they experienced greater reductions in depression when treated by a multiprofessional team than similar patients receiving usual primary care (Hegel et al., 2005). A study of a telephone-based collaborative care depression and anxiety treatment program in patients with acute cardiac disease reported decreased depressive symptoms, increased function, and improved quality of life compared to usual care (Huffman et al., 2014), and evidence supported the cost-effectiveness of the intervention (Celano et al., 2016).

Individualized Nursing Interventions for Depression

Psychosocial and behavioral nursing interventions can be incorporated into the plan of care, based on the patient's individualized need. Timely assessment and provision of safety precautions for patients with suicidal thinking is a priority. In acute medical settings, patients may require transfer to the psychiatric service when suicidal risk is high and staffing is not adequate to provide continuous observation of the patient. In outpatient settings, continuous surveillance of the patient should be provided while an emergency psychiatric evaluation and disposition is obtained.

Promotion of nutrition, elimination, sleep/rest patterns, physical comfort, and pain control has been recommended specifically for depressed medically ill older adults (Voyer & Martin, 2003). Nursing interventions should also focus on enhancement of the older adult's physical function and activity; aerobic activity; strength training; and exercise groups (Melrose, 2018). Referral for Tai Chi, yoga, and other mindfulness-based therapies provides older adults with depression with the opportunity for enhanced symptom management of depression and anxiety (Glover & Srinivasan, 2017). Enhancement of social support is associated with improved mood and is an important function of the nurse. This may be done by identifying, mobilizing, or designating a support person, such as a family member, a confidant, friend, volunteer or other hospital resource, church member, support group, patient or peer visitor, and particularly by accessing appropriate clergy for spiritual support.

Nurses should maximize the older adult's autonomy, personal control, self-efficacy, and decision-making about clinical care, daily schedules, and personal routines (Lawton, Moss, Winter, & Hoffman, 2002). Participation in regular, predictable, and pleasant activities can result in more positive mood changes for older adults with depression (Janssen et al., 2017). For example, a pleasant-events inventory, elicited from the patient and family, can be used to incorporate and increase the quality and quantity

of pleasurable activities into the older patient's daily schedule. The addition of music therapy customized to the older adult's preference is also recommended to reduce depressive symptoms (Zhao, Bai, Bo, & Chi, 2016).

Nurses should provide emotional support and education for depressed older patients by providing empathetic, supportive listening; encouraging patients to express their feelings in a focused manner on issues such as grief or role transition; offering supportive adaptive coping strategies; identifying and reinforcing strengths and capabilities; maintaining privacy and respect; and instilling hope. In particular, it is important to increase the patient's and family's awareness that depression and related symptoms are not a normal part of aging and that they are treatable. Education should include information on the negative health outcomes of untreated depression as well as the efficacy of evidence-based treatments for older adults with depression.

CASE STUDY 19.1

Ray Stimson is an 87-year-old man with multiple medical problems. He has a history of coronary artery disease (CAD) and had triple-bypass surgery 4 years ago. He also has hypertension, type 2 diabetes, and is hard of hearing. He was admitted to the hospital for surgical repair of a hip fracture following a fall in his home. Mr. Stimson is widowed (11 months) and has two adult children who do not live locally. Before his fall, he was living independently in the community; however, his children were growing increasingly concerned about his safety. Following surgery, Mr. Stimson was irritable and resisted efforts by the nursing staff to participate in self-care activities (e.g., walking, bathing). They often found him lying stoically in bed, staring into space. The nurses also observed that he was occasionally confused and would ask about his deceased wife.

A subsequent referral to the geropsychiatric consultation liaison nurse revealed that Mr. Stimson was experiencing a great deal of postoperative pain that was not well treated on his current medication regimen. Nursing staff had charted concerns that his opioid analgesic was contributing to his mental confusion. The geropsychiatric evaluation also revealed that Mr. Stimson had been growing increasingly depressed over the past few months and was still actively grieving the loss of his wife of 62 years. As his health had failed and his independent living was threatened, he admitted he had contemplated suicide, stating, "Life is just not worth living anymore." Further assessment revealed that he did not have a specific plan in mind and admitted that he did not really think that was a solution to his problems, but that he could not see that he had many options.

The liaison nurse worked with the medical team to develop a more aggressive plan for pain management. She also arranged for a family conference to discuss discharge-planning issues. During the family conference, the liaison nurse spoke to Mr. Stimson's children about long-term planning. She explained how important it was for Mr. Stimson to participate in any placement decisions that they may be contemplating and to have a sense of control. Although his children were able to express their reservations and concerns about safety, they agreed to explore the kinds of community support services that could be activated to help support their father in his own home for as long as possible.

Mr. Stimson was able to participate in rehabilitation and gained enough strength to return to his home. Arrangements were made for follow-up with mental health services. He was started on an antidepressant and agreed to participate in the senior lunch program twice a week to increase the opportunity for socialization. Several months after his discharge, Mr. Stimson reported that he still missed his wife terribly and that he still was lonely at times. However, he had developed some friendships at the senior center and was getting out one to two times each week. His children called more often and had, for the time being, stopped sending him brochures for assisted living facilities. He acknowledged that he may need to move to a more supervised setting in the future, but for now, he was content to stay in the home where he had many pleasant memories to keep him company.

SUMMARY

Depression significantly threatens the personal integrity, health, and "experience of life" of many older adults. Depression can be addressed with prompt identification and appropriate treatment. Early recognition can be enhanced by training healthcare personnel in the use of a standardized protocol that outlines a systematic method for depression assessment adapted for older adults in various settings and with diverse comorbid conditions. Early identification of depression and successful treatment outcomes demonstrate to society that depression is a treatable condition in late life. Nurses are key healthcare team members with a responsibility to depressed older adults for early identification of at-risk individuals and related symptoms, development of collaborative plans of care, and advocacy for equitable access to mental healthcare. As Blazer (1989) stated in his seminal article, "When there is depression, hope remains" (p. 166).

NURSING STANDARD OF PRACTICE

Protocol 19.1: Late-Life Depression

I. BACKGROUND[a]

A. Depression—both major and minor depressive disorders—is highly prevalent in medically ill, functionally impaired, and institutionalized older adults.
B. Depression is not a natural part of aging or a normal reaction to acute illness hospitalization.
C. Consequences of depression include amplification of pain and disability, delayed recovery from illness and surgery, worsening of drug side effects, excess use of health services, cognitive impairment, poor nutrition, and increased suicide- and nonsuicide-related death.
D. Depression (major and minor) tends to be long lasting and recurrent. Therefore, comprehensive and timely approaches are necessary.
E. Somatic symptoms may be more prominent than depressed mood in late-life depression.
F. Mixed depression and anxiety features may be evident among many older adults.
G. Recognition of depression is hindered by the coexistence of physical illness, cognitive decline, and social and economic problems common in late life. Early recognition, intervention, and referral by nurses can reduce the negative effects of depression.

II. ASSESSMENT PARAMETERS

Identify risk factors/high-risk groups (APA, 2013; Aziz & Steffens, 2013; Melrose, 2018; Smith et al., 2015; Taylor, 2014).

A. Biological contributors
   1. Vascular disease (MI, CAD, CVA)
   2. General health (new medical illness, pain, insomnia, prior depression, history of suicide attempt, concomitant substance abuse)
   3. Dementia (vascular and Alzheimer's disease)
   4. Other chronic or disabling medical conditions (diabetes, Parkinson's disease, arthritis, low vision, COPD)
   5. Psychosocial contributors
   6. Personality attributes (personality disorder, low self-efficacy)
   7. Life stressors (trauma, low income, impaired function, disability)
   8. Social stressors (bereavement, loneliness, impaired social support, caregiving)
B. Screen all at-risk groups using a standardized depression screening tool and document score
   1. The GDS-SF is recommended for its brevity, validity, and extensive use with medically ill older adults, and inclusion of *few* somatic items that may be confounded with physical illness.
   2. The PHQ-9 and PHQ-2 are recommended for their brevity, validity with older as well as younger adults, and availability in hospital and primary care settings.
C. Perform a *focused* depression assessment on all at-risk groups and document results. Note the number of symptoms; onset; frequency/patterns; duration (especially 2 weeks); and change from normal mood, behavior, and functioning.
   1. Depressive symptoms
   2. Depressed or irritable mood, frequent crying
   3. Loss of interest or pleasure (in family, friends, hobbies, sex)
   4. Weight loss or gain (especially loss)
   5. Sleep disturbance (especially insomnia)
   6. Fatigue/loss of energy
   7. Psychomotor slowing/agitation
   8. Diminished concentration
   9. Feelings of worthlessness/guilt

(*continued*)

Protocol 19.1: Late-Life Depression (*continued*)

10. Suicidal thoughts or attempts, hopelessness
11. Psychosis (i.e., delusional/paranoid thoughts, hallucinations)
12. History of depression, current substance abuse (especially alcohol), previous coping style
13. Recent losses or crises (e.g., death of spouse, friend, pet; retirement; anniversary dates; move to another residence, nursing home); change in physical health status, relationships, roles

D. Obtain/review medical history and physical/neurological examination.
E. Assess for depressogenic medications (e.g., steroids, narcotics, sedative/hypnotics, benzodiazepines, antihypertensive, H_2 antagonists, beta-blockers, antipsychotics, immunosuppressive, cytotoxic agents).
F. Assess for related systematic and metabolic processes (e.g., infection, anemia, hypothyroidism or hyperthyroidism, hyponatremia, hypercalcemia, hypoglycemia, congestive heart failure, kidney failure).
G. Assess for cognitive dysfunction.
H. Assess level of functional disability and quality of life.

III. CARE PARAMETERS

Based on guidelines and reviews (APA, 2010; Melrose, 2018; Pinquart et al., 2006; Taylor, 2014)

A. For severe depression (GDS-SF score of 11 or greater, five to nine depressive symptoms [must include depressed mood or loss of pleasure] plus other positive responses on individualized assessment [especially suicidal thoughts or psychosis and comorbid substance abuse]), refer for psychiatric evaluation. Treatment options may include medication or cognitive behavioral, interpersonal, or brief psychodynamic psychotherapy/counseling (individual, group, family); hospitalization; or ECT.
B. For less severe depression (GDS-SF score 6 or greater, less than five depressive symptoms, plus other positive responses on individualized assessment), refer to mental health services for psychotherapy/counseling (see previous types), especially for specific issues identified in individualized assessment and to determine whether medication therapy may be warranted. Consider resources such as psychiatric liaison nurses, geropsychiatric advanced practice nurses, social workers, psychologists, and other community and institution-specific mental health services. If suicidal thoughts, psychosis, or comorbid substance abuse are present, a referral for a comprehensive psychiatric evaluation should always be made.
C. For all levels of depression, develop an *individualized* plan integrating the following nursing interventions:
    1. Institute safety precautions for suicide risk as per institutional policy (in outpatient settings, ensure continuous surveillance of the patient while obtaining an emergency psychiatric evaluation and disposition).
    2. Remove or control etiologic agents.
        a. Avoid/remove/change depressogenic medications.
        b. Correct/treat metabolic/systemic disturbances.
    3. Monitor and promote symptom management of depression and anxiety (e.g., supporting individuals to improve nutrition, elimination, sleep/rest patterns, physical comfort [especially pain control], mindfulness interventions; routine aerobic and strength exercise programs).
    4. Monitor and enhance physical function (i.e., structure regular exercise/activity; refer to physical, occupational, or recreational therapies); develop a daily activity schedule.
    5. Enhance social support and reduce isolation (i.e., identify/mobilize a support person(s) [e.g., family, confidant, friends, hospital resources, support groups]); ascertain need for spiritual support and contact appropriate clergy.
    6. Maximize autonomy/personal control/self-efficacy (e.g., include patient in active participation in making daily schedules, short-term goals).
    7. Identify and reinforce strengths and capabilities.
    8. Structure and encourage daily participation in relaxation therapies, pleasant activities (conduct a pleasant activity inventory), and music therapy.
    9. Monitor and document response to medication and other therapies; readminister depression screening tool.
    10. Provide practical assistance; assist with problem-solving.

(*continued*)

Protocol 19.1: Late-Life Depression (*continued*)

11. Provide emotional support (i.e., empathic, supportive listening, encourage expression of feelings, hope instillation), support adaptive coping, and encourage pleasant reminiscences.
12. Provide information about the physical illness and treatment(s) and about depression (i.e., that depression is common, treatable, and not the person's fault). Include attention to addressing potential fear and stigma associated with depression.
13. Educate about the importance of adherence to prescribed treatment regimen for depression (especially medication) to prevent recurrence; educate about *specific* antidepressant side effects.
14. Ensure mental health community link-up; consider collaborative care programs.

IV. EVALUATION OF EXPECTED OUTCOMES

A. Patient
   1. Patient safety will be maintained.
   2. Patients with severe depression will be evaluated by psychiatric services.
   3. Patients will report a reduction of symptoms that are indicative of depression. A reduction in the GDS score will be evident, and suicidal thoughts or psychosis will resolve.
   4. Patient's daily functioning will improve.

B. Healthcare provider
   1. Document risk assessment, interventions initiated for depression, progress of patients with depressive symptoms, and referrals.
   2. Provide support and depression-specific education to patients and their families (and other caregivers) via written and verbal information on depression and its management, including how families or carers can support the person.
   3. Conduct medication review for potential drug–drug interactions.
   4. Evaluate physiological findings necessitating adjustment (e.g., liver and renal function).

C. Institution
   1. The number of patients identified with depression will increase.
   2. The number of in-hospital suicide attempts will not increase.
   3. The number of referrals to mental health services will increase.
   4. The number of referrals to psychiatric nursing home care services will increase.
   5. Staff will receive ongoing education on depression recognition, assessment, and interventions.
   6. Develop collaborative depression care management programs.

V. FOLLOW-UP TO MONITOR CONDITION

A. Continue to track prevalence and documentation of depression in at-risk groups.
B. Show evidence of transfer of information to postdischarge mental health service delivery system.
C. Educate caregivers to continue assessment and management strategies.

ABBREVIATIONS

APA	American Psychiatric Association
CAD	Coronary artery disease
COP	Chronic obstructive pulmonary disease
CVA	Cerebrovascular accident
GDS-SF	Geriatric Depression Scale–Short Form
MI	Myocardial infarction
PHQ	Patient Health Questionnaire

[a] Somatic symptoms, also seen in many physical illnesses, are frequently associated with A and B; therefore, the full range of depressive symptoms should be assessed.

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RESOURCES

Recommended Instruments for Screening for Depression

Geriatric Depression Scale–Short Form (GDS-SF)

A 15-item screening measure for depression in older adults
www.stanford.edu/~yesavage/GDS.html

Patient Health Questionnaire (PHQ-9)

A nine-item scale recommended for screening in older adults. The first two questions of the PHQ-9 are referred to as the PHQ-2 and may be used to identify the need for a more complete assessment of depressive symptoms using the PHQ-9 or GDS-SF.
www.phqscreeners.com

Additional Online Information About Assessing Depression

Assessing Care of Vulnerable Elders (ACOVE)
www.rand.org/health/projects/acove.html

Portal of Geriatric Online Education

Provides resources for assessment and management of geriatric health issues
https://www.pogoe.org

Try This: ® Series

A series of tips on various aspects of assessing and caring for older adults, sponsored by the Hartford Institute for Geriatric Nursing at New York University College of Nursing.
https://consultgeri.org/tools/try-this-series

Guidelines

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Delirium: Prevention, Early Recognition, and Treatment*

Cheri Blevins

20

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Discuss risk factors of delirium in older hospitalized adults.
2. Describe the negative sequelae of delirium in older adults during hospitalization.
3. Discuss the importance of early recognition of delirium.
4. List four nonpharmacological interventions to prevent and/or treat delirium.
5. Identify long-term negative sequelae of delirium in older adults who have been hospitalized.

OVERVIEW

Delirium is a common complication in hospitalized older adults and is one of the major contributors to poor outcomes and institutionalization. The incidence and severity of delirium may be reduced by identifying risk factors, implementing nonpharmacological multicomponent interventions, and screening regularly for delirium. If delirium develops, early recognition is of utmost importance to determine and treat the underlying pathology in order to minimize negative sequelae. Although many researchers are seeking to identify effective pharmacological agents to prevent and/or treat delirium, no definitive evidence has been determined. Implementation of nonpharmacological and multicomponent bundles remain the primary intervention to prevent and/or treat delirium. Nurses play a key role in the prevention, early recognition, and treatment of this potentially devastating condition in older hospitalized adults.

BACKGROUND AND STATEMENT OF PROBLEM

Definition

Delirium is an indicator of acute brain dysfunction and is a complex neurocognitive disorder. Delirium is characterized by disturbances in consciousness and changes in cognition that develop over a short period of time (hours to days) and fluctuates. Evidence from history and physical or laboratory findings indicates a direct physiological cause from a general medical condition, an intoxicating substance, medication use, or multiple causes (American Psychiatric Association [APA], 2013). Delirious patients may exhibit hyperactive, hypoactive, or mixed motoric subtypes of delirium (Hosie, Davidson, Agar, Sanderson, & Phillips, 2013; Meagher, 2009). Two additional motoric subtypes have recently been noted: catatonic (extreme hypoactive) and excited or extreme hyperactive delirium (Maldonado, 2017; Wilson et al., 2017). Hyperactive delirium is easily

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

recognized as it is often accompanied by harmful patient behavior for patient and staff. The hypoactive subtype, with its lack of overt psychomotor activity, is also common (Hosie et al., 2013; Meagher, 2009; Pandharipande et al., 2007) and has a higher risk of mortality and other comorbid conditions, especially when superimposed on dementia (Gual et al., 2018; Yang et al., 2009).

Etiology and Epidemiology

Prevalence and Incidence

Among medical inpatients, delirium is present on hospital admission in 8% to 17% of older patients and in 40% of nursing home residents; during hospitalization, 50% of older adults develop delirium (Inouye, Westendorp, & Saczynski, 2014; Siddiqi, House, & Holmes, 2006). Among hip surgery patients, the incidence of delirium is 4% to 53%. Older adults experiencing hip fractures and preexisting cognitive impairment are extremely likely to develop delirium (25%–65%) and experience functional decline and death (Bruce, Ritchie, Blizard, Lai, & Raven, 2007; Freter, Koller, Dunbar, MacKnight, & Rockwood, 2017). Older adults admitted to medical intensive care units (ICUs) have both prevalent and incident delirium of 31% (McNicoll et al., 2003; Salluh et al., 2010). In surgical ICUs (SICUs), the prevalence of delirium on admission is only 2.6%; however, 24.4% to 28.3% develop delirium during their SICU stay (Balas et al., 2007; Chaiwat et al., 2019). Up to 81.7% of mechanically ventilated patients in medical and SICUs experience delirium (Ely et al., 2004; Pisani, Murphy, Araujo, & Van Ness, 2010), and more than half of older patients in medical ICUs still have delirium when transferred (Pisani et al., 2010). From 13.3% to 42.3% of palliative care patients have delirium on admission, 26% to 62% during hospitalization, and 58.8% to 88% when closer to death (Hosie et al., 2013). The incidence of delirium superimposed on dementia ranges from 22% to 89% (Fick, Agostini, & Inouye, 2002; Mosk et al., 2017).

Pathophysiology

The pathogenesis of delirium is an extremely complex physiological phenomenon involving interactions between neurotransmitter systems and psychoneuroimmunological pathways (American Geriatrics Society [AGS]/National Institute on Aging [NIA] Delirium Conference Writing Group, Planning Committee and Faculty, 2015). One theory postulated to be connected to the development of delirium involves five converging pathways: neuronal aging, neuroinflammation, oxidative stress, neuroendocrine dysregulation, and circadian dysregulation; additional research is needed to further explain this theory (Maldonado, 2017).

Risk Factors

The most common risk factors for the development of hospital delirium are dementia, older age, comorbid illness, severity of medical illness, infection, "high-risk" medication use, postoperative status, diminished activities of daily living, immobility, sensory impairment, urinary catheterization, urea and electrolyte imbalance, and malnutrition. Statistically significant risk factors are dementia, illness severity, urinary catheterization, low albumin level, length of hospital stay, and metabolic acidosis (Abraha et al., 2016; Ahmed, Leurent, & Sampson, 2014; Zaal, Devlin, Peelen, & Slooter, 2015). In older patients admitted for hip surgery, early cognitive impairment, such as memory impairments, incoherence, and disorientation, as well as underlying physical illness and age, are especially strong predictors of delirium (de Jonghe et al., 2007; Freter et al., 2017; Kalisvaart et al., 2006). Other possible risk factors include sleep deprivation (Weinhouse et al., 2009), elevated blood urea nitrogen (BUN)/creatinine ratio, polypharmacy, physical restraints, and anemia (Inouye et al., 1990; Inouye, Viscoli, Horwitz, Hurst, & Tinetti, 1993; O'Keeffe & Lavan, 1996).

Outcomes

The outcomes of delirium in hospitalized older adults are grave. Those who develop delirium have an increased mortality rate during hospitalization (Schubert et al., 2018) and post discharge (up to 22.7 months [Witlox et al., 2010]). These patients also experience increased hospital lengths of stay and require discharge to long-term care facilities (Shi, Presutti, Selchen, & Saposnik, 2012; Witlox et al., 2013). Other sequelae of delirium are depression, decreased functional and cognitive status, and increased geriatric syndrome complications (Anderson, Ngo, & Marcantonio, 2012; Cole, McCusker, Ciampi, & Belzile, 2008; Witlox et al., 2010, 2013). ICU patients who develop delirium have a higher mortality and complication rate, spend longer periods of time on mechanical ventilation, have increased ICU and hospital lengths of stay, and are more likely to be discharged to a long-term care facility (Ely et al., 2004; Ely, Gautam, et al., 2001; Shehabi et al., 2013; Zhang, Pan, & Ni, 2013). Thirty percent of patients surviving critical illness report depression, and 23% experience difficulty in ADLs at 12 months post discharge (Jackson et al., 2014). From 22% to 89% of older hospitalized adults with dementia also have

delirium superimposed on dementia (Fick et al., 2002), are at increased risk for developing delirium, and have worse outcomes, including a risk of death five times that for those without delirium (Ford, 2016; Morandi et al., 2014; Yang et al., 2009).

ASSESSMENT OF THE PROBLEM

Identification of risk factors is a critical first step in delirium prevention. Researchers have begun to utilize risk identification, through the electronic medical record, as a means to proactively identify those at high risk for progression to delirium in order to mitigate or eliminate those risks (Halladay, Sillner, & Rudolph, 2018; Milisen, Lemiengre, Braes, & Foreman, 2005). Recognizing delirium as a warning sign of worsening pathology is a key component of any delirium program. This can best be done by routinely assessing patients at risk for delirium with a standardized screening tool for delirium, although this is currently occurring only in 17% of hospitals (Neuman, Speck, Karlawish, Schwartz, & Shea, 2010), and nurses fail to recognize delirium 75% of the time (Rice et al., 2011).

The gold standard for diagnosing delirium is a full evaluation by a mental health expert using the criteria found in the most recent *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*; APA, 2013). However, given the rapid onset and typically fluctuating course of delirium, particularly in the hospital setting, a number of user-friendly and relatively rapid screening tools have been developed and utilized by nurses for over the past two decades.

The Confusion Assessment Method (CAM; Inouye et al., 1990) is the most widely used delirium screening instrument in hospitalized older adults, having been used in more than 5,000 original articles and translated into 13 languages (Inouye, 2015). The long CAM has 10 items and is preferred in research studies, whereas short CAM contains only the four items of the diagnostic algorithm. A version of the CAM for patients in ICUs (CAM-ICU; Ely, Inouye, et al., 2001) is recommended for use with critically ill adults (Devlin et al., 2018; Jacobi et al., 2002; Schuurmans, Deschamps, Markham, Shortridge-Baggett, & Duursma, 2003). The CAM instrument identifies the key features of delirium—acute onset and fluctuating course, inattention, disorganized thinking, and altered level of consciousness—and is supported by the best evidence (Wong, Holroyd-Leduc, Simel, & Straus, 2010). The brief CAM (bCAM) is another tool that has been used for rapid assessment for the verbal hospitalized elder utilizing the attention test of the months of year backward from December to July, with more than one error indicating inattention (Han et al., 2013; O'Regan et al., 2014). The Two-item Ultra-brief Delirium (UB-2) uses all 12 months of the year and also asks, "What is the day of the week?"; it has a sensitivity to pick up delirium of 93% and 96% in persons with dementia (Fick et al., 2018). If older adults fail either question, they are positive for delirium, and it should be followed up with another tool such as the CAM.

Other robust and usable scales include the Delirium Rating Scale (DRS), the Memorial Delirium Assessment Scale (MDAS), and the NEECHAM Confusion Scale (Adamis, Sharma, Whelan, & Macdonald, 2010; Breitbart et al., 1997; Neelon, Champagne, Carlson, & Funk, 1996; Trzepacz et al., 2001).

Another delirium scale in use is the Nursing Delirium Screening Scale (Nu-DESC; Gaudreau, Gagnon, Harel, Tremblay, & Roy, 2005). The Nu-DESC is based on the Confusion Rating Scale (CRS; Gagnon, Allard, Masse, & DeSerres, 2000), the only delirium screening scale that does not require patient participation as it evaluates the presence of confusional symptoms. The CRS can be completed in less than 2 minutes during routine nursing care and assesses four symptoms of delirium: disorientation, inappropriate behavior, inappropriate communication, and illusions or hallucinations. The CRS uses a score of 0 when there are no symptoms, 1 if there is one mild symptom, and 2 when a symptom is present and pronounced. A score of 2 or more is considered positive.

The Nu-DESC added a fifth symptom, psychomotor retardation, to account for the hypoactive variant of delirium (Gaudreau et al., 2005). When compared with blinded assessments of 59 patients with psychiatrists using the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; APA, 1994) criteria and research nurses using the CAM and MDAS assessments, the Nu-DESC showed 85.7% sensitivity and 86.8% specificity (De & Wand, 2015). When comparing the Nu-DESC to the CAM-ICU in ICU patients, the Nu-DESC had a sensitivity of 83% (compared to 81% for the CAM-ICU); however, the specificity of the Nu-DESC (81%) was significantly lower than that of CAM-ICU (96%; Luetz et al., 2010); so the CAM-ICU remains the preferred screening tool for delirium in critically ill patients.

Bedside nurses are in the best position to recognize delirium because they possess the skill and responsibility of ongoing patient assessment and are in key positions to recognize risk factors for delirium and the earliest cognitive changes heralding the onset of delirium. Early identification of risk factors and screening for onset of delirium are critical to implementing strategies to minimize the occurrence of this devastating pathology in hospitalized older adults. Chapter 9, Assessing Cognitive Function in the Older Adult, provides more information on screening and assessment tools.

Interventions

A Cochrane Review in 2016 found strong evidence that multicomponent interventions are noted to prevent delirium in both medical and surgical patients and moderate evidence that these interventions may decrease delirium severity (Siddiqi et al., 2016).

The focus of the AGS is to promote healthy aging through primary, secondary, and tertiary prevention under which delirium prevention and mitigation would be included (Friedman et al., 2018). It is noteworthy that virtually all of the components of these recommended nonpharmacological interventions to prevent and manage delirium are basic nursing practices that should be part of every nurse's routine care of hospitalized patients. Supporting studies (Abraha et al., 2016; AGS expert panel, 2014; Collinsworth, Priest, Campbell, Vasilevskis, & Masica, 2016; Inouye et al., 1999; Kolanowski et al., 2016; Lundstrom et al., 2005; Marcantonio, Flacker, Wright, & Resnick, 2001; Milisen et al., 2005; Rivosecchi, Kane-Gill, Svec, Campbell, & Smithburger, 2016; Rubin, Neal, Fenlon, Hassan, & Inouye, 2011; Rubin et al., 2006; Siddiqi et al., 2016; Zaubler et al., 2013) have included the following types of interventions:

1. Mobility
2. Reorientation
3. Cognitive stimulation
4. Maintenance of nutrition and hydration
5. Sleep enhancement
6. Vision and hearing adaptation
7. Nursing education
8. Geriatric consultation

CASE STUDY 20.1

Mrs. S. is a 71-year-old patient admitted, after a ground-level fall and humerus break, with a diagnosis of hyponatremia. She is a retired office worker who continues to work a waitress job for fun, lives with her fiancé, and is very active. She regularly has shopping outings with her grandchildren and enjoys driving her convertible. She recently had a bunion surgery and has mild hypertension (controlled with lisinopril 5 mg) and depression (sertraline 50 mg) since the death of her husband 9 years previously. Mrs. S. reports complete recovery from her surgery yet continues with diminished appetite, ongoing back pain despite ibuprofen daily, and dizzy spells in the day, leading to her fall. She reports wearing her contact lenses consistently and has no cognitive or executive functioning deficits. She is alert, oriented, and concerned regarding the cause of her fall, and in pain owing to the humerus break. Her admission sodium level was 122, and she also has elevated liver enzymes (ALP 300 IU/L and LDH 1,000 IU/L). Owing to the metabolic disarray, Mrs. S will not have surgery immediately to repair her bone.

What Factors Present on Admission to the Hospital Put Mrs. S at Risk for Developing Delirium?

- *Age:* Older adults are at greater risk of delirium, particularly if they have underlying dementia or depression. Physiological changes that occur with aging can affect the ability of older adults to respond to physical and physiological stress and to maintain homeostasis.
- *Metabolic disarray:* Electrolyte imbalances are direct brain insults often presenting as alterations in mental status.
- *Fall history:* Patients with a fall history may experience dizziness and potential for metabolic encephalopathy.
- *Pain:* Uncontrolled pain contributes to the development of delirium.

It is important to understand that delirium is not attributable to one particular factor but to the interplay of patient vulnerability (predisposing factors) and precipitating factors—common during hospitalization—that place the older adult at risk for delirium.

What Can You Do to Help Prevent Delirium in Mrs. S?

- Ensure adequate pain relief and assistance with positioning for comfort.
- Replace electrolytes as ordered.
- Ensure adequate sleep and rest.
- Review Mrs. S's nutritional status and collaborate with the interprofessional team to ensure adequate hydration and nutrition.
- Implement fall precautions and ensure a safe environment.

You provide care for Mrs. S on your next shift 2 days later. She has received a diagnosis of stage IV breast cancer with bone and liver metastases. She is confused and picking at the air and oriented to self only. An indwelling urinary catheter and peripheral intravenous line are

(*continued*)

CASE STUDY 20.1 (*continued*)

in place. In report, the day-shift nurse mentioned considering a physical restraint because Mrs. S was increasingly restless and impulsive. She is Nu-DESC positive, indicating that she may have delirium. The licensed independent practitioner was notified and confirmed delirium using the *DSM-5* criteria (APA, 2013).

What Are the Clinical Features of Delirium?

- *Disturbance of consciousness* characterized by reduced clarity and awareness of the environment: reduced ability to focus, sustain, and shift attention. Patients have trouble following instructions or making sense of their environment, even with cues. They may also get "stuck" on a particular concern or thought.
- *Cognitive changes:* Memory deficit, disorientation, language disturbance, and/or perceptual disturbance
- *Perceptual disturbances:* Hallucinations and delusions are common. Patients can be hyperactive and agitated or lethargic (hypoactive) and less active. The latter presentation is of particular concern because it is often not recognized by healthcare providers as delirium. The presentation may also be mixed, with the patient fluctuating from one to the other behavioral state.
- Delirium can be *characterized by* disturbances in the sleep–wake cycle and rapidly shifting emotional disturbances, with escalation of the disturbed behavior at night (sundowning).
- The clinical hallmarks of delirium are that the cited *changes occur rapidly* over several hours or days. There is a decreased attention span and a fluctuating course (waxing and waning of confusion).

It is also important to consider that delirium may occur concurrently with dementia or depression. In fact, these patients are at increased risk for developing delirium. Family and caregivers can be invaluable in helping to identify or distinguish cognitive changes in circumstances when the patient is not well known to you.

What Additional Factors May Now Be Contributing to Mrs. S's Delirium?

- *Worsening metabolic disarray:* Has her sodium corrected? Have any other electrolytes been affected by her devastating diagnosis?
- *Pain:* What is Mrs. S's pain-control regimen and status? What is the dose and frequency of the pain medication? Is the dose appropriate?
- *Hypoxemia:* Mrs. S is at risk because of limited mobility and diagnosis. What is her oxygen saturation (SpO_2)? Does she have crackles or diminished breath sounds?
- *Infection, inflammation, or other medical illness:* Could the bone break and could further complications from metastatic cancer be contributing to inflammation? An inflammatory response to a new medical problem may be the cause of the delirium. Could Mrs. S have a urinary tract infection (UTI) related to her indwelling catheter?
- *Unfamiliar surroundings:* Particularly for those with sensory deficits, unfamiliar environments can lead to misinterpretations of information, which may contribute to delirium.

What Steps Should Be Taken Now?

- *Avoid the use of restraints*, which could worsen Mrs. S's agitation and pain from her arm break.
- *Call the physician or nurse practitioner* immediately as delirium from electrolyte disturbances can be life threatening. Report your findings; request that the patient be evaluated to determine the underlying cause of the delirium. If the psychotic features of delirium worsen and the risk of harm to the patient or others is imminent, Mrs. S may also need medication to control her hyperactive symptoms to prevent further injuries.
- *Frequent reality orientation:* Frequent orientation, reassurance, and helping Mrs. S interpret her environment and circumstances should be helpful. (Monitor the patient's reaction. If the patient becomes upset or angry, you will need to modify your approach to that of more reassurance and validating the patient's experience rather than reorienting.)
- Are Mrs. S's contacts still in place? If not, ensure glasses are available. Impaired sensory input contributes significantly to delirium.
- Invite *family/significant others* to stay as much as they are able to assist with his orientation, reassurance, and sense of well-being. Monitor the effect of family visitation. If the patient has increased agitation or anxiety, then limit the visitation of the individual who seems to be triggering Mrs. S's upset.
- *Mobilize the patient*. Mobility assists with orientation and helps prevent problems associated with immobility, such as atelectasis and deep venous thrombosis.
- *Judicious use of medications* for pain, sleep, or anxiety. Drugs used to address these issues can exacerbate the delirium. Try nonpharmacological approaches for sleep and anxiety first. A regular schedule of a smaller dose or nonnarcotic pain medication almost always is better than as-needed dosing.

(*continued*)

CASE STUDY 20.1 (*continued*)

- Try to *provide for adequate sleep:* Reduce noise at night; play soft, relaxing music; offer warm milk or herbal tea, and massage; reschedule care in order not to interrupt sleep.
- Make sure the patient is well *hydrated and nourished*.
- Talk to the doctor or nurse practitioner about removing the *indwelling urinary catheter*. If strict monitoring of intake and output are not needed, remove the catheter as soon as possible. Consider use of an external female catheter. Are there additional symptoms of a UTI such as fever or pain? Consider urinalysis.
- *Address safety concerns* (e.g., increase surveillance). Mrs. S is now also at greater risk for falls and other conditions and syndromes.

SUMMARY

Delirium is a common occurrence in hospitalized older adults and contributes to poor outcomes. Thus, it is important to identify those patients at risk for delirium immediately upon admission and implement preventive measures as well as promptly recognize delirium if it develops. Nursing assessments using validated delirium screening instruments must become routine. A standard-of-practice protocol provides concise information to guide nursing care of individuals at risk for or experiencing delirium.

NURSING STANDARD OF PRACTICE

Protocol 20.1: Delirium Prevention/Management

I. GOAL

Reduce the incidence of delirium in older hospitalized adults

II. OVERVIEW

A. Delirium is a common syndrome in hospitalized older adults and is associated with increased mortality, hospital costs, and long-term cognitive and functional impairment.
B. Delirium may be prevented or diminished with the recognition of high-risk patients and the implementation of a standardized multicomponent delirium-reduction protocol.
C. Recognition of risk factors and routine screening for delirium should be part of comprehensive nursing care for older adults.

III. BACKGROUND

A. Delirium is a neurocognitive disorder that develops over a short period of time (hours to days), fluctuates in severity throughout the day, and is primarily a disturbance of attention. Delirium is a physiological consequence of another underlying disorder (APA, 2013).
B. Prevalence and incidence: In 8% to 17% of older medical patients, 31% of ICU patients, and 26% to 62% of palliative care patients, delirium is *present on admission* (Inouye et al., 2014; Siddiqi et al., 2006). Delirium *develops* in 11% to 42% of medical (Siddiqi et al., 2006), 4% to 53% of hip surgery (Bruce et al., 2007), 31% of medical ICU (McNicoll et al., 2003; Salluh et al., 2010), 24.4% to 28.3% of surgical ICU (Balas et al., 2007; Chaiwat et al., 2019), up to 81.7% of mechanically ventilated (Ely et al., 2004; Pisani et al., 2010), and 26% to 88% of palliative care patients (Hosie et al., 2013; Mosk et al., 2017).
C. Risk factors: The most common risk factors for delirium in acute hospital units are dementia, older age, comorbid illness, severity of medical illness, infection, "high-risk" medication use, postoperative status, diminished activities of daily living, immobility, sensory impairment, urinary catheterization, urea and electrolyte imbalance, metabolic acidosis, and malnutrition (Abraha et al., 2016; Ahmed et al., 2014; Zaal et al., 2015). Other possible risk factors

(*continued*)

Protocol 20.1: Delirium Prevention/Management (*continued*)

include sleep deprivation (Weinhouse et al., 2009), polypharmacy, physical restraints, and anemia (Inouye et al., 1990, 1993; O'Keeffe & Lavan, 1996).

D. Outcomes: The outcomes of delirium in hospitalized older adults are increased mortality (Schubert et al., 2018; Witlox et al., 2010), hospital length of stay, transfer to long-term care facilities (Shi et al., 2012; Witlox et al., 2013), depression, decreased functional and cognitive status, increased geriatric syndrome complications, and dementia (Anderson et al., 2012; Cole et al., 2008; Jackson et al., 2014; Witlox et al., 2010, 2013). From 22% to 89% of older hospitalized adults with dementia also have delirium superimposed on the dementia (Fick et al., 2002), are at increased risk for developing delirium, and experience worse outcomes if it occurs (Ford, 2016; Morandi et al., 2014; Yang et al., 2009).

IV. PARAMETERS OF ASSESSMENT

A. Assess for common and other risk factors (Ahmed et al., 2014; Halladay et al., 2018).
   1. Cognitive dysfunction
   2. Illness severity
   3. Comorbidities
   4. Infection
   5. Postoperative status
   6. High-risk medication use (e.g., benzodiazepines)
   7. Immobility
   8. Decreased activities of daily living
   9. Urinary catheterization
   10. Urea and electrolyte imbalance and dehydration
   11. Malnutrition
   12. Physical restraints
   13. Anemia
   14. Metabolic acidosis

B. Assess for delirium using a validated screening tool (see "Resources")
   1. Key features of delirium (CAM, CAM-ICU, bCAM)
      a. Acute onset and fluctuating course
      b. Inattention
      c. Disorganized thinking
      d. Altered level of consciousness
   2. Delirium symptoms (Nu-DESC)
      a. Disorientation
      b. Inappropriate behavior
      c. Inappropriate communication
      d. Illusions or hallucinations
      e. Psychomotor hypoactivity

V. NURSING CARE STRATEGIES

A. Eliminate or minimize risk factors
   1. Administer medications judiciously; avoid high-risk medications.
   2. Prevent and/or promptly and appropriately treat infections.
   3. Prevent and/or promptly treat dehydration and electrolyte disturbances.
   4. Provide adequate pain control.
   5. Maximize oxygen delivery (supplemental oxygen, blood, and BP support as needed).

(*continued*)

Protocol 20.1: Delirium Prevention/Management (*continued*)

6. Use sensory aids as appropriate.
7. Regulate bowel/bladder function.
8. Provide adequate nutrition.

B. Provide a therapeutic environment.
1. Foster orientation: Frequently reassure and reorient patient (unless patient becomes agitated); use easily visible calendars, clocks, caregiver identification; carefully explain all activities; communicate clearly.
2. Provide appropriate sensory stimulation: quiet room, adequate light, pursue one task at a time, use noise-reduction strategies.
3. Facilitate sleep: Offer back massage, warm milk, or herbal tea at bedtime; play relaxation music/tapes; employ noise-reduction measures; avoid awaking patient.
4. Foster familiarity: Encourage family/friends to stay at bedside, bring familiar objects from home, maintain consistency of caregivers, minimize relocations.
5. Maximize mobility: Avoid restraints and urinary catheters; ambulate or perform active ROM exercises three times daily.
6. Provide appropriate cognitive stimulation.
7. Communicate clearly, provide explanations.
8. Reassure and educate family.
9. Minimize invasive interventions.
10. Consult with a geriatric specialist.
11. Consider psychotropic medication **as a last resort** for agitation (Neufeld, Yue, Robinson, Inouye, & Needham, 2016; Patel, Baldwin, Bunting, & Laha, 2014; Zaubler et al., 2013).

VI. EVALUATION/EXPECTED OUTCOMES

A. Patient
1. Absence of delirium
2. Cognitive status returned to baseline (before delirium)
3. Functional status returned to baseline (before delirium)
4. Discharged to same destination as prehospitalization

B. Healthcare provider
1. Regular use of delirium screening tool
2. Increased detection of delirium
3. Implementation of appropriate interventions to prevent/treat delirium from standardized protocol
4. Decreased use of physical restraints
5. Decreased use of antipsychotic medications
6. Increased satisfaction in care of hospitalized older adults

C. Institution
1. Staff education and interprofessional care planning
2. Implementation of standardized delirium screening protocol
3. Decreased overall cost
4. Decreased length of stay
5. Decreased morbidity and mortality
6. Increased referrals and consultation to earlier specified specialists
7. Improved satisfaction of patients, families, and nursing staff

VII. FOLLOW-UP MONITORING OF CONDITION

A. Decreased delirium to become a measure of quality care

(*continued*)

Protocol 20.1: Delirium Prevention/Management (*continued*)

B. Incidence of delirium to decrease
C. Patient days with delirium to decrease
D. Staff competence in recognition and treatment of delirium
E. Documentation of a variety of interventions for delirium

ABBREVIATIONS

BCAM	Brief Confusion Assessment Method
CAM	Confusion Assessment Method
CAM-ICU	CAM for patients in intensive care unit
Nu-DESC	Nursing Delirium Screening Scale
ROM	Range of motion

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RESOURCES

Recommended Delirium Screening Instruments

Brief Confusion Assessment Method (bCAM)
https://www.icudelirium.org/medical-professionals/adult-non-icu-care-monitoring-delirium

Confusion Assessment Method (CAM)
http://www.hospitalelderlifeprogram.org/delirium-instruments/short-cam

Confusion Assessment Method for the Intensive Care Unit (CAM-ICU)
http://www.icudelirium.org/delirium/monitoring.html

Nursing Delirium Screening Scale (Nu-DESC)
http://www.jpsmjournal.com/article/S0885-3924(05)00053-9/abstract

Other Delirium Screening Instruments

Delirium Rating Scale (DRS)-revised-98

Memorial Delirium Assessment Scale (MDAS)

NEECHAM Confusion Scale

Additional Information About Delirium

American Nursing Association. https://www.nursingworld.org/practice-policy/work-environment/health-safety/delirium. An online informational site open to all nurses for health and safety of patients.

Consult GeriRN. http://consultgerirn.org/resources. An online resource containing information regarding assessing and caring for older adults, sponsored by the Hartford Institute for Geriatric Nursing at New York University College of Nursing.

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Dementia: Assessment and Care Strategies*

Marie Boltz

21

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe the spectrum of dementia syndromes.
2. Recognize the clinical features of dementia.
3. Discuss nonpharmacological and pharmacological approaches in the management of dementia.
4. Develop a nursing plan of care for an older adult with dementia.

OVERVIEW

Dementia is most commonly defined as a clinical syndrome of cognitive decline. The term *dementia* was eliminated and replaced with "major or minor neurocognitive disorder" in the latest *Diagnostic and Statistical Manual of Mental Health Disorders* (5th ed.; *DSM-5*; American Psychiatric Association, 2013). It was felt that the term *dementia* was stigmatizing and that the focus should be on decline rather than deficit. Because these changes are confusing to many healthcare professionals and the term *dementia* remains established in the literature, the terms *dementia* and *neurocognitive disorder* are used interchangeably in this chapter. In addition to disruptions in cognition, dementia is associated with a gradual decline in function and changes in mood and behavior.

There are many causes of dementia and dementia-like presentations. Differentiating these changes early in the course of illness is important because condition-specific assessment, monitoring, and management strategies can be employed. Differential diagnoses among conditions that cause cognitive impairment are confounded by the fact that these conditions may coexist and disparate neurocognitive disorders may be similarly clinically expressed.

Major goals in the clinical approach to a person presenting with cognitive impairments are identification and resolution of potentially reversible conditions (e.g., delirium, depression), recognition and control of comorbid conditions, early diagnosis and management of a neurocognitive disorder, and the provision of caregiver support. The focus of this chapter is on assessment and management of the major neurocognitive disorders.

BACKGROUND AND STATEMENT OF PROBLEM

Global estimates reflect that approximately 50 million people have dementia, which will increase to 75.6 million by 2030 and 135.5 million by 2050 (Alzheimer's Disease

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

International, 2018). It is further estimated that every 4 seconds there is a new case of dementia in the world and that once every 65 seconds, someone in the United States develops Alzheimer's disease (Alzheimer's Association, 2019). Dementia affects about 11% of individuals aged 65 years and older, and the prevalence is higher in individuals 85 years and older, at nearly 32%. More than 5.8 million individuals in the United States have the most common form of dementia, Alzheimer's disease (AD), a number that is projected to increase to approximately 14 million by 2050 (Alzheimer's Association, 2019).

This chapter discusses the most common forms of progressive dementia: AD, vascular dementia (VaD), dementia with Lewy bodies (DLB), and frontotemporal dementia (FTD). Less common, though not less significant, is progressive dementia associated with Parkinson's disease (PDD), dementias associated with HIV, and Creutzfeldt–Jacob disease.

AD, the most common form of dementia, accounts for more than 80% of all cases. A chronic neurodegenerative disease, first described by Alois Alzheimer in 1907, it is characterized by neurofibrillary plaques and "tangles" in the brain. The extracellular accumulation of amyloid beta proteins in the neuritic plaques is one of the hallmarks of AD (Takahashi, Nagao, & Gouras, 2017). The variation in the clinical presentation of the disease depends on the area of the brain that is affected. Classic features of AD include progressive loss of memory, deterioration of language and other cognitive functions, decline in the ability to perform activities of daily living (ADL), and changes in personality and behavior and judgment dysfunction (Kumfor, Halliday, & Piguet, 2017). Mild cognitive impairment (MCI) represents a transitional state between healthy aging and dementia and is characterized by cognitive impairment out of proportion to the age of the individual, yet the individual does not meet the criteria for dementia (Yanhong, Chandra, & Venkatesh, 2013). Incidence rates of MCI are 51 to 76.8 per 1,000 person-years, with a higher incidence in those with advanced age, lower education, vascular risk factors (type 2 diabetes, hypertension, obesity, dyslipidemia, smoking), cardiovascular disease outcomes (coronary artery disease, atrial fibrillation, congestive heart failure, cerebrovascular disease), and neuropsychiatric conditions (depression, anxiety, apathy; Roberts & Knopman, 2013). About 35% of MCI patients progress to AD, with an annual conversion rate of 5% to 10% (Mitchell, 2009). Cerebrospinal fluid (CSF) biomarkers' performance is the most convenient test predicting conversion, yet it remains suboptimal (Ferreira et al., 2014).

VaD, sometimes referred to as vascular cognitive impairment (VCI) and previously known as multi-infarct dementia (MID), refers to dementia resulting from cerebrovascular disease. It is the second most common cause of dementia among older adults and represents approximately 30% of all cases of dementia in the United States (Michigan Alzheimer's Disease Center, 2019). The link between AD and VaD is strong yet not entirely clear (de la Torre, 2012). The onset of VaD is usually more acute than AD, and the diagnosis of VaD is based on the association between a cerebrovascular event and the onset of clinical features of dementia, including evidence of focal deficits, gait disturbances, personality and mood changes, and impairments in executive function (Kuźma et al., 2018). As compared with AD, memory may not be impaired or is more mildly affected. Not uncommonly, AD and VaD pathology coexist, and this, often referred to as a mixed dementia, is likely to increase as the population ages (Jang et al., 2017).

DLB accounts for about one in 25 diagnosed cases of dementia (Vann Jones & O'Brien, 2014). DLB is a neurodegenerative dementia that results when Lewy bodies form in the brain. Lewy bodies are pathological aggregations of alpha-synuclein found in the cytoplasm of neurons (Morra & Donovick, 2014). Clinical features include cognitive and behavioral changes in combination with features of parkinsonism. Disorders of executive function occur early. Hallucinations, visual–spatial disturbances, and sleep disorders are prominent. Rigidity and unsteady gait are common. Many (but not all) patients with PDD develop a dementia years after the motor symptoms appear. Distinctions have been made clinically between DLB and the dementia associated with PDD based on the sequence of the appearance of symptoms over the time course. In PDD, motor symptoms precede cognitive impairment, whereas DLB begins with fluctuations in cognition. DLB and PDD may represent the same pathological process along a disease spectrum (Mayo & Bordelon, 2014).

FTD, with a prevalence of 15 per 100,000, refers to a group of progressive brain diseases whose clinical manifestations are dominated by behavioral changes and/or impairments in language (Riedl, MacKenzie, Forsti, Kurz, & Diehl-Schmid, 2014). A growing body of evidence indicates that FTD and amyotrophic lateral sclerosis (ALS) share some clinical, pathological, and molecular features as part of a common neurogenerative spectrum disorder (Gascon & Gao, 2014).

The National Alzheimer's Project Act of 2011 (NAPA) mandated a national plan to address AD and related dementias (Montine et al., 2014). NAPA, directed by the U.S. Department of Health and Human Services, is organized around the following five goals: (a) prevent and effectively treat AD by 2025; (b) enhance care quality and

efficiency; (c) expand supports for individuals with AD and their families; (d) enhance public awareness and engagement; and (e) improve data to track progress and drive improvement (Bonnel, 2013).

ASSESSMENT OF THE PROBLEM

Goals of Assessment

Early identification of cognitive impairment is the most important goal in assessment. Cognitive impairment resulting from conditions like dementia, delirium, or depression represents critically serious pathology and requires urgent assessment and tailored interventions. Yet diminished or altered cognitive functioning is often perceived by healthcare professionals as a normal consequence of aging, and opportunities for timely intervention are too often missed (Harris, 2017). Although distinctions have been made comparing the clinical features of the common cognitive impairments associated with delirium, dementia, and depression, this is difficult to do clinically because these conditions often coexist and older adults can demonstrate atypical features in any of these conditions.

The second most important assessment goal is to identify a potentially reversible primary or contributing cause of a cognitive impairment. The common causes of reversible cognitive impairment (delirium) in the older adult are covered in Chapter 20, Delirium: Prevention, Early Recognition, and Treatment.

History Taking

Complaints from the patient or observations made by others of memory loss, problems with decision-making and/or judgment, or a decline in function in an activity of daily living should alert the healthcare professional that a progressive form of dementia might exist. Collecting an accurate history is the cornerstone of the assessment process, yet this is obviously a challenge in the individual presenting with cognitive impairment. The assessment domains covered in history taking include functional, cognitive, and behavioral queries and observations. The history-taking process involves interviewing the patient, followed, perhaps, by clarifying, elaborating, and validating information with the family or others familiar with the capabilities and expressions of the patient. An informant questionnaire on cognitive decline can also provide utility, the commonly used tools being the AD8 and the Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE). The AD8 was originally validated as an informant-based interview, completed by a spouse, adult child, or friend who knew the older adult well. Recent studies validated the AD8 as a direct questionnaire for the person with potential dementia who can often rate change in performance into the later stages of dementia (Galvin, Roe, Coats, & Morris, 2007). These tools are useful for screening purposes with established reliability and validity (Galvin, Roe, Xiong, & Morris, 2006; Quinn et al., 2014). Although the accuracy is reasonable, its use alone may result in misdiagnosis or false reassurance, underscoring the need for a comprehensive evaluation.

Even when a diagnosis of dementia has been made, it is often not communicated well across care settings. The easiest way to increase recognition of dementia in hospital or home healthcare patients is to add the items "memory or thinking problems," "Alzheimer's disease," and "dementia" to the list of diseases and conditions patients and families are routinely asked about on intake forms and in intake interviews.

Functional Assessment

Dementia is characterized by deterioration in the ability to perform ADL. Because cognitive assessment can be embarrassing and/or threatening, it may be more respectful to initiate the conversation around the patient's functional domain. Asking the patient to elaborate on his or her functional abilities in ADL as well as instrumental activities of daily living (IADL) and eliciting any identified decline with specified chronology can provide some insight. The Functional Activities Questionnaire (FAQ) is an informant-based measure of functional ability and has been recognized for its ability to discriminate early dementia. An informant, typically the primary caregiver, is asked to rate the performance of the patient in 10 different activities (Pfeffer, Kurosaki, Harrah, Chance, & Filos, 1982). The Functional Assessment Staging Test (FAST) has been used to effectively discriminate among normal cognition, MCI, and dementia and has proven to be useful in measuring functional performance (Rikkert et al., 2011; Teng et al., 2010). The Alzheimer's Disease Cooperative Study (ADCS)–ADL inventory is a specific functional tool used primarily in clinical drug trials to assess and monitor patients with moderate to severe AD (Galasko et al., 1997). The patient's daily caregiver is asked to rate the older adult's usual performance on the more basic measures of function over the previous month to identify progression of functional decline. It has been recognized that individuals with a frontotemporal behavioral-variant form of dementia may have greater functional impairment than those with other forms of dementia (Lima-Silva, Bahia, Nitrini, & Yassuda, 2013). In addition to looking for potential treatments, this

rating helps to provide an explanation to the patient and family for advance care planning while the patient is still capable of decision-making.

Cognitive Assessment

The cognitive domain is assessed as part of a broader mental status evaluation, the components of which are listed in Box 21.1. Although some of the parameters of a mental status evaluation (such as memory or cognition) might be measured with a standardized tool, such as the Montreal Cognitive Assessment (MoCA) and St. Louis University Mental Status Exam (SLUMS), others require specific inquiry or direct or indirect observation by the healthcare professional and/or caregiver. The measure of mood is totally subjective and is based on self-report status. The evaluation always provides the opportunity to identify sensory impairments (vision and hearing loss), which can further impact cognition, function, and behavior. There are a variety of tools for assessing cognitive impairment, some more sensitive to mild dementia and others to moderate to severe dementia.

The gold standard of tools that measure cognition is the MMSE, which was developed over 30 years ago (Folstein, Folstein, & McHugh, 1975). The tool is no longer in the public domain, and copyright permission must be secured. Tools with comparable sensitivity and specificity for detecting dementia are the MoCA (Nasreddine et al., 2005) and SLUMS, which are available for free (Tariq, Tumosa, Chibnall, Perry, & Morley, 2006).

Instruments such as the Mini-Cog (Borson, Scanlan, Chen, & Ganguli, 2003), Memory Impairment Screen (Buschke, 1999), and General Practitioner Assessment of Cognition (Brodaty et al., 2002) have all been recognized for utility, whereas the Clock Draw test (CDT; Shulman, 2000) and newer instruments, such as the MoCA (Nasreddine et al., 2005), have greater sensitivity, address frontotemporal executive function, and have less educational and cultural bias (Ismail, Rajji, & Shulman, 2010). Unlike the more language-based tools described earlier, the CDT assesses cognition focused on executive function. A systematic review of the literature identified the CDT's usefulness in predicting future cognitive impairment (Peters & Pinto, 2008). Scoring is based on the ability to draw the face of a clock freehand, insert the hour numbers in the appropriate location, and then set the hands of the clock to the time designated by the examiner. The CDT is strongly correlated with executive function (i.e., the ability to execute complex behaviors and to solve problems) and is useful in the detection of mild dementia (Peters & Pinto, 2008). It also correlates moderately with driving performance; as the CDT score drops, the number of driving errors increases (Freund, Gravenstein, Ferris, Burke, & Shaheen, 2005; Freund, Gravenstein, Ferris, & Shaheen, 2002).

A clinically useful tool that combines the CDT with measures of cognition (three-word recall) is the Mini-Cognitive (Mini-Cog; Borson, Scanlan, Brush, Vitaliano, & Dokmak, 2000). The Mini-Cog detected cognitive impairment in a community sample of predominantly ethnic minority better than primary care physician assessment (84% vs. 41%), particularly in milder stages of the disease (Borson, Scanlan, Watanabe, Tu, & Lessig, 2005).

A systematic review of the Mini-Cog for screening for dementia in primary care demonstrated that it was brief; easy to administer; clinically acceptable and effective; and minimally affected by education, gender, and ethnicity (Milne, Culverwell, Guss, Tuppen, & Whelton, 2008) with psychometric properties similar to the MMSE (Brodaty, Low, Gibson, & Burns, 2006). See Chapter 9, Assessing Cognitive Function in the Older Adult, for more information on cognitive assessment.

BOX 21.1

Components of Mental Status Evaluation

State of consciousness: quality or state of awareness
General appearance and behavior: appropriately groomed and interactive
Orientation: person, place, time
Attention and concentration: ability to attend and concentrate
Memory: ability to register, recall, retain
Judgment and insight: ability to make appropriate decisions
Executive control functions: ability to abstract, plan, sequence, and use feedback to guide performance
Visual–spatial function: ability to mentally manipulate a figure
Speech and language: ability to communicate ideas and receive and express a message
Thought content: presence of delusions, hallucinations
Mood and affect: how individual feels most days and at a given moment and the appropriateness of behavior demonstrated

Behavioral Assessment

The vast majority of persons living with dementia exhibit behavioral and psychological symptoms of dementia (BPSD), which are distressing perceptions, thought content and mood, and behaviors such as aggression and

apathy (Kales, Gitlin, & Lyketsos; Detroit Expert Panel on Assessment Management of Neuropsychiatric Symptoms of Dementia, 2014). BPSD result in declines in function, including some that are precipitous, risk of physical abuse, poor quality of life, caregiver burden, and they account for more than one third of all dementia-related costs (R. D. Adelman, Tmanova, Delgado, Dion, & Lachs, 2014; Herrmann et al., 2006; Toot, Swinson, Devine, Challis, & Orrell, 2017).

Regular assessment and monitoring can help identify the triggers of BPSD and early manifestations of the behavior. Timely interventions can help maintain functionality and safety, and the de-escalation of the behavior can help decrease the level of distress experienced by both the patient and the caregiver. Asking the patient about levels of restlessness, anxiety, and irritability is important, as at times these emotional/behavioral states occur even earlier than cognitive changes.

The Neuropsychiatric Inventory (NPI; Cummings, Mega, Rosenberg-Thompson, Carusi, & Gornbein, 1994) measures frequency and severity of psychiatric symptoms and behavioral manifestations in individuals with dementia. The NPI takes about 10 minutes to administer, during which the caregiver is asked screening and probing questions related to the presence and degree of behaviors such as agitation, anxiety, irritability, apathy, and disinhibition. The NPI also includes a measure of caregiver stress. It has established validity and reliability, although it does not discriminate between disorder types (Lai, 2014).

Depression is a common neuropsychiatric manifestation in persons living with dementia (Petersen et al., 2017). Thus, it is important to conduct an adjunctive assessment of depression. The Geriatric Depression Scale—Short Form (GDS-SF; Sheikh & Yesavage, 1986) and Patient Health Questionnaire-9 (PHQ-9; Siu & United States Preventive Services Task Force, 2016) are valid and reliable screening instruments but are not recommended for screening in adults with cognitive impairment. The Cornell Scale for Depression in Dementia (CSDD) is an interviewer-rated scale that was developed specifically to detect symptoms of depression in older adults with dementia (Alexopoulos, Abrams, Young, & Shamoian, 1988). Screening instruments along with appropriate depression-management strategies are discussed in detail in Chapter 19, Late-Life Depression.

Physical Examination and Diagnostics

Once the functional, cognitive, and behavioral domains in progressive dementia have been established through history taking of the patient and the caregiver, a thorough review of systems is undertaken, followed by the physical examination. The history-taking process narrows the differential diagnosis of reversible and irreversible causes of dementia. A thorough neurological and cardiovascular examination will help to specify the etiology of a single type or combined dementia, which will direct the need for laboratory and imaging tests. Cardiovascular findings, such as hypertension, arrhythmias, and extra heart sounds or murmurs, along with focal neurological findings, such as weakness and sensory deficit, may favor a diagnosis of VaD, pathological reflexes, gait disorders, and abnormal cerebellar findings that may be indicative of AD, and parkinsonian signs that might indicate dementia associated with either Lewy bodies or PDD (Kane, Ouslander, Abrass, & Resnick, 2013).

There are no specific laboratory tests for the diagnosis of progressive dementia other than those that can primarily indicate a potentially reversible or contributing cause. The American Academy of Neurology (AAN) recommends two specific laboratory tests (thyroid function and B12) in the initial evaluation of suspected dementia (Knopman et al., 2001). The AAN similarly recommends that all patients with suspected dementia have an MRI study or noncontrast CT as part of the initial workup.

Referral of the patient to a neuropsychologist or memory clinic for more extensive neuropsychological testing is often indicated in order to provide more specific diagnostic information associated with neurodegenerative disease states and areas of brain dysfunction. This kind of assessment can identify subtle cognitive impairments in higher functioning individuals, distinguish MCI from dementia, and provide direction and support for care providers and the family (Zweig, 2016).

Caregiver Assessment

Eighty percent of the care provided to persons living with dementia, both care delivery (hands-on care) and care management, is provided by informal caregivers (family and friends; Alzheimer's Association, 2019). Approximately 15.5 million caregivers provide an estimated 17.7 billion hours of unpaid care, and higher numbers prevail among African American and Hispanic as compared to White and Asian-American caregivers. The majority of caregivers are women (66%) with an average age of 42; 64% are currently employed, are students, or are homemakers. Twenty-one percent of female caregivers are aged 65 and over. Men who provide caregiving tend to be spouses (Alzheimer's Association, 2019).

Caregivers have described the rewards of caregiving: reciprocity, learning and personal growth, emotional

closeness to the care receiver, and the opportunity to enact their values (McGillick & Murphy-White, 2016). However, caregiving often takes a physical, emotional, and psychological financial toll. Stress is often related to one or more of the following: employment complications, less family time, disrupted family and social relationships, less time for leisure, and less self-care (Campbell, Rowe, & Marsiske, 2011). A review of the physiological consequences of caregiving describes multiple studies that have examined the effect of the caregiving experience on physical consequences of caregiving. Being a dementia caregiver was associated with poorer function in specific domains of cognitive function (processing speed, attention, and concentration) as well as overall functioning. Also, immune function in caregivers has been shown to be worse, particularly with the immune markers of TNF-α and C-reactive protein both consistently elevated, indicating immune dysfunction (Fonareva & Oken, 2014). Researchers have also found evidence of two pathophysiological mechanisms of vascular inflammation and altered clotting profiles in caregivers (Rowe, Farias, & Boltz, 2016).

The proposed mechanisms of caregiving-associated physiological and psychological change include emotional demands of caregiving, poor sleep, sustained vigilance, and interference with caregivers' health-promoting behaviors (Covinsky et al., 2001; Simpson & Carter, 2013; Zanetti et al., 1998). The most prominent psychological change is depression, with a number of risk factors for higher levels of depression already identified. These include the caregiver having lower educational levels, lower income, being a spouse caregiver, being female, and being Caucasian (compared with being African American; Rowe et al., 2016). Predictors of high levels of depressive symptoms include poorer self-rated health, smaller social networks, and use of dysfunctional (emotion-focused) coping. Care recipient characteristics that are associated with caregiver depression include poorer cognitive function, higher dependence in ADL, and behavioral manifestations of distress in the patient (Piercy et al., 2013).

Hospitalization of the person with dementia increases the stress of caregivers. Family caregivers have described care-related worries related to safety, comfort, and emotions, and the need to keep vigil (de Vries, Drury-Ruddlesden, & Gaul, 2019). They also described the importance of bedside communication tools and positive clinician relational skills to support their efforts to promote positive outcomes for the patient (Boltz, Chippendale, Resnick, & Galvin, 2015a).

Because the demands of caregiving have the potential to impact caregiver health as well as efficacy in the caregiving role, caregiver well-being warrants assessment. The Zarit Burden Interview (ZBI) can be used to identify the degree of burden experienced by the caregiver. The ZBI is a four-item screening followed by an additional 12 items; the test has good reliability and validity (Higginson, Gao, Jackson, Murray, & Harding, 2010). Administration of this tool to a community-dwelling caregiver can indicate the extent of impact caregiving has on the caregiver's health, social and emotional well-being, and finances. The Modified Caregiver Strain Index (CSI) is a 13-question tool that measures strain (financial, physical, social, psychological, and personal) related to care provision, with excellent internal consistency and reliability (Onega, 2008; B. Robinson, 1983; Thornton & Travis, 2003). Given that higher caregiver strain has been found to be associated with higher caregiver anxiety at the time of the care receiver's hospitalization, routine evaluation of caregiver strain is integral to informing the transitional planning for persons with dementia (Boltz et al., 2015a).

The Preparedness for Caregiving is an eight-item instrument that asks caregivers how well prepared they believe they are for multiple domains of caregiving: physical care and emotional support, setting up support services, dealing with the stress of caregiving. Items are rated 0 (not at all prepared) to 4 (very well prepared); the tool shows very good reliability and internal consistency (Archbold, Stewart, Greenlick, & Harvath, 1992), including in family caregivers of hospitalized persons with dementia (Boltz et al., 2015b).

PROMOTING HEALTH, FUNCTION, AND WELL-BEING IN THE PERSON LIVING WITH DEMENTIA

Nonpharmacological strategies, including those from the cognitive, behavioral, and environmental domains, in combination with staff support and education, are effective. Physical/functional, environmental, psychosocial, educational, and behavioral interventions are discussed as follows.

Physical/Functional Interventions

Maintaining the physical and functional well-being of the individual with progressive dementia facilitates independence, maintains health status, and can ease the caregiving burden. Interventions include adequate nutrition and hydration, regular exercise, maintenance of ADL by encouraging self-care, proper rest and sleep, appropriate bowel and bladder routines, proper dental hygiene and care, and current vaccinations. As comorbidities are common, regular assessment, vigilant monitoring, and careful management of acute and chronic conditions are necessary.

The Function Focused Care Intervention for the Cognitively Impaired (FFC-CI) teaches and motivates direct

care workers (DCWs) to engage residents with dementia in activities that optimize function and activity while minimizing affective and behavioral disturbances during care interactions. Staff are provided with education on communication techniques, ways to motivate, self-care promotion, and ways to integrate physical activity in daily life. Environmental and policy modifications are provided as needed. Outcomes in both assisted living and the nursing home include improvements in the amount and intensity of physical activity (by survey and actigraphy) and physical function in the treatment group, as well as fewer falls. There was no significant difference between groups with regard to agitation or apathy (Galik, Resnick, Hammersla, & Brightwater, 2014; Galik, Resnick, Lerner, Hammersla, & Gruber-Baldini, 2016).

Vehicular-driving safety might need to be examined as recent evidence indicates that individuals with dementia pose a risk in driving safety (Man-Son-Hing, Marshall, Molnar, & Wilson, 2007). There is insufficient evidence to either support or refute the benefit of neuropsychiatric testing or intervention strategies for drivers with dementia (Iverson et al., 2010). However, it is prudent to engage the family caregiver and person with dementia in monitoring of driving safety.

Environmental Interventions

A specialized ecological model of care, which facilitates interaction between the person and the environment in a more homelike atmosphere, has proven to be beneficial for individuals with dementia. This model affords greater privacy, encourages meaningful activities, and permits more choice than the traditional model of care. It also demonstrates that individuals with dementia experience less decline in ADL and more engagement with the environment, with no measurable differences found in cognitive measures, depression, or social withdrawal (Reimer, Slaughter, Donaldson, Currie, & Eliasziw, 2004). A study of residents before and after conversion to a household model found that social engagement or interactive occupation with residents was more after implementing the household model (Morgan-Brown, Newton, & Ormerod, 2013).

A systematic review reported inclusive results and suggested that more research is needed with regard to the use of bright light in fostering better sleep and reducing behavior problems in dementia (Forbes et al., 2009). The use of aromatherapy to reduce disturbed behavior, promote sleep, and stimulate motivation also shows promise but needs more study (Thorgrimsen, Spector, Wiles, & Orrell, 2003). Manipulation of the environment (alarms, circular hallways, visual, or structural barriers) to minimize wandering has not been conclusively demonstrated to be effective (Futrell & Melillo, 2002). There is a lack of robust evidence supporting nonpharmacological interventions for wandering (L. Robinson et al., 2007).

A scoping review of dementia-friendly hospital design concluded that evidence of design principle effectiveness is needed that can be applied to general medical and surgical units (Parke et al., 2017). In the United Kingdom, the Department of Health commissioned The King's Fund, an independent charity, to focus on developing more supportive design for people with dementia in hospitals. Twenty-six projects were completed in acute, community, and mental health settings. The outcomes from the program enabled the development of a set of overarching design principles for dementia-friendly design in care settings (Waller, Masterson, & Finn, 2013). An audit tool was developed to demonstrate the impact of environmental changes, for use by people with dementia, family carers, and lay people as well as staff. The tool is divided into seven criteria that focus on how the environment can promote: (a) meaningful interaction between patients, their families, and staff; (b) well-being; (c) eating and drinking, (d) mobility, (e) continence and personal hygiene; (f) orientation, and (g) calm, safety, and security (Waller, Masterson, & Evans, 2017).

Psychosocial and Educational Interventions

Mental and social engagement is important to the well-being of all older adults. Reality orientation appears to be effective in the early stages of dementia (Bates, Boote, & Beverley, 2004). The evidence suggests that cognitive therapy is more beneficial than no therapy at all, but it may be patient specific (Carrion, Aymerich, Baillés, & López-Bermejo, 2013; Woods, Aguirre, Spector, & Orrell, 2012). Although evidence is lacking regarding its efficacy, validation therapy, based on caregiver acceptance of the reality of the experience of the person with dementia, is considered therapeutic by experts (Neal & Barton Wright, 2003).

Support groups, counseling, and education for individuals with AD and their caregivers are essential (Rowe et al., 2016). Areas for caregiver education are detailed in Box 21.2. Cross-sectional data from the National Caregiver Training Project (data collected 1995–1997) indicated that the majority of caregivers did not attend support groups (73%) or use respite services (79%), nor did they participate in bereavement services. The profile of nonusers compared to users revealed that nonusers were significantly older, more depressed, and received less social support (Bergman, Haley, & Small, 2011; K. M. Robinson, Buckwalter, & Reed, 2013).

BOX 21.2

Education Content for Caregivers

Information about the disease and its progression
Strategies to maintain function and independence
Preservation of cognitive and physical vitality in dementia
Maintaining a safe and comfortable environment
Giving physical and emotional care
Communicating with the individual with dementia
Managing behavioral problems
Advance planning: healthcare and finances
Caregiver self-care tips
Building a caregiver support network

In the hospital setting, there is evidence that providing information and engaging families in assessment and planning increases family preparedness for postacute caregiving and decreases anxiety, while also improving functional outcomes for the patient (Boltz et al., 2015b). Family video messaging can provide emotional comfort to persons with dementia and has demonstrated decreased agitation in hospitalized patients with delirium superimposed on dementia (Waszynski, Milner, Staff, & Molony, 2018).

Activity Interventions

A growing body of evidence shows that individuals with dementia enjoy music, and research on its benefits is emerging (Baird & Samson, 2015; Samson, Clement, Narme, Schiaratura, & Ehrle, 2015).

The efficacy of a music intervention with caregivers was evaluated that included coaching the caregivers of persons with early dementia to either sing or listen to music regularly as a part of everyday care. Compared with usual care, both singing and listening to music improved mood, orientation, and remote episodic memory and, to a lesser extent, attention and executive function and general cognition. Singing also enhanced short-term and working memory and caregiver well-being, whereas listening to music had a positive effect on quality of life (Särkämö et al., 2014).

A critical review conducted by Särkämö (2018) reported that music listening has an enhancing effect on mood and arousal, which can temporarily improve cognitive performance in attention or memory tasks in persons with dementia. Positive effects on neuropsychiatric symptoms, such as agitation and social interaction, have been seen with more advanced (severe) dementia. Särkämö opines that limited conclusions can be drawn in regard to the clinical efficacy of music-based interventions because of the variable methodological quality of the published studies.

In addition to music, other cultural arts (poetry, storytelling, dance) have reflected positive social and behavioral changes, although there are some study design issues that limit inclusion in a systematic review (de Medeiros & Basting, 2014). Structured short-term occupational therapy interventions have demonstrated usefulness in improving apathy in patients with dementia (Ferrero-Arias et al., 2011).

Cognitively stimulating activities selected on the basis of assessments of leisure interests, physical function, and mental status have been examined in community-dwelling older adults with dementia and delirium receiving care in a postacute facility. Cognitively stimulating activities did not improve delirium but improved executive function and reduced the length of stay (Kolanowski et al., 2016).

In the home setting, occupational therapy-led activity interventions that included caregiver education and home modifications have demonstrated improvements in functional outcomes as well as less caregiver upset with memory-related behaviors, less need for assistance from others, and better affect in caregivers (Gitlin, Corcoran, Winter, Boyce, & Hauck 2001; Gitlin, Winter, Dennis, Hodgson, & Hauck, 2010; Gitlin et al., 2003).

Behavioral Interventions

Behavioral and psychosocial symptoms of dementia are common with every form of progressive dementia, particularly in the moderate stage. The three most troublesome symptoms are agitation, aggression, and wandering. Problematic behaviors that occur during meals or bathing can be particularly challenging. It is important to recognize and realize that any new behavior could be a sign of an acute illness or an environmental influence. Unrecognized pain can also cause disruptive behavior. The Progressively Lowered Stress Threshold (PLST) is a framework to optimize function, minimize disruption, and help the caregiver (M. Smith, Hall, Gerdner, & Buckwalter, 2006). The PLST model increases the positive appraisal and decreases the negative appraisal of the caregiving situation (Stolley, Reed, & Buckwalter, 2002) and helps the caregiver manage the aggressive behaviors demonstrated in AD (Cheung, Chien, & Lai, 2011; Lindsey & Buckwalter, 2009). By adapting the environment and routines, interventions are designed to help the patient with dementia use his or her functional skills and minimize potentially triggering reactions. There are six essential principles of care in the PLST:

1. Maximize safe function: Use familiar routines, limit choices, provide rest periods, reduce stimuli when stress occurs, and routinely identify and anticipate physical stressors (pain, urinary symptoms, hunger, or thirst).

2. Provide unconditional positive regard: Offer respectful conversation, simple and understandable language, and nonverbal expressions of touch.
3. Use behaviors to gauge activity and stimulation: Monitor for early signs of anxiety (pacing, facial grimacing) and intervene before behavior escalates.
4. Teach caregivers to "listen" to the behaviors: Monitor the language pattern (repetition, jargon) and behaviors (rummaging) that might be showing how the person reduces stress when needs are not being met.
5. Modify the environment: Assess the environment to assure safe mobility and promote way-finding and orientation through cues. Consider the need for increased observation, provided by a caregiver trained in activity and function-focused approaches.
6. Provide ongoing assistance to the caregiver: Assess and address the need for education and support.

The Detroit Expert Panel on the Assessment and Management of the Neuropsychiatric Symptoms of Dementia developed "DICE" as a comprehensive approach to behavioral management (Kales et al., 2014). DICE (Describe, Investigate, Create, and Evaluate) details key patient, caregiver, and environmental considerations with each step of the approach and describes behavioral and environmental interventions that should be considered. The components are described as follows.

- **D: Describe**—Asking the caregiver, and the patient if possible, to describe the Who, What, When, and Where of situations where problem behaviors occur and the physical and social context for them. Caregivers could take notes about the situations that led to behavior issues that they could share with health professionals during visits.
- **I: Investigate**—Having the health provider examine the patient's health, dementia symptoms, current medications, and sleep habits that might be combining with environmental, social, and caregiver-related factors to produce the behavior.
- **C: Create**—The patient's caregiver and health providers develop a plan to prevent and respond to behavioral issues in the patient that may include changing routine and/or activities, modifying the environment, education, and support for the caregivers.
- **E: Evaluate**—The patient's caregiver and health providers assess how well the plan is being followed, how it is working, and what might need to be changed.

Emerging evidence shows systemic approaches that support individualized interventions to prevent and manage BPSD. An interdisciplinary team and a nurse champion, ongoing staff training and mentoring, and attention to the environment and policies are associated with enhanced uptake of person-centered interventions for BPSD (Resnick et al., 2016). In the acute care setting, the use of a Personal Approach Form, completed with family input, provides information on patient's lifestyle, hobbies, and leisure activities. Findings were incorporated into an activity plan implemented by nursing assistants and resulted in decreased mild, moderate, and severe agitation, measured by the Agitated Behavior Scale (ABS; Waszynski et al., 2013).

PHARMACOLOGICAL APPROACHES TO DEMENTIA

To date, there are no disease modifying medications to treat dementia. Medication therapy can only delay, but not reverse, the disease process. Drug therapy may offer the person with dementia as well as the caregiver the opportunity of time to make important life and financial decisions that would otherwise not be feasible (Brandt & Mansour, 2016). Currently, there are two classes of medications that are used in the treatment of AD, acetylcholinesterase inhibitors (AChEIs) and *N*-methyl-*D*-Aspartate (NMDA) receptor agonist.

AChEIs are the mainstay of treatment in AD. Three are currently available in the United States: donepezil hydrochloride (Aricept), rivastigmine tartrate (Exelon), and galantamine hydrobromide (Razadyne). Tacrine hydrochloride (Cognex)—the oldest and less favored drug)—was taken off the market in 2013 because of its adverse effect on the liver and multiple daily dosing. A combination drug, memantine/donepezil (Namzaric), is also available. Cognitive improvements in patients with mild to moderate AD have been shown for all three of the AChEIs agents available in the United States (Tan et al., 2014). The AChEIs are safe; however, they may have gastrointestinal side effects (nausea, anorexia, and diarrhea).

Memantine (Namenda), approved for moderate to severe dementia, has a different mechanism of action than do the AChEIs. This NMDA receptor antagonist has neuroprotective effects that prevent excitatory neurotoxicity. Individuals with AD have improved cognition and behavior on this drug (McShane, Areosa Sastre, & Minakaran, 2006). Side effects of memantine, although uncommon, include diarrhea, insomnia, and agitation. In combined administration of cholinesterase inhibitors with memantine, the research is mixed. Some studies (Atri et al., 2013; Riepe et al., 2007) demonstrated increased efficacy in advanced AD as compared to cholinesterase inhibitors alone, whereas another demonstrated that the combined treatment had no benefit (Howard et al., 2012). There

is insufficient evidence at this time that pharmacological therapy for dementia can delay nursing home placement.

Pharmacological Management of Behaviors Associated With Dementia

Neuropsychiatric symptoms (BPSD), including agitation and resistiveness to care, are often overwhelming for caregivers and result in institutionalization and increased healthcare utilization (Alzheimer's Association, Public Policy Office, 2013). Various psychopharmacological medications are used to treat these symptoms, such as antidepressants, antipsychotics, anticonvulsants, anxiolytics, and cholinesterase inhibitors. There are limited studies of these medications in persons with dementia, and most of their use is off-label and not FDA approved (Brandt & Mansour, 2016).

On March 29, 2012, the Centers for Medicare and Medicaid Services (CMS) launched a national initiative aimed at improving behavioral health and minimizing the use of medications such as antipsychotics to manage behaviors in persons with dementia. There is a growing imperative to conduct a comprehensive biopsychosocial assessment to better understand the origins of the behaviors and unmet needs rather than applying a quick fix that may increase the risk of falls, functional decline, and other complications. Nonpharmacological interventions should be implemented before drug therapy to address neuropsychiatric symptoms. When medications are deemed necessary, they need to be administered in the context of a comprehensive assessment, for a specific medical or psychiatric condition, in the lowest dose possible for the shortest amount of time and evaluated for continued need, response, and side effects. A Cochrane Review (Lonergan, Luxenberg, & Colford, 2002) validated the useful role of haldol in managing aggression but did not find evidence for its role in managing agitation for patients with dementia. The side effects of conventional antipsychotics are considerable and include extrapyramidal symptoms, tardive dyskinesia, sedation, orthostatic hypotension, and falls.

Although not FDA approved, the atypical antipsychotics are often prescribed for use in patients with dementia. Evidence indicates that they may benefit people with dementia, but the risks of adverse events (cardiovascular, extrapyramidal symptoms) may outweigh the benefit, especially with long-term treatment (Maher et al., 2011). Agents available on the market include risperidone, olanzapine, quetiapine, ziprasidone, aripiprazole, and paliperidone. There are little to no published data on the efficacy and safety of the last three drugs listed.

Benzodiazepines (lorazepam, oxazepam, alprazolam) are sometimes used to manage agitation and aggression; however, the risk–benefit ratio is often unsatisfactory. Although the benzodiazepines may be useful in rapidly sedating the agitated patient with dementia, the potential for falls and worsening of cognition limit long-term use. Again, nonpharmacological interventions to treat behavioral manifestations of distress are preferred (Brandt & Mansour, 2016). Pharmacological interventions, if utilized, should always be accompanied by nonpharmacological interventions that promote a sense of well-being in persons with dementia.

Although antidepressants (Seitz et al., 2011) and anticonvulsants are sometimes used to treat agitation in dementia, there is insufficient evidence to support their use. An international Delphi consensus process showed a clear preference for an escalating approach to the management of BPSD in AD, beginning with the identification of underlying causes. For BPSD overall and for agitation, caregiver training, environmental adaptations, person-centered care, and tailored activities were identified as first-line approaches prior to any pharmacological approaches. If pharmacological strategies were needed, citalopram and analgesia were prioritized ahead of antipsychotics. In contrast, for psychosis, pharmacological options, and, in particular, risperidone, were prioritized following the assessment of underlying causes (Kales, Lyketsos, Miller, & Ballard, 2019).

Supplemental Drugs

Anti-inflammatory drugs and estrogen; herbals, such as gingko; and vitamins, such as B12, folate, and vitamin E—although sometimes touted and commonly used—have no proven efficacy for dementia; however, some isolated studies have demonstrated a benefit. Dementia associated with VaD requires appropriate control of hypertension, hyperlipidemia, and aspirin therapy. Parkinsonism (rigidity), seen with DLB, may benefit from dopaminergic therapy. Selective antidepressants and amphetamines may be effective in reducing the behavioral symptoms in FTD (Nardell & Tanjo, 2014).

ADVANCE PLANNING AND END-OF-LIFE CARE INTERVENTIONS

Advance planning and providing directives for care are important in guiding the types of interventions used at the end of life and can decrease the caregiver stress in proxy decision-making. Advance directives in cases of dementia have been a debated subject, for, although advance directives are considered valid, they are marginally effective. As many as 90% of Americans with dementia will be institutionalized before death (G. E. Smith, Kokmen, & O'Brien, 2000), making this environment, in particular,

an important focus for end-of-life (EOL) care. There is a lack of research published on EOL care in the nursing home, and most of it is descriptive (Oliver, Porack, & Zewig, 2004). The end stage of AD may last for several years, and frequently distressing signs and symptoms occur at this time. Nursing home patients and their families want physicians more involved in EOL care, to acknowledge the presence of the patient and caregiver, and provide guidance (Fosse, Schaufel, Reiths, & Malterud, 2014). See Chapter 17, Advance Care Planning for a fuller discussion.

Dementia itself or associated conditions can cause physical symptoms, such as poor nutrition, urinary incontinence, skin breakdown, pain, infection, shortness of breath, fatigue, difficulty in swallowing, choking, and gurgling, in addition to the behavioral symptoms mentioned earlier. There is no acceptable standard treatment for the consequences of advanced dementia, and where guidelines do exist there is minimal palliative care content. Aggressive treatments, such as antibiotics, tube feedings, psychotropic drugs, and physical restraints to address problematic behaviors, appear to be prevalent, although there is no substantial evidence that this approach is effective in end-stage dementia and that prognosis and life expectancy are improved by these strategies (Evers, Purohit, Perl, Khan, & Marin, 2002; L. Smith & Ferguson, 2017). Measuring quality of care at the end of life for those with dementia poses significant challenges because of the limitations in subjective reporting and therefore relies on the caregiver's analysis of cues to monitor the patient's condition and experience (Volicer, Hurley, & Blasi, 2001). In spite of the clear recognition that significant improvements in EOL care for those with dementia is needed (Scherder et al., 2005), there is a lack of systematic evidence on how to approach palliative care for this population (Sampson, Ritchie, Lai, Raven, & Blanchard, 2005). However, attention to the physical and emotional comfort of the patient and support of the family's need for education, inclusion, and bereavement is considered best practice (Trotta, Boltz, Happ, & Strumpf, 2018).

CASE STUDY 21.1

Mrs. P is an 85-year-old Caucasian woman brought into the primary care clinic by her daughter for a geriatric consultation. She has a 4-year history of decline in cognitive impairment that began with memory loss and impaired judgment, which appears to be worsening; she is now experiencing some behavioral problems. Mrs. P is high school educated, widowed for 10 years, and is a retired short-order cook. She currently lives with her daughter, son-in-law (both work full time), and grandson.

Her primary care physician completed a dementia workup when the symptoms appeared 4 years ago and started her on donepezil, which was discontinued within a few days because of gastrointestinal side effects. The daughter reports she is allergic to it. Mrs. P recently had paranoid ideation, in which she accused her 15-year-old grandson of listening in on her phone conversations and taking some money from her purse. Her daughter reports that Mrs. P has always had "a short fuse" and now gets agitated easily. "She called me a moron and even took a swing at me the other day when I told her she smelled bad and needed to take a shower."

Mrs. P performs her own personal hygiene, although she needs reminders and cueing at times; she is continent. She does not perform any IADL (e.g., cooking, shopping), and it was unclear whether she was truly no longer capable of performing these functions or no longer had the opportunity or desire to do them. Mrs. P reports no desire to eat and had a weight loss resulting in a change in at least three clothing sizes that has occurred slowly over the past few years. She reports that she has always been overweight and is proud of this accomplishment. The daughter says she has tried to get her to eat by serving food that she likes, but she just "plays with the food," pushing it around on her plate, and has been seen sneaking it to the dog while at the table. When asked about her mood, she becomes tearful and says, "I feel lonely; no one cares about me anymore." Mrs. P says she hates to be alone and that the family "just come and goes—they never talk with me." She used to take an evening walk in the neighborhood, but now that she lives with her daughter, she is unfamiliar with and fearful of her surroundings. Her MoCA score is 20/30, with deficits in memory, calculation, and ability to copy the cube. She scores 10/15 on the GDS.

Past medical history includes thyroidectomy, left cataract extraction, cholecystectomy, and hysterectomy for benign disease. Her daughter thinks that Mrs. P may have been on antihypertensives in the past. The only medication Mrs. P takes at present is for her thyroid, but neither she nor her daughter know the name of the drug.

On physical examination Mrs. P is afebrile; blood pressure is 132/70, and she is about 10 pounds below her ideal body weight. Mrs. P is alert, cooperative, and smiles at intervals during the examination and has hearing loss bilaterally with clear canals; no thyromegaly. Cardiovascular examination reveals no murmur, edema, or discolorations of the extremities. Pulses

(*continued*)

CASE STUDY 21.1 (*continued*)

are strong throughout. There are no focal neurological symptoms. Gait is slow but steady. She has full range of motion, but her muscle tone and strength are diminished in both upper and lower extremities.

A diagnosis of depression and progressive dementia of the Alzheimer's type is made, and she is started on the combination of donepezil and memantine, both to be titrated slowly. Additional information from Mrs. P's primary care physician will be consulted about potential lab work and diagnostic studies, including thyroid function. The need for a nutritional and hearing evaluation will be explored. Antidepressant therapy may be considered at a later date.

Health teaching and additional resource information is provided to the family, including a structured daily routine and activities.

Discussion

Depression is not uncommon in those with a progressive dementia. Severe anxiety, agitation, and aggression can occur; tearfulness and decreased appetite with weight loss may also be present. Using the PLST model, the nurse focuses on teaching the daughter to recognize triggers and prodromal signs of increasing anxiety and intervene appropriately when anxiety and agitation occur. Strategies are emphasized in each of the PLST principles of care: maximize safe function, provide unconditional regard, use behaviors to gauge activity and stimulation, "listen" to the behaviors, and modify the environment. Less confrontational language and behaviors are emphasized in approaches and interactions with Mrs. P. The daughter is also provided with specific contact information for the geriatrician's office as well as the local and national resources available through the Alzheimer's Association and the Alzheimer's Disease Education and Referral Center (ADEAR). Instructions include dietary strategies to increase nutritional density and an exploration of ways to increase social engagement and exercise while assuring safety. If available in the area, Meals on Wheels, Friendly Visitors, and Home Safety Assessment might be of benefit. Specific medication instructions with particular emphasis on how to use the titration packet are provided, with the recommendation to coadminister with food to reduce the likelihood of gastrointestinal side effects. It was explained that what Mrs. P experienced earlier was likely medication intolerance, not an allergy, and that administering with food should help. The nurse plans a follow-up phone call for the next day and schedules a follow-up medical and health teaching appointment in 1 month to evaluate the effectiveness of the plan of care. The patient and family are instructed to call or return if new or changed behaviors or physical symptoms develop. Caregiving has its burdens and rewards and impacts the entire family. At the next visit, the nurse plans to have the daughter, son-in-law, and grandson present to get their perspective and engage them in discussion on the development of a family-centered plan of care, including advance care planning.

Also, the family is educated about the advisability of preparing an emergency bag, packed ahead of time, ready in the event of hospitalization. Items to include are the following:

- Health insurance cards, lists of current medical conditions, medicines being taken, and allergies
- Healthcare providers' names and phone numbers
- Copies of healthcare advance directives
- Personal information sheet
- Comforting objects or music player with earphones
- A pad of paper and pen
- A small amount of cash
- A note on the outside of the emergency bag to remind you to take your cell phone and charger with you
- A change of clothing, toiletries, and personal medications for the caregiver
- Pain medicine, such as ibuprofen, acetaminophen, or aspirin, for the caregiver (National Institute on Aging, 2017)

SUMMARY

It is important that healthcare professionals identify cognitive impairments in older adults early and differentiate a progressive from a reversible etiology, such as delirium. Comprehensive assessment, monitoring, and pharmacological and nonpharmacological management of physical, functional, cognitive, and behavioral problems are important both in the initial identification and in the ongoing care of the individual with progressive dementia. Education and support of the family and professional caregiver are essential. It is difficult to identify clearly what constitutes quality of life for the individual with progressive dementia, what interventions enhance this quality, and how this is accomplished; thus, it is important to assess individual preferences. It is imperative that geriatric nurses evaluate practice and generate new knowledge to assure best practice in the care of individuals with progressive dementia and their caregivers.

NURSING STANDARD OF PRACTICE

Protocol 21.1: Dementia: Recognition and Care Strategies

I. GOALS

A. Early recognition of dementing illness
B. Appropriate management strategies in care of individuals with dementia and their families

II. OVERVIEW

The rapid growth of the aging population is associated with an increase in the prevalence of progressive dementias. It is imperative that a differential diagnosis be ascertained early in the course of cognitive impairment and that the patient is closely monitored for coexisting morbidities. Nurses have a central role in assessment and management of individuals with progressive dementia.

III. BACKGROUND

A. Definitions/distinctions
    1. Dementia (also referred to as a major neurocognitive disorder) is a clinical syndrome of disruptions in cognition.
    2. In addition to disruptions in cognition, dementias are commonly associated with changes in function, mood, and behavior.
    3. The most common forms of progressive dementia are AD, VaD, DLB, and FTD; the pathophysiology for each is poorly understood.
    4. Differential diagnosis of dementing conditions is complicated by the fact that concurrent disease states (i.e., comorbidities) often coexist.
B. Prevalence
    1. Dementia affects about 11% of individuals aged 65 years and older.
    2. More than 5.8 million individuals in the United States have AD, with the number projected at about 14 million cases by 2050.
    3. Global prevalence of dementia is about 50 million, and is projected to reach 135.5 million by 2050.
C. Risk factors
    1. Advanced age
    2. MCI
    3. Cardiovascular disease
    4. Genetics: family history of dementia, PDD, cardiovascular disease, stroke, presence of ApoE4 allele on chromosome 19
    5. Environment: head injury, alcohol abuse

IV. PARAMETERS OF ASSESSMENT

No formal recommendations for cognitive screening are indicated in asymptomatic individuals. Clinicians are advised to be alert for cognitive and functional decline in older adults to detect dementia and dementia-like presentation in early stages. Assessment domains include cognitive, functional, behavioral, physical, caregiver, and environment.

A. Cognitive parameters
    1. Orientation: person, place, time
    2. Memory: ability to register, retain, recall information
    3. Attention: ability to attend and concentrate on stimuli
    4. Thinking: ability to organize and communicate ideas
    5. Language: ability to receive and express a message

(*continued*)

Protocol 21.1: Dementia: Recognition and Care Strategies (*continued*)

6. Praxis: ability to direct and coordinate movements
7. Executive function: ability to abstract, plan, sequence, and use feedback to guide performance

B. Mental status screening tools
1. SLUMS and MoCA are commonly used tools.
2. CDT is a useful measure of cognitive function that correlates with executive control functions.
3. Mini-Cog combines the CDT with the three-word recall.

When the diagnosis remains unclear, the patient may be referred for more extensive screening and neuropsychological testing, which might provide more direction and support for the patient and the caregivers.

C. Functional assessment
1. Tests that assess functional limitations, such as the FAQ and the FAST, can detect dementia. They are also useful in monitoring the progression of functional decline.
2. The severity of disease progression in dementia can be demonstrated by performance decline in ADL and IADL tasks and is closely correlated with mental status scores.

D. Behavioral assessment
1. Assess and monitor for behavioral changes, in particular the presence of agitation, aggression, anxiety, disinhibitions, delusions, and hallucinations.
2. Evaluate for depression because it commonly coexists in individuals with dementia. The GDS is a good screening tool.

E. Physical assessment
1. A comprehensive physical examination with a focus on the neurological and cardiovascular system is indicated in individuals with dementia to identify the potential cause and/or the existence of a reversible form of cognitive impairment.
2. A thorough evaluation of all prescribed, over-the-counter, homeopathic, herbal, and nutritional products taken is done to determine the potential impact on cognitive status.
3. Laboratory tests are valuable in differentiating irreversible from reversible forms of dementia. Two laboratory tests specifically recommended in the initial evaluation are thyroid function and B12. Structural neuroimaging with noncontrast CT or MRI scans is appropriate in the routine initial evaluation of patients with dementia.

F. Caregiver/environment
1. The caregiver of the patient with dementia often has as many needs as the patient with dementia, so a detailed assessment of the caregiver and the caregiving environment is essential.
   a. Elicit the caregiver perspective of patient function and the level of support provided.
   b. Evaluate the impact that the patient's cognitive impairment and problem behaviors have on the caregiver (mastery, satisfaction, and burden). Two useful tools include the ZBI and the CSI tools.
   c. Evaluate the caregiver experience and patient/caregiver relationship.

V. NURSING CARE STRATEGIES

A. The PLST framework provides a framework for the nursing care of individuals with dementia.
1. Monitor the effectiveness and potential side effects of medications given to improve cognitive function or delay cognitive decline.
2. Provide appropriate cognitive-enhancement techniques and social engagement.
3. Assure adequate rest, sleep, fluid, nutrition, elimination, pain control, and comfort measures.
4. Avoid the use of physical and pharmacological restraints.
5. Maximize functional capacity: Maintain mobility and encourage independence as long as possible, provide graded assistance as needed with ADL and IADL, provide scheduled toileting and prompted voiding to reduce urinary incontinence, encourage an exercise routine that expends energy and promotes fatigue at bedtime, and establish bedtime routine and rituals.

(*continued*)

Protocol 21.1: Dementia: Recognition and Care Strategies (*continued*)

6. Address behavioral issues: Identify environmental triggers, medical conditions, caregiver/patient conflict that may be causing the behavior; define the target symptom (i.e., agitation, aggression, wandering) and pharmacological (psychotropics) and nonpharmacological (manage affect, limit stimuli, respect space, distract, redirect) approaches; provide reassurance; and refer to appropriate mental healthcare professionals as indicated.
7. Assure a therapeutic and safe environment: Provide an environment that is modestly stimulating, avoiding overstimulation, which can cause agitation and increase confusion, and understimulation, which can cause sensory deprivation and withdrawal. Eliminate any environmental hazards and modify the environment to enhance safety. Provide environmental cues or sensory aids that facilitate cognition, and maintain consistency in caregivers and approaches. Psychosocial interventions and cultural arts therapy in dementia may prove beneficial.
8. Encourage and support advance care planning: Explain the trajectory of progressive dementia, treatment options, and advance directives.
9. Provide appropriate EOL care in the terminal phase: provide comfort measures, including adequate pain management; weigh the benefits/risks of the use of aggressive treatment (tube feeding, antibiotic therapy).
10. Provide caregiver education and support: Respect family systems/dynamics and avoid making judgments; encourage open dialogue, emphasize the patient's residual strengths; provide access to experienced professionals; and teach caregivers the skills of caregiving.
11. Integrate community resources into the plan of care to meet the needs for patient and caregiver information; identify and facilitate both formal (i.e., Alzheimer's Association, respite care, specialized long-term care) and informal (i.e., churches, neighbors, extended family/friends) support systems.

VI. EVALUATION/EXPECTED OUTCOMES

A. Patient outcomes: The patient remains independent and functional in the environment of choice for as long as possible, the comorbid conditions the patient may experience are well managed, and the distressing symptoms that may occur at EOL are minimized or controlled adequately.
B. Caregiver outcomes (lay and professional): Caregivers demonstrate effective caregiving skills; verbalize satisfaction with caregiving; report minimal caregiver burden; and are familiar with, have access to, and use available resources.
C. Institutional outcomes: The institution reflects a safe and enabling environment for delivering care to individuals with progressive dementia; the quality improvement plan addresses high-risk problem-prone areas for individuals with dementia such as falls and the use of restraints.

VII. FOLLOW-UP TO MONITOR CONDITION

A. Follow-up appointments are regularly scheduled; frequency depends on the patient's physical, mental, and emotional status and caregiver needs.
B. Determine the continued efficacy of pharmacological/nonpharmacological approaches to the care plan, and modify as appropriate.
C. Identify and treat any underlying or contributing conditions.
D. Community resources for education and support are accessed and used by the patient and/or caregivers.

VIII. RELEVANT PRACTICE GUIDELINES/RESOURCES

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(*continued*)

Protocol 21.1: Dementia: Recognition and Care Strategies (*continued*)

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ABBREVIATIONS

AD	Alzheimer's disease
ADL	Activities of daily living
BPSD	Behavioral and psychological symptoms of dementia
CDT	Clock Draw test
CSI	Caregiver Strain Index
DLB	Dementia with Lewy bodies
EOL	End of life
FAQ	Functional Activities Questionnaire
FAST	Functional Assessment Staging Test
FTD	Frontotemporal dementia
GDS	Geriatric Depression Scale
IADL	Instrumental activities of daily living
MCI	Mild cognitive impairment
Mini-COG	Mini-Cognitive
MMSE	Mini-Mental State Exam
PDD	Parkinson's disease
PLST	Progressively Lowered Stress Threshold
SLUMS	St. Louis University Mental Status Exam
VaD	Vascular dementia
ZBI	Zarit Burden Interview

RESOURCES

AARP
www.aarp.org/home-family/caregiving

Alzheimer's Association
https://www.alz.org/

Alzheimer's Disease Education and Referral Center
https://www.nia.nih.gov/alzheimers

Caregiver Action Network (formerly, National Family Caregiver's Association)
http://caregiveraction.org

ElderWeb
www.elderweb.com

Hartford Institute for Geriatric Nursing
www.hartfordign.org

Lewy Body Dementia Association
www.lbda.org

National Alliance for Caregiving
www.caregiving.org

National Council of Certified Dementia Practitioners
http://www.nccdp.org

National Hospice and Palliative Care Association
https://www.nhpco.org/

Nursing Home Toolkit (Promoting Positive Behavioral Health)
http://www.nursinghometoolkit.com

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Pain Management in the Older Adult*

22

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EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Discuss the importance of effective pain management for older adults.
2. Describe the best methods of assessing pain, including among elders with dementia.
3. Discuss pharmacological and nonpharmacological strategies for managing pain.
4. State at least two key points to include in education for patients and families.

OVERVIEW

Pain is a common experience among older adults. Across all care settings and most specialty areas, nurses regularly interact with older adults. By the year 2030, it is projected that there will be 72.1 million adults 65 years of age or older, representing 19% of the U.S. population. Individuals aged 85 and older are the fastest growing segment of the population (Federal Interagency Forum on Aging-Related Statistics [Federal Interagency], 2016).

Aging increases the risk of pain due to high rates of chronic and acute health conditions. Almost half of adults aged 65 and older have four or more chronic health conditions (Altman & Frist, 2015). In 2010, 13.6 million adults over age 65 were hospitalized in acute care settings, and an additional 298.4 million older adults sought care at an ambulatory care clinic at least once (Federal Interagency, 2016). Pain is typically associated with some of these medical visits. Further, more than 19 million surgeries were performed on older adults, including 5.2 million musculoskeletal surgeries (e.g., knee and hip arthroplasty surgeries; Federal Interagency, 2016). Therefore, older adults are at risk for pain associated with chronic diseases as well as postsurgical and procedural pain.

Effective pain management relies on systematic and comprehensive assessment as well as multidimensional pain treatment. In this chapter, we provide an overview of pain, including the epidemiology of pain, definitions and types of pain, causes and consequences of pain, and barriers to pain management in older adults. We also provide an overview of pain assessment strategies, including self-report and objective pain measurement, the latter of which is relevant to pain assessment for older adults with dementia. This overview is followed by a discussion of pharmacological and nonpharmacological pain management strategies for use with older adults.

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

Epidemiology of Pain in Older Adults

The high prevalence of pain among older adults in the United States is well documented (Institute of Medicine [IOM], 2011; Morrissey, Viola, & Shi, 2014). In a nationwide survey of 7,601 older adults, approximately 50% of respondents reported experiencing bothersome pain in the preceding month (Patel, Guralnik, Danise, & Turk, 2013). The Centers for Disease Control and Prevention (Dahlhamer et al., 2018) estimated that over 60% of older adults in the United States experience chronic pain. Such estimates are higher in long-term care settings where older adults have multiple medical conditions. It is estimated that as many as 83% to 93% of nursing home residents experience pain on a regular basis (Abdulla et al., 2013).

Definitions, Causes, and Types of Pain

The International Association of the Study of Pain (IASP) defines *pain* as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (Merskey, 1994, p. S74). Pain is also described as a complex, multidimensional, subjective experience with sensory, cognitive, and emotional dimensions (Melzack & Casey, 1968). In clinical practice, McCaffery's parsimonious definition of pain is often cited: "Pain is whatever the experiencing person says it is, existing whenever he says it does" (1968, p. 95). These definitions highlight the subjective nature of pain.

Several types of pain can affect older adults. *Acute pain* is typically associated with surgery, fractures, acute illness, or trauma. *Persistent pain* (often referred to as chronic pain) typically continues past the usual healing time, often beyond 3 to 6 months. *Persistent* pain is most frequently associated with chronic diseases common among older adults, including degenerative joint disease, cardiovascular disease, diabetes mellitus, osteoporosis, cancer, and peripheral neuropathies.

Pain is also characterized by the type of pain stimulus. *Nociceptive pain* is caused by actual or threatened damage to organs, skin, muscle, and bones (e.g., nonnervous system tissue). This type of pain is caused by activation of nociceptors (sensory receptors throughout the body) that process painful stimuli. Osteoarthritis pain is one of the most common types of nociceptive pain in older adults (Savvas & Gibson, 2016). *Neuropathic pain* is caused by damage or disease to the somatosensory nervous system. Subtypes of neuropathic pain include central and peripheral pain. Disease or damage to the central somatosensory nervous system causes *central neuropathic pain*. Conditions such as Parkinson's disease, poststroke myelopathies, spinal cord injuries, spinal stenosis, multiple sclerosis, and fibromyalgia are common causes of this type of pain. *Peripheral neuropathic pain* is caused by conditions such as postherpetic neuralgia, metabolic disorders (e.g., diabetic neuropathy, alcohol abuse), nerve compression or entrapment, phantom limb pain, and trigeminal neuralgia (Guerriero, Bolier, Van Cleave, & Reid, 2016). Neuropathic pain is characterized by tingling or stabbing sensations and is often associated with abnormal sensations (dysesthesia) or pain from typically nonpainful stimuli (allodynia). Owing to the prevalence of acute and chronic health conditions in this population, older adults may experience multiple types of pain. For example, patients may experience persistent pain (e.g., osteoarthritis) with acute pain (e.g., cancer, cardiac, illness-related, or postsurgical pain). Further, patients may experience both nociceptive and neuropathic pain, which require different treatment measures. Healthcare providers should assess for all types of pain that may negatively impact mobility, recovery, rehabilitation, and quality of life.

Consequence of Pain for Older Adults

Over the past several decades, much attention has been devoted to the issue of pain in older adults in the research and clinical literature (Horgas, 2017a). Nonetheless, there is empirical evidence that pain among older adults continues to be undertreated (Morrissey, Horgas, Miller, & Wiener, 2019). In older adults, untreated or ineffectively treated moderate to severe persistent pain has major implications for overall health, functioning, and quality of life (Horgas, 2017a). Pain has been associated with depression, social withdrawal, sleep disturbances, impaired mobility, decreased activity engagement, and increased healthcare use (American Geriatrics Society [AGS] Panel on the Pharmacological Management of Persistent Pain in Older Persons, 2009). Other conditions that can be exacerbated by pain include falls, cognitive decline, deconditioning, malnutrition, gait disturbances, and slowed rehabilitation (AGS, 2009).

In the hospital setting, older adults suffering from acute pain are at increased risk for complications such as thromboembolism, pneumonia, and functional decline. In addition, there is growing evidence that inadequate management of severe, acute, postoperative pain leads to the development of persistent postsurgical pain (Johansen, Romundstad, Nielsen, Schirmer, & Stubhaug, 2012; Macrae, 2008). Surgeries associated with increased risk of persistent postsurgical pain include lower extremity amputation, breast surgery, thoracotomy, inguinal hernia repair, coronary artery bypass surgery, and cholecystectomy, all of

which are common surgeries among older adults (Kehlet, Jensen, & Woolf, 2006).

Pain is burdensome for caregivers who must manage pain for older adults at home (Reinhard, Levine, & Samis, 2012). Overall, unrelieved pain reduces the quality of life for older adults and contributes to increased healthcare resource utilization and costs (IOM, 2011; Morrissey et al., 2014). Thus, it is not surprising that the IOM (2011) declared chronic pain a major public health problem in the United States.

Barriers to Pain Management in Older Adults

Pasero and McCaffery (2011) provided a comprehensive chapter on biases, misconceptions, and misunderstandings that hampered the healthcare provider's assessment and treatment of patients who reported pain. These issues apply to patients across the life span and led the authors to conclude the following:

> A veritable mountain of literature published during the past three decades attests to the undertreatment of pain. Much of this literature is consistent with the hypothesis that human beings, including health care providers in all societies, have strong tendencies or motivations to deny or discount pain, especially severe pain, and to avoid relieving the pain. Certainly, we should struggle to identify and correct personal tendencies that lean to inadequate pain management, but this may not be a battle that can be won. Perhaps it is best to assume that there are far too many biases to overcome and that the best strategy is to establish policies and procedures that protect patients and ourselves from being victims of these influences. (p. 48)

Among older adults, there are a number of barriers that impede pain assessment and management and contribute to inadequate pain management. These barriers fall into three domains: individual-based, provider-based, and system-based factors. *Individual-based factors* include the following: (a) belief that pain is a normal part of aging, (b) concern about being labeled a hypochondriac or complainer, (c) fear of the meaning of pain in relation to disease progression or prognosis, (d) fear of opioid addiction and analgesics, (e) worry about healthcare costs, and (f) belief that pain is not important to healthcare providers (AGS, 2009). Cognitive impairment is also an important barrier because dementia reduces an older adult's ability to remember and report pain (Horgas, 2017a; Horgas, Elliott, & Marsiske, 2009).

Provider-based factors refer to knowledge deficits among healthcare providers in effective pain management. Because there is no objective measure for pain, providers must rely on patient self-report to assess pain. Healthcare providers tend to underestimate patient reports of pain, a finding that is well documented for cognitively impaired older adults (Horgas, 2017a). Older adults with dementia are undertreated for pain when compared with cognitively intact older adults (Horgas et al., 2009; Horgas & Tsai, 1998; Lukas, Barber, Johnson, & Gibson, 2013; Morrison et al., 2003). This finding may reflect providers' difficulty in detecting pain in individuals who cannot verbally express it and a lack of knowledge regarding adequate pain assessment and use of management strategies with this population.

System-based factors include policies and regulations about prescription practices and prescriptive authority. Providers face strict regulations on how opioids can be prescribed and who can prescribe them. The U.S. federal government recently issued new regulations on prescribing in an effort to combat the current opioid epidemic and, in the process, may have limited access to pain medications for older adults who need them (Guerriero & Reid, 2017). Also, prescription costs, insurance coverage, access to providers, and access to pain medications are important system-based factors. While not an exhaustive list, these barriers highlight some of the challenges that both healthcare providers and older adults face when managing pain.

ASSESSMENT OF PAIN

In clinical settings, pain is often assessed using two straightforward questions: (a) "Are you having any pain?" and (b) "On a scale of 0 to10, how much pain are you having now?" Answers to these basic questions provide information about the presence of pain and its intensity. However, pain is a multidimensional phenomenon, and a more comprehensive pain assessment approach is needed to gain a full understanding of the patient's pain experience. It is important to note that an objective biological marker or laboratory test for pain does not exist, and thus pain assessment must rely on the patient's self-report. In individuals who cannot verbalize pain, such as those with dementia or communication disorders, pain assessment must include observational measures of pain. These approaches to pain assessment will be discussed in the following sections.

Self-Reported Pain

A patient's self-report is considered the gold standard for pain assessment (AGS, 2009). The first principle of pain assessment is to *ask* about the presence of pain at regular and frequent intervals (Horgas, 2017a). It is important to

allow older adults sufficient time to process the questions and formulate answers, especially when working with cognitively impaired older adults. It is also important to explore different words that patients may use synonymously with pain, such as discomfort or aching. Use open-ended questions, such as "Tell me about your pain, aches, soreness, or discomfort," when eliciting information about pain from older adults (Herr, 2011).

Self-reported pain intensity is measured in various ways. Some commonly used tools include the Numerical Rating Scale (NRS), the Verbal Descriptor Scale (VDS), and the Faces Pain Scale (FPS; Herr, 2011). The NRS is widely used in hospital settings. Patients are asked to rate the intensity of their pain on a 0 to 10 scale. The NRS requires the ability to discriminate differences in pain intensity and may be difficult for some older adults to comprehend. In one study, adults over age 81 had a significantly higher failure rate in completing the NRS (11.1% failure rate) compared to those in the 61 to 70 (5.5% failure rate) or 71 to 80 (7.8% failure rate) age groups (Wood, Nicholas, Blyth, Asghari, & Gibson, 2010).

The VDS is recommended for use with older adults (Herr, 2011), but is more commonly used in research than in clinical settings. This tool measures pain intensity by asking individuals to select a word that best describes their present pain (e.g., no pain to worst pain imaginable). The VDS is considered a reliable and valid measure of pain intensity and is reported to be the easiest to complete and most preferred by older adults (Herr, 2011; Herr, Bjoro, & Decker, 2006).

The Faces Pain Scale (FPS) is commonly used to assess pain in acute care settings. Initially developed to assess pain intensity in children, the FPS is often recommended to measure pain in hospitalized, cognitively impaired older adults, although there is not strong empirical evidence to support this approach. The FPS and the FPS–Revised (FPS-R) consists of cartoon-like faces exhibiting pain expressions, ranging from the least pain to the most pain possible (Herr et al., 2006). Patients are asked to select the facial expression that represents the level of pain they are experiencing at present. See the "Resources" section for information on accessing these pain measurement tools.

In addition to these simple pain assessment tools, several multidimensional measures have been developed to assess overall pain and pain associated with cancer or osteoarthritis. These measures are generally broader in scope, assessing pain intensity and contributing and relieving factors of pain, as well as the impact of pain on daily functioning (e.g., sleep, movement, relationships). The McGill Pain Questionnaire is one of the most widely used multidimensional tools. This tool measures pain affect and evaluation (based on 78 word descriptors), pain location (using a body map), and pain intensity (based on the Present Pain Intensity subscale, a single question rating subjective pain on a 6-point scale; Melzack, 1975). The Brief Pain Inventory (BPI) is a commonly used multidimensional measure, originally designed for cancer pain but widely used as a general pain measure (Cleeland & Ryan, 1994). A three-item version of the BPI, called the PEG Scale, is available for quick assessment of pain interference with activities (Guerriero et al., 2016; Krebs et al., 2009). This tool measures average *P*ain intensity, pain interference with *E*njoyment, and pain interference with *G*eneral activities over the past week. Questions are scored on a 0 to 10 scale (0 indicating no interference and 10 indicating complete interference; Guerriero et al., 2016). The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) is often used to measure pain associated with osteoarthritis (Bellamy, Buchanan, Goldsmith, Campbell, & Stitt, 1988). The reader is referred to the "Resources" section for more information on these measurement tools.

Observed Pain Indicators

Comprehensive pain assessment requires focusing on objective indicators of pain. Cognitive impairment, such as that associated with Alzheimer's disease and related disorders, compromises an older adult's ability to self-report pain. Patients with dementia, broadly defined, and those with aphasia or other neurological disorders cannot provide verbal self-reports of pain. Thus, other assessment approaches must be used to identify the presence of pain (Herr, Bursch, Ersek, Miller, & Swafford, 2010).

The American Society for Pain Management Nursing issued a consensus statement about assessing pain in nonverbal patients and recommended a hierarchical pain assessment approach (Herr, Coyne, et al., 2006). The four steps in the recommended process are: (a) attempt to obtain a self-report of pain; (b) look for an underlying cause of pain, such as surgery or a procedure; (c) observe for pain behaviors; and (d) seek input from family and caregivers (Herr, Coyne, et al., 2006). If any of these steps are positive, the nurse should assume that pain is present, and a trial of analgesics or nonpharmacological pain treatment should be initiated. Pain behaviors should be observed before and after the treatment trial in order to evaluate if the strategies were effective or need modification.

Observational techniques for pain assessment focus on behavioral or nonverbal indicators of pain (Hadjistavropoulos et al., 2007; Herr, 2011; Herr, Coyne, et al., 2006; Horgas et al., 2009). Behaviors such as

guarded movement, bracing, rubbing the affected area, grimacing, painful noises or words, and restlessness are often considered pain behaviors (AGS, 2009; Horgas et al., 2009). In the acute care setting, vital signs are often considered physiological indicators of acute pain. However, elevated vital signs are not considered a reliable indicator of pain, but rather should initiate pain assessment (Pasero & McCaffery, 2011). In addition, older adults with dementia often express pain through behavioral changes. For example, changes in interpersonal interactions (e.g., aggression, agitation, resisting care), activity patterns (e.g., wandering), and mental status (e.g., confusion, crying) may signal the presence of pain (Ahn & Horgas, 2013; Husebo, Achterberg, & Flo, 2016).

Approximately 20 different observational measurement tools have been developed to assess behavioral indicators of pain (see comprehensive reviews by Herr, Bjoro et al., 2006 and Taylor, Harris, Epps, & Herr, 2005). These tools differ in their content, comprehensiveness, scoring, and psychometric characteristics (e.g., reliability and validity). There is not one behavioral measure of pain that can be universally applied in all settings or with nonverbal individuals. However, an expert panel developed a consensus statement focused on pain behavior assessment tools for use in nursing homes (Herr, 2010). Two measures were recommended for use: the Pain Assessment in Advanced Dementia (PAINAD) Scale (Warden, Hurley, & Volicer, 2003) and the Pain Assessment Checklist for Seniors With Severe Dementia-II (PACSLAC-II; S. Chan, Hadjistavropoulos, Williams, & Lints-Martindale, 2014; Fuchs-Lacelle & Hadjistavropoulos, 2004).

Although most observational measures have undergone some psychometric testing, most lack evidence to support sensitivity to change over time. This undermines the ability to detect treatment effects, a fundamental aspect of effective pain management. One notable exception is the MOBID-2 (Mobilization-Observation-Behavior-Intensity-Dementia-2 Pain Scale; Husebo, Ostelo, & Strand, 2014). The MOBID-2 has undergone extensive, rigorous testing in several clinical trials and has demonstrated reliability and sensitivity to treatment effects with patients (Husebo, Ballard, Sandvik, Nilsen, & Aarsland, 2011; Husebo, Strand, Moe-Nilssen, Husebo, & Ljunggren, 2010).

In summary, a comprehensive review of these measures, as well as other similar tools, is available on the City of Hope website (see the "Resources" section). In addition, the Hartford Institute for Geriatric Nursing provides online resources for pain assessment in older adults with dementia that include information on the PAINAD tool and an instructional video on how to use it (see the "Resources" section for link). Several caveats about observational tools must be noted: (a) the presence of these behaviors is suggestive of pain but not always a reliable indicator of pain, and (b) the presence of pain behaviors does not provide information about the intensity of pain (Pasero & McCaffery, 2011). As such, pain behavior tools should be used as one component of a comprehensive pain assessment with older adults.

Pain Assessment Resources

Several excellent clinical guidelines and consensus statements are available to guide healthcare providers when conducting comprehensive pain assessment and measurement. The American Pain Society issued an interdisciplinary expert consensus statement on assessment of pain in older adults (Hadjistavropoulos et al., 2007). This excellent resource includes a comprehensive overview of pain measurement tools and recommendations for pain assessment approaches, including the assessment of psychological, emotional, and functional aspects of pain. More recently, Booker and Herr (2015) developed a focused pain assessment protocol for older adults and provided guidelines for selecting pain assessment tools. Also, see review articles on pain assessment and measurement in older adults with and without dementia (Horgas, 2017a, 2017b; Horgas & Glover, 2017, 2018). In addition, there are several excellent websites focused on pain assessment in older adults, most notably The Geriatric Pain website (www.geriatricpain.org). In addition, the Hartford Institute for Geriatric Nursing provides online resources for pain assessment in older adults with dementia (https://consultgeri.org/try-this/dementia/issue-d2) that include tools and instructional videos (Horgas & Miller, 2008).

SUMMARY

Systematic and thorough assessment is a critical first step in appropriately managing pain in older adults. Self-reported pain should be assessed in all patients, and observed pain indicators should be assessed in individuals who are unable to verbally express pain. The use of a standardized pain assessment tool and approach is important in measuring pain. It enables healthcare providers to document their assessment, measure changes in pain, evaluate treatment effectiveness, and communicate with other healthcare providers, the patient, and the family. Information from family and caregivers should also be obtained to supplement and contextualize information from pain self-reports and observed pain indicators.

INTERVENTIONS AND CARE STRATEGIES

The primary goal of pain management in older adults is to maximize function and quality of life by minimizing pain to the extent possible (Horgas, Grall, & Yoon, 2016). Pain relief is one of the most common goals of older adults (Makris, Abrams, Gurland, & Reid, 2014). However, balancing treatment for multiple comorbidities with treatment for pain can be challenging (Fine, 2012; Patel et al., 2013; Schere et al., 2016). Polypharmacy is common among older adults (Ersoy & Engin, 2018). Thus, a multimodal approach to the management of pain, including pharmacological and nonpharmacological therapies, is recommended (Hochberg et al., 2012; Makris et al., 2014; Schneiderhan, Clauw, & Schwenk, 2017). These two approaches to pain management are presented in the following sections.

Pharmacological Pain Treatment

Analgesic medications are an integral component of pain management in older adults (Horgas et al., 2016). The plan to use pharmacotherapy for the treatment of pain is a mutual decision among the healthcare provider, the patient, and caregiver, with the goals of optimizing pain relief as well as improving quality of life and patient functioning (Horgas et al., 2016). Guidelines from the AGS recommend the establishment of realistic pain goals with the acknowledgment that complete resolution of pain in the older adult may not be achievable (AGS, 2009; Guerriero et al., 2016; Makris et al., 2014). Pain pharmacotherapy in the older adult is a process of trial and error that aims to balance drug effectiveness with management of its adverse effects, considering age-related changes in drug absorption, distribution, metabolism, and excretion (Kaye, Baluch, & Scott, 2010). Comorbidities increase the use of multiple drugs (polypharmacy) and the risk of drug-to-drug interactions (Horgas et al., 2016). In patients with dementia, pharmacological pain management is considered a priority because altered cognitive functioning limits their ability to engage in nonpharmacological pain relief strategies (Corbett et al., 2014; Horgas, 2017b).

Choice of analgesic drugs for older adults depends on the type, severity, and duration of pain. In 2008, the World Health Organization (WHO) established guidelines for the treatment of cancer pain (Pergolizzi et al., 2008). Although focused on cancer-related pain, the WHO ladder has been used as a guide by healthcare providers in decision-making regarding analgesic use with a variety of patient populations. Using a three-step approach, drug choices are made from three categories based on pain severity: mild, moderate, or severe. Drug choices include nonopioids, opioids, and adjuvant agents. Combinations of these drugs may be prescribed for patients such that two or more drugs can treat varied underlying pain mechanisms and different types of pain. This practice would allow for smaller doses of analgesics to be used and would, in turn, minimize adverse effects (Pergolizzi et al., 2008). Types of analgesic drugs commonly prescribed are as follows.

Nonopioid Drugs

Nonopioid drugs (e.g., acetaminophen, ibuprofen, or naproxen) are recommended to treat mild to moderate pain. Acetaminophen is considered the first drug of choice for the treatment of persistent pain (AGS, 2009) and for mild to moderate pain in older adults (Galicia-Castillo & Weiner, 2019; Makris et al., 2014). The U.S. Food and Drug Administration (FDA) has recommended that the total daily dose of acetaminophen not exceed 3 g/d, and 2 g/d in frail patients, those over 80 years of age, and those who use alcohol on a regular basis (FDA, 2011; Galicia-Castillo & Weiner, 2019). Hepatoxicity is a risk for individuals with reduced hepatic function or history of alcohol abuse; therefore, the maximum daily dose should be reduced to 50% to 75% in this population (Galicia-Castillo & Weiner, 2019). The importance of monitoring acetaminophen intake to prevent the cumulative effects of this drug requires watching for "hidden" dosages in combination drugs such as opioid + nonopioid, and in over-the-counter (OTC) medications, and should be monitored closely by healthcare providers. Patients and caregivers should be educated about this risk and how to avoid it. In 2011, the FDA required drug manufacturers to limit the strength of acetaminophen in combination products to 325 mg per tablet, capsule, or dosing unit to lower the potential for acetaminophen-induced hepatotoxicity (Galicia-Castillo & Weiner, 2019).

Nonsteroidal anti-inflammatory drugs (NSAIDs) are more effective than acetaminophen for patients with inflammatory pain, such as the pain associated with rheumatological diseases. In general, NSAIDs should be used only for brief periods, typically 1 to 2 weeks, during episodes of increased nociceptive pain (Gloth, 2011). There are two types of NSAIDs: nonselective (e.g., ibuprofen or naproxen) and cyclooxygenase-2 (COX-2) selective inhibitors (e.g., celecoxib). The COX-2 drugs were introduced in the pharmaceutical market with the goal of reducing the gastrointestinal (GI) side effects associated with nonselective NSAIDs. However, the GI effects resulting from COX-2 drugs were found to be similar to those of nonselect

NSAIDs. In 2004, two of the initial COX-2 drugs (rofecoxib and valdecoxib) were withdrawn from the market because of their association with increased risks for adverse cardiovascular events, including myocardial infarction and stroke (Galicia-Castillo & Weiner, 2019). The AGS Beers Criteria® Update Expert Panel (2019) recommend that all NSAIDs, including nonselective and COX-2 drugs, be used with caution in older adults, especially in those with underlying cardiovascular diseases (e.g., myocardial infarction, heart failure, or stroke), renal disease, or history of gastropathy. The drug naproxen is an exception because it is considered a reasonable choice for patients at risk for cardiovascular disease (Galicia-Castillo & Weiner, 2019). The concomitant use of gastroprotective agents such as proton-pump inhibitor drugs (e.g., prilosec or protonix) and H2 receptor antagonist drugs (e.g., famotidine or ranitidine) is recommended to decrease the risk of GI adverse effects in elderly patients (Galicia-Castillo & Weiner, 2019). The FDA recently released warnings about the drug ibuprofen, another commonly used NSAID, citing increased incidence of cardiovascular events (including myocardial infarction) and recommending that maximum dosing not exceed 3,200 mg/d. In the general population, OTC doses of NSAIDs have a good safety profile. However, risks for adverse effects are significantly higher in the older adult, especially those with chronic kidney disease, gastropathy, and cardiovascular disease such as heart failure (AGS Beers Criteria, 2019).

Opioid Drugs

When pain persists, increases, or has significant pain-related functional impairment, opioid drugs can be used in older adults (AGS, 2009; Makris et al., 2014). Opioid drugs (e.g., oxycodone, morphine, hydromorphone, or fentanyl) are effective for treating moderate to severe pain from multiple causes. According to the AGS Panel on the Pharmacological Management of Persistent Pain in Older Persons (2009), opioid analgesics can be used safely and effectively in older adults if they are properly selected and monitored by the healthcare provider. Patients with persistent uncontrolled pain requiring opioid therapy should receive around-the-clock scheduled dosing to ensure steady drug levels of the opioid (Pasero & McCaffery, 2011). The use of extended-release opioids can reduce the need for frequent dosing and provide better pain relief, which is especially helpful with older adults (Galicia-Castillo & Weiner, 2019; Kaye et al., 2010).

In light of the current opioid epidemic in the United States, opioid use has been the focus of much attention. Healthcare providers are making more conscientious decisions when prescribing opioid analgesics for the control of pain. Prescribing decisions and practices are now being more closely scrutinized by federal agencies such as the FDA. The CDC has published new recommendations for prescribing opioids for noncancer pain, which providers are encouraged to follow (Dowell, Haegerich, & Chou, 2016). The Centers for Medicare and Medicaid Services (CMS) has published position statements on drug diversion putting forth recommendations for actions at the federal and state levels that impact providers and patients. Although young to mid-age adults are affected most by problems such as opioid dependence, drug diversion, and mortality associated with opioid overdosing, these problems also impact older adults who are prescribed opioids for pain control (Dowell et al., 2016).

Healthcare providers should prescribe opioids based on clearly defined therapeutic goals. Prescribing should occur based on serial attempts to reach these goals, with the lowest opioid analgesic dose chosen on the basis of its efficacy and minimal adverse effects (AGS, 2009; Galaria-Castillo & Weiner, 2019). Potential adverse effects such as respiratory depression, a rare but serious side effect, can be mitigated by slow dose escalation and careful monitoring for signs of hypoxia (Galaria-Castillo & Weiner, 2019). Potential adverse effects such as constipation, a common side effect and a problem especially for older adults, can be managed by the concurrent use of stool softeners (Galaria-Castillo & Weiner, 2019).

Some older adults are reluctant to use opioids because of fear of addiction, severity of adverse effects, and death associated with drug overdose (Galaria-Castillo & Weiner, 2019). These concerns have been heightened by the opioid epidemic. However, careful prescribing and close monitoring of older adults receiving opioids for pain relief can decrease the likelihood of these problems. Patient and caregiver education about appropriate use of opioid analgesics, safety precautions (e.g., driving, falls), safe storage to prevent diversion, and risks of obtaining opioid prescriptions from multiple providers is imperative (Horgas, 2017a).

In summary, opioid use for pain relief with older adults has been shown to be efficacious for short-term use, but little is known about the efficacy of long-term use (Reid, Eccleston, & Pillemer, 2015). Further, because of the lack of high-quality evidence, little is known about the prevalence of opioid misuse in older adults (Maree, Marcum, Saghafu, Weiner, & Karp, 2016). These are areas in need of further study to provide an evidence base for opioid pain management practices with older adults.

Adjuvant Drugs

Adjuvant drugs are agents administered in conjunction with analgesics to relieve pain. These drugs provide relief from pain beyond their intended use and include, for example, antidepressants and antiepileptics. When administered with nonopioids and opioids to achieve pain control, these drugs work by providing additive analgesic effects or by enhancing the patient's response to analgesics (Horgas, 2017b). Adjuvant drugs are specifically recommended for patients with neuropathic pain (AGS, 2009). Tricyclic antidepressants (TCAs; e.g., nortriptyline and desipramine) have demonstrated dual effects on both pain and depression. However, the AGS guidelines (2009) recommend that TCAs should be avoided in older patients because of their anticholinergic effects, including confusion, dry mouth, constipation, and orthostatic hypotension (AGS Beers Criteria, 2019; Galicia-Castillo & Weiner, 2019). Selective serotonin reuptake inhibitors (SSRIs) and serotonin norepinephrine uptake inhibitors (SNRIs) are safer classes of antidepressant drugs to use in older adults because they are effective in the treatment of neuropathic pain and have better adverse effect profiles than TCAs (Reisner, 2011). Anticonvulsants (e.g., pregabalin and gabapentin) can be used as adjuvants for treating pain associated with trigeminal neuralgia and postherpetic neuralgia. These drugs have fewer adverse effects than TCAs but must be titrated slowly, and older patients should be closely monitored for adverse effects such as dizziness, somnolence, fatigue, and weight changes (AGS, 2009; Reisner, 2011). Local anesthetics such as lidocaine as a patch, gel, or cream can be used as an additional treatment of postherpetic neuralgia pain (Horgas, 2017b). A major benefit of using these routes is avoidance of systemic adverse effects (Galicia-Castillo & Weiner, 2019).

Special Considerations for Administering Analgesics in Older Adults

Older adults require close monitoring when taking analgesic medication, especially when beginning a new drug or changing the dosage of a drug. It is important to observe for therapeutic effects and adverse effects and then determine the need to titrate dosages or change drug therapy (Makris et al., 2014). Adverse effects are drug and dose specific and can include neurological changes (e.g., dizziness, confusion, or sedation), cardiorespiratory changes (e.g., hypotension or respiratory depression), and GI changes (e.g., bleeding or constipation; Makris et al., 2014). It is important to assess for these changes and take prompt medical action.

Recommendations for beginning pharmacotherapy for pain include starting at low doses and gradually titrating upward while monitoring for and managing adverse effects. The medical adage "start low and go slow" for prescribing medications for geriatric patients applies to analgesics as well, particularly when administering opioids to opioid-naïve older adults. Healthcare providers need to titrate analgesic doses upward to achieve the desired therapeutic effects using short-acting analgesics first, then consider using longer-acting analgesics for long-lasting pain relief once analgesic drug tolerability has been established (Fine, 2012). For most older adults with mild to moderate pain or for those taking drugs for persistent pain, analgesics taken "around the clock" rather than "pro re nata" (prn) are recommended. Using analgesic drugs with a short half-life and the fewest side effects is also recommended (Pasero & McCaffery, 2011). Overall, adopting a preventive approach to pain management whenever possible is recommended with the elderly. By treating pain before it occurs, often less dosage of analgesia is required to relieve pain and, in turn, fewer adverse effects are experienced (Pasero & McCaffery, 2011).

The least invasive method of drug delivery should be used with older adults. The oral route is the most convenient and is recommended with older adults whenever possible, provided swallowing is intact (Pasero & McCaffery, 2011). When more rapid onset of drug action is needed or when the patient cannot take oral medications, intravenous, subcutaneous, and intramuscular routes for administration can be used. Drugs administered via these routes typically have a shorter duration of action and require administration skills (Fine, 2012). Generally, the intramuscular route should be avoided in the older adult because of the potential for tissue injury, unpredictable drug absorption, and injection discomfort (Pasero & McCaffery, 2011). Transdermal, rectal, and oral transmucosal routes should be considered with older adults (Galicia-Castillo & Weiner, 2019).

Drugs to Avoid in Older Adults—Beers Criteria (2019)

It is important to recognize the dangers associated with potentially inappropriate medications (PIMs) for the treatment of pain in older adults. The AGS Beer's Criteria (2019) is a well-known and widely used resource for identifying medications that have an unfavorable balance of risk and benefits. There are several analgesic agents considered PIMs on the Beers List. In general, the AGS Beers Criteria recommend avoiding opioids except in

cases of severe acute pain (e.g., recent fractures or joint replacement surgery) owing to the association with falls or fractures (AGS Beers Criteria, 2019). Meperidine has a toxic metabolite (normeperidine) with a long half-life that causes neuro-excitation and seizures, and its use should be avoided with older adults (AGS Beers Criteria, 2019). Tramadol was recently added to the AGS Beers Criteria (2019) owing to the risk of the syndrome of inappropriate antidiuretic hormone (SIADH) and hyponatremia associated with its use.

Nonselective NSAIDs, as a class of drugs, are considered PIMs because of their increased risk for GI bleeding. These drugs include ibuprofen and naproxen. Indomethacin is more likely than any other NSAID to have adverse effects on central nervous system (CNS) functioning and has the most adverse effects. Thus, the use of indomethacin should be avoided in older adults (AGS Beers Criteria, 2019). Both NSAIDs and selective COX-2 inhibitors should be avoided in older adults with symptomatic heart failure (AGS Beers Criteria, 2019).

Several classes of adjuvant drugs are on the Beers List and should be avoided with older adults. Skeletal muscle relaxants prescribed to treat muscle spasms and back pain should be avoided in older adults because of their CNS adverse effects, anticholinergic effects, sedation, and fall/fracture risk (AGS Beers Criteria, 2019). Antidepressants, alone or in combination, are associated with anticholinergic effects, sedation, and hypotension, placing older adults at risk for falls (AGS Beers Criteria, 2019). Finally, drugs used to treat the adverse effects of analgesics and adjuvant drugs, including sedatives, antihistamines, and antiemetics, can contribute to anticholinergic effects, hypotension, and falls (AGS Beers Criteria, 2019).

Nonpharmacological Treatment for Pain

Nonpharmacological pain treatment is an essential component of effective and patient-centered pain management (CDC, 2016; Joint Commission, 2017). Given the high rates of chronic conditions and polypharmacy previously cited, consideration should be given to relieve pain without adding further pharmacological agents when possible. There is evidence to support the use of nonpharmacological pain treatment for common chronic pain conditions, such as exercise for low back pain and osteoarthritis (CDC, 2016). In a systematic review of 105 U.S.-based randomized controlled trials conducted over the past 50 years, several nonpharmacological therapies to treat pain were identified and found to be effective (Nahin, Boineau, Khalsa, Stussman, & Weber, 2016). In particular, complementary health approaches such as yoga, tai chi, and acupuncture improved pain management (Nahin et al., 2016). Over 30% of adults use some form of complementary therapy, according to the report by the National Center for Complementary and Integrative Health (NCCIH, 2018). The most commonly reported nonpharmacological strategies included exercise, nutritional supplements, ointments, massage, relaxation (e.g., breathing, meditation, imagery, music), activity modification, massage, and heat or cold application (NCCIH, 2018). The use of transcutaneous electrical nerve stimulation (TENS), chiropractic practices, vitamins, herbal remedies, magnets, and acupuncture was less prevalent in older adults (NCCIH, 2018; Stewart et al., 2012). Nonpharmacological therapies that were recommended for chronic pain management included acupuncture, mindfulness meditation, massage, TENS, cognitive behavioral therapy (CBT), and supplements such as glucosamine and topical capsaicin cream (Abdulla et al., 2013; Zhang et al., 2008). Many of these nonpharmacological therapies are safe and effective in reducing pain and improving function (Makris et al., 2014). Older adult patients should be encouraged to use multimodal approaches, including nonpharmacological treatment, for more effective pain management (Makris et al., 2014).

Types of Nonpharmacological Treatment

Pain is a physical and emotional experience (Merskey, 1994). Thus, emotional responses to and correlates of pain such as anxiety and depression are common (Abdulla et al., 2013; Denise et al., 2014). Multimodal approaches are increasingly encouraged to address both the physical and the emotional components of pain (Abdulla et al., 2013; Keefe, Porter, Somers, Shelby, & Wren, 2013; Makris et al., 2014). Nonpharmacological pain treatment strategies such as acupuncture, acupressure, massage, mindfulness meditation, and yoga may be beneficial to manage pain both physically and emotionally. Physical pain relief modalities include, but are not limited to, TENS, use of heat and cold, massage, physical activity, acupuncture, acupressure, and exercise. Emotional pain relief modalities include guided imagery, mindfulness meditation, CBT, biofeedback, tai chi, and yoga (Abdulla et al., 2013; Makris et al., 2014). Various types of dietary supplements are also commonly used nonpharmacological pain treatments among older adults. Many of these nonpharmacological strategies have been empirically evaluated for their effectiveness in pain management for older adults and reviewed for level of evidence ratings (Makris et al., 2014). A brief explanation of some commonly used nonpharmacological pain treatments follows.

Acupuncture Acupuncture is recommended primarily as a complementary therapy. It is considered a safe effective treatment according to a meta-analysis (Vickers et al., 2012), evidence-based guidelines (Abdulla et al., 2013; Makris et al., 2014; Park & Hughes, 2012), and leading professional organizations such as the Osteoarthritis Research Society International (OARSI; Zhang et al., 2008) as well as the AGS (2009). Although a randomized clinical trial conducted in Australia (Hinman et al., 2014) did not support acupuncture as an effective treatment for chronic knee pain, a more recent meta-analysis of 39 clinical trials concluded that acupuncture needling therapy was superior to sham acupuncture and that no-acupuncture controls for relieving chronic musculoskeletal pain had a persistent effect (Vickers et al., 2018). Thus, recent Clinical Practice Guidelines from the American College of Physicians (ACP) recommend acupuncture as an effective treatment to manage chronic back pain based on a systematic review (Tick et al., 2018). Among the clinical trials reviewed, however, the frequency and duration of acupuncture treatment varied from three times per week for 2 weeks to once a week for 26 weeks. Thus, more research is needed to define the optimal treatment dosage and timing.

Acupressure Acupressure involves applying physical pressure by hands, fingers, or elbows on different pressure points and is based on the same principles as acupuncture. One type of acupressure that has shown improvement in pain outcomes is auricular acupressure (AA)—pressure applied to the ear. E. You, Kim, Harris, and D'Alonza (2019) highlighted the fact that acupressure can be safely self-administered, which is a significant advantage from a self-management perspective. Like acupuncture studies, there is considerable variability in the dosage and timing of acupressure treatments. One study reported that AA applied daily for 7 days was effective to manage chronic low back pain (Yeh, Chien, Chiang, & Huang, 2012). Another study used acupressure once per day for 5 days a week over an 8-week period and demonstrated significantly improved pain relief compared to the usual care in older adults with knee osteoarthritis (Li, Harris, Tsodikov, Struble, & Murphy, 2017). Similarly, acupressure applied for 15 minutes 4 times per week for 12 weeks indicated reduced pain intensity among community-dwelling frail older adults (C. W. C. Chan et al., 2017). These studies support the effectiveness of acupressure to relieve chronic pain, despite differences in dosage, frequency, and duration of acupressure treatment. Thus, further study is needed to define the parameters of optimal acupressure treatment for pain relief.

Massage Massage is considered an effective adjunctive therapy for pain without serious adverse events (Abdulla et al., 2013; AGS, 2009; Makris et al., 2014; Zhang et al., 2008). Clinical Practice Guidelines from the ACP recommend massage therapy as an effective treatment to manage chronic back pain (Tick et al., 2018). Massage therapy may be beneficial when combined with aromatherapy. A study by Arslan, Kutlutürkan, and Korkmaz (2019) found aromatherapy massage helped to reduce chronic pain from osteoarthritis. Another type of healing touch, therapeutic touch, involves the use of hands to promote energy healing. There is some evidence to support its use to relieve pain. For example, a pilot study by Mueller, Palli, and Schumacher (2019) suggested using therapeutic touch as a noninvasive intervention because it was beneficial to adult neurological patients with chronic back pain.

Mindfulness Meditation

Mindfulness-based interventions appear to be effective in managing musculoskeletal pain (Lopes, Vannucchi, Demarzo, Cunha, & Nunes, 2019) and chronic back pain (Cherkin et al., 2016), demonstrating clinically meaningful improvement in pain after use. In one clinical trial, it was found that 8 weeks of a meditation program was as effective as an educational program in reducing chronic low back pain (Morone, Rollman, Moore, Qin, & Weiner, 2009). Relaxation, as a mind–body therapy, was also effective for managing chronic headaches and musculoskeletal pain in adults (Gonzalez et al., 2019), and for treating persistent pain of older adults living in long-term care facilities (Shropshire, Stapleton, Dyck, Kim, & Mallory, 2018).

Transcutaneous Electrical Nerve Stimulation (TENS)

The effectiveness of TENS for managing back pain has been well studied. A recent meta-analysis of TENS as an intervention found short-term improvement of functional disability but not symptoms of chronic back pain (Wu et al., 2018). In contrast, older adults demonstrated similar changes in experimental pain responses when compared to middle and younger adults (Simon, Riley, Fillingim, Bishop, & George, 2015). Older adults may need higher doses of TENS to have comparable effects for pain relief as do young adults (Simon et al., 2015) or this intervention may be used in combination with acupuncture (Abdulla et al., 2013; Park & Hughes, 2012). To obtain pain relief with TENS, adequate intensity and dosing should be established and applied (DeSantana, Walsh, Vance, Rakel, & Sluka, 2008).

Tai Chi

Tai chi is a movement-based exercise regimen that has demonstrated effectiveness in managing pain, improving physical functioning, and lowering fall risk (Huang, Feng, Li, & Lv, 2017; Makris et al., 2014). Systematic reviews and meta-analyses provide evidence that tai chi is safe for older adults (Abdulla et al., 2013; Kang, Lee, Posadzki, & Ernst, 2011). A recent randomized controlled trial to manage chronic multisite pain with tai chi intervention demonstrated decreased pain severity and pain interference compared to light physical exercise (T. You et al., 2018). Despite many trials of tai chi, the effectiveness of this intervention for chronic pain in older adults is still inconclusive because of methodological issues among studies (Hall, Maher, Latimer, & Ferreira, 2009). Therefore, tai chi is not widely supported to relieve pain.

Cognitive Behavioral Treatment Cognitive behavioral treatment (CBT) includes cognitive and behavioral coping skills training, cognitive restructuring, acceptance, and behavioral activation (Niknejad et al., 2018). CBT has also contributed to significant improvement in chronic pain and self-efficacy (Niknejad et al., 2018), and improved pain treatment and mobility among older adults with osteoarthritis (Baird, Murawski, & Wu, 2010). CBT is recommended for pain relief when delivered by a professional therapist (Abdulla et al., 2013; AGS, 2009) in a group-based setting (Niknejad et al., 2018). CBT requires multiple sessions (Green, Hadjistavropoulos, Hadjistavropoulos, Martin, & Sharpe, 2009; Niknejad et al., 2018). While the period and number of CBT interventions varied between studies, the mean number of sessions was 8.4 (min-max: 6–14) times and mean duration 9.4 (min-max: 4–35) weeks (Niknejad et al., 2018). A CBT intervention once a week for 10 weeks improved maladapative pain behavior, increased relaxation, and improved coping (Green et al., 2009) among participants.

Although these nonpharmacological therapies are not an exhaustive list of regimens, they demonstrated evidence to support their use in older adults. Each of these modalities has demonstrated mixed results, largely because of individual patient preferences and methodological differences in how the studies were conducted. Thus, there is no conclusive evidence that these modalities will relieve pain in older adults. Acupuncture seems to have the most consistently effective results for pain management. Nonpharmacological modalities should be considered on an individualized basis, depending on patient preference and response, physical function, psychological functioning, and acceptability and used as an adjunct to pharmacological treatment.

In summary, nonpharmacological treatments are widely used measures to help manage and relieve pain. These approaches are challenging to study because it is difficult to (a) find a convincing placebo and (b) establish optimal dose, frequency, and duration of such interventions. In addition, studies have inconsistent findings because of differences in designs, inconsistent measures, and mixed intervention durations. Further, it has not been determined which specific type of nonpharmacological treatment works best for specific types of chronic pain. Despite the lack of strong evidence and rigorous support for these nondrug approaches, they are of interest to patients, clinicians and researchers. Thus, healthcare providers should consider all possible combinations and options for managing pain and discuss these approaches with their older adult patients to identify the best options for each individual patient. More detail about these nonpharmacological treatments for pain can be found in the clinical guidelines referenced throughout this chapter. In addition, Shoji and colleagues provide a comprehensive review of behavioral interventions to treat pain and related symptoms among older adults from a palliative care perspective (Shoji, Glover, & Horgas, 2018).

Special Considerations for Using Nonpharmacological Treatment for Older Adults

Individuals vary widely in their preferences for and ability to use nonpharmacological treatments to manage pain. Spiritual and/or religious coping strategies, for example, should be consistent with the individual's values and beliefs. Other strategies, such as guided imagery, biofeedback, or relaxation, may not be feasible for cognitively impaired older adults. Tai chi or exercise should be customized based on functional ability and mental status of the older adult. Therefore, it is important for healthcare providers to consider a broad array of nonpharmacological treatments for pain and to tailor selections to the individual patient. It is also important to gain patient and family input about the use of home and folk remedies because use of herbals or home remedies is often not disclosed to healthcare providers and may result in negative drug–herb interactions (Yoon & Horne, 2001; Yoon, Horne, & Adams, 2004; Yoon & Schaffer, 2006).

IMPROVING PAIN MANAGEMENT IN HEALTHCARE SETTINGS

Nurses have a crucial role in assessing and managing pain. The promotion of comfort and relief of pain is fundamental to nursing practice, and, as integral members of

interdisciplinary healthcare teams, nurses must work collaboratively to assess and treat pain effectively. Given the prevalence of pain in older adults and the burgeoning aging population seeking care in our healthcare systems, this role is vitally important. In addition, nurses have a primary responsibility to teach the patient and family about pain and how to manage it, both pharmacologically and nonpharmacologically. As such, nurses must be knowledgeable about pain management, in general, and about managing pain in older adults, specifically. Moreover, nurses are responsible for basing their practice on the best evidence available, and helping to bridge the gap among evidence, recommendations, and clinical practice.

High-quality pain management requires strong institutional commitment and leadership that supports team-based quality-improvement processes (Dirks, 2010; Gordon et al., 2005). The American Pain Society recommendations for improving the quality of pain management in healthcare settings emphasizes a multilevel systems approach that ensures prompt pain assessment and effective pain treatment, including reassessing and adjusting treatment plans. Patients and families should be involved in developing and altering pain management plans. Documentation, identification of quality indicators, and measurement of pain management and process outcomes are required components of quality pain management initiatives. This interdisciplinary, comprehensive approach requires input from all parties in the healthcare setting with the unified goal of high-quality pain management for all patients across all settings.

CASE STUDY 22.1

Mrs. B is a 93-year-old woman living with her daughter in the community. She has been diagnosed with anxiety disorder, hypertension, and diabetes, and has a severe hearing problem. Recently, Mrs. B fell in her bathroom and broke her right leg, which resulted in admission to the hospital. Before the fall, she typically walked around the neighborhood daily with her daughter. She now stays in her hospital bed with bruising, swelling, and pain in her right lower extremity. Her daughter has stayed with Mrs. B at the bedside and is worried about her anxiety and pain. Mrs. B is ordered oxycodone hydrochloride 5 to 10 mg every 6 hours orally or morphine sulfate 1 mg intravenously every 4 hours for pain as needed.

The nurse conducted an assessment of vital signs and completed a thorough pain assessment and mental status assessment, starting with self-report questions and asking the daughter for observations about her mother's response. The nurse explained the analgesic choices, including the types, routes, dosages, and potential side effects, to the patient and her daughter. When the nurse asked Mrs. B and her daughter about their perspective of pain medications and their acceptable level of pain (pain goal), both expressed fear of taking opioid medications. After further discussions with the nurse, Mrs. B and her daughter agreed to oxycodone 5 mg (instead of 10 mg) to manage Mrs. B's pain. They expressed that this was an informed decision—that Mrs. B's anxiety about pain medication was relieved, and that they felt relieved to be part of the pain treatment decision. Follow-up pain evaluation revealed that 5 mg of oxycodone did not relieve Mrs. B's pain. Mrs. B. was repositioned, ice was applied, and gentle music turned on. Afterward, Mrs. B rested comfortably. Her daughter was relieved to see her mother resting comfortably and felt more knowledgeable about her mother's pain experience and how to manage it.

SUMMARY

Pain is a significant problem for older adults, and has the potential to negatively impact independence, functioning, and quality of life. In the acute care setting, pain can negatively affect healing. In order for pain to be effectively managed, it must first be carefully and systematically assessed. Pain assessment in older adults should start with self-reported pain. It should also incorporate assessment of nonverbal pain behaviors and family input about usual pain responses and patterns, particularly in patients unable to verbally communicate their pain. The use of established pain assessment measurement tools is recommended. Pain treatment in older adults should be tailored to the type and severity of pain, with medications that can be safely used in older adults, or combined with nonpharmacological treatment for heightened effectiveness. Older adults, their families, and their healthcare providers should be knowledgeable about pain and how to manage it. Thus, education is an important part of the process and should not be overlooked. Healthcare settings must emphasize the importance of effective pain management and empower their staff through resources, education, committed leadership, and organizational policies to provide high-quality pain management to older adults. Pain management is a crucial nursing role that can improve the healthcare experience and quality of life for the older adults.

NURSING STANDARD OF PRACTICE

Protocol 22.1: Pain Management in Older Adults

I. GOAL

All older adults will either be pain free or their pain will be controlled to a level that is acceptable to the patient and allows the person to maintain the highest level of functioning possible.

II. OVERVIEW

Pain, a common, subjective experience for many older adults, is associated with a number of acute (e.g., surgery, trauma) and chronic (e.g., osteoarthritis) conditions. Despite its prevalence, evidence suggests that pain is often poorly assessed and poorly managed, especially in older adults. Cognitive impairment related to dementia and related disorders represents a particular challenge to pain management because older adults with these conditions may be unable to verbalize their pain. Nurses, an integral part of the interdisciplinary care team, need to understand the barriers to pain management to provide optimal care and to educate patients and families about managing pain.

III. BACKGROUND

A. Definitions
   1. *Pain:* Pain is defined as "an unpleasant sensory and emotional experience" (Merskey, 1994, pS74) and also as "whatever the experiencing person says it is, existing whenever he says it does" (McCaffery, 1968, p. 95). These definitions highlight the multidimensional and highly subjective nature of pain. Pain is usually characterized according to the duration of pain (e.g., acute vs. persistent) and the cause of pain (e.g., nociceptive vs. neuropathic). These definitions have implications for pain management strategies.
   2. *Acute pain:* Defines pain that results from injury, surgery, or trauma. It may be associated with autonomic activity such as tachycardia and diaphoresis. Acute pain is usually time limited and subsides with healing.
   3. *Persistent pain:* Defines pain that lasts for a prolonged period (usually more than 3–6 months) and is associated with chronic disease or injury (e.g., osteoarthritis; AGS, 2009). Persistent pain is not always time dependent, however, and can be characterized as pain that lasts longer than the anticipated healing time. Autonomic activity is usually absent, but persistent pain is often associated with functional loss, mood disruptions, behavior changes, and reduced quality of life.
   4. *Nociceptive pain:* This refers to pain caused by stimulation of specific peripheral or visceral pain receptors. This type of pain results from disease processes (e.g., osteoarthritis), soft-tissue injuries (e.g., falls), and medical treatment (e.g., surgery, venipuncture, and other procedures). It is usually localized and responsive to treatment.
   5. *Neuropathic pain:* Refers to pain caused by damage to the peripheral nervous system or CNS. This type of pain is associated with diabetic neuropathies, postherpetic and trigeminal neuralgias, stroke, and chemotherapy treatment for cancer. It is usually more diffuse and less responsive to analgesic medications.

B. Epidemiology
   1. Approximately 50% of community-dwelling older adults and 85% of nursing home residents experience persistent pain.
   2. The Centers for Disease Control and Prevention estimated that over 60% of older adults in the United States experience chronic pain (Dahlhamer et al., 2018).
   3. More than 19 million surgeries were performed on older adults in 2010, including 5.2 million musculoskeletal surgeries (including knee and hip replacements; Federal Interagency, 2016). Thus, older adults are at risk for pain associated with chronic diseases as well as postsurgical and procedural pain.

C. Etiology
   1. Older adults have chronic medical conditions that are typically associated with persistent or chronic pain, such as osteoarthritis and peripheral vascular disease.
   2. Older adults often have multiple medical conditions, both chronic and/or acute, and may suffer from multiple types and sources of pain.

(*continued*)

Protocol 22.1: Pain Management in Older Adults (*continued*)

D. Significance
   1. Untreated or ineffectively treated moderate to severe persistent pain has major implications for older adults' health, functioning, and quality of life (Horgas, 2017a).
      a. Pain is associated with depression, social withdrawal, sleep disturbances, impaired mobility, decreased activity engagement, and increased healthcare use (AGS, 2009).
      b. Other geriatric conditions that can be exacerbated by pain include falls, cognitive decline, deconditioning, malnutrition, gate disturbances, and slowed rehabilitation (AGS, 2009).
      c. Unrelieved pain reduces quality of life for older adults and contributes to increased healthcare resource utilization and costs (IOM, 2011; Morrissey et al., 2014). The IOM (2011) declared chronic pain a public health problem in the United States.
   2. Nurses play a key role in pain management. The promotion of comfort and relief of pain is fundamental to nursing practice. Nurses need to be knowledgeable about pain in late life in order to provide optimal care, to educate patients and families, and to work effectively in interdisciplinary healthcare teams.

IV. ASSESSMENT PARAMETERS

A. Assumptions
   1. Most hospitalized older patients suffer from both acute and persistent pain.
   2. Older adults with cognitive impairment experience pain but are often unable to verbalize it.
   3. Both patients and healthcare providers have personal beliefs, prior experiences, insufficient knowledge, and mistaken beliefs about pain and pain management that (a) influence the pain management process and (b) must be acknowledged before optimal pain relief can be achieved.
   4. Pain assessment must be regular, systematic, and documented in order to accurately evaluate treatment effectiveness.
   5. Self-report is the gold standard for pain assessment.
   6. Effective pain management requires an individualized approach.

B. Strategies for pain assessment
   1. Initial, quick pain assessment (Herr, Bjoro, et al., 2006)
      a. Assess older adults who present with acute pain of moderate to severe intensity or who appear to be in distress.
      b. Assess pain location, intensity, duration, quality, and onset.
      c. Assess vital signs. If changes in vital signs are absent, do not assume that pain is absent (Herr, Coyne, et al., 2006).
   2. Comprehensive pain assessment (AGS, 2009; Herr, Coyne, et al., 2006; Pasero & McCaffery, 2011)
      a. Review medical history, physical examination, and laboratory and diagnostic tests in order to understand sequence of events contributing to pain.
      b. Assess cognitive status (e.g., dementia, delirium), mental state (e.g., anxiety, agitation, depression), and functional status. If there is evidence of cognitive impairment, do not assume that the patient cannot provide a self-report of pain. Be prepared to augment self-report with observational measures and proxy report using the hierarchical approach.
      c. Assess present pain, including intensity, character, frequency, pattern, location, duration, and precipitating and relieving factors.
      d. Assess pain history, including prior injuries, illnesses, and surgeries; pain experiences; and pain interference with daily activities.
      e. Review medications, including current and previously used prescription drugs, OTC drugs, and complementary therapies (including home remedies). Determine what pain control methods have previously been effective for the patient. Assess patient's attitudes and beliefs about pain and the use of analgesics, adjuvant drugs, and nonpharmacological treatments. Assess history of medication or alcohol abuse.

(*continued*)

Protocol 22.1: Pain Management in Older Adults (*continued*)

f. Assess self-reported pain using a standardized measurement tool. Choose from published measurement tools, and recall that older adults may have difficulty using 10-point NRSs. Vertical verbal descriptor scales or faces scales may be more useful with older adults. Use the same tool consistently.
g. Assess pain regularly and frequently, at least every 4 hours. Monitor pain intensity after giving medications to evaluate effectiveness.
h. Observe for nonverbal and behavioral signs of pain, such as facial grimacing, withdrawal, guarding, rubbing, limping, shifting of position, aggression, agitation, depression, vocalizations, and crying. Also watch for changes in behavior from the patient's usual patterns.
i. Gather information from family members about the patient's pain experiences. Ask about the patient's verbal and nonverbal/behavioral expressions of pain, particularly in older adults with dementia.
j. When pain is suspected but assessment instruments or observation is ambiguous, institute a clinical trial of pain treatment (i.e., in persons with dementia). If symptoms persist, assume that pain is unrelieved and treat accordingly.

V. NURSING CARE STRATEGIES

A. General approach
1. Pain management requires an individualized approach.
2. Older adults with pain require comprehensive, individualized plans that incorporate personal goals, specify treatments, and address strategies to minimize the pain and its consequences on functioning, sleep, mood, and behavior.

B. Pain prevention
1. Develop a written pain treatment plan on admission to the hospital or before surgery or treatments. Help the patient to set realistic pain treatment goals, and document the goals and plan.
2. Assess pain regularly and frequently to facilitate appropriate treatment.
3. Anticipate and aggressively treat for pain before, during, and after painful diagnostic and/or therapeutic treatments. Administer analgesics 30 minutes before activities.
4. Educate patients, families, and other clinicians to use analgesic medications prophylactically before and after painful procedures.
5. Educate patients and families about pain medications; their side effects; adverse effects; and issues of addiction, dependence, and tolerance.
6. Educate patients to take medications for pain on a regular basis and to avoid allowing pain to escalate.
7. Educate patients, families, and other clinicians to use nonpharmacological strategies to manage pain, such as relaxation, massage, and the use of heat and cold.

C. Treatment guidelines
1. Pharmacological (Horgas, 2017a; Pasero & McCaffery, 2011)
a. Administer pain drugs on a regular basis to maintain therapeutic levels. Use medications as needed for breakthrough pain.
b. Document treatment plan to maintain consistency across shifts and with other care providers.
c. For postoperative pain, choose the least invasive route. Intravenous analgesics are the first choice after major surgery. Avoid intramuscular injections. Transition from parenteral medications to oral analgesics when the patient has oral intake.
d. Choose the correct type of analgesic. Use opioids for treating moderate to severe pain and nonopioids for mild to moderate pain. Select the analgesic based on thorough medical history, comorbidities, other medications, and history of drug reactions.

(*continued*)

Protocol 22.1: Pain Management in Older Adults (*continued*)

e. Among nonopioid medications, acetaminophen is the preferred drug for treating mild to moderate pain. Guidelines recommend not exceeding 3 g/d (maximum 2 g/d in frail elders). The maximum dose should be reduced to 50% to 75% in adults with reduced hepatic function or history of alcohol abuse. Monitor for excess acetaminophen intake from combination drugs (e.g., opioid + nonopioid) or OTC medications that include acetaminophen. Educate patients and families about this risk and drugs to avoid.
f. The other major class of nonopioid medications, NSAIDs, should be used with caution in older adults. Monitor for GI bleeding and consider giving with a proton-pump inhibitor to reduce gastric irritation. Also monitor for bleeding, nephrotoxicity, and delirium.
g. Older adults are at increased risk for adverse drug reactions because of age- and disease-related changes in pharmacokinetics and pharmacodynamics. Monitor medication effects closely to avoid overmedication or undermedication and to detect adverse effects. Assess hepatic and renal functioning.

2. Nonpharmacological (Horgas, 2017b; Pasero & McCaffery, 2011)
   a. Investigate older patients' attitudes and beliefs about, preference for, and experience with nonpharmacological pain treatment strategies.
   b. Tailor nonpharmacological techniques to the individual.
   c. Cognitive behavioral strategies focus on changing the person's perception of pain (e.g., relaxation therapy, education, distraction) and may not be appropriate for cognitively impaired persons.
   d. Physical pain relief strategies focus on promoting comfort and altering physiological responses to pain (e.g., heat, cold, TENS units) and are generally safe and effective.

D. Follow-up assessment
   1. Monitor treatment effects within 1 hour of administration, and at least every 4 hours.
   2. Evaluate patient for pain relief and side effects of treatment.
   3. Document patient's response to treatment effects.
   4. Document treatment regimen in patient care plan to facilitate consistent implementation.

VI. EXPECTED OUTCOMES

A. Patient will
   1. Be either pain free or pain will be at a level that the patient judges as acceptable.
   2. Maintain highest level of self-care, functional ability, and activity level possible.
   3. Experience no iatrogenic complications, such as falls, GI upset/bleeding, or altered cognitive status.

B. Nurse will
   1. Demonstrate evidence of ongoing and comprehensive pain assessment.
   2. Document evidence of prompt and effective pain management interventions.
   3. Document systematic evaluation of treatment effectiveness.
   4. Demonstrate knowledge of pain management in older patients, including assessment strategies, pain medications, nonpharmacological interventions, and patient/family education.

C. Institution/Facilities will (Dirks, 2010; Gordon et al., 2005)
   1. Maintain strong institutional commitment and leadership to improve pain management. Evidence of institutional commitment includes:
      a. Providing adequate resources (including compensation for staff education and time; necessary materials)
      b. Clear communication of how better pain management is congruent with organizational goals
      c. Establishment of policies and standard operating procedures for the organization
      d. Requiring clear accountability for outcomes
   2. Establish an internal pain team of committed and knowledgeable staff who can lead quality-improvement efforts to improve pain management practices.
   3. Require evidence of documentation of pain assessment, intervention, and evaluation of treatment effectiveness. This includes adding pain assessment and reassessment questions to flow sheets and electronic forms.

(*continued*)

Protocol 22.1: Pain Management in Older Adults (*continued*)

4. Provide evidence of using a multispecialty approach to pain management. This includes referral to specialists for specific therapies (e.g., psychiatry, psychology, physical therapy, interdisciplinary pain treatment specialists; clinical pathways and decision support tools will be developed to improve referrals and multispecialty consultation).
5. Provide evidence of pain management resources for staff (e.g., educational opportunities, print materials, access to Web-based guidelines and information).

ABBREVIATIONS

AGS	American Geriatrics Society
CDC	Centers for Disease Control and Prevention
CNS	Central nervous system
IOM	Institute of Medicine
NSAID	Nonsteroidal anti-inflammatory drug
OTC	Over the counter

RESOURCES

American Association of Pain Management Nurses (ASPMN)
http://www.aspmn.org

American Geriatrics Society (AGS)
www.americangeriatrics.org

American Medical Director Association (AMDA). Clinical Practice Guideline: Pain Management in the Long-Term Care Setting
https://www.guidelinecentral.com/summaries/pain-management-in-the-long-term-care-setting

City of Hope: State of the Art Review of Tools for Assessing Pain in Nonverbal Older Adults
https://prc.coh.org/PAIN-NOA.htm

Gerontological Society of America
https://www.geron.org/publications/from-policy-to-practice

Hartford Institute for Geriatric Nursing: Try This Series: Assessing Pain in Older Adults With Dementia
https://consultgeri.org/try-this

The University of Iowa Geriatric Pain website
https://geriatricpain.org/about-us

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Assessing, Managing, and Preventing Falls in Acute Care*

23

Deanna Gray-Miceli
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EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Perform a fall-focused health history and physical, functional, and mobility assessment as part of the nursing assessment of the older adult who has fallen.
2. Evaluate the older adult who is unsafe and at risk for falls and/or fall-related injury, as well as corresponding nursing interventions to minimize risks for injury among fall-prone hospitalized older adults.
3. Design nursing plans of care aimed at reducing serious injuries among older adults prone to falls based on the suspected fall type and fall risks.
4. Use findings from a comprehensive post-fall assessment (PFA) to develop an individualized plan of nursing care for the secondary prevention of recurrent falls.
5. Mobilize institutional resources to provide a collaborative interprofessional falls or safety team.
6. Use the latest evidence-based innovations in practice to champion a nurse-led fall-prevention intervention to prevent recurrent falls.
7. Use commonsense approaches and practice standards to manage persons at risk for falls or who have fallen.

OVERVIEW

Population-level data provided by the Centers for Disease Control and Prevention provide evidence of the magnitude and burden of harm among certain age groups, such as those 65 and older, due to falls and fall-related injury (Centers for Disease Control and Prevention [CDC], National Centers for Injury Prevention and Control [NCIPC], 2019). Evidence shows falls and resulting injuries in older adults are a major public health problem not only because of their magnitude and consequences, but also because of their degree of preventability.

Keeping patients safe and free from falls during hospitalization is an expectation of care supported by practicing healthcare professionals and providers, healthcare organizations, state and federal government, accreditation agencies, and key stakeholders in promoting the health and safety of the public, especially for persons cared for in health care facilities (Institute of Medicine [IOM], 2003; The Joint Commission-Sentinel Event Alert 55, 2015a and 2015b). Specific aims to keep patients safe in healthcare facilities by preventing falls are focused to: (a) reduce fall-related injury and fatality from falls; (b) champion

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

an interprofessional fall-prevention program to prevent patient falls and fall-related injuries; and (c) promote improvements in patient safety by reducing preventable falls through system-wide solutions whenever possible (The Joint Commission, 2015). To accomplish these aims requires providers to use two sets of lenses, one focused on the retrospective question "Why did the fall occur in the first place?", which can best be answered through a comprehensive post-fall assessment (PFA), and the other on the prospective questions "Who is at risk to fall and/or at risk for fall-related injuries?" and "How can their fall be prevented and injuries averted?" In either approach, person-, unit-, or organization-level factors are implicated.

Use of a guiding conceptual framework can help nurses to navigate best practice approaches to prevent falls and fall-related injuries, whether they occur from person-, unit-, or organization-level factors within health care facilities. One framework, the epidemiological injury framework, is based on identified personal risk factors and levels of prevention (primary, secondary, and tertiary; Katz, Wild, Elmore, & Lucan, 2013, p. 4). This framework allows nurses to identify best practice interventions according to the presence or absence of personal risk factors, disease states, and goals of care (Katz et al., 2013). The CDC's public health model has been used to address unintentional injuries and traumatic brain injury (TBI). This four stage model guides TBI prevention moving from surveillance to identification of risk and protective factors for TBI to development and testing of evidence-based interventions to bringing effective interventions to scale from widespread adoption (Baldwin, Breiding, & Sleet, 2016). The Haddon Matrix is another useful model which identified the pre-event, the event, and the post-event states in context of influencing factors among the person (host), agent, physical and social environment (Barnett et al., 2005). Another useful guiding framework, and focus of this chapter, centers on application of the nursing metaparadigm, which considers the person experiencing the fall, the person's environment, his or her health (including risk factors), and the nursing response.

The nursing response to the falling patient requires the use of the highest level of evidence-based interventions, as well as the use of best practice standards should empiric research evidence be lacking. Use of best practice standards of care is evidenced by what a nurse in a similar situation would do to assess or intervene to prevent a fall. It relies on nursing judgment, and commonsense approaches or practice standards to manage persons at risk for falling or who have fallen. Promoting patient safety calls for an understanding and dovetailing of multiple frameworks and practice approaches, particularly when research-based evidence is lacking. For instance, knowing the situational context, such as when and where the fall occurred, is as important as knowing the person's behavior at the time of the fall that may have precipitated the fall. For these reasons, eliciting the person's recollection of his or her fall, through appropriate history taking, helps to identify individual-level or personal risk factors as well as explain (from the patient's perspective), the circumstances of the fall.

Recognizing the unique circumstances of each and every person's fall becomes an important consideration for nursing care of that individual. The first critical step in the nursing process to keep patients safe and free from falls and injury is implementation of a nursing assessment. The nursing assessment serves as the gatekeeper for effective communication to healthcare providers and team, plans of care, tailored interventions, and evaluation of the effectiveness of those interventions. The nursing assessment includes an assessment of the person's concerns, clinical condition, the person's surrounding environment, his or her health and function, and current nursing care strategies.

Health Systems Improvement for Fall Prevention

The occurrence of patient falls is associated with a multitude of individual-level, unit-level, or organizational level factors such as those occurring from human factor ergonomics and/or system issues. For example, a patient fall can occur because proper protocols were not in place, that is, errors of omission in the care plan occurred and/or staffing and skill mix were inadequate. Health systems improvement for fall prevention thus includes a comprehensive evaluation of all known factors and risks across these three levels (person, unit, and organizational level) based on the most current evidence.

One aim for health systems improvement for fall prevention is active involvement of all stakeholders who seek to uphold the triple aim of better patient-care experiences and use of cost-effective interventions so that falls are reduced (Institute for Healthcare Improvement [IHI], n.d.). Among others, one health systems level improvement is fall-prevention programs. Across *all* patient settings, evidence exists that fall-prevention programs are effective. The RAND report cites, from a meta-analysis of 20 randomized clinical trials (among all patient settings, but mostly long-term care), that fall-prevention programs reduced either the number of older adults who fell or the monthly rate of falling (Shekelle et al., 2004). Effective fall-prevention programs in acute care hospitals are championed by nurses using one or more approaches in

collaboration with interprofessional teams. Program evaluation should extend beyond traditional fall rates to causes of fall, types of fall, sources of injury, and severity of injury. These data inform organizational efficiency and effectiveness of fall and fall injury programs at the patient, unit, and population level. Fall management must differentiate and segment vulnerable patients to protect from injury when a fall is experienced (Oliver, Healy, & Haines, 2010; Zubkoff et al., 2018). Assessing risk of injury provides the data for nurses to provide specific interventions to reduce injury (e.g., hip protectors, floor mats, and helmets) based on using existing tools. Strong evidence exists to support the benefit of multifactorial fall-prevention programs for injurious falls in acute care. System-level interventions with emerging evidence of effectiveness result from the work of innovation: nurse champions, safety huddles, teach-back strategies, post-fall huddles (PFHs), and interventions to reduce fall-related trauma.

To be most effective, action needs to be taken by both leaders and frontline staff, to be championed by all members of the interprofessional team, including support workers, and tailored to the preferences and needs of individual patients (Degelau et al., 2012; Ganz et al., 2013; Oliver et al., 2010; Shekelle et al., 2013; Spoelstra, Given, & Given, 2012).

This chapter begins with: (a) the scope and magnitude of the problem of falls and outcomes related to injuries, such as fatal injuries, traumatic brain injury, and hip fracture; (b) an organizational practical approach to comprehensive nursing assessment of the falling patient that seeks to identify the patient's recollection of the fall, the person's understanding of the fall, the stability of the patient, associated symptoms of the person's fall, emotional responses, and presence of injury; (c) individual patient level and environmental risk factors for falling. Throughout the chapter, we have identified some commonsense practice standards for nurses to implement to mitigate the risk of falls and fall-related injury.

BACKGROUND AND STATEMENT OF PROBLEM

Scope, Magnitude, and Outcomes of Falls and Fall-Related Injuries

Many of the adverse healthcare outcomes resulting from falls, such as injury and/or functional decline, typically strike those patients older than 85 years *and* can be prevented. The most serious outcome is a *fatality*. The National Center for Injury Prevention and Control (NCIPC) ranks fatal falls as the leading cause of unintentional injury–fatality among older adults aged 65 to 85+ years between 1999 and 2010 (CDC, 2015c). The fatal fall incidence increases with age—those older than 85 years are the most vulnerable.

Falls with injury populate our healthcare delivery system at alarming rates, resulting in more than 3 million injuries treated in EDs annually, 800,000 hospitalizations, and more than 27,000 deaths annually (Centers for Disease Control and Prevention, Web-Based Injury Statistics, 2016). Every 11 seconds an older adult is seen in the ED for a fall, and every 19 minutes an older adult dies from a fall (National Council on Aging, 2018). In a recent examination of fall death rates in the United States, an increase in 30% has been reported from 2007 to 2016 (CDC, NCIPC, 2019). Reported hospital inpatient falls vary according to the type of study conducted, that is, multisite or single-site study, the type of unit (medical–surgical, telemetry, rehabilitation, or other), skill mix, and total number of nursing hours per patient day. The rate of falls in acute care hospitals, drawn from single-site studies, is estimated to range from 1.3 to 8.9 per 1,000 bed days, translating into significantly more than 1,000 falls per year in a large facility (Oliver et al., 2010). The rate of falls, drawn from multisite studies, however, increases to three to five falls per 1,000 bed days (Oliver et al., 2010). In terms of unit type, recent evidence from a longitudinal study using National Database of Nursing Quality Indicators (NDNQI) data found the mean fall rates for most unit types are stable or are decreasing, whereas those for surgical units increased over time (He, Dunton, & Staggs, 2012). Changes in practice are cited as potential key drivers behind the increased rate of falls post surgery. As early ambulation is encouraged, more patients on these units are out of bed. Fall rates have also been associated with registered nurse skill mix and total nursing hours per patient day. In He et al.'s study, lower fall rates were significantly associated ($p < .001$) with higher registered nurse skill mix and total number of nursing hours per patient day.

Serious injuries resulting from falls range from minor to severe types of injuries, such as hip fractures and traumatic brain injury (TBI), among others. And although we would like to believe that seemingly "minor" strikes to the head, spine, or limbs produce minor injury, evidence shows this is simply not true. We now know that ground-level falls from a standing position among adults older than 70 years cause more severe injuries and that those afflicted are less likely to survive compared with adults younger than 70 years (Spoelstra et al., 2012). In fact, those 70 years and older are three times as likely to die from these low-level, ground falls compared with adults younger than age 70 years. Evidence suggests that seemingly minor strikes to the head can result in tears in cranial

blood vessels and subdural mater (Strub, 2002). Given these findings, significant changes in clinical practice approaches are urgently needed for early identification of serious complications related to head trauma in older adults who appear to have "minimal head trauma, no obvious signs of head injury or concussion." New evidence supports a ramping up of the classic markers of head injury toward greater vigilance in recognition of other critical signs and symptoms of head trauma. Ergo, it is just not enough to assess older adults for risk of falls, but one must assess for risk of injury. Conventional practice has always drilled into practitioners the need to assess for hip-fracture injury or spinal fracture injury. Stepped up changes are warranted for heightened surveillance by healthcare professionals for all types of injury outcomes, most importantly, TBI as well as hip fracture. A brief overview of the evidence related to TBI and hip-fracture incidence is presented.

Traumatic Brain Injury

About 1.7 million people sustain TBI annually (CDC, 2015a). Of all external causes implicated in TBI, such as assault, being struck, and motor vehicle accident, falls account for 35%. The CDC reports falls as the leading cause of TBI for adults aged 75 years and older (CDC, 2015a). Of all the TBI-related ED visits in the United States during 2006 to 2010, the 65-years-and-older age group accounted for 81.8% of the TBI-related ED visits (CDC, 2015c). This age group also has the highest rates of TBI-related hospitalization and death. Because of limitations in study design, baseline health status, and inability to grade injury severity across studies, we have much less evidence of who, among the 75+-year-old cohort, carries the greater risk for TBI. Is it the patient with type 2 diabetes, Parkinson's disease, or those patients on anticoagulation medication? One study that relied on a 15-state CDC TBI surveillance system found an increased incidence of depression, dementia, and Parkinson's disease in patients with fall-related TBI (Coronado, Thomas, Sattin, & Johnson, 2005).

The issue of increased comorbidity has been suggested as a likely contributing factor for the higher incidence of TBI in persons 65 years and older, owing to increased use of aspirin and anticoagulation in management of these chronic conditions (Thompson, McCormick, & Kagan, 2006).

Groups at risk for the development of TBI include men, who are twice as likely to sustain a TBI, adults aged 75 years or older, and African Americans who have the highest death rate from TBI (CDC, NCIPC, 1999). Older adult residents who experienced head injuries from a fall were more likely to live in assisted living (47.9%; $p <$ .04) and to be walking at the time of their fall (69.0% vs. 36.1%) compared with older adult fallers without a head injury (Gray-Miceli, Ratcliffe, & Thomasson, 2013). The link between ambulation and head injury when fall occurs from a standing position has clinical relevance across all settings of care.

Physiological changes in the brain matter itself, seen with aging, have also been suggested as contributing factors to the increased risk of TBI in older adults. It has been suggested that dura mater becomes more adherent to the skull with age (Thompson et al., 2006), giving way to the development of tears even with minor strikes or blows to the head. The field of cellular neuroscience has also isolated changes of the microglia, rendering them weaker against protection of the brain after an ischemic or traumatic insult (Lourbopoulos, Erturk, & Hellal, 2015). Although it is unknown, age-related changes among older adults' brain tissue and supporting structures may underlie accumulating evidence, which has shown that elderly patients with TBI have worse mortality and functional outcome than nonelderly patients who presented with head injury despite lower injury severity (Susman et al., 2002). Noted neurosurgical experts report that when the head hits a stationary object, such as when the patient hits his or her head on the floor, "lesions are produced in the white matter of the brain from these shearing forces … resulting in strain and stretching of axons and vessels." This damage is in addition to any bleeding or clot formation (Strub, 2002, p. 2).

Hip Fracture

The news headline, well known to older Americans, reads: "Death or Immobility Often Follows Hip Fractures in Nursing Homes." This common adverse outcome of a fall is realized not just in nursing homes, but also among those living independently in the community. The CDC estimates that more than 95% of hip fractures are caused by falling, often sideways, on the hip (CDC, 2015b). Annually, at least 258,000 hospital admissions for hip fracture among those 65 years and older occur nationwide (CDC, 2015b).

Women, especially White women, carry the greatest risk of hip fracture compared with men (Hall, DeFrances, Williams, Golosinskiy, & Schwartzman, 2010), African American women, or Asian women (Ellis & Trent, 2001). An underlying diagnosis of osteoporosis increases risk of fall-related hip fracture (National Osteoporosis Foundation, 2013). There are 54 million people with osteoporosis and/or low bone mass (43.4 million with low bone mass and 10.2 million with osteoporosis; National Osteoporosis Foundation, 2013). Classic risk factors for osteoporosis,

pertinent to hospitalized patients, include immobility, insufficient calcium or vitamin D supplementation, and lack of weight-bearing exercises owing to the acute treatment of other diseases.

The U.S. Preventive Health Task Force recommends screening for osteoporosis with bone measurement testing to prevent osteoporotic fractures in women aged 65 years and older and in younger women at risk for osteoporosis (U.S. Preventive Services Task Force, 2018). Health-promotion activities, including regular screening for osteoporosis, begin with a complete health history. Once detected, osteoporosis is treatable by medications that build bone and supplementation of calcium and vitamin D, coupled with regular walking and exercise. Although it would seem advantageous to recommend the use of hip pads to protect the hip bone from injury during a sideways fall, there is insufficient evidence to recommend hip protectors routinely for all persons at risk for a fall.

Falls with injury remain a major prioritized patient safety focus when considering that, in 2010, older adults who were aged 65+ years accounted for approximately 45% of the inpatient population. The repeat-fall age group is 75 years and older and comprised 28% of the inpatient population (CDC, 2015b).

Older adults in acute care hospitals are a vulnerable population at risk for falls and falls with injury, be it from age-related factors, disease-related factors, medications, functional declines or disabilities, or for all of these reasons taken together. Therefore, the nurse's antenna for suspicion for injury should be raised so that assessment for these serious types of injuries predominate our post-fall and fall risk analyses.

NURSING ASSESSMENT OF THE FALLING PATIENT

Falling is recognized as a geriatric syndrome, a complex and multidimensional phenomenon among older adults (Inouye, Studenski, Tinetti, & Kuchel, 2007). Additionally, because the older adult's perception of his or her fall is influenced by his or her experiences, situational contexts, and beliefs about falling, what the person chooses to disclose to the nurse about the fall is highly subjective. Thus, use of an organizational, practice-based approach to a comprehensive post-fall nursing assessment of the falling patient allows for consistent gathering of key information needed to determine possible underlying fall etiologies (Gray-Miceli, Johnson, & Strumpf, 2005). The organizational approach presented in this chapter is based on evidence-based national guidelines for fall prevention among older adults (Panel on Prevention of Falls in Older Persons, American Geriatrics Society [AGS], & British Geriatrics Society [BGS], 2011) by providing the clinician with a discrete set of fall-focused historical questions and physical assessment parameters to assist in the search for identifying various underlying causal event factors associated with falls. This approach begins with eliciting the persons' experience and perception of their fall and recreates the situational context of the fall and key symptoms associated with the fall, which help nurses to answer the question "Why did this fall occur in the first place?", among other important steps outlined in other published works (Gray-Miceli et al., 2005). Nurses should strive to increase their understanding of the patients' perceptions about their fall, whenever feasible. Lim et al. (2018) acknowledged that efforts to reduce falls are limited by insufficient understanding of patients' views about falls and preventive initiatives dictated by healthcare providers. After interviewing 100 medically stable cognitively intact patients one day after the fall, themes revealed that patients were apathetic toward falls, described self-blame behaviors, admitted to risk-taking behavior, were reluctant to impose on busy nurses, and more. These results compel nurses to change conversations with patients and use evidence-based and theoretically derived assessment strategies that incorporate the patient's voice.

This practice approach has been used by registered nurses with long-term care older residents post fall and found feasible, acceptable, and comprehensive (Gray-Miceli, Ratcliffe, & Johnson, 2010). More recently, practicing registered nurses have found this practice-based approach very useful and of benefit to older adults (Gray-Miceli, 2018).

Value of the Post-Fall Assessment

Determination of why the fall occurred is of vital importance. The value of the PFA, if performed properly and comprehensively using appropriately empirically tested tools, is that underlying fall etiologies can be discerned so that appropriate plans of care can be instituted. To simply perform a fall risk assessment or perform a PFA and document the findings without linking the risk or actual fall cause to a strategy is *useless*. Once the likely type of fall is determined using a comprehensive post-fall evaluation tool, the nurse can put into motion an appropriate plan of care.

Empirical research directed at determining the various types of falls occurring among older adults using a comprehensive PFA tool as the basis for determination has resulted in a broader classification scheme consisting of eight fall types observed among older adults in long-term care, including falls caused by acute illness, chronic diseases, medications, behavior, unknown, environment,

misjudgment, or poor patient safety awareness (Gray-Miceli et al., 2010). Fall risk screening tools identify the likelihood of an anticipated physiological fall with known intrinsic and extrinsic fall risk factors. These screening tools provide the first level of assessment data as the basis for comprehensive assessment. Only through comprehensive PFA can multifactorial, complex fall, and injury risk factors be defined (Quigley, Neily, Watson, Wright, & Strobel, 2007). Fall risk assessment and PFA are two very different and distinct approaches for fall prevention. Fall risk assessment tools offer limited types of inquiry, typically streamlined and focusing on five or six areas of inquiry, which are not a substitution or replacement for a comprehensive post-fall inquiry or assessment. It is vital for the nurse to be aware that critical information is missing in streamlined fall risk assessment tools, as they do not replace a comprehensive PFA and analysis of likely fall type.

Therefore, the purpose of the PFA is to identify the clinical status of the older adult, verify and treat injuries, and identify underlying causes of the fall whenever possible. Components of the PFA are typically routinely performed by professional nurses in all patient settings, although this evaluation may be skeletal or limited according to the completeness of questions and examination included in the tool used. Few empirically published tools for PFA exist, and previous research has shown that fall risk determination, using short forms asking five to eight questions about risk, often replaced (inappropriately) PFA in institutionalized settings (Gray-Miceli, Strumpf, Reinhard, Zanna, & Fritz, 2004; Ray et al., 1997; Rubenstein, Robbins, Josephson, Schulman, & Osterweil, 1990).

Evidence shows that comprehensive PFA tools are useful and available to assist professional registered nurses in performing a PFA, especially in institutionalized settings (Gray-Miceli, Strumpf, Johnson, Draganescu, & Ratcliffe, 2006). In institutional settings where teams are unavailable, comprehensive PFA should be carried out by professional nurses and findings conveyed and discussed through consultation with specialty-trained providers.

The PFA is a comprehensive yet fall-focused history and physical examination of the present problem (falling), coupled with a functional assessment, review of past medical problems, and medications. Clinical fall-prevention guidelines are very clear about all of the necessary components for inclusion of patients who have fallen, which include fall history; fall circumstance; medical problems; medication review; mobility assessment; vision assessment; neurological examination, including mental status; and cardiovascular assessment. In addition to this information, data are collected about the patient's physical status. Performing a comprehensive PFA allows the clinician to identify intrinsic risks and recent causes of a fall such as orthostatic hypotension and/or bradyarrhythmia or tachyarrhythmia associated with dizziness (Gray-Miceli et al., 2006). There are various stages of a PFA, ranging from the immediate period following the fall (within 24 hours) to the interim period and then the longitudinal period, where adverse outcomes such as pain from an injurious fall can occur. In the hospital setting, certain components of a PFA can be elicited immediately following a patient fall, with the decision to ask certain questions immediately, depending on the medical stability of the patient and nursing judgment.

Prior to conducting this seven-step PFA, it is important for the nurse to recognize his or her own bias about how, when, where, and why falls occur among older adults. Each interviewer brings to the interview/assessment his or her own set of values, beliefs, perceptions, experiences, and attitudes about falls and their prevention. Setting any bias aside, so active and reflective listening can occur, is essential to eliciting a comprehensive PFA. The seven-step approach presented in this chapter also fosters opportunities for teach-back education and development of tailored individualized care plans for the prevention of recurrent falls.

Setting the Stage for the Interview

It is advisable for the nurse to take notes and also have a blank sheet of paper to jot down important findings and impressions for use in teach-backs with the older patient. For each of the seven steps of the nursing assessment, identify the aim in each step, as indicated in Box 23.1.

Prior to conducting the interview, and as part of the setup, the nurse will need to ascertain if the patient is capable of providing the needed information. Typically, the nurse who has developed a relationship with the patient knows the patient the best. In other instances, the person will need to be evaluated for cognitive impairment. Nurses should also use additional sources of information gathered from family caregivers or eyewitness accounts to help validate the person's recollection of events. In cases where cognitive impairment exists, the patient might recount a fall from long ago and think that it was his or her most recent fall. It is helpful, therefore, to label the fall along with a time frame, for instance, as the fall that happened over Thanksgiving or the fall that occurred this morning while shaving. If the fall is associated with an activity, the patient is likely to recall the activity and exact events leading up to the fall.

BOX 23.1

Components of a "Stepwise Approach to a Comprehensive Post-Fall Assessment" for Older Adults in the Acute Care Setting

Step 1: Elicit a fall-focused history ("What and Why").
Step 2: Recreate the situational context ("When and Where, Stability and Behavior").
Step 3: Review past medical history, associated symptoms, and high-risk medications.
Step 4: Perform a fall-focused physical, functional, and mobility assessment.
Step 5: Detect environmental hazards and eliminate.
Step 6: Synthesize Steps 1 to 5 to identify the likely type of fall and construct a case synopsis for communication with the interprofessional team.
Step 7: Inform, educate, and empower older patients.

Source: Adapted from Gray-Miceli, D., Johnson, J. C., & Strumpf, N. E. (2005). A stepwise approach to a comprehensive post fall assessment. *Annals of Long-Term Care: Clinical Care and Aging, 13*(12), 16–24. doi:10.7282/T3PG1TNZ; Gray-Miceli, D. (2014). *5 easy steps to prevent falls: The comprehensive guide for nurses to keeping patients of all ages safe*. Silver Spring, MD: American Nurses Association.

BOX 23.2

Critical Observations Made During the Immediate Post-Fall Assessment

Expressions or verbalizations of pain (facial grimacing, crying, screaming, agitation)
Changes in behavior or function, which may indicate pain
Swelling of an extremity (wrist, arm, leg) or head (hematoma, skull pain)
Unstable vital signs
Discolored cyanotic skin
Skin temperature (cold, clammy, diaphoretic)
Skin lacerations, contusions
LOC, no response to stimuli or significant change in LOC
Changed range of motion of extremities
Evidence of neck, head, or spinal cord injury
Abnormal or erratic neurological responses, such as absent pupil response, fixed or dilated pupils, seizures, or abnormal changes in posture

LOC, loss of consciousness.
Source: Reprinted with permission from ECRI Institute (2006).

The length of the interview and nursing assessment will vary from patient to patient and will depend on many factors. Whenever possible, it is best to do the five-step assessment in one block of time. However, issues such as patient fatigue, pain, and level of alertness are all important factors that can interrupt a comprehensive PFA. Ideally, the patient should be interviewed in a private, quiet area which is comfortable for him or her and provides a tabletop for the nurse to use to take notes. The interview should allow 45 minutes to complete all elements of the assessment, realizing that additional time will need to be reserved to provide the patient with teach-back education.

Before proceeding with the interview to discuss the fall with the older adult, it is vital for the nurse to establish if the older patient is physically injured and/or physiologically stable to proceed with the interview. For more details, refer to the section "Assess and Diagnose the Older Adult Patient's Risk of Serious Injury: Fractures." Nurses must therefore review critical observation made of the patient during the immediate PFA (Box 23.2). Once the nurse determines the patient is physiologically stable, she/he should proceed with the modified seven-step approach "A Stepwise Approach to a Comprehensive Post-Fall Assessment" (Gray-Miceli et al., 2005) adapted for use by nurses in the acute care setting. Refer to Box 23.1.

Steps 1 and 2 focus on obtaining the four W's of the fall: "What, Why, When, and Where?" (Gray-Miceli, 2014). See Figure 23.1.

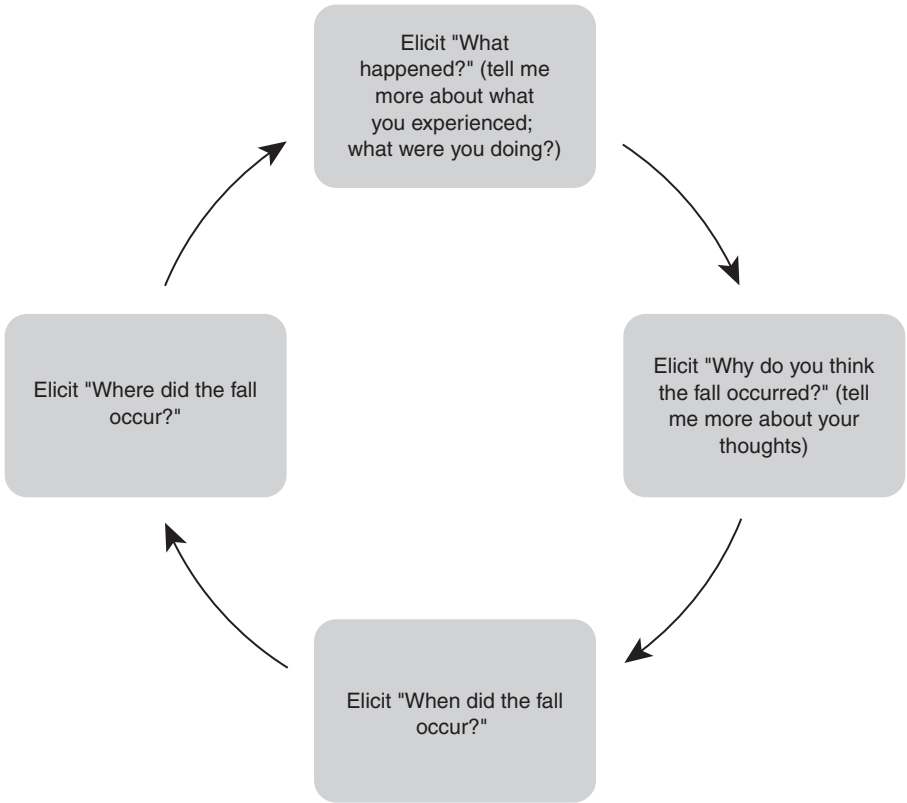
Step 1: Eliciting the Older Adult's Experience and Perception of The Fall

The overall aim of Step 1 is to elicit the person's thoughts, feelings, experiences, and perceptions of the most recent fall. Starting the conversation by saying, "Today, I would like to speak to you about the fall that occurred this morning" provides context and helps the patient to focus on the most recent fall, and not one that might have occurred last week or 1 year ago. All falls are important to discuss, but it is best to focus on one fall at a time, realizing there may be patterns or similarities among falls and that stories can become intertwined. Here is where labeling the fall that occurred, for instance, "this morning's fall," helps avoid confusion among the older adult and the interviewer.

In Step 1, the focus is to obtain the "What and the Why?" of the fall. The "what" is actually *what* the patient recalls happened and is typically linked to an activity, but does not have to be. The "why" of the fall helps the nurse to understand the patient's thoughts and perceptions about *why* the fall occurred: faulty equipment? An arthritic knee? Or the person has no idea. All responses are important to note. The best means for eliciting the "What and Why of the fall" is to state: "Tell me about your most recent fall to

FIGURE 23.1

The four W's of the fall discussed in Steps 1 and 2.



Source: Gray-Miceli, D. (2014). *5 easy steps to prevent falls: The comprehensive guide for nurses to keeping patients of all ages safe*. Silver Spring, MD: American Nurses Association. Retrieved from http://www.nursesbooks.org/Homepage/Hot-off-the-Press/5-Easy-Steps-To-Prevent-Falls.aspx.

the ground, everything you can recall and how you were feeling." The emotional response to a fall is highly subjective and can range from "it was nothing" to "it made me angry, fearful of aging, afraid to walk, anxious, sad and blue, to disgust or embarrassment" (Gray-Miceli, 2001). Nurses must ask about not only the physical injury post fall, that is, "Did you injure yourself?" but also about the emotional impact of the fall. Emotional responses experienced by older adults such as fear of falling, helplessness, and anger/frustration can impact older adults' mobility and activities of daily living (Gray-Miceli, 2001) and are thus vital to include in the assessment, because these responses can influence health behaviors (Gray-Miceli & Ratcliffe, 2015).

Step 2: Recreate the Situational Context of the Fall

The aim of Step 2 is to determine the "When and Where" of the fall in relation to time and space and the physiological stability of the patient. Noting any particular behavior is important as this becomes an important aspect of the situational context that may help to inform the clinician about the fall circumstance. The months of the year, days of the week, and time of day speak to when the fall occurred, but it is the "Where" the fall occurred that ties the fall not only to an activity, but also to the person's body in space or position at the time of the fall (sitting, standing, turning, running, and/or rolling over). Recreating a visual image of the fall by the examiner can help point to possible underlying causative factors contributing to the fall. When the examiner shares this image with the patient, the patient has the opportunity to clarify important events associated with the fall. One way to create a visual image is for the examiner to concentrate on the setting, location, time of day, and what the person was doing moments before the fall and then to summarize that image by repeating it back to the patient. For instance, state, "As I understand it, you pushed yourself up out of bed

to a standing position, then became dizzy, the room spun around, you had nothing to hold onto, so you grabbed the covers from the bed to help brace your fall, you woke up on the floor, feeling stunned and had a racing heart, but because of the covers you did not sustain any injury." Then the nurse examiner asks for verification from the patient. If correctly envisioned, the examiner can illustrate a picture and make notes to review with the patient regarding his or her position, timing, factors associated with the fall, and how to avoid future falls from occurring for the same reason.

Situational Context and Fall

Also embedded within the situation context is the patient's behavior during the activity that was associated with the fall. For example, "Was the person in a hurry and rushing? Did he or she forget how to use the assistive device? Did he or she feel dizzy and thought it would pass?" When assessing the patient's risk of falls and risk of injury, it is imperative that the nurse consider the situational context as well as the medical stability of the patient (behavior, level of alertness, and cognition). So, although it may appear that the alert and oriented older patient with lower extremity weakness who is resting in a low-rise bed surrounded by floor mats is at low risk for an injurious bed fall, his or her risk of injury increases as he or she walks, because of the lower extremity weakness. As the patient is out of bed and walking, with weakened limbs, risk of ambulatory falls occurs.

Thinking about the next fall you are trying to prevent, whether it is a bed fall, an ambulatory fall, or a fall during transitioning from bed to chair, will further help in identifying fall risk and source of trauma for injury. With the older adult patient lying in bed or sitting on the chair, try to identify those situations that place the older adult at greater risk for falling or injury. Various situational circumstances of falls identified in the literature and commonly encountered in clinical practice include the following:

- Patient rolls off the mattress or slips off the edge of the bed; that is, a **bed fall**.
- Patient slides from the chair, or falls getting into or out of the chair; that is, a **chair fall**.
- Patient falls while walking; that is, **an ambulatory fall**.
- Patient falls getting on/off the toilet or when getting up to stand from a seated position; that is, **a fall during transfer**.
- Patient found on the floor or lower level; an unwitnessed fall.

A risk-versus-benefit analysis should always be part of fall management decision-making for patient safety and prevention of injury (Quigley & Goff, 2011), especially when patients move about on the hospital unit as they gain independence in mobility. Therefore besides assessing the situational circumstances (where the fall occurred) nurses must assess the patients risk for falls in these circumstances (see personal risk factors).

Behavioral Factors

Older adults in the acute care setting enter hospitals for management of their conditions. They may never have encountered an illness or event that resulted in sudden changes in their bodies. When physiologically unstable or cognitively impaired, these factors pose a safety risk as physical capacity and physical independence in functioning are suddenly altered. These patients often cannot do the things they once could with ease and are admitted to an unfamiliar environment. As physical independence decreases, their autonomy and desire to do what they are accustomed to doing may remain. This creates a conflict. They wish to get up but may not fully recognize it is really not safe for them to do so. Gender, degree of frailty or injury, cultural background, baseline personality, and prior hospitalization experience are all likely to influence how the patient is coping with this sudden illness. Assessment should include whether older adults perceive these changes as stressors; and, if so, do they believe they do not require help? Nurses caring for elderly patients must remember that they have many years of experience in coping, or not, with their chronic condition. How they have coped and managed from day to day is likely to influence their current reaction to the hospital experience and current behavior. Reminding the patient that he or she is ill and needs temporary help is one remedy through the use of teach-backs, but it is likely to be ignored or short lived by persons who refuse help and want to remain independent despite medical advice. Those with cognitive impairment, depending on the severity of impairment, may not have the current cognitive ability to recognize that they are overestimating their actual ability to perform.

Nurses working with any hospitalized patient should observe their behavior, noting if they seem preoccupied, anxious, fearful, cautious, or reckless. Once behaviors are identified, nurses can work with patients to identify potential hazardous situations in their teach-backs.

Step 3: Review Medical History, and Associated Symptoms, Assess Fall Risk and High-Risk Medications

The aim of Step 3 is to review the past medical history and to identify key symptoms occurring at the time of the patient fall, including use of high-risk medications implicated

in falls. As the nurse obtains information gathered in Steps 1 and 2, it is likely that symptoms will be identified and described by the patient. Some symptoms may be linked to underlying medical events and/or chronic illnesses (refer to Gray-Miceli et al., 2005 for a comprehensive list of acute and chronic illnesses associated with falls in older adults), which may be part of the patient's past medical history. Other medical events or diseases, such as syncope from sudden loss of blood volume, may be of an acute nature. When the nurse identifies a symptom occurrence, it is vital to describe its onset, timing (duration), frequency, location, and associated aggravating or alleviating factors. Determining whether it is of a short duration, as in an acute event, or a more recurring chronic symptom helps in relaying effective communication to a physician to build the overall plan of care for appropriate interventions.

Table 23.1 presents some of the key symptoms *never to miss* in the review of systems that are often associated with recurrent falls and that, if acute, require prompt referral to a physician. Reporting these symptoms immediately to the primary care provider is required for further evaluation/ treatment as they can indicate physiological instability. A comprehensive evaluation of a patient with symptomatic falls includes further diagnostic evaluation accomplished by electrocardiogram, x-rays, serum glucose, electrolytes, complete blood count, urinalysis, oxygenation levels, and other tests as dictated by various pertinent physical assessment findings.

The new onset of symptoms associated with a fall can be due to a multitude of factors such as those arising from acute or chronic illness or high-risk medication use.

TABLE 23.1

Key Symptoms by System Associated With Recurrent Falls

System Involved	Key Symptom
Cardiovascular or neurological	Blacking out (syncope)
Cardiovascular	Dizziness associated with heart rate abnormality (bradycardia, tachycardia, or arrhythmia) Dizziness or loss of balance associated with standing (orthostatic hypotension—drop in blood pressure with standing) Lightheadedness associated with head rotation (possible alteration in carotid artery blood flow)
Neurological	Seizures at the time of the fall Sudden unilateral weakness at the time of the fall (stroke) Sudden loss of unilateral vision (stroke) Loss of balance due to vertigo or Parkinson's disease
Musculoskeletal	Sudden onset of hip, leg, spine (vertebral) pain with weight bearing (possible bone fracture) Trip or slip due to misfooting
Metabolic	Extreme fatigue, exhaustion of new onset (electrolyte disturbances, blood volume abnormalities, anemia, blood glucose abnormalities)

Past Medical History of a Fall or Fracture Injury

Many studies have shown a prior fall to be the most potent predictor of another fall among older adults (Degelau et al., 2012; Gates, Smith, Fisher, Lamb, & Phil, 2008; Oliver, Daly, Martin, & McMurdo, 2004). Therefore, careful fall-history screening is vital as a health-promotion measure and quality-of-care check for all newly admitted patients to the hospital or seen in the ED.

The presence of a current fracture injury, such as a hip fracture, could reoccur if care is not taken to protect such vulnerable patients. Older adult patients with a current hip fracture and/or surgical repair have muscular weakness, incisional pain, and referred limb pain with potential loss of sensation, all of which contribute to their inability to maintain balance and prevent a fall from occurring should they become off balance. While ambulating or transferring, the patient puts less weight on the surgical limb, shifting it toward the unaffected limb, which bears the brunt of the patient's body weight. If osteoporosis exists and has been untreated, it is possible that the impact of walking can cause the "good" limb to fracture. In any event, the presence of pain or use of narcotic analgesia can also alter the patient's response to "avoid slips, spills, or obstacles" in her or his path.

The standard of care calls for identification of personal (intrinsic) risks to fall. Many of these risks (but not all) are contained on fall risk scales, such as the Morse Scale (Morse, 2009) used in acute care health facilities (refer to Box 23.3). Behavioral factors such as agitation, disruptive or aggressive behavior and impulsivity can result in impaired safety judgment and falls.

High-Risk Medications Contributing to Falls and Injury Risk in Older Adults

"Culprit" drugs or medications implicated in increasing fall risk are those causing potentially dangerous side effects, including drowsiness, mental confusion, problems with balance or loss of urinary control, and postural hypotension (Fritsch & Shelton, 2019). Classifications of medications implicated in falls for older adults include psychotropic agents (benzodiazepines, sedatives/hypnotics, antidepressants,

BOX 23.3

Intrinsic Risks to Falls

Alteration in level of consciousness and/or cognitive impairment
Impaired safety judgment and/or behavioral factors (agitation, disruptive, aggressiveness or impulsivity)
Dependence in transferring or ambulation mobility (needs assistive device or human help)
Use of one-size non-skid socks
Visual impairment
Lower extremity weakness and/or gait or balance impairment
Orthostatic or postural hypotension
Neuropathy of lower extremities/feet

and neuroleptics), antiarrhythmics, digoxin, and diuretics (Fritsch & Shelton, 2019). The risk of falls alone should not automatically disqualify a person from being treated with warfarin (Garwood & Corbett, 2008).

A recent review of medications and fall risks, taking into account a series of studies, finds strong evidence for benzodiazepines, antidepressants, and antipsychotics to increase the risk of falls (Boyle, Naganathan, & Cumming, 2010; Bulat, Castle, Rutledge, & Quigley, 2008a, 2008b). Their analysis confirms that there is no evidence that very short or short half-life benzodiazepines, selective serotonin reuptake inhibitor (SSRI) antidepressants, or atypical antipsychotics are safer in terms of fall risks than earlier generations of drugs in the defined drug category. Furthermore, they conclude that antihypertensives, in particular diuretics, are associated with a modestly increased risk for falling (Bulat, Castle, Rutledge, & Quigley, 2008c).

Medications increase falls across all age groups but are heightened with older adults because of potential loss of function and life if they fall. Thus, reduction of medication use or modifying medication to reduce fall risk is essential. Constant attention to identifying risk versus benefits should be exercised by all practitioners, especially pharmacists (Fritsch & Shelton, 2019).

Step 4: Perform a Fall-Focused Physical, Functional, and Mobility Assessment

The aim of Step 4 is to identify pertinent positive and negative physical assessment findings associated with a fall that can produce functional impairment and/or mobility dysfunction. Some examples of treatable types of falls, the system effected, and the physical assessment finding are presented in Table 23.2. The physical assessment begins with assessment of vital signs and also inclusion of pain assessment. The resting vital signs often give clues as to the presence of pain or the presence of physiological instability. The assessment of arterial saturation can be helpful, because when it is abnormal, it can explain why a person may fall when he or she is fatigued and concomitantly has a low pulse oxygenation rate.

TABLE 23.2

Physical Assessment Findings Associated With Recurrent Falls

System Involved	Key Symptom
Visual system	Sudden loss of vision in one or both eyes (stroke) Blurred vision or loss of nighttime vision (cataract)
Cardiovascular	Slow heart rate (<60 bpm) Fast heart rate (>100 bpm) Drops in blood pressure with standing (orthostatic hypotension)
Neuromuscular	Gait instability Balance instability Lower extremity weakness on neurological assessment

bpm, beats per minute.

National recommendations for post-fall evaluation call for assessment of vision, gait, balance, musculoskeletal system, cardiovascular system, neurological system, the head, and footwear (Panel on Prevention of Falls in Older Persons et al., 2011). Within the assessment of the cardiovascular system it is critical to assess postural blood pressure while supine, sitting, and standing with the use of standby assistance from nurse's aides in case the patient develops sudden loss of balance. In previous work on assessment of orthostatic hypotension in nursing home residents who fell, nearly 44% experienced loss of balance, and not dizziness, even though drops in blood pressure met the diagnostic criteria of orthostatic hypotension (Gray-Miceli, Ratcliffe, Liu, Watland, & Johnson, 2012).

One modification the nurse can incorporate in his or her assessment of the frail older adult suspected to have orthostatic hypotension or who has a diagnosis of orthostatic hypotension is to assess the patient's blood pressure when supine and then assist the person to a sitting position and, while close to the person's side, retake the blood pressure. Should blood pressure drop significantly with sitting, there is no need to stand the patient to reassess his or her blood pressure.

Among other parameters assessed, neurological head assessment includes actively looking for signs of head injury; palpation of the skull looking for bulges or hematomas,

cuts, or lacerations; and assessment of the pupils for equality, roundness, reactivity to light, and accommodation.

The mental status assessment is critical to detect the presence of delirium (acute cognitive impairment) or chronic cognitive impairment due to diseases such as dementia. During conversation with the patient, the nurse is likely to observe physical assessment findings indicative of cognitive impairment—some examples include: inability to follow one- or two-stage commands; inability to recall the examiner's name within the first few minutes of the exam, despite repetitions; inability to sustain attention or immediate recall of events; and/or in addition to inability to speak or express himself or herself (aphasia), among others.

Physiological Stability of the Patient

In many situations, the nurse will find the older patient on the floor, and the standard approach to eliciting the history described earlier is not feasible because of the physiological stability of the patient, who may be injured. Thus, further dialogue and communication should take place when the patient is physiologically stable and comfortable in his/her room. However, other elements of the physical assessment must be performed immediately to ensure patient safety. Box 23.4 lists those elements that are essential to include in the immediate PFA when the older adult is found on the floor or lower level.

BOX 23.4

Immediate Post-Fall Assessment When the Older Adult Is Found on the Floor or Ground

Actions taken by professional nurses and nursing staff:

If the older adult patient is found on the floor, remain with the patient, summon additional help, and proceed to:

- Ask the older adult how he or she is feeling and whether there is pain.
- Control any bleeding (follow unit protocol) from injured site.
- Assess level of consciousness and perform neurological assessment, including pupillary checks (according to unit protocol).
- Gather and document vital signs: Note the apical pulse rate and the supine blood pressure.
- Examine for signs of external injury to the head, spine, neck, and extremities.
- Determine oxygenation status.
- Determine finger-stick glucose if hypoglycemia is suspected.
- If stable, sit the patient up with support and assess sitting blood pressure.
- Immobilize an extremity if fracture is suspected.
- Reassure the older patient.
- If stable, assist with transfer to an appropriate area for further evaluation of the historical events leading to the fall (refer to Box 23.1).
- Diagnosis and treatment.

Source: Reprinted with permission from ECRI Gray-Miceli D. (2006).

(*continued*)

Functional Status of the Patient

Assessment of the patient's functional status includes ability to walk, transition from a chair to the bed and vice versa, and independently perform self-care through standard activities such as dressing, bathing, grooming, eating, and toileting. The functional assessment can be observed among patients as they prepare to take care of themselves when first arising in the morning or at other times during the day such as during activities of daily living. The nurse notes whether the patient can or cannot perform the activity independently or safely. These are two separate types of determinations. Experts report that in order to prevent functional decline and falls, it is vital for nurses to optimize function and physical activity (Resnick & Boltz, 2019). Physical activity, defined as bodily movement that expends energy, including bed mobility, transfers, and others, has a positive impact on the physical and psychosocial outcomes among older adults during hospitalization (Resnick & Boltz, 2019). Moreover, function-focused care for use in acute care is an intervention approach to increase physical activity among hospitalized patients as it prevents functional decline and falls and other adverse events (Boltz, Chippendale, Resnick, & Gakvin, 2015; Boltz, Resnick, Capezuti, Shabbat, & Secic, 2011; Resnick et al., 2016). Key activities, signs of impairment, and potential underlying factors that can lead to falls are provided in Table 23.3. One critical question to consider is whether the patient can *safely* perform the activity alone (independent) or whether he or she requires assistance because it is unsafe (i.e., dependent on another or requiring supervision).

Nursing assessment of patient safety includes, among others, evaluation of mental status, physiological status, and the ability to follow directions and to repeat those directions when asked (a complete list of factors is beyond the scope of this chapter).

TABLE 23.3

Key Activities, Signs of Impairment, and Underlying Factors That Can Lead to Falls

Observe This Activity	Signs of Impairment/ Inability to Accomplish This Activity	Possible Underlying Factors
Standing up from a high-back straight arm chair	Falls backward attempting to stand or sits down again during the attempt to stand	Drop in blood pressure Shoes not on feet, feet slide on the floor Lower extremities are weak Upper extremities are weak, and patient cannot push self to an upright position Confusion/cognitive impairment—unable to follow simple instructions
Getting out of the wheelchair or a chair	Unable to lean forward and push self up to a standing position	Upper extremity weakness Cognitive impairment Balance impairment
Walking 10 feet in a steady line	Leans to one side or path deviates to one side	Prior cerebrovascular event: Cerebellar issue Disorders causing gait apraxia, gait ataxia
Getting out of bed	Rolls onto one side and then onto the floor	Poor safety awareness/judgment/cognitive impairment Orthostatic hypotension

Mobility Assessment

An integral component of the functional assessment is the patient's ability to ambulate and to be mobile. Evidence finds persons over age 85 need more help with mobility related to walking and getting in/out of bed or chair than those between the ages of 65 and 84 years (Centers for Medicare and Medicaid Services, 2014). Both impaired function and needing more help with mobility related to walking are significant predictors of longer hospital lengths of stay and repeat hospitalizations (impaired mobility: odds ratio = 1.94, $p < .001$ and impaired function: odds ratio = 1.68, $p < .01$). Inability of older adults to perform customary roles within families and society constitutes, at the social level, a disability or handicap (Verbrugge & Jette, 1994). Therefore, nursing interventions to preserve function and maintain mobility are particularly important in any fall-prevention intervention program. Restoration of physical mobility and function leads to quality patient outcomes. By way of example, reduced muscular strength and inability to walk is a functional impairment and limitation that leads to a disability when the older adult is unable to shop or assume prior role functions (Verbrugge & Jette, 1994). In the broadest sense, impaired mobility means the person needs assistance to maintain mobility, and in the strictest sense, impaired mobility can mean the person is confined completely in movement, as when persons are confined to a wheelchair or bed. Without proper rehabilitation or restoration, persons with impaired mobility can deteriorate to a state of immobility.

The importance of safe mobility is espoused by the American Nurses Association's (ANA's) *Safe Patient Handling and Mobility: Interprofessional National Standards Across the Continuum* (ANA, 2015). The aim of the bedside mobility assessment is to identify the patient's strengths during mobility so as to prevent falls and injury from occurring during activities such as transferring, pivoting, toileting, showering or bathing, and ambulation. There are many demographic (such as over age 85), situational, and clinical factors influencing mobility in older adults (Gray-Miceli, 2017) of equal importance to recognize. Situational factors and indicators, at the person level, include statements made by patients that reveal an emotional response to their functional limitations or impairment induced post fall, which may include fear, anger/frustration, and embarrassment (Gray-Miceli, 2001). It is important to recognize these emotional responses in the plan of care and mobility evaluation because they can be reasons that explain why the person does not wish to engage in an active mobility plan.

Tailoring a mobility plan to suit older adults in the acute care hospital setting involves consideration of emotional responses that might be expressed or identified by the nurse during the course of the conversation about mobility. Some emotional responses may need to be further evaluated should they be identified as a significant factor impairing the older adults' progress. In terms of the assessment of any symptom reported along with a fall, further evaluation of its onset, duration, timing, frequency of occurrence, and aggravating or alleviating factors is indicated. If the symptom persists, then monitoring is indicated and/or referral to a specialist.

Typically, the primary care provider will be able to judge the need for additional consultation or referral to a physiatrist or psychologist. In the acute care setting, the physical therapist will be equipped to evaluate mobility and the person's concerns during periods of transition. Additional assessment tools can be used by the professional nurse to establish whether an emotional response is interfering with the older adult's mobility. For instance, fear of falling has been linked to self-efficacy (Tinetti, Richman, & Powell, 1990). Measurement tools that have been used to evaluate the older adults' degree of fear of falling as a measure of self-efficacy have been developed and shown to have reliability and validity (Greenberg, Sullivan-Marx, Sommers, Chittams, & Cacchione, 2014).

In the acute care setting, nurses can use available tools such as the Bedside Mobility Assessment Tool and also work in harmony with the licensed physical therapist to identify patient strengths and weaknesses related to mobility (Bonyton, Kelly, & Perez, 2014). It is important to note that emotional responses can influence subsequent activity restriction and mobility. Promoting the older adults' ability to ambulate and maintain function without encountering dependency or activity restriction is very important since we know periods of reduced mobility can quickly lead to immobility.

Step 5: Detect Environmental Hazards and Eliminate

Falls due to environmental hazards are potentially preventable because they encompass foreseeable events, such as spills or improper footwear, which are correctable (Connell, 1996). Common extrinsic or environmental factors, which represent preventable falls, are highlighted in Box 23.5.

BOX 23.5

Extrinsic Risks to Falls

Floor surfaces that are slippery, wet, shiny, or uneven or cracked
Equipment that is faulty, not supportive, or that collapses when used, laden with debris
Intravenous poles, stretchers, or beds that are nonsturdy or move away from the patient when used for support
Poor lighting or extraglaring "blinding" bright lights on floor surfaces or in the patient room
Bathrooms lacking grab rails, bars, or nonskid appliqués or mats
Bathrooms with sharp edges
Bathroom fixtures that are not secure in the wall or are difficult for the patient to use properly
Physical restraints
Inappropriate footwear

Equipment used to assist the patient with mobility can also be found to create an environmental hazard leading to a fall if that equipment is found to be not sturdy or rickety. Therefore, it is commonplace for nurses and care teams to evaluate the environment and to regularly assess equipment to ensure it is functioning properly and safe. National guidelines for safe patient handling have been created and serve as a reference (ANA, 2015).

Step 6: Synthesize Steps 1 to 5 to Identify the Likely Type of Fall and Construct a Case Synopsis That Envelops All Possible Underlying Causal Event Factors, Fall Risks and/or Antecedents to the Fall So As to Tailor the Plan of Care and Communicate Findings to the Interprofessional Team

This may seem like a daunting task, but it is not. The nurse gathering the historical information about the fall described in Steps 1 to 5 should have a suspicion of the multitude of underlying causal event factors including intrinsic and extrinsic risks involved in the patient fall. In previous work, we found nurses were able to identify many of the causal event factors associated with the fall and to further categorize the likely type of the fall when asked to do so among their patients residing in long-term care, who possessed on average 10 chronic illnesses and took many high-risk medications (Gray-Miceli et al., 2010). Table 23.4 provides the broadest array of fall types identified by nurses in long-term care and in acute-care hospital settings. It is important to note that many of the fall types/categories seen in long-term care (LTC) can occur among older adults as they transition from LTC to rehabilitation, subacute, or acute care. The fall types listed here are not mutually exclusive and allow for a person to have more than one type of fall. A quick comparison of fall types evidenced through research is presented in Table 23.4 to illustrate similarities in categorization schemes.

Note that in the acute care setting Morse has studied and presented a classification scheme of the three most commonly observed types of falls: (a) accidental fall (related to an unsafe environment or environmental risk factor); (b) anticipated physiological fall (related to known intrinsic and extrinsic risk factors of the individual); and (c) unanticipated physiological fall (resulting from an unexpected medical event; Morse, 2009). Risk factors vary by the type of fall, and the interventions to reduce an accidental fall are different from the interventions used to reduce risk factors associated with anticipated physiological falls.

Reasons for patient falls and injuries are tied directly to impairments in consciousness, cognition, behavior, and

TABLE 23.4

Fall Types Identified and Categorized by Nurses

Categorization of Fall Type in LTC (Gray-Miceli et al., 2010)	Categorization of Fall Type in Acute Care (Morse, 2009)
Falls likely due to:	
Fall due to symptoms of chronic illness	Anticipated physiological fall
Fall due to symptoms of acute illness	Unanticipated physiological fall
Fall due to environmental hazards	Accidental fall
Fall due to patient poor safety awareness and Fall due to poor patient judgment	Accidental fall and/or anticipated fall
Fall due to adverse effects of high-risk medication use	Anticipated and/or unanticipated physiological fall

acute and chronic types of medical conditions, in addition to the situational context of the fall. Some of these risks are caused by *intrinsic* factors, whereas others are the result of *extrinsic* factors. The standard of care calls for assessment of fall risk factors and then the development of an intervention plan addressing each of these factors. Not all fall risk factors are modifiable; those that are should be treated.

Accidental or environmental falls are potentially preventable because they encompass foreseeable events, such as spills or improper footwear, which are correctable (Connell, 1996). Review important intrinsic risks that contribute to anticipated physiological falls. Common extrinsic or environmental factors, which represent preventable falls, are highlighted in Box 23.5.

Asking and answering questions to evaluate, for instance, the occurrence of key associated factors or environmental factors is an important assessment finding. The following case synopsis illustrates the synthesis of findings from the PFA to a meaningful likely underlying causal event factor. Consider the following situation:

Situation of Mrs. Stiles (Synthesis of Steps 1–5)

Mrs. Stiles, an 85-year-old woman admitted to the hospital for sepsis due to a urinary tract infection, fell out of bed. *Subjective:* She replied, "I was in a hurry and got up from the bed quickly, walked to the bathroom because of urgency and dribbling." Further inquiry revealed, on review of systems, no chest pain, dizziness, vertigo, shortness of breath, sudden leg weakness, or other key symptoms. She takes no sedatives, hypnotics, or high-risk medications associated with falls. *Objective:* She has an IV with D5W/2 NSS at KVO rate. She is receiving Bactrim DS by mouth BID for the UTI. Vital signs: temperature: 97.1°F; heart rate 80 and regular; BP 120/80 supine, sitting, and standing. Head shows a small laceration to the posterior scalp, requiring bandages and ice for the evolving hematoma. Neurological—awake and alert, Cr nerves II–XII intact, no focal weaknesses of extremities, wearing nonskid sneakers. *Assessment:* s/p fall with head injury suspect due to urinary frequency; *Plan:* monitor urgency, institute bladder scanning every 2 hours and post void to rule out residual urine and to anticipate urinary needs; institute toileting every 2 hours or more frequently according to scans and provide toileting assistance via use of a bedpan- until the severity of head injury is determined; neurological checks as per facility protocol for head injury, discuss with pricare provider urinalysis results and need for a repeat urinalysis as well as referral to urology.

Step 7: Inform, Engage, and Use Teach-Back to Educate and Empower Patients

Patient Engagement

Evidence confirms that patient outcomes are improving when patients and caregivers are fully engaged as partners in their care (Hibbard & Greene, 2013). Interventions that tailor patient education and support to each patient's level of activation and engagement as a partner in one's fall-prevention program builds skill and confidence to prevent and manage falls. Redesigning patient education methods can be accomplished with methods such as: Teach-Back, Ask Me 3, and Falls T.I.P.S (Dykes, I-Ching, Soukup, Chang, & Lipsitz, 2012; Dykes et al., 2010).

Teach-Back

Health literacy requires that providers evaluate the degree to which individuals learn by assessing their capacity to obtain information, process, and understand basic health information and services so that they can make informed health decisions (Nielsen-Bohlman, Panzer, & Kindig, 2004). Teach-backs identify what the patient learned by a return demonstration or feedback, and, more important, what the patient had difficulty learning, so that the provider

can fill that gap through ongoing education (Boushon et al., 2012). A more detailed discussion of teach-backs and patient education geared toward the older adult patient is available for practicing nurses (Gray-Miceli, 2014).

According to the AHRQ (2019), healthcare providers are increasingly using teach-back in their practices to teach adults. Thirty percent of adults were educated via teach-back in 2015 compared to 24% in 2011. Health literacy requires that providers evaluate the degree to which individuals learn by assessing their capacity to obtain information, process, and understand basic health information and services so that they can make informed health decisions (Nielsen-Bohlman et al., 2004).

Another resource for patient engagement and education is IHI and National Patient Safety's Ask Me 3 Videos to teach clinicians the use of the National Patient Safety Foundation's (NPSF) Ask Me 3 approach to patient education and including teach-back as a method to evaluate effectiveness. One such video is from NPSF: www.youtube.com/watch?v=B3EB-icaNKQ.

The three questions of Ask Me 3 to frame education are: What is my main problem? What do I need to do? Why is it important for me to do this? Nurses are teachers. To be effective teachers, nurses must redesign approaches to patient and family/caregiver education, consider patient/resident autonomy, and apply adult principles to essential patient education strategies (Guillaume, Crawford, & Quigley, 2016).

FALLS AND INJURY RISK ASSESSMENT

The older adult's risk potential of incurring a fall that could result in injury is contingent on several "real-time" underlying factors: (a) baseline pathophysiological changes at the time of the fall, such as presence of osteoporosis/osteopenia, prior fracture, anticoagulation, hypoglycemia, or sensory neuropathy; (b) use of high-risk medications such as centrally acting medications (described in Step 3, p. 382); (c) presence of fall risk factors associated with known medical conditions such as cognitive impairment (i.e., delirium and dementia), impaired vision, or impaired proprioception; (d) environmental factors such as room or bed placement, suboptimal furniture height, or one-size nonskid socks (described in Step 5; Box 23.6); and (e) behavioral factors, such as the presence of agitation, disruptive or aggressive behavior, impulsivity, and/or impaired safety judgment (described in Box 23.2).

Summary of Baseline Pathophysiological Changes

Pathophysiological changes of the sensory system, from age or from disease, can trigger not only a fall but a fall with injury. Some of the more common age-related changes of the sensory system related to vision that predispose to falls include the presence of cataract formation or macular degeneration. With cataracts, the crystalline lens becomes yellowed and cloudy, creating a visual alteration and potential for blindness, depending on the severity of the cataract. Age-related macular degeneration, however, causes loss of central vision, which can obfuscate ability to see objects directly in front of the patient. Assessment is geared at identifying unilateral visual loss and monocular vision. Seeing at night can become troublesome; therefore, higher levels of illumination are required. Consultation with an ophthalmologist for treatment of these disorders can prevent falls and falls with injury.

The contribution of vision to risk of falling has been summarized by fall experts Lord, Smith, and Menant (2010). They substantiated by review of numerous studies the impact of visual deficits on older persons' stance and balance, increasing risk of falls. Their evidence confirms significant increases in postural sway when there are changes in or loss of vision. Another common sensory disorder affecting the peripheral nerves among older adults is peripheral neuropathy (Cuevas-Trisan, 2019; Hatton & Rome, 2019). Older adults experience sensory changes prior to motor changes. With sensory changes, older adults will have changes in step width that is wider and step length that is shorter (Richardson, 2002). With motor changes, older adults will have trouble with diminished reflexes, ankle dorsiflexion, and even foot drop. Common among persons with B12 deficiency, disorder of the microvasculature, or type 2 diabetes, sensory neuropathy is a painful disorder that leads to loss of sensation typically affecting a stocking–glove distribution, referred to as sensory neuropathy (Richardson, 2002). Feeling one's feet on the floor can be a lost sensation altogether. Referral to a podiatrist or physiatrist can be of help to find appropriate footwear and to discuss treatment options.

Age-related changes in the neurological system can also predispose individuals to falls. The reduction in the righting reflex and an overall decrease in reflexes accompanying age cause not only slow movement but also potential for balance impairment, resulting in a fall and/or injury, especially if ambulating on an uneven surface. With a slowed reflex, the ability of the older adult to reach out and stop the fall may be lost altogether. In this situation, the person can fall flat on the face, shoulder, or back, resulting in serious cranial or extremity fractures. Although not considered normal aging, "frailty" is associated with a higher case incidence of falls. Frailty is an independent risk factor for falls (Nowak & Hubbard, 2009). Frailty is defined as a geriatric syndrome that has multiple clinical markers such as weight loss, gait speed slowness, and

slowness in movement, evidenced by an increased time to perform standard tests such as the Timed Get Up and Go test. It is estimated that frailty increases with age and is highest among older adults aged 85 years and older and is more common among women.

Age-related changes in the musculoskeletal system and pain are commonly encountered among older adults who fall and incur fall-related fractures (Cuevas-Trisan, 2019). Normal aging results in some diminution of muscle mass and strength, along with osteopenia, and when untreated progresses to osteoporosis. Older adults with diseases affecting the musculoskeletal system, such as sarcopenia and osteoporosis, profile physical frailty and fracture risk, which result in progressive decline toward dependency, recurrent falls, and serious injury.

Why Do Older Adult Patients in an Acute Care Setting Fall, and Who Is at Greatest Risk?

Strong, sustained evidence supports fall prevention based on an interdisciplinary, multifactorial approach to assessment, treatment, and evaluation by the care team (Cameron et al., 2012; Degelau et al., 2012; Ganz et al., 2013; Shekelle et al., 2013; Spoelstra et al., 2012). Evidence from systematic reviews of fall risk factors in hospital inpatients supports the following risk factors to be linked to falls: a recent fall, muscle weakness, behavioral disturbance, agitation or confusion, urinary incontinence or frequency, use of "culprit" medications (especially sedative/hypnotics), postural hypotension, syncope, and age greater than 85 years (Oliver et al., 2010).

Screening a patient for fall risk is not the same as fall risk assessment. All patients require a risk screen, which prompts an in-depth assessment on admission. All tools used by nurses to screen and assess for risk should be valid and reliable, with known predictive properties for the anticipated physiological fall. From assessment, referrals to the interdisciplinary care team should occur to seek the underlying cause of the identified risk factors that contribute to the production of an injurious fall (Quigley, 2016). Whenever possible, the care team should work collectively to modify or eliminate the risk factors present. It is frequent reassessments upon change in patient status by nursing and the care team that reveal decreases and increases in fall risk. Assessment after a patient fall informs causes of falls, sources of injury, and complications. However, population-based care requires that care teams protect the most vulnerable irrespective of a score on a screening tool. In 2010, 45% of the inpatient hospital population in the United States were 65 years of age and older—among whom 19% were aged 75 to 84 and 9% were aged 85 and older. These findings should compel all organizations to implement patient safety programs based on increased vulnerability for hospital-acquired harm that result in loss of function or loss of life. For example, falls among persons aged 85 and older are the leading cause of unintentional injury death (Levant, Chari, & DeFrances, 2015).

Fall risk is formally screened through administration of fall risk tools. The Morse Fall Scale is a screening tool and should only be completed using the FACT acronym: after a *f*all, on *a*dmission of the patient, on *c*hange in patient status, and on *t*ransfer or discharge (National Center for Patient Safety [NCPS], 2014). The St. Thomas Risk Assessment Tool in Falling Elderly Inpatients (STRATIFY) tool has also been widely used, but, overall, researchers report that the use of any of the tools offers no added benefit over nursing staff's clinical judgment. Oliver et al. (2010) recommend the Morse Fall Scale and the STRATIFY tool as the two screening tools with the best predictive properties, and the Morse Fall Scale was designed specifically to predict the probability of an anticipated physiological fall. The HD (Hester Davis) Scale (Hester & Davis, 2013) for fall risk predicts the anticipated physiological falls. This scale is the newest scale that progresses from screening to assessment, aligns interventions to fall risk factors, and is validated in both paper and electronic medical records. The HD Scale generates an individualized care plan, which when implemented results in mitigation and/or elimination of fall risk factors.

Some of the more commonly encountered risks of fall and injury observed in acute care are evident on many of the widely published and available risk-analysis tools. All of the nursing fall risk tools include assessment of cognitive function.

It is very important to recognize cognitive impairment as studies confirm that early detection of acute mental status changes, especially delirium, leads to early treatment and resolution. Moreover, early recognition of cognitive impairment caused by underlying chronic dementia is equally important. Acute care studies have shown that in patients with underlying dementia before hospitalization, cognitive function typically worsens with hospitalization. Both acute delirium and chronic dementia are independent risk factors for fall (Sillner, Holle, & Rudolph, 2019), impacting impaired safety judgment. Impaired safety judgment is a nursing diagnosis that refers to the patients' inability to recognize whether their actions are safe or not. Therefore, when safety impairment exists in the acute care setting, it is incumbent on the registered nurse to protect the patient from harm. Impaired safety judgment arises from acute or chronic illnesses, medications and other factors such as pain.

BOX 23.6

Medical Conditions That Raise the Risk of Serious Injury (Fracture)/Internal Bleeding

Medical conditions
Osteopenia
Osteoporosis
Fracture history
Thrombocytopenia
Acute lymphocytic leukemia
Acute anemia or loss of blood volume
Any state of altered level of consciousness "delirium," lethargy, obtunded or comatose
Bleeding/Clotting disorder
Medications
Blood thinners
Thrombocytopenic agents

Impaired safety judgment is a very serious safety concern especially should other medical conditions co-exist for serious injury, as outlined in Box 23.6. An integral component of the nursing assessment is to remain current with patients' medical conditions that increase fall risk. If present, strategies must be integrated into the patient's individualized plan of care, which can mitigate, reduce, or eliminate these risks altogether.

Diagnosis: Cognitive Dysfunction (Dementia/Delirium)

Important characteristics of level of alertness are the patients' ability to maintain attention and concentration, follow commands, and engage in appropriate conversation. If impairment exists in level of consciousness, an assessment should be made to differentiate delirium from dementia. Cognitive impairment is a known fall risk factor, requiring clinical assessment to differentiate.

Delirium. Delirium has many synonyms, including acute confusional state, altered mental status, reversible dementia, and organic brain syndrome.

On admission, all patients older than 65 years, regardless of admitting diagnosis, should be assessed for both dementia and delirium. Assessment is usually completed with the Confusion Assessment Method (CAM; Degelau et al., 2012).

Dementia. Patients with dementia include those with a diagnosis of Alzheimer's disease, vascular dementia, Lewy-body dementia, frontotemporal lobe dementia, and those associated with other disorders. Such patients normally have slower reaction times and demonstrate impaired judgment. Individuals with dementia also possess varying degrees of alterations in visual–spatial orientation. Screening for dementia can be completed with the Mini-Cog, Mini-Mental State Exam (MMSE; Borson, Scanlan, Chen, & Ganguli, 2003; Folstein, Folstein, & McHugh, 1975), and Kokmen Short Test of Mental Status Sources (Degelau et al., 2012; see Chapter 17, Advance Care Planning). These patients are at risk for falls and injury, if injury-reduction practices are not implemented.

Additionally, any postoperative surgical patient is at high risk for both a fall and injury due to altered level of consciousness from anesthesia, centrally acting medication, and orthostasis. An important factor in determining a patient's safety within his or her environment is whether he or she can process information and execute simple one-, two-, and/or three-stage commands. The ability to execute a command is contingent on the level of consciousness, behavior, and cognition.

Traditionally, the level of consciousness is assessed and written as alert and oriented times four (person, place, time, and situation). The ability of the person to sustain attention can be gauged by observation of one's ability (or not) to execute a simple one stage versus complex three-stage command. This type of assessment is typically routine when the nurse first greets the patient and is beyond a simple assessment of whether or not the patient is awake, "alert," and oriented and can say, "Hello." All of these determinations are critical factors in the nurse's judgment of patient safety. After the first assessment, the nurse should reassess the older patient frequently because the level of consciousness can change quickly. Thus, at first glance it appears to the nurse that the patient is awake and alert, but later in the shift, the patient may typify "delirium" and appear hyper- or hypo-alert. Thus, patients require frequent monitoring of the level of consciousness.

Observation of a patient's behavior includes the patient's affect, demeanor, and ability to process stimuli in the environment. Agitated older adults are at risk for falls and injury because attention to the normal environmental cues is blunted or lost altogether. Depressed older adults may be at risk for impaired safety awareness and management because of blunted responses or apathy as well as centrally acting medications used to treat the depressants.

For each of these four factors—consciousness, affect, behavior, and cognition—nurses work with primary providers to evaluate the underlying causes and find treatable solutions wherever possible. Note that the roots of many of the disturbances of *consciousness*, *behavior*, and *affect* are some classic acute medical events such as hypotension, infection, dehydration, profound blood loss, or toxicity from medications. If no identifiable etiology exists, the standard of care requires

nurses to institute observation and safety interventions (Box 23.7). Nurse-initiated actions remain constant until the patient is stabilized or transferred to a higher level of care.

Assess and Diagnose the Older Adult Patient's Risk of Serious Injury

Fractures

Nurses must ask a few commonsense questions when determining whether an elderly patient is at risk for serious injury (Box 23.7). *Serious injury* is defined as injuries that result in loss of function and loss of life (Boushon et al., 2012). The National Quality Forum (NQF, 2007) defines *moderate harm* as the harm from falls resulting in suturing, Steri-Strips, fracture, or splinting; *major harm* as those falls that result in surgery, casting, or traction; then *death*. One of the most prevalent conditions increasing risk of serious injury in older patients, such as a fracture, is the presence of osteoporosis. For many reasons, the true incidence of osteoporosis is unknown in the older population, especially in men (Kaufman et al., 2000), who comprise a large percentage of the acute care hospital and long-term care beds. Therefore, it is entirely conceivable that the older adult will fracture an extremity or vertebrae with a fall, even though there is no documented diagnosis of osteopenia or osteoporosis. Depending on bone density and the severity of the trauma sustained during a fall, fracture risk must remain a consideration so that interventions to reduce harm can be implemented. Nurses must remember that osteopenia and osteoporosis can be present, even though they have not formally been diagnosed. Nurses must know risk factors for osteopenia and osteoporosis, because not all older adults have received a dual-energy x-ray absorptiometry (DEXA) or bone densitometry scan. Most older individuals with hip fractures have osteoporosis; yet, findings from a retrospective analysis of records of patients receiving hip-fracture surgery show that the frequency of treating these high-risk older patients for osteoporosis is less than optimal; women are offered treatment more than men (Kamel, 2003). If osteoporosis has been diagnosed, then certain protective interventions should be considered, such as the use of hip protectors (Applegarth et al., 2009; Bulat, Applegarth, et al., 2008; Shekelle et al., 2013).

As indicated for those older persons without safety judgment and who are unable to transfer and ambulate independently, the use of low-height beds and/or floor mats placed around the bedside reduce the chance of harm to the patient should they fall; alternatively, padding a hard surface will reduce the chance of injury. Treatment for osteoporosis needs to be discussed, ranging from the use of medication agents to supplemental calcium and vitamin D, although research findings show a controversial association between vitamin D and physical performance improvements in gait and balance (Annweiler, Schott, Berrut, Fantino, & Beauchet, 2009). However, a recent meta-analysis found vitamin D to be the only intervention shown to be effective in reducing falls among female stroke survivors in an institutional setting (Batchelor, Hill, Mackintosh, & Said, 2010).

Hemorrhage

Other medical comorbidities that increase the risk of serious injury include bleeding disorders and use of blood-thinning medications to prevent stroke. A risk-versus-benefit analysis should always be part of fall management

BOX 23.7

Interventions for Patients Suspected of a Serious Injury

Notify the physician or healthcare professional immediately.
Activate Rapid Response Team.
If on the floor, do not move the patient until medically evaluated.
Apply supplemental oxygen if indicated.
Assess vital signs and pulse oximetry every 15 minutes.
Prepare the patient for an x-ray of the extremity or CT scan of the head.
Pad side rails if there is altered level of consciousness among the bedridden.
Do not leave the patient alone; obtain a sitter or one-on-one assistance.
Lower the height of the bed, use tab alarms or personal alarms.
Assess and maintain airway, breathing, and circulation.
Assess and monitor pain (does it increase over time or is it unrelieved?).
Maintain an NPO status unless ordered otherwise.
For suspected injury to soft tissue, apply ice for swelling, following the RICE principle.
Prepare the patient for laboratory data; frequently, a serum blood count, type and cross match, bleeding time, and serum electrolytes are ordered.
Observe and monitor the injury site: Does the swelling increase? Is there an open fracture? Does the tissue discolor? Is there loss of circulation?
Are there any coexisting symptoms, which worsen over time, such as headache, backache, pain in the extremity, or experiences of dizziness or shortness of breath?

RICE, rest, ice, compression, elevation.

decision-making for patient safety and prevention of injury (Quigley & Goff, 2011). Those with thrombocytopenia require monitoring of neurological status post fall in an effort to early identify a patient with a looming internal bleed or developing hematoma. These clinical conditions are very serious and can be fatal if not assessed early.

Head Trauma

To detect the development of serious conditions, such as a subdural hematoma, frequent neurological checks are done for several days, depending on hospital clinical practice policies and guidelines, following head injury in older patients and those who are on blood thinners or who have coexisting medical conditions (Degelau et al., 2012; Ganz et al., 2013). In addition, vital signs and assessing behavior, affect, cognition, and level of consciousness are all part of any assessment of a patient with head injury. Changes in speech, such as slurred speech, or subtle diminution in cognitive abilities (i.e., they no longer recognize you after recalling your name) are significant findings post-fall head injury that require immediate attention. Recent evidence suggests that the major predictors of death in patients with ground-level falls were age greater than 70 years and a Glasgow Coma Scale score of less than 15 (Konstantinos et al., 2010). Older patients who have unwitnessed falls or do not recall falling despite evidence to the contrary should be monitored for head injury following the CDC guidelines for head injury (see "Resources"). TBI caused by head injuries is a condition that is preventable and, more important, readily recognizable. Subtle changes in cognition, level of consciousness, or behavior post fall indicate underlying head trauma. Box 23.6 details best practice interventions in cases in which a head injury is suspected post fall.

There is a strong clinical reason to suspect that older adults who are on anticoagulants are at higher risk for TBI, but empirical research in this age group is lacking. Still, best practice approaches to care of older adults must include a risk–benefit evaluation of medications, such as Coumadin, Plavix, and/or aspirin, among others, that place the older adult at an increased risk of bleeding following a fall. Additionally, use of helmets may be considered because they absorb trauma and reduce impact to the head (Quigley & Goff, 2011).

Post-Fall Management: Huddles and Assessment

Post-Fall Huddles

Because older adults continue to fall despite the implementation of evidence-based guidelines to prevent falls, identifying the causes of each fall is critical to preventing future falls. Within the inpatient settings, clinicians are able to act when a patient fall occurs and to quickly determine the event with the patient, using the PFH process. The purpose of the PFH is to determine the root cause of the fall and the source of injury in order to mitigate and eliminate causes of harm (Cameron et al., 2012; Ganz et al., 2013; U.S. Department of Veterans Affairs, 2014).

PFHs are conducted in all settings of care to determine the cause of the fall and intervene appropriately (Anderson, Mokracek, & Lindy, 2009; Ganz et al., 2013; The Joint Commission, 2015a, 2015b; Quigley et al., 2009). The definition of *huddle* varies from study to study, but a huddle is an immediate evaluation of each fall, by a team, preferably interprofessional, with the patient in the environment where the patient fell. Data about the root cause of the fall determine the type of fall, such as accidental, anticipated physiological, and unanticipated physiological fall. Analysis of data enables clinicians, administrators, and risk managers to profile population risk at the patient, unit, hospital, and system level. Valid and reliable data are essential to examine patterns and trends surrounding fall occurrence, program structure, and processes needed for program evaluation.

Overview of Effective Fall and Injury Prevention Programs in Hospitals

Nurse Champions

Embracing nurse champions at the point of care, the IHI's Transforming Care at the Bedside has partnered with the Veterans Integrated Service Network (VISN) 8 Patient Safety Center to focus on acute care fall and injury prevention for the past 5 years. Dedicated to building program capacity, infrastructure, and expertise, fall experts have mentored and coached nurses from across acute care settings to address vulnerable older adults who are at greatest risk for loss of function or loss of life if any type of fall occurs. This approach to nursing practice has been transformational (Boushon et al., 2012; Ganz et al., 2013).

Comfort Care and Safety Rounds

Traditionally, nursing staff complete routine and frequent comfort care and safety rounds to observe patient status, anticipate and meet patient needs, and increase patient safety. These rounds have modified to intentional or purposeful 1- to 2-hour rounding designed to increase patient satisfaction and safety. However, evidence is based on quality-improvement projects that reported issues with feasibility and staff adherence. Any associations between

intentional rounding and fall reduction were flawed because of methodological issues (LeLaurin & Shorr, 2019). Still, this intervention has been included in hospital fall-prevention toolkits (Boushon et al., 2012; Degelau et al., 2012; Ganz et al., 2013; NCPS, 2014). The IHI recommends implementing routine rounds that "combine frequent and regular toileting rounds with existing patient-care tasks, such as patient turning, environmental safety assessments, and pain assessment, and addressing all patient needs (e.g., pain, position, toileting, and environment) in one effective encounter" (Boushon et al., 2012, p. 22).

Many hospital-based fall-prevention programs include toileting rounds. The range of toileting-related falls in bathrooms was reported to be 38% to 47% (Tzeng, 2010). Evidence confirms the relationship between delirium, toileting needs, high-risk prescription medications, ambulation impairment, and an increase in the number of patient falls (Fridman, 2019). The high percentage of falls associated with toileting is alarming, considering the small amount of time patients spend toileting or in the bathroom. These statistics should compel nurses to increase efforts to assess, individualize, and hard-wire toileting schedules as part of comfort and safety rounds. The purpose of toileting rounds as well as individualized toileting plans is to prevent patients from having elimination accidents, attempting to toilet without assistance, and falling. Toileting is a fundamental element of basic care that has an important place in the prevention of patient falls.

INTERVENTIONS FOR FALL PREVENTION AND MANAGEMENT

Instituting General Safety Measures

Hospitals and their staff have a legal responsibility and due diligence to ensure freedom from environmental hazards and ensure safety for all patients, staff, and visitors. Routine environmental assessment using a checklist should include the unit, corridors, entrance, and exits, as well as patient holding areas, patient rooms, and areas where patients are transported (radiology, nuclear imaging, and operating room; Ganz et al., 2013; Shekelle et al., 2013). In each of these areas, an environmental assessment is performed focusing on floor surfaces; furniture; hallways; steps; device safety, such as stretchers, wheelchairs, and other types of chairs; presence or absence of clutter; bathrooms with appropriate grab rails; and routine assessment of equipment. Use of a checklist signed by the designated employee allows for audit review of compliance, serving as an internal benchmark of compliance.

Early Mobility for Older Patients to Prevent Falls

When nurses implement fall-prevention strategies that limit mobility, negative consequences result, such as functional decline, confusion, pressure injury, hospital-acquired infections, and institutionalization (Growdon, Shorr, & Inouye, 2017). Nurses have a responsibility to initiate early mobility, because this decreases fall and injury risks (Inouye, 2019). The HELP (Hospital Elder Life Program) has resources to guide nurses' implementation of early mobility programs (Mobility Change Package and Toolkit; Inouye, 2019). Early mobility, whenever older patients are medically stable, is a fundamental and basic aspect of care for all older adult patients to receive during their hospitalization. It is a step toward the prevention of deconditioning, reduced mobility and immobility, and other cascading problems that can result when less sedentary (for instance, orthostatic pneumonia or atelectasis). Early mobility starts with nonambulatory patients: assisted bed mobility, sit-to-stand exercises, range of motion exercises, and lower extremity exercises. Nursing staff assist the patient out of bed to walk to the bathroom whenever possible, rather than to use a bedpan or even a bedside commode that offers little opportunity for mobility. Wearing proper footwear, corrective lenses, and clearing a path that is free of clutter and spills are essential. Use of a walking aid, such as a standard cane or walker, may also be required; appropriate assistive devices can be ascertained through an occupational or physical therapist consultation (Quigley & Goff, 2011). For older adults who may have cognitive impairment and are at risk for serious injury, assistance with ambulation and their device is recommended, given findings that ambulatory fallers in assisted living had greater risk of head injury than fallers residing in skilled nursing (Gray-Miceli, Ratcliffe, & Thomasson, 2013).

Another essential approach for the older adult with comorbidities is for nurses to preemptively ask the older patient, who is transitioning with his or her assistance, from sitting to standing and then while walking, "How are you feeling?" Of concern is the detection of symptoms such as lightheadedness, vertigo with rotational movement, or muscular stiffness. These symptoms can be managed and monitored, if significant enough to prohibit mobility, once they are detected. Another concern exists for the older adult patient with orthostatic hypotension. In this instance, gradual upright incline with assistance while monitoring for symptoms of lightheadedness is important. Should an older adult experience symptoms or develop acute physiological evidence of a problem (for instance, near syncope, syncope, or changes in heart rate or blood pressure), slowly easing him or her back to a recumbent position and notifying the physician for further evaluation are warranted.

Mobility programs should be instituted which are built on the positive feedback that the patient feels about their status and progress as well as objective findings of gains in strength each day (Resnick & Boltz, 2019). Checklists can monitor progress and serve to validate to the patient his or her clinical progression. Care must be taken, however, to remind persons who are restricted from independent mobility to always wait for assistance. Recommendations are to set a similar time each day and to use consistent staff. An integral component of any mobility program is the footwear of patients. A recent study found patients who wore their own footwear significantly improved participants' balance compared to being barefoot; in fact, the greatest benefit was seen in those individuals with the poorest balance (Hatton & Rome, 2019; Horgan et al., 2009).

Specific Nursing Interventions

Personal alarms are routinely used to alert nursing staff about impending falls or changes in patient mobility status; however, they have limited effectiveness (Shorr et al., 2012). Care should be taken when deciding to use these devices, because they do not prevent a fall from occurring (Oliver et al., 2010); rather, they heighten staff's awareness by sounding an alarm, indicating a change in position has occurred. They also act as a deterrence to patient mobility, which has negative consequences to the patient. There are many commercial products available, but, generally, they are of two types: personal alarms clipped to the patient's gown or chair and bed–chair pressure sensors. Despite their widespread use, there is insufficient evidence that they reduce falls in an acute care hospital setting (Kwok, Mok, Chien, & Tam, 2006; LeLaurin & Shorr, 2019; Shorr et al., 2012). Effectiveness in the prevention of falls may best be gauged by the timeliness of the rescue (Quigley & Goff, 2011), as documented by Quigley, Votruba, and Kaminski (2019). Greater nurse surveillance capacity was significantly associated with better quality care and fewer adverse events (Kutney-Lee, Lake, & Aiken, 2009).

Patient-Engaged Virtual Surveillance

As part of general safety, some facilities designate any older adult aged 65 years and older who has been admitted as being on "safety precautions," which can include various other safety measures (presented in the following text). Surveillance is the third important component of a fall and fall injury prevention program. Frequent and/or continuous observation is critical to the safety of patients who fail the teach-back and are unable to be a full partner in one's fall-prevention program. These patients may have cognitive and immobility deficits, impulsivity, dementia, delirium, and/or lack of safety awareness. Evidence shows that sitters have limited effectiveness to prevent falls and, along with bed alarms, may provide a false sense of safety for nurses, patients, and families (Feil & Wallace, 2014; LeLaurin & Shorr, 2019) and can be intrusive and agitating. Integration of innovative video surveillance technology and continuous observation by monitor technicians that engage patients has significantly reduced falls across age groups (Quigley, Votruba, & Kaminski, 2019). This study adds evidence that continuous observation and timeliness of response are key factors in preventing falls, especially when nursing staff trust the technology (Cournan, Fusco-Gessick, & Wright, 2018).

Interventions to Reduce Trauma: Floor Mats, Hip Protectors

Interventions to protect from injury are separate and distinct from interventions to prevent falls. Injury-reduction interventions include floor mats, hip protectors, and elimination of sharp edges on furniture and room accessories; reduce fall distance; and move furniture from the bedside (Quigley, 2016). Both floor mats and use of low-rise beds have an important place in the effort to prevent the occurrence of serious injury when a bed fall occurs for vulnerable populations, patients at risk for injury, or those who have a fall injury history (Boushon et al., 2012). Biomechanical evidence confirms the protective properties of floor mats to reduce trauma (Bowers, Lloyd, Lee, Powell-Cope, & Baptiste, 2008; Crane, Certo, & Goodworth, 2012; Raymond, Catena, & Vaughan, 2011; Wright & Laing, 2012). Floor mats are placed at the bedside to protect the head and the torso and serve to cushion the impact of the fall. Floor mats are a standard of care to protect patients from injury when they fall from bed or chair (Ganz et al., 2013; Pearson & Coburn, 2011). All organizations should purchase only floor mats with beveled edges to reduce trip hazards and consider glow-in-the-dark strips for nighttime detection.

Hip protector clothing absorbs trauma and reduces hip-fracture risk and is often included in injury prevention programs (Boushon et al., 2012; Pearson & Coburn, 2011). Hip protectors retain protective properties to shield a hip from fracture (Bulat, Applegarth, et al., 2008). When pooling data from cluster randomized trials involving elderly in nursing homes, hip protectors were found to decrease risk of hip fracture (Sawka et al., 2007). In clinical practice, hip protectors are offered to patients at risk for hip fracture in the event of a lateral fall. Prudent patient safety environments would ensure that older adults at risk for hip fracture or who have already sustained hip fracture would have the same safety net offered in long-term care (LTC) to that of hospitals. In addition, many clothing options are available: pants, sweatpants, shorts,

undergarments, incontinent briefs. Floor mats and hip protectors have the greatest protective properties to reduce trauma due to falls and are feasible paired interventions to reduce trauma for vulnerable populations—those 85 years of age and older and those at risk for fracture or fracture history (Zubkoff et al., 2018).

CASE STUDY 23.1

Mrs. S is an 80-year-old White woman admitted to the step-down rehabilitation unit at the hospital following a 3-week admission for treatment of a community-acquired pneumonia. Mrs. S received intravenous antibiotics and fluids for management of the infiltrate and associated dehydration. Mrs. S's hospitalization was complicated by the development of acute confusion, which escalated following the use of IV theophylline and the use of Ventolin nebulizers. Mrs. S also developed a deep vein thrombosis of the leg, which was treated with IV heparin, and she now receives Coumadin. Mrs. S's fall risk score was significant for visual impairment because of a cataract, delirium, focal lower extremity weakness resulting from osteoarthritis, chronic obstructive lung disease, and forgetfulness with short-term memory loss. She is at risk for injury because of osteoporosis and anticoagulation.

Before this hospitalization, Mrs. S was functioning independently in her home, until her son and daughter found her on the floor, mildly confused and disoriented, complaining of dizziness. Mrs. S was transported to the emergency department for further evaluation. She was diagnosed with a right lung infiltrate via chest x-ray and moderate to severe dehydration. An IV line was started, and she was treated with antibiotics and admitted for observation. A 12-lead electrocardiogram showed a sinus bradycardia at 54 beats/minute (bpm). A CT scan of the head was not performed; rather, Mrs. S was placed on observation and admitted to a medical–surgical unit.

After the 3-week long hospitalization, Mrs. S was transferred via wheelchair to the rehabilitation unit. During the admission assessment, you note Mrs. S's fall risk increased from baseline as a result of increased confusion/disorientation, periods of restlessness, and reduced mobility. Mrs. S's vital signs are stable. You learn in the nursing report that Mrs. S needs constant supervision, or she wanders off the unit. During the physical examination, you are paged overhead and respond by going to the nursing station. When you return to examine Mrs. S, she is gone. A second overhead page is called "stat" for assistance on your unit. Mrs. S was found sitting on the floor outside of the elevator, complaining of pain in her right hip and right ankle.

The immediate PFA shows possible loss of consciousness as Mrs. S was observed unresponsive for a few seconds. There is evidence of a head injury with a laceration and hematoma to the scalp as well as right lower leg pain and swelling. Mrs. S's sitting blood pressure is 80/50 mmHg, and her pulse rate is 60 bpm—regular, but weak. Ice is applied to her scalp and her leg is immobilized. The physician is notified immediately, and a stat CT scan of the head is ordered, later confirming an acute intracranial bleed. Mrs. S is prepared for cranial surgery and then hip-fracture repair the following day.

Discussion

1. What nursing actions should have been taken to prevent the fall and serious injury?
   Mrs. S is at high risk for serious injury, as indicated by her fall risk screen score and use of the anticoagulation medication Coumadin. The standard of practice for caring for an older adult hospitalized with increased risk of falls with serious injury requires the nurse to recognize that this patient is likely to have impaired judgment and inability to follow directions because of her disorientation, relocation to a new unit, and evidence of restlessness. Because she is ambulatory, but forgetful, this creates a situation in which the patient needs constant supervision. Mrs. S should be allowed to ambulate, but only with one-on-one supervision and/or physical assistance whenever possible. The nurse failed to recognize the importance of providing constant supervision to the patient. Actions that should have been undertaken include constant supervision by support staff, such as volunteers and/or a special assignment of a nurse's aide to stay with the patient. Family would need to be notified of this decision and to enlist their support for considering a private-duty nurse's assistant. Acute confusion or delirium renders Mrs. S unsafe to make the necessary decisions or judgments about her care.

   In terms of preventing serious injury, Mrs. S could be offered a hip protector as such protection is indicated for older adults who are deemed at high risk for fracture. Osteoporotic older adults who fall are likely to fracture an extremity or incur serious injury. A low-rise bed and floor mats should be used because she is at high risk for falling from bed again. Her needs can be anticipated by regular

(*continued*)

CASE STUDY 23.1 (*continued*)

rounds and by offering the use of the toilet, which can help prevent urinary accidents and/or falls when walking toward the bathroom.

It is imperative that Mrs. S be allowed to continue to move freely and ambulate provided she is supervised and/or assisted because of her disorientation. Daily walking on the unit, in the patient's room, and whenever possible to increase mobility is essential.

2. How should the nursing assessment be focused?
Further assessment for reversible causes of delirium is warranted. As Ventolin has precipitated acute confusion, this drug should be used sparingly and possibly substituted with less "anticholinergic agents." A pharmacy consultation, as part of the interprofessional assessment, would be appropriate. Alternative respiratory interventions for increased pulmonary secretions, such as clapping, postural drainage, deep breathing, and the use of inspirometry, could be instituted.

Further assessment of Mrs. S's falls (i.e., a fall evaluation) is clinically indicated. She has had two falls recently: one at home and the other in the hospital. While the root cause of these falls is unknown, increased evaluation is critical through post-fall huddles and medical evaluation. The history of "being dazed" that occurred in both falls warrants additional workup for orthostasis. In the emergency department, the patient did not receive a CT scan of her head. The fall evaluation includes, among other tests, a 24-hour Holter monitor. A consultation with a geriatrician and/or neurologist is clinically warranted; also, patient-engaged virtual surveillance should be activated to bed exit, room elopement, and, ultimately, the fall and resulting injury. Comprehensive assessment and interdisciplinary care planning are critical to develop and implement her individualized care plan, to mitigate and eliminate fall risk, and to protect her from further injury.

The following case study illustrates a real-life patient fall that resulted in serious physical injury and trauma. The nursing assessment is vital to detect problems that require early intervention/management.

SUMMARY

Fall and serious injury prevention is a shared responsibility by all healthcare providers and professionals caring for older adult patients. National recommendations exist to guide practice and should be routinely incorporated into any fall-prevention program and practice policy. Some of the evidence-based research presented here can help clinicians make choices about which interventions may be the most efficacious or effective, bearing in mind that this choice changes with changes in the patient's condition. Therefore, selecting the most appropriate intervention will always depend on what the nursing and medical assessment determine the likely cause of the fall to be and the medical stability of the patient at that time. Among older adults with advanced years of age with complex illness and multiple comorbidities and geriatric syndromes, this determination becomes increasingly more challenging, but not impossible to make. The safety of older adults in the hospital and continuing on discharge home depends on continual assessment and reevaluation of their condition coupled with education, the use of the most effective and safest technology, and the older adults' knowledge and willingness to participate in evidence-based care.

Nursing staff and hospital organizations are fortunate to have resources of some best practice exemplars used by acute care hospitals in their efforts to reduce patient falls. Exemplars that have been reviewed by expert panels are available from the IHI and AHRQ's fall toolkits (Ganz et al., 2013; NCPS, 2014). Some best practice exemplars and compilation of evidence-based interventions are also addressed in the ANA publication *5 Easy Steps to Prevent Falls: The Comprehensive Guide for Nurses to Keeping Patients of All Ages Safe* (Gray-Miceli, 2014). Framed around a public health model for fall prevention, content includes important steps for practicing professional nurses in fall history taking, fall-focused physical examination, environmental assessment, fall-focused nursing diagnosis and targeted interventions, and patient education through teach-backs (Gray-Miceli, 2014). These resources provide best practice examples to the nursing workforce so that fall knowledge and fall and injury solutions can be implemented in practice.

Hospital organizations vary in their ability to successfully eradicate patient falls. Their success is contingent on many factors in addition to a trained, knowledgeable nursing and interprofessional team workforce. The Joint Commission has suggested that, to become a high-reliability hospital, a series of incremental changes should be undertaken. Leadership's commitment to zero falls, a fully functional culture of safety, and widespread deployment of highly effective process improvement measures are required in their process approach for high-reliability healthcare (Chassin & Loeb, 2013). Quigley and White (2013) discuss components of patient safety culture and the integration of these components with fall prevention, the role of nurses, and high reliability.

NURSING STANDARD OF PRACTICE

Protocol 23.1: Fall Prevention

I. GOALS

A. Reduce preventable falls (accidental and anticipated physiological falls) and serious injury in hospitalized older adults.
B. Mitigate and eliminate multifactorial risks and causes of falls in older adults.
C. Implement fall prevention and management consistent with best available evidence, clinical practice guidelines, and standards of care that are age specific and population based.

II. OVERVIEW

Falls among older adults are not a normal consequence of aging; rather, they are considered a geriatric syndrome most often caused by discrete multifactorial and interacting, predisposing (intrinsic and extrinsic risks), and precipitating (dizziness and syncope) causes (Gray-Miceli et al., 2005; Rubenstein & Josephson, 2006). Fall epidemiology varies according to clinical setting. In acute care, fall incidence ranges from 2.3 to 7 falls per 1,000 patient-days, depending on the unit. Nearly one third of older adults living in the community fall each year in their homes. The highest fall incidence occurs in the institutional long-term care setting (nursing home), where 50% to 75% of the 1.63 million nursing home residents experience a fall yearly. Falls rank as the eighth leading cause of unintentional injury for older Americans and were responsible for more than 16,000 deaths yearly (Oliver et al., 2010).

III. BACKGROUND/STATEMENT OF THE PROBLEM

A. Definition
   1. A *fall* is an unexpected event in which the participant comes to rest on the ground, floor, or lower level (Prevention of Falls Network Europe, 2006).
B. Fall etiology
   1. Fall *risk factors* include intrinsic risks of cognitive, vision, gait, or balance impairment, high-risk/contraindicated medications, and/or the extrinsic risks of assistive devices, inappropriate footwear, restraint, use of unsteady furniture or equipment, poor lighting, and uneven or slippery surfaces.
   2. Fall *causes* include, among others, orthostatic hypotension, arrhythmia, infection, generalized or focal muscular weakness, syncope, seizure, hypoglycemia, neuropathy, and medication.

IV. PARAMETERS OF ASSESSMENT

A. Assess and document all older adult patients for intrinsic risk factors to fall.
   1. Advancing age, especially if older than 75
   2. History of a recent fall, repeat falls, or fall-related injury (Panel on Prevention of Falls in Older Persons et al., 2011)
   3. Specific comorbidities: dementia, hip fracture, type 2 diabetes, Parkinson's disease, arthritis, and depression
   4. Functional disability: use of assistive device
   5. Alteration in level of consciousness or cognitive impairment
   6. Gait, balance, or visual impairment
   7. Use of high-risk medications (Chang et al., 2004)
   8. Urge urinary incontinence (Brown et al., 2000)
   9. Physical restraint use (Capezuti, Maislin, Strumpf, & Evans, 2002)
   10. Bare feet or inappropriate footwear
   11. Identify risks for significant injury resulting from current use of anticoagulants, such as Coumadin, Plavix, or aspirin, and/or those with osteoporosis or risks for osteoporosis (Resnick, 2003).

(*continued*)

Protocol 23.1: Fall Prevention (*continued*)

B. Assess and document patient-care environment routinely for extrinsic risk factors for fall, and institute corrective action:
   1. Floor surfaces for spills, wet areas, and unevenness
   2. Proper level of illumination and functioning of lights (night-light works)
   3. Tabletops, furniture, and beds are sturdy and in good repair
   4. Grab rails and bars are in place in the bathroom
   5. Adaptive aids work properly and are in good repair
   6. Bed rails do not collapse when used for transitioning or support
   7. Patient gowns/clothing do not cause tripping
   8. IV poles are sturdy if used during mobility, and tubing does not pose a safety hazard for tripping

C. Perform PFH and a comprehensive PFA following a patient fall to identify possible fall causes (if possible, begin the identification of possible causes within 24 hours of a fall) as determined during the immediate, interim, and longitudinal post-fall intervals. Because of known incidences of delayed complication of falls, including fractures, observe all patients for about 48 hours after an observed or suspected fall (ECRI Institute, 2006; Gray-Miceli et al., 2006; Panel on Prevention of Falls in Older Persons et al., 2011).

D. Perform a physical assessment of the patient at the time of the fall, including vital signs (which may include orthostatic blood pressure readings); neurological assessment; and evaluation for head, neck, spine, and/or extremity injuries.
   1. Once the assessment rules out any significant injury:
      a. Obtain a history of the fall by the patient or witness description and document
      b. Note the circumstances of the fall, location, activity, time of day, and any significant symptoms
      c. Review underlying illness and problems
      d. Review medications
      e. Assess functional, sensory, and psychological status
      f. Evaluate environmental conditions
      g. Review risk factors for falling (American Medical Directors Association, 2003; ECRI Institute, 2006; Panel on Prevention of Falls in Older Persons et al., 2011; Resnick, 2003).

E. In the acute care setting, an integrated multidisciplinary team (comprised of the physician, nurse, healthcare provider, risk manager, physical therapist, and other designated staff) plans care for the older adult at risk for falls or who has fallen, hinged on findings from an individualized assessment (ECRI Institute, 2006; The Joint Commission, 2007).

F. The process approach to an individualized PFA includes use of standardized measurement tools of patient risk in combination with a fall-focused history and physical examination, functional assessment, and review of medications (American Medical Directors Association, 2003; Panel on Prevention of Falls in Older Persons et al., 2011; Resnick, 2003). When plans of care are targeted to likely causes, individualized interventions are likely to be identified. If falling continues despite attempts at individualized interventions, the standard of care warrants a reexamination of the older adult and his or her fall.

V. NURSING CARE STRATEGIES

A. General safety precaution and fall-prevention measures that apply to all patients, especially older adults, include:
   1. Assess the patient-care environment routinely for extrinsic risk factors, and institute appropriate corrective action.
      a. Use standardized environmental checklists to screen; document findings.
      b. Communicate findings to risk managers, housekeeping, maintenance department, all staff, and hospital administration if needed.
      c. Reevaluate environment for safety (ECRI Institute, 2006).

(*continued*)

Protocol 23.1: Fall Prevention (*continued*)

2. Screen/assess older adult patient for multifactorial risk factors for fall on admission, following a change in condition, on transfer to a new unit, and following a fall (ECRI Institute, 2006; NCPS, 2014):
   a. Use standardized or empirically tested fall risk tools in conjunction with other assessment tools to evaluate risk of falling (Panel on Prevention of Falls in Older Persons et al., 2011; Tinetti, Williams, & Mayewski, 1986).
   b. Document findings in nursing notes, interprofessional progress notes, and the problem list.
   c. Communicate and discuss findings with interprofessional team members.
   d. In the interprofessional discussion, include review and reduction or elimination of high-risk medications associated with falling.
   e. As part of fall protocol in the facility, flag the chart or use graphic or color display of the patient's risk potential to fall.
   f. Communicate to the patient and the family caregiver the identified risk to fall, and specific interventions chosen to minimize the patient's risk.
   g. Include patient and family members in the interprofessional plan of care and discussion about fall-prevention measures.
   h. Promote early mobility and incorporate measures to increase mobility, such as daily walking, if medically stable and not otherwise contraindicated.
   i. On transfer to another unit, communicate the risk assessment and interventions chosen and their effectiveness in fall prevention.
   j. On discharge, review fall risk factors and measures to prevent falls in the home with the older patient and/or family caregiver. Provide patient literature/brochures, if available. If not readily available, refer to the Internet for appropriate websites/resources.
   k. Explore with the older patient and/or family caregiver avenues to maintain mobility and functional status; consider referral to home-based exercise or group exercises at community senior centers. If discharge is planned to a subacute or rehabilitation unit, label the older adult's mobility status at the time of discharge on the transfer, or indicate other types of physical activity in the home to strengthen lower extremities or assist with gait/balance problems.
3. Institute general safety precautions according to the facility protocol, which may include:
   a. Referral to a fall-prevention program
   b. Use of a low-rise bed that measures 14 inches from the floor
   c. Use of floor mats if patient is at risk of serious injury such as osteoporosis
   d. Easy access to call light
   e. Minimization and/or avoidance of physical restraints
   f. Initiate patient-engaged video surveillance
   g. Use proper footwear
   h. Regular toileting at set intervals and/or continence program; provide easy access to urinals and bedpans
   i. Observation during walking rounds or safety rounds
   j. Use of corrective glasses for walking
   k. Reduction of clutter in traffic areas
   l. Early mobility program (ECRI Institute, 2006)
4. Provide staff with clear, written procedures describing what to do when a patient fall occurs.

B. Identify specific patients requiring additional safety precautions and/or evaluation by a specialist or:
1. Those with impaired judgment or thinking caused by acute or chronic illness (delirium and mental illness)
2. Those with osteoporosis, at risk of fracture
3. Those with current hip fracture
4. Those with current head or brain injury (standard of care)

(*continued*)

Protocol 23.1: Fall Prevention (*continued*)

C. Review and discuss with the interprofessional team the findings from the individualized assessment, and develop a multidisciplinary plan of care to prevent falls (Chang et al., 2004).
   1. Communicate to the physician significant PFA findings (ECRI Institute, 2006).
   2. Monitor the effectiveness of the fall-prevention interventions instituted.
   3. Following a patient fall, observe for serious injury resulting from a fall, and follow facility protocols for management (standard of care).
   4. Following a patient fall, monitor vital signs, level of consciousness, neurological checks, and functional status as per facility protocol. If significant changes in patient condition occur, consider further diagnostic tests, such as plain film x-rays, and CT scan of the head/spine/extremity, and provide a neurological consultation and/or transfer to a specialty unit for further evaluation (standard of care).

VII. EVALUATED/EXPECTED OUTCOMES

A. Patients will
   1. Maintain their safety.
   2. Avoid preventable falls.
   3. Not develop serious injury from a fall if it occurs.
   4. Know their risks of falling.
   5. Be prepared on discharge to prevent falls in their homes.
   6. Continue prehospitalization level of mobility.
   7. Those who develop fall-related complications, such as injury or change in cognitive function, will be promptly assessed and treated appropriately should fall-related complications, injury, or cognitive decline occur.
   8. Be fully engaged as a partner in the fall-prevention plan of care.
B. Nursing staff will
   1. Accurately detect, refer, and manage older adults at risk of falling or who have experienced a fall
   2. Integrate into their practice comprehensive assessment and management approaches for fall prevention in the institution
   3. Gain appreciation for older adults' unique experience of falling and how it influences their daily living and functional, physical, and emotional status
   4. Educate older adult patients anticipating discharge about fall-prevention strategies
   5. Collaborate and coordinate fall prevention as members of interprofessional teams
C. Family caregivers will
   1. Benefit from added knowledge about fall prevention to become sensitized and more aware of simple strategies to prevent falls
   2. Be fully engaged in patient safety efforts
D. Healthcare organizations will
   1. Realize reduced fall and injurious fall rates
   2. Realize the benefits of fall-prevention programs that minimize liability
   3. Support budgetary lines for fall-prevention interventions directed to patients and healthcare staff

VIII. FOLLOW-UP MONITORING OF CONDITION

A. Monitor fall incidence and incidences of patient injury caused by a fall, comparing overall fall rates, rates by type of fall, and root causes of fall events, within and across units over time.
B. Compare falls, falls with injury, and percentage of falls with major injury per quarter against national benchmarks available in the National Database of Nursing Quality Indicators.
C. Incorporate continuous quality-improvement criteria into fall-prevention program.

(*continued*)

Protocol 23.1: Fall Prevention (*continued*)

D. Identify fall team members and roles of clinical and nonclinical staff (ECRI Institute, 2006).
E. Educate patient and family caregivers about fall-prevention strategies so they are prepared for discharge.

IX. RELEVANT PRACTICE GUIDELINES

A. Panel on Prevention of Falls in Older Persons, AGS, BGS (2011)
B. American Medical Directors Association (2003)
C. University of Iowa Gerontological Nursing Interventions Research Center (UIGN, 2004)
D. ECRI Institute (2006)

ABBREVIATIONS

PFA	Post-fall assessment
PFH	Post-fall huddle

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Reducing Adverse Drug Events in the Older Adult*

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24

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Conduct a comprehensive geriatric medication assessment and identify risks for adverse drug events (ADEs).
2. Describe five reasons older adults experience ADEs.
3. Delineate strategies to prevent common medication-related problems in older adults.
4. Define The Joint Commission safety goals on reconciling medication to reduce ADEs.

OVERVIEW

Adverse drug events (ADEs) comprise the largest single category of adverse events experienced by hospitalized patients (Brennan et al., 1991). In a community retrospective cohort study, at least 1 in 785 hospitalized patients had an ADE within a 6-month period (Cahir, Bennett, Teljeur, & Fahey, 2014). Furthermore, the occurrence of ADEs is associated with increased morbidity, mortality, and costs in care (Poudel, Acharya, Ghimire, Dhital, & Bharati, 2017). A systematic review of 16 studies that examined the effect of Computerized Physician Order Entry (CPOE) found that CPOE was associated with half as many errors as paper entry, which is a promising finding, but much is needed to be accomplished to eradicate all ADEs (Nuckols et al., 2014).

The Institute of Medicine estimates between 380,000 and 450,000 annual ADEs occurred in the United States in 2007 (Aspden, Wolcott, Bootman, & Cronenwett, 2007). Assuming 400,000 preventable ADEs each year, at an incremental hospital cost of $5,857 per ADE, $3.5 billion was spent in 2006 alone (Aspden et al., 2007). These findings were also referenced by the National Academies of Sciences, emphasizing the importance, relevance, and paucity of progress to date (National Academies of Sciences, Engineering, & Medicine, 2018). Others have found that ADEs in community hospitals cost more than $3,000 on average and increased length of stay by 3.1 days (Hug, Keohane, Seger, Yoon, & Bates, 2012).

BACKGROUND AND STATEMENT OF THE PROBLEM

Adverse Drug Events

ADEs are defined as "an injury resulting from medical intervention related to a drug" (Kohn, Corrigan, & Donaldson, 2000, p. 33). This includes medication errors, adverse drug reactions (ADRs), allergic reactions, and overdoses (for more information regarding ADE

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

terminology, see the resource "Clarifying Adverse Drug Events: A Clinician's Guide to Terminology, Documentation, and Reporting"). ADEs, compared with medication errors, are a more direct measure of patient harm. Almost 100,000 emergency hospitalizations in the United States were due to ADEs in adults 65 years of age or older, with nearly half occurring in adults 80 years of age and older (Budnitz, Lovegrove, Shehab, & Richards, 2011). This number is likely much higher, as only 50% of all ADEs are reported in U.S. hospitals, with most going unreported. ADEs also increase costs to patients, length of hospital stay, and mortality (Levinson, 2018).

Older adults are the largest consumers of prescription and over-the-counter (OTC) medications (Hamilton, Gallagher, Ryan, Byrne, & O'Mahony, 2011) and thus contribute to increased risk. A longitudinal study of a community-dwelling sample of older adults aged 62 to 85 found an increase in the use of prescription medications, dietary supplements, and concurrent use of interaction medicines by 15% in 2011 when compared to 2005 (Qato, Wilder, Schumm, Gillet, & Alexander, 2016). Furthermore, ADEs are thought to cause 10% to 30% of all hospital admissions in older adults (Thomas et al., 2013), with an increase in the number of ADE incidents occurring after discharge. Kanaan et al. (2013) found that of the identifiable ADEs during a 45-day follow-up after hospitalization, 35% of ADEs were preventable and suggests the need for quality and safety medication errors to extend beyond a singular assessment tool (Kanaan et al., 2013). Intrinsic factors such as advanced age, frailty, and polypharmacy further contribute to greater risks in adverse outcomes (Buck et al., 2009). National patient safety goals established by The Joint Commission (2019) require healthcare organizations to implement comprehensive medication reconciliation (MR) at every transition point, including admission, transfer, and discharge along the continuum of care through collaborative efforts.

Also, when a new symptom develops in a person taking multiple medications, the symptom must always be considered an ADE first, particularly in frail hospitalized patients. Providers should evaluate the relationship between the new symptom and most recent medications prescribed to identify potential cause. Inappropriate treatment of a new symptom may result in a prescribing cascade of multiple drug treatments and possibly result in an ADR (Petrovic, van der Cammen, & Onder, 2012). In a systemic review, medication review may reduce emergency department visits in older adults (Christensen & Lundh, 2016).

Adverse Drug Reactions

ADRs are preventable causes of harm to patients and, as previously mentioned, an unnecessary use of healthcare resources (Lavan & Gallagher, 2016). Predicting risk of ADRs includes changes in pharmacokinetics and pharmacodynamics, increasing burden of comorbidity, polypharmacy, inappropriate prescribing, and suboptimal monitoring (Branowicki et al., 2017). Risk tools for evaluation of ADRs are available, but none have sufficient predictive and detection value. However, hospital postdischarge interventions such as home visits and follow-up phone calls from medical team members can contribute to reduced hospital readmissions (Branowicki et al., 2017). Good clinical practices during clinic visits and hospital admissions such as detailed documentation and regular review of prescribed medications can also assist in better detection (Branowicki et al., 2017).

Caution is also recommended for newly assigned medication to patients with clear statements of therapeutic goals and recognition of the impact a particular drug can have on multiple organs (Lavan & Gallagher, 2016). Duplication, additive effects, discontinuation of therapy, skipping medication, changing dose to cause, and physiological antagonism too can contribute to ADRs (Alomar, 2014). For such reasons, prescribers and medical staff should regularly review medication efficacy and be vigilant of ADRs and their contributory factors.

ADRs often go unidentified in older adults because of their atypical presentation. Missed conventional symptoms of disease seen in younger persons such as no pain with an acute abdomen contribute to such unidentified reactions (Steinman & Holmes, 2014). These changes are often prodromal to an acute illness, especially in frail older adults. Symptoms may include a change in functional capacity, falls, vague cognitive changes, behavioral changes, appetite decrease, anorexia, or new onset incontinence (Steinman & Holmes, 2014). It is essential to take patient, family, and nonprofessional care provider reports of subtle symptoms seriously so they are not missed. Timely identification of acute illness with vague presentation enables early treatment of illness, resulting in reduced morbidity and mortality and an enhanced quality of life in older adults. Because atypical presentation makes ADRs difficult to accurately identify, nurses must be aware that ADRs may present themselves in such a manner. One strategy for improving recognition of ADRs is to identify risk factors associated with ADRs (Box 24.1). The most common risk factors include increasing age (85 years or older), multiple medical conditions, polypharmacy or multiple medications, and physical, cognitive, or functional impairment (Steinman & Holmes, 2014).

BOX 24.1

Risk Factors for Potential Adverse Drug Reactions in Older Adults

Medication-Related Factors

Class of medication
- Anticoagulants and antiplatelets
- Cardiovascular meds
- Hypoglycemics (oral and insulin)
- Benzodiazepines
- Antipsychotics
- CNS agents/sedative/hypnotics
- Psychotropics
- Anticholinergics
- NSAIDs
- TCAs
- Opioid analgesics
- Corticosteroids

Specific medication
- Warfarin
- Digoxin
- Diuretics
- Benadryl
- Lithium salts
- Chlorpropamide
- Theophylline
- Beta blockers
- ACEI/ARBS
- ASA

Patient characteristics
- Polypharmacy
- Dementia/Memory problems
- Multiple chronic medical problems (>4–6)
- Reduced homeostatic mechanisms
- Reduced lean body mass
- Renal insufficiency (CrCl <50 mL/min)
- Recent hospitalization
- Advanced age (85 years of age)
- Frailty
- Multiple prescribers
- Regular use of alcohol (~1 fl oz/d)
- Geriatric syndromes
- Prior ADR
- Nonadherence
- Alcohol misuse/abuse

Provider factors
- Prescribing potentially inappropriate medications
- Individual clinical information for prescribing
- Inadequate monitoring of adherence
- Adding medication for nonspecific indication
- Regular medication review
- Monitoring: new medication, lab parameters, follow-up visit
- Identifying functional changes—self-administration ability

ACEI, angiotensin converting enzyme inhibitors inhibitors; ADR, adverse drug reaction; ARBS, angiotensin-receptor blockers; ASA, acetylsalicylic acid; COX, cyclooxygenase; CrCl, creatinine clearance; NSAIDs, nonsteroidal anti-inflammatory drugs; TCAs, tricyclic antidepressants.

Sources: Data from Buck, M. D., Atreja, A., Brunker, C. P., Jain, A., Suh, T. T., Palmer, R. M., … Wilcox, A. B. (2009). Potentially inappropriate medication prescribing in outpatient practices: Prevalence and patient characteristics based on electronic health records. *The American Journal of Geriatric Pharmacotherapy, 7*(2), 84–92. doi:10.1016/j.amjopharm.2009.03.001. *Evidence Level IV*; Chan, S. A., Hussain, F., Lawson, L. G., & Ormerod, A. D. (2013). Factors affecting adherence to treatment of psoriasis: Comparing biologic therapy to other modalities. *Journal of Dermatological Treatment, 24*(1), 64–69. doi:10.3109/09546634.2011.607425. *Evidence Level IV*; Kongkaew, C., Hann, M., Mandal, J., Williams, S. D., Metcalfe, D., Noyce, P. R., & Ashcroft, D. M. (2013). Risk factors for hospital admissions associated with adverse drug events. *The Journal of Human Pharmacology Drug Therapy, 33*(8), 827–837. doi:10.1002/phar.1287. *Evidence Level IV*; Petrovic, M., van der Cammen, T., & Onder, G. (2012). Adverse drug reactions in older people. *Drugs & Aging, 29*(6), 453–462. doi:10.2165/11631760-000000000-00000. *Evidence Level V*; Rochon, P. A. (2019). Drug prescribing for older adults. In K. E. Schmader & J. Givens (Eds.), *UpToDate*. Retrieved from https://www.uptodate.com/contents/drug-prescribing-for-older-adults. *Evidence Level V*.

High-Risk Medications

Several high-risk drug classes have been consistently associated with ADEs in hospitalized patients. Anticoagulants, antihyperglycemic agents, sedatives, narcotics, antibiotics, antipsychotics, and chemotherapeutics are the leading drug classes associated with ADEs. A common feature among these drugs are narrow therapeutic windows that require close monitoring and dose adjustments that contribute to potential errors in timing calculations (Evans, Lloyd, Stoddard, Nebeker, & Samore, 2005). Older adults experience medication-related events for five major reasons:

1. *Alterations in pharmacokinetics:* a reduced ability to metabolize, distribute, and absorb drug along with *pharmacodynamics*; physiological effects, that is, what the drug does in binding at the receptors (Rochon, 2019).

2. *Polypharmacy:* referred to as the use of five or more medications on a daily basis (Fulton & Riley Allen, 2005) and experience of an ADE while taking multiple medications at a single time (Qato et al., 2016).
3. *Therapeutic failures:* under- or overdosage of therapeutics. Failure in accomplishing treatment goals as a result of inappropriate drug therapy and in no relation to the natural progression of disease (Fillit, Rockwood, & Young, 2016).
4. *Iatrogenic causes:* illness due to medication as a result of ADRs, inappropriate prescribing, medication errors, and use of medication for treatment of symptoms that are not disease dependent or specific, such as self-medication or prescribing cascades (Rochon, 2019).
5. *Medication adherence:* taking medication as assigned by a doctor and/or pharmacist professional. Additionally, medical adherence is further defined as a two-way form of communication in which a patient and medical provider assume active roles in fulfilling the set therapeutic regimen (Lo, Chau, Woo, Thompson, & Choi, 2016).

Older adults often combine OTC medications with prescription medications or herbal remedies yet do not report their use to healthcare providers. Likewise, providers often do not inquire about OTC medications or herbal remedies. Underreporting may lead to ADEs, including unrecognized adverse drug–disease or drug–drug interactions (Lopez-Gonzalez, Herdeiro, & Figueiras, 2009; see Table 24.1 and Table 24.2). Patient safety in medication management is a major focus in older adults; however, current information on use of prescription medications, OTC medications, and dietary supplements is still limited (Qato et al., 2008). It is important to differentiate an ADR from an ADE (see Figure 24.1).

TABLE 24.1

Common Drug–Drug Interactions

Drug 1	Drug 2	Interaction	Effects
Warfarin (Coumadin)	Diltiazem	Inhibits drug	↑ Anticoagulation
Warfarin	Verapamil	Metabolism	Potential bleeding
Warfarin	Metronidazole	Metabolism	Potential bleeding
Warfarin	NSAID	NSAID ↓ prostaglandins. Increases GI erosion. ↓ Platelet aggregation	GI bleeding
Warfarin	ASA	Same as NSAID	GI bleeding
Warfarin	Sulfa drugs	Unknown	↑ Warfarin effects
Warfarin	Acetaminophen-opiate combination Fluconazole Cipro Biaxin	↑ INR	Bleeding
Digoxin	Amiodorone	↓ Renal/nonrenal clearance of digoxin	Digoxin toxicity
Digoxin	Clarithromycin	↓ Renal clearance of digoxin	Digoxin toxicity
Digoxin	Verapamil	↓ Impulse conduction and muscle contraction	Potential bradycardia or heart block
Levothyroxine	Calcium carbonate	L-thyroxine (T_4) absorbs calcium carbonate	ACE inhibitors absorption of L-thyroxine (T_4)
Glyburide	Co-trimoxazole	Potentiates effect of sulfonylureas	Hypoglycemia

(*continued*)

TABLE 24.1

Common Drug–Drug Interactions (*continued*)

Drug 1	Drug 2	Interaction	Effects
ACE inhibitors	Potassium-sparing diuretics	Unknown	Life-threatening hyperkalemia
Diuretics	NSAIDs	ACE inhibitors renal perfusion	Renal impairment
Phenytoin (Dilantin)	Cimetidine Erythromycin Fluconazole	Not specified	Increases levels of phenytoin within 1 week
Theophylline	Quinolones	↓ Liver metabolism of theophylline	Theophylline toxicity
Acetylcholinesterase inhibitor, e.g., Aricept, Exelon	Anticholinergics	↓ Ability to augment acetylcholine level	Therapy less effective

ACE, angiotensin converting enzyme; ASA, aspirin; CNS, central nervous system; GI, gastrointestinal; INR, international normalised ratio; NSAID, nonsteroidal anti-inflammatory drug; SSRI, selective serotonin reuptake inhibitor.

Sources: Data from Ament, P. W., Bertolino, J. G., & Liszewski, J. L. (2000). Clinically significant drug interactions. *American Family Physician, 61*(6), 1745–1754. Retrieved from https://www.aafp.org/afp/2000/0315/p1745.html. *Evidence Level V*; Feldstein, A. C., Smith, D. H., Perrin, N., Yang, X., Simon, S. R., Krall, M., & Soumerai, S. B. (2006). Reducing warfarin medication interactions: An interrupted time series evaluation. *Archives of Internal Medicine, 166*(9), 10009–11015. doi:10.1001/archinte.166.9.1009. *Evidence Level III*; Ruscin, J. M., & Linnebur, S. A. (2014). Drug-related problems in the elderly (Level VI ed.). Whitehouse Station, NJ: Merck Research Laboratories. *Evidence Level VI*; Salvi, F., Marchetti, A., D'Angelo, F., Boemi, M., Lattanzio, F., & Cherubini, A. (2012). Adverse drug events as a cause of hospitalization in older adults. *Drug Safety, 35*(1), 29–45. doi:10.1007/BF03319101. *Evidence Level I*; See "Resources."

TABLE 24.2

Potentially Harmful Drug–Drug Interactions

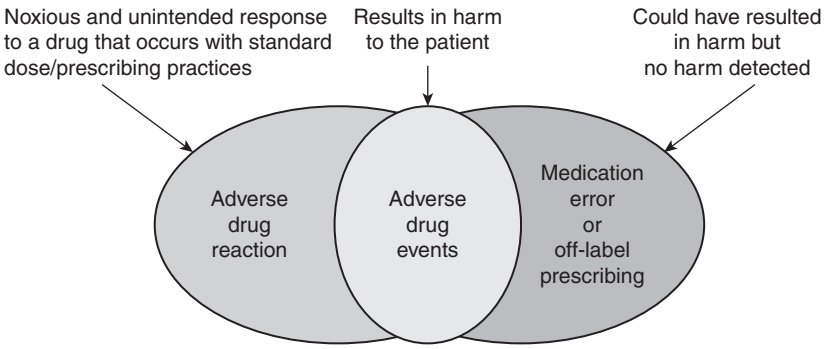
Drug Agent at Risk	Potentially Harmful Drug Interaction With (Example)
Angiotensin-converting enzyme (ACE) inhibitors (e.g., lisinopril)	Potassium-sparing diuretics (spironolactone)
ACE inhibitors (e.g., lisinopril) or angiotensin receptor blockers (losartan [Cozaar])	Sulfamethoxazole/trimethoprim (Septra DS or Bactrim)
Benzodiazepines (Ativan or Xanax) Zolpidem (Ambien)	Many interacting medications—not all inclusive: alcohol, CNS agents, antifungals (Ketoconazole), SSRIs (Paxil or Prozac), anticonvulsants, beta agonists, macrolides, h2 receptor agonists (cimetidine)
Calcium channel blocker Amlopidine (Norvasc)	Macrolide antibiotics Azithromycin (Zithromax); erythromycin
Digoxin	Macrolide antibiotic Azithromycin (Zithromax), erythromycin
Lithium	Loop diuretics or ACE inhibitors (Lasix or lisinopril, respectively)
Phenytoin (Dilantin)	Sulfamethoxazole/trimethoprim (Septra DS or Bactrim)
Sulfonyureas (glipizide, glyburide)	Antimicrobial agents (antibiotics)
Theophylline	Ciprofloxacin (Cipro)
Warfarin (Coumadin)	Antimicrobials (antibiotics) or NSAIDs (nonsteroidal anti-inflammatory drugs) (Aleve or ibuprofen)

CNS, central nervous system; SSRI, selective serotonin reuptake inhibitor.

Source: Hines, L. E., & Murphy, J. E. (2011). Potentially harmful drug–drug interactions in elderly: A review. *American Journal of Geriatric Pharmacotherapy, 9*(6), 364–377. doi:10.1016/j.amjopharm.2011.10.004. *Evidence Level V*, reprinted with permission. CNS, central nervous system; SSRI, selective serotonin reuptake inhibitor

FIGURE 24.1

Relationship Between ADEs and ADRs.



ADEs, adverse drug events; ADRs, adverse drug reactions.

Source: Nebeker, J. R., Barach, P., & Samore, M. H. (2004). Clarifying adverse drug events: A clinician's guide to terminology, documentation, and reporting. *Annals of Internal Medicine, 140*(10), 795–801. doi:10.7326/0003-4819-140-10-200405180-00009. *Evidence Level V*.

Medication Adherence

Medication adherence is "the process by which patients take their medication as prescribed" (Vrijens et al., 2012, p. 691). Specifically, adherence is composed of *initiation*—time when a patient takes his or her first dose of prescribed medication; *implementation*—extent to which actual dosing corresponds to the prescribed dosing regimen; and *discontinuation*—when the patient stops taking medication for any reason (Vrijens et al., 2012).

A systematic review performed on persons with diabetes showed adherence rates varying from 31% to 87%. Age is not a risk factor for medication nonadherence; however, chronic illness and taking multiple medications does increase risk (Phillips, Christenfeld, & Glynn, 1998). Medication adherence to high-risk older adults may be considered as the most likely to have difficulty, especially when considering multiple conditions, greater costs, and increase in medications prescribed.

Medication Errors

The National Coordinating Council for Medication Error Reporting and Prevention (n.d.-a) defines *medication errors* "as any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of a health care professional, patient, or consumer" (para. 2). A large percentage of errors are caused by incorrect medication administration and dose. Errors in time interval and incorrect medication assignment, along with negligence and prescribing errors, are also contributors. Emphasis and priority have been placed in healthcare policy reforms on improving the safety profile of healthcare delivery systems to reduce prescription errors (Aspden et al., 2007). Prescription errors commonly occur at hospital admission followed by other transitions in levels of care.

ASSESSMENT TOOLS AND INNOVATIVE STRATEGIES

Age-Friendly Health Systems

The Institute for Healthcare Improvement (IHI) has, in partnership with the John A. Hartford Foundation in New York City, taken on the bold challenge of creating age-friendly health systems in 20% of American health systems by 2020. This work, characterized as a social movement, aims to accelerate the quality and safety of care for older adults across the care continuum (Fulmer & Berman, 2016; Fulmer, Mate, & Berman, 2018). In creating a conceptual model, a team of experts have arrived at a patient model, referred to as the 4Ms. It is comprised of the following four areas: what *m*atters to the patient, *m*entation, *m*obility, and *m*edications. Together, they constitute the critical elements to be addressed when taking care of older adults. If any of the four Ms are not addressed appropriately, each and all are likely to have a cascading effect in a detrimental direction. Medication problems, for example, are likely to create problems within all areas of this model. By using the very best evidence from geriatric assessment literature, the friendly-age health systems initiative ensures approaches to care improvement are evidence based and reliably implemented.

Tools for Medication Assessment in Older Adults

Geriatric assessment tools are used to evaluate an older adult's ability to self-administer medications, including:

- Physical and cognitive functional capacity
- Review of the patient's medication list for potentially inappropriate medications (PIMs) that are indicated but underutilized
- MR/Evaluation for potential drug–drug or drug–disease interactions that assist in renal function assessments
- Encouraging the Brown Bag Method to augment reconciliation

Each of these methods should be patient/family-centered and include collaboration with interdisciplinary team members.

Beers Criteria

The Beers Criteria, also known as the Beers List, is a medication list compiled by the American Geriatrics Society of medications to generally avoid or use with caution in adults 65 years of age and older in view of potential harmful side effects and drug-to-drug interactions. The list comprises avoidance and adjustments of medications for older adults with kidney dysfunction and other specific health conditions outside of hospice and palliative care settings. Overall, the Beers Criteria is a tool that provides an essential starting point for discussion among medical providers, caregivers, and older adults (American Geriatrics Society, 2019).

STOPP and START

The **STOPP** criteria are intended to identify potentially inappropriate prescriptions (PIPs vs. PIMs) by physiological systems and include several more medications than the Beers Criteria (Hamilton et al., 2011). The prevalence of inappropriate medications in hospitalized older adults using this criterion was determined to be between 35% and 77% (Gallagher & O'Mahony, 2008; Hamilton et al., 2011).

The **START** criteria identify potential prescription omissions of medications that should be prescribed in hospitalized adults. According to the **START** criteria, 41.9% to 66% of hospitalized older adults experienced either undertreatment or omission of an appropriate medication (Lang et al., 2012). Overall, the **START** criteria are a vital tool in alerting doctors to the right treatment and recommend important medications for specific chronic conditions often omitted. The tool is intended to be used simultaneously with **STOPP** Criteria (Gallagher, O'Connor, & O'Mahony, 2011).

In a randomized controlled trial, the **STOPP** and **START** criteria were employed to identify PIPs and potentially omitted prescriptions (POPs) as determined by a pharmacist who made recommendations based on the criteria. Researchers reported a significant decrease in PIPs and POPs in the intervention group but not in the control group at the 6- to 12-month follow-up (Frankenthal, Lerman, Kalendaryev, & Lerman, 2014). The intervention group also showed a decline in falls and indicates how pharmacist–physician collaboration in using the **STOPP** and **START** criteria in older adults may aid in decreasing ADEs.

Recent updates to the START and STOP criteria include expansion and update for the purpose of minimizing inappropriate prescriptions and adding new evidence-based criteria in view of expanding therapeutics. They are as follows:

- New **STOPP** categories in antiplatelet/anticoagulants, drugs that affect/are affected by renal function, increase in anticholinergic burden, minimizing inappropriate prescribing. Overall, these new categories and updates assist in identifying PIMs and are more extensive than the Beers Criteria in identifying a greater number of older adults needing hospitalization because of ADEs (O'Mahony et al., 2015).
- New **START** categories in urogenital and analgesics and vaccines (O'Mahony et al., 2015).

Cockroft–Gault Formula

The Cockroft–Gault Formula is useful for estimating/predicting creatinine clearance based on age, weight, and serum creatinine levels (Terrell, Heard, & Miller, 2006). A creatinine clearance of less than 50 mL/min places older adults at risk for ADEs, and virtually all people over 70 have a creatinine clearance of less than 50. It is important to note this formula may estimate far higher creatinine levels in older adults than actual glomerular filtration rates, particularly those of lower weight (see Exhibit 24.1).

Brown Bag Method

The Brown Bag Method is used to assess all medications an older adult has at home, including prescriptions from all providers, and includes OTC medications and herbal remedies. All medications at home are placed in a bag and brought to the hospital/other care settings and

EXHIBIT 24.1

Cockroft–Gault Formula for Estimation of Creatinine Clearance (CrCl)

Formula for men:

$$\text{CrCl in milliliters per minute}^{a} = \frac{(140 - \text{age in years})(\text{weight in kilograms})}{72(\text{serum creatinine in milligrams per deciliter})}$$

Formula for women: Use formula for men and multiply by 0.85

[a] A creatinine clearance of less than 50 mL/min places older adults at risk of ADEs, and virtually all people older than 70 years have a creatinine clearance of less than 50.

ADEs, adverse drug events.

Source: Data from Fouts, M., Hanlon, J., Pieper, C., Perfetto, E., & Fernberg, J. (1997). Identification of elderly nursing facility residents at high risk for drug-related problems. *The Consultant Pharmacist: The Journal of the American Society of Consultant Pharmacists, 12*, 1103–1111. *Evidence Level VI.*

should be used in conjunction with a complete medication history (Nathan, Goodyer, Lovejoy, & Rashid, 1999). Implementation of the Brown Bag Method should follow a cohesive and action plan method for its effectiveness, since its use is usually varied. In a study of a small medical private practice and urban medical practice, MR was improved when action plans in regard to how to remind and tell patients what to bring before their appointments along with methods in praise and tracking progress were clearly defined (Weiss et al., 2016). Although the researchers suggest limitations due to a small sample, the significant improvements suggest action plans in larger settings could assist in improving MR (Weiss et al., 2016).

Drug Regimen Unassisted Grading Scale (DRUGS) Tool

This is a standardized method of assessing the ability of older adults managing their own medicine. It is comprised of four progressive tasks: identification, access, dosage, and timing. These progressive tasks are to be conducted for each individual medication (Edelberg, Shallenberger, & Wei, 1999).

INNOVATIVE ASSESSMENT STRATEGIES

Changes With Aging in Pharmacotherapy

Nurses and the interdisciplinary team must first be aware of aging changes in pharmacokinetics and pharmacodynamics when assessing medications in older adults (Steinman & Holmes, 2014). New research is directed at pharmacogenetics and pharmacogenomics with application to ADRs. Inter-individual variations of these genes may account for the differences observed in drug efficacy and appearance. The following describes aging changes:

- *Pharmacokinetics:* The time course of absorption, distribution across compartments, metabolism, and excretion of drugs in the body. As the body ages, the metabolism and excretion of many drugs decline, and physiological changes require dosage adjustment for some drugs. The vast majority of drugs are cleared either through liver or renal clearance (Steinman & Holmes, 2014).
- *Changes in drug absorption* (e.g., increased gastric pH and decreased gastrointestinal motility).
- *Drug distribution:* Includes decreased cardiac output, reduced total body water, decreased serum albumin (which is more likely to be related to malnutrition or acute illness than aging), and increased body fat. Changes in tissue or plasma binding can change the apparent volume of distribution determined from plasma concentration measurements. Older adults have a relative decrease in skeletal muscle mass and tend to have a smaller volume of distribution (Vd) such as Vd of digoxin, which binds to muscle proteins.
- *Reduced total body water:* Creates a potential for higher serum drug levels owing to low volume of distribution and occurs with water-soluble drugs (hydrophilic) such as alcohol or lithium. Decreased serum albumin results in higher unbound drug levels with protein-bound drugs such as warfarin, phenytoin, digoxin, and theophylline. Drugs that distribute in fat (e.g., diazepam) may thus have a larger volume of distribution. These lipophilic drugs (e.g., long-acting benzodiazepines [BZDs]) are stored in the body fat and slowly leech out, resulting in increased half-life, with the drug staying around longer (Salvi et al., 2012; Steinman & Holmes, 2014).

Strategies to Improve Medication Adherence in Older Adults

Although medication adherence has been well studied, there are few data on what specific interventions work to improve medication adherence (for more information, see the resource "Interventions to Improve Medication Adherence: A Review"). Various strategies can be used to assist in overcoming barriers to medication adherence. One of them requires healthcare providers to change how they think about and discuss medication use with patients. Posing open-ended questions such as "How many doses of your medication have you missed over the past week?" as opposed to closed-ended questions such as "Have you missed any doses of medication?" allows patients an opportunity to voice a concern. Using more open-ended questions and a nonjudgmental tone of voice can improve communication and allow for more information to be exchanged.

Identification of ADEs

ADRs in older adults often go unidentified because of their atypical presentation in older adults. Missed conventional symptoms of disease seen in younger persons (Steinman & Holmes, 2014), such as no pain with an acute abdomen, contribute to unidentified reactions. These changes are often a prodrome (symptom(s) indicative of an approaching disease) of an acute illness, especially in frail older adults. Symptoms may include a change in functional capacity, falls, vague cognitive changes, behavioral changes, appetite decrease, anorexia, or new onset incontinence (Steinman & Holmes, 2014). It is essential to take patients, family, and nonprofessional care provider reports of subtle symptoms seriously so they are not missed. Timely identification of acute illness with vague presentation enables early treatment of illness, resulting in reduced morbidity and mortality and an enhanced quality of life in older adults. Atypical presentation makes ADRs difficult to accurately identify; thus, nurses must be aware that ADRs may present atypically. One strategy for improving recognition of ADRs is to identify risk factors associated with ADRs. The most common risk factors include increasing age (age 85 years or older), multiple medical conditions, polypharmacy or multiple medications, and physical, cognitive, or functional impairment (Steinman & Holmes, 2014).

When a new symptom develops in a person taking multiple medications, the symptom must always be considered an ADE first, particularly in the frail hospitalized patient. Providers should evaluate the relationship between the new symptom and the most recent medication given to identify the potential cause. Inappropriate treatment of a new symptom may result in a prescribing cascade of multiple drug treatment and possibly an ADR (Petrovic et al., 2012; see Figure 24.2).

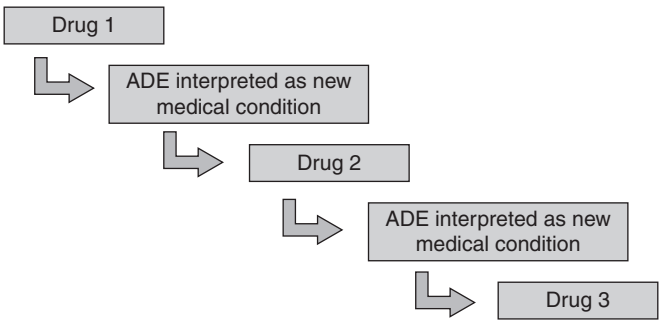
Also, in a systematic review, medication review reduced emergency department visits in older adults. Although more research is needed in the efficacy of medication review, the authors suggest medication review should be a part of regular geriatric care (Christensen & Lundh, 2016) and can assist in better identifying an ADE.

Over-the-Counter (OTC) Medications

Older adults are the largest consumers of OTC medications and dietary supplements which may lead to adverse drug-to-drug or drug–disease interaction

FIGURE 24.2

Prescribing cascade.



ADE, adverse drug event.

Source: Reproduced from Rochon, P. A., & Gurwitz, J. H. (1997). Optimising drug treatment for elderly people: The prescribing cascade. *BMJ*, *315*(7115), 1096–1099. doi:10.1136/bmj.315.7115.1096, with permission from BMJ Publishing Group Ltd.

and impaired cognition due to anticholinergic effects (Tachjian, Maria, & Jahangir, 2010). In a systemic review, herbal–drug interactions were found in St. John's wort, ginkgo, garlic, ginseng, and kava and suggests the need for further research on herbal–drug interactions (Izzo & Ernst, 2009). Furthermore, OTC medications with anticholinergic effects can cause impaired cognition and an adverse event, suggesting the need for increased communication and education among older adults and their medical team to reduce a potential adverse event (Holden et al., 2019).

In the United States, community-dwelling older adults take about as many OTC drugs as prescription drugs. In a study of 6,887 patients, self-medication represented about 4% of ADRs, with the remainder of ADRs found in prescribed OTCs (Schmiedl et al., 2014). The study also found women aged 70 to 79 and men aged 60 to 69 experienced an ADE related to self-medication. Of self-prescribed OTC medications, nonsteroidal anti-inflammatory drugs (NSAIDs) and acetylsalicylic acid (ASAs) were the most frequent ADRs causing GI complaints (Schmiedl et al., 2014).

The National Institute on Drug Abuse (NIDA) estimates that 19% of older adults misuse the combination of alcohol and medication (National Institute on Drug Abuse, 2014). Combination of these drugs with alcohol can worsen age-related renal insufficiencies, resulting in chronic salicylate intoxication due to its water solubility. Cold remedies, including those with alcohol, are significant sources of drug potentiation in aging adults. A history of alcohol consumption and OTC ingestion is important to determine drug interactions (National Institute on Drug Abuse, 2014).

Low-dose aspirin and NSAIDs are the most commonly linked OTCs to hospital admissions (Schmiedl et al., 2014). In a study evaluating concomitant use of prescriptions, OTCs and herbal remedies were found to have major interactions in the use of nonprescription therapies in more than half of a sample size of 1,000 older adults (Qato et al., 2008). Within these interactions, almost half involved the use of anticoagulants such as warfarin or antiplatelet agents such as aspirin, with common effects in men rather than women across all age groups. Drug-to-drug interactions increased with age due to nonprescription medications (Qato et al., 2008). Finally, although the FDA has been evaluating OTC ingredients and encouraging active labelling, it is yet to be seen if the FDA will be more specific on safety issues that relate to older adults. Healthcare providers need to specifically ask patients what OTC and herbal remedies they are taking and their frequency.

De-Prescribing

Falls, orthostatic hypotension, delirium, renal failure, and gastrointestinal and intracranial bleeding are the most common clinical problems in ADRs. Increased ADR risk is associated with age-related changes in pharmacokinetics and pharmacodynamics, increasing the burden of comorbidity, polypharmacy, inappropriate prescribing, and suboptimal monitoring of drugs. Prescribers and clinicians should regularly review medication efficacy and be vigilant for ADRs and their contributory risk factors. De-prescribing should occur at an individual level when drugs are no longer efficacious or beneficial or when safer alternatives exist. Inappropriate prescribing and unnecessary polypharmacy should be minimized. Comprehensive geriatric assessment (CGA) and the use of explicit prescribing criteria can be useful in this regard. The Garfinkel algorithm has been suggested as one such evidence-based approach to this end (Garfinkel, 2018; see Figure 24.3).

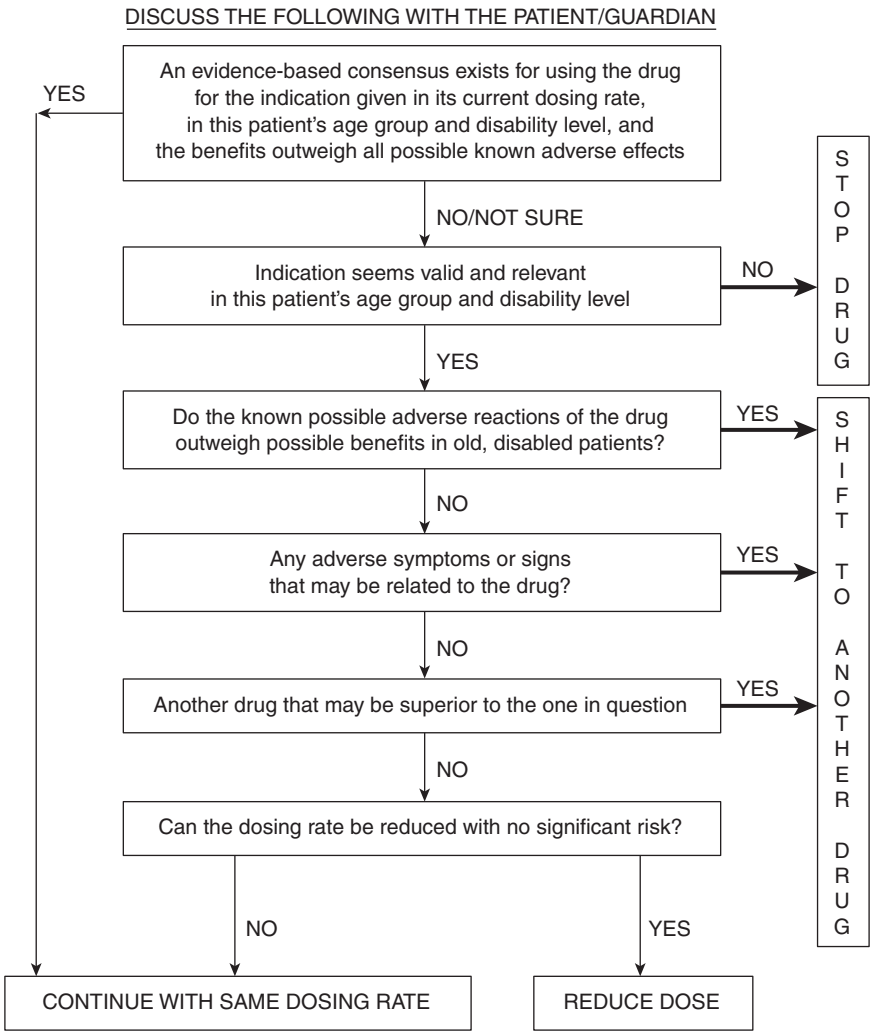
Many studies have revealed common high-risk medications in older adults. Four medications or medication classes were implicated alone or in combination in 67% of hospitalizations: warfarin (33.3%), insulin (13.9%), oral antiplatelet agents (13.3%), and oral hypoglycemic agents (10.7%; Budnitz et al., 2011). Although warfarin is deemed high risk, it is often underprescribed due to provider fear of bleeding; however, older patients often gain a greater absolute reduction in risk of stroke (Steinman, Handler, Gurwitz, Schiff, & Covinsky, 2011). Purposeful monitoring and special attention given to these medications can significantly reduce the risk of serious adverse effects.

Digoxin should also be closely monitored as one-third of all emergency department visits are digoxin-related ADEs (Salvi et al., 2012; Steinman & Hanlon, 2010). According to a systematic review, monitoring of high-risk medications is more likely to reduce ADEs (versus prescribing interventions) as providers can anticipate and address abnormal results immediately. Thus, proactive and appropriate monitoring is more likely than interventions to reduce ADEs. Other medications to monitor are BZDs, which are an independent risk factor for falls (Rochon, 2019). Prescription of OTC NSAIDs given with cardiac-dose ASA account for 30% of upper GI bleeding-related admissions.

According to the American Geriatric Society, it is now recommended that treatment with proton pump inhibitors (PPIs) be reserved for frequent symptoms or erosive esophagitis, with treatment being administered once a week for 8 weeks with morning meals. Maintenance therapy should be provided for long-term Barrett esophagitis

FIGURE 24.3

Improving drug therapy in elderly patients: The Garfinkel Algorithm.



Source: Garfinkel, D, Zur-Gil, S, & Ben-Israel, J. (2007). The war against polypharmacy: A new cost-effective geriatric-palliative approach for improving drug therapy in disabled elderly people. *Israel Medical Association Journal, 9*(6), 430–434. Retrieved from https://www.ima.org.il/MedicineIMAJ/viewarticle.aspx?year=2007&month=06&page=430

or erosive esophagitis. De-prescribing PPIs is now suggested for those who don't really need treatment, because long-term use may result in bone loss and/or fractures, pneumonia, and vitamin B deficiency.

Prevention of ADEs

It is prudent that healthcare team members are aware of the risk factors for ADEs in older adults and of which medications put older adults at high risk for adverse events. In a prospective observational study, Kongkaew et al. (2013) reported patient age, length of time since starting a new drug, total number of prescription drugs, and hospitalization were significantly associated with ADEs. The most common preventable ADEs were antiplatelet drugs, anticoagulants, diuretics (loop and thiazide diuretics), angiotensin-converting enzyme (ACE) inhibitors, and antiepileptic drugs (Kongkaew et al., 2013). Knowing and recognizing

these drug classes as being at high risk for ADEs support the importance of regular international normalized ratio (INR) monitoring and ongoing evaluation for anticoagulants or chemistry panels for diuretics to monitor electrolytes or potential orthostatic hypotension, particularly in frail older adults. In initiating ACE inhibitors, serum potassium and increasing creatinine levels need to be monitored closely. It is important for nurses to recognize that hypotension and/or hyponatremia can occur when a patient is dehydrated or volume depleted. Patients taking potassium-sparing diuretics may experience hypokalemia, even in the presence of loop diuretics. These high-risk drugs should be on the radar for potential ADEs for all providers (Kongkaew et al., 2013).

Comprehensive Geriatric Assessment

An accurate medication history must be obtained from each patient along with medication history validation. Ascertaining the amount and types of medication typically consumed, including OTC medications and herbal remedies, should be examined, along with estimation of how long each has been taken. The following medication history recommendations by FitzGerald (2009) are suggested to be used in conjunction with MR methods such as the Brown Bag Method:

- Currently prescribed drugs, doses, route of administration, frequency taken, and duration of treatment
- OTC drugs and herbal remedies
- Drugs taken in the recent past
- Previous drug hypersensitivity reaction and the nature (rash or anaphylaxis)
- Adherence to therapy (are you taking your medication regularly? How many pills did you miss this week/month?)
- Obtain up-to-date list from primary provider or pharmacy
- Check with pharmacy regarding prior ADRs and last order dates for each medication
- Inspect drugs and their container for name, dosage, and number of meds taken since dispensation

Also, a CGA is a more global and individualized assessment that ensures a specific plan for a patient (Petrovic et al., 2012). It should be conducted for each individual patient and repeated with any change in status as new symptoms develop. In a study of 746 patients receiving a CGA on admission, IADL dependency, malnutrition, acute kidney injury, and presence of pressure ulcers were found to be independent factors with in-hospital death (Avelino-Silva et al., 2014). However, it should be noted, of the 30 instruments developed to evaluate medication management ability, to date, research has not shown sufficient validity and reliability (Avelino-Silva et al., 2014). However, researchers report the DRUGS Tool and Medication Management Instrument for Deficiencies in older adults are the most promising (Brandt, Gruber-Baldini, & Orwig, 2006).

Questionnaires can assist in assessing potential adverse events and medication adherence. The Brief Medication Questionnaire is a self-report tool that identifies persons at risk for nonadherence (Svarstad, Chewning, Sleath, & Claesson, 1999) and has been validated in a wide range of disease states (Rogers et al., 2009). Likewise, The Morisky Medication Adherence Questionnaire was developed to identify adherence to antihypertensive medications and has good concurrent and predictive validity in low-income and minority patients as it determines patient willingness and ability to take oral medications (Morisky, Ang, Krousel-Wood, & Ward, 2008). A thorough medication review should be performed and include patient adherence variations with attention to OTC drugs and herbal remedies. The review should include a previous history of ADRs as this is a harbinger for future ADRs (Steinman et al., 2011).

Performing a systematic review of interventions using electronic reminders for patients to take medications yielded significant effects on patient adherence in seven of the eight studies reviewed (Vervloet et al., 2012). Of these, seven showed short-term effects in under 6 months of follow-up. Adherence was improved using short message service (SMS) reminders, including four studies using an electronic recording device and one pager reminder (Vervloet et al., 2012).

Medication Reconciliation

MR is the process by which the most accurate patient medication list possible is obtained and compared to physician medication orders throughout the continuum of healthcare services (IHI, 2011) The IHI recommends including the drug name, dose, frequency, and administration route. It should include OTC medications, herbal remedies, vaccinations, supplements, and vitamins. Unintentional medication discrepancies at the time of transitions occur commonly at the time of admission, during intrahospital transfer, and at discharge. About one-third of these discrepancies have the potential to cause patient discomfort or clinical deterioration. MR reduced discrepancies with a decrease in potential ADEs (Mueller, Sponsler, Kripalani, & Schnipper, 2012).

The process of MR has three steps:

- Verification—renewing the patient's medication history and developing an accurate list of medications

- Clarification—ensuring medication(s) and doses are appropriate along with an up-to-date medication list when medication(s) is ordered
- Reconciliation—identifying any discrepancies between medication orders and those on the patient's medication list along with appropriate changes to medication orders; and documenting any changes and communicating an updated medication list to the patient's next provider within or outside the hospital (Mueller et al., 2012).

Patients should also be provided with a written medication information list along with MR at the time of hospital discharge (Mueller et al., 2012). Finally, pharmacists are also optimal team members who can complete MR in the community setting or after discharge as a follow-up of discharge medications. In a systematic review and meta-analysis, the pharmacist's readmission rates reported in five and six cohorts demonstrated reduction in clinically relevant discrepancies in two studies (McNab et al., 2018). Of the 14 studies, no significant readmission rate was reported (McNab et al., 2018).

CASE STUDY 24.1

Medication Reconciliation

Mrs. J is an 80-year-old woman who has lived alone her entire life with regular visits from her daughter. She is admitted to an inpatient geriatric orthopedic unit. She reported to her daughter, who was visiting over the weekend, that she fell at home getting out of the bathroom. Her daughter took her to the hospital, and Mrs. J was diagnosed with intertrochanteric fracture with no other injury. Mrs. J is now being discharged to her home with her daughter's assistance. She has a home nurse coming to evaluate her needs at home and progress daily. She will receive needed equipment, which has already been delivered, have outpatient home visits by a nurse on a daily basis, and receive physical and occupational therapy and evaluations at home.

QUESTION 1

What Are the Most Important Next Steps?

A classic study found that nearly 20% of patients experience adverse events within 3 weeks of discharge, nearly three-quarters of which could have been prevented or ameliorated (Forster, Murff, Peterson, Gandhi, & Bates, 2003). ADEs are the most common postdischarge complication, with hospital-acquired infections and procedural complications also causing considerable morbidity (Forster et al., 2003). More subtle discharge hazards arise from the fact that nearly 40% of patients are discharged with pending test results, and a comparable proportion are discharged with a plan to complete outpatient workup. This places patients at risk, unless timely and complete follow-up is ensured. Nearly 20% of Medicare patients are hospitalized within 30 days of discharge. Minimizing postdischarge adverse events has become a priority for the U.S. healthcare system (Jencks, Williams, & Coleman, 2009).

QUESTION 2

What Should Be Completed Next?

Medication reconciliation (MR) should be performed and compared at each point during transitions in care such as primary provider office, hospital, long-term care, rehabilitation or subacute facilities, surgery, or other levels of care transition or transfer (e.g., between hospital units). MR includes three steps:

- **Verification** involves the collection of an accurate medication history from the patient, family, or other healthcare professionals involved in the patient's care.
- **Clarification** is ensuring medication(s) name, dosage, route, and time of administration are accurate.
- **Reconciliation** includes the documentation of any changes made to medication orders.

QUESTION 3

What Is the Most Important Step in Reconciliation?

Transmission is the final step, in which the updated medication list is communicated to the next care provider (IHI, 2011). MR reduced patients' ADEs caused by admission prescribing changes by 43% (Boockvar et al., 2011). A recent study reported a reduction in emergency admissions with MR; however, two review articles reported difficulties in effective MR using health IT and reported insufficient evidence to support its value (McKibbon et al., 2011).

See Resources: Medications at Transitions and Clinical Handoffs, MATCH

Monitoring for ADEs

Hospitalizations related to ADEs in U.S. older adults are more often related to drugs that require regular monitoring. Safety measures for monitoring high-risk medications such as warfarin, anticonvulsants, and digoxin have been endorsed by the National Quality Forum (Budnitz et al., 2011). 52% of ADE-related hospitalizations can be attributed to monitoring problems. ADEs due to errors in or lack of medication monitoring occur more frequently than prescribing errors in older adults recently discharged from the hospital and those in the community (Budnitz et al., 2011). Monitoring signs, symptoms, and laboratory parameters can determine whether an adverse event has only mild and short-term consequences or major long-term effects on morbidity and mortality (Steinman et al., 2011). Monitoring warfarin closely increases the benefit and decreases bleeding risk by increasing time in the therapeutic INR range. Ongoing monitoring with detection and mitigation of possible harms may improve the use of a very important medication often underprescribed in older adults (Steinman et al., 2011).

As an example, anticoagulants are most likely to cause harm to hospitalized patients because of a variety of factors, including complex dosing, the need for frequent monitoring, and transitions between parenterally and orally administered agents, such as in preparation for surgery or at the time of hospital discharge. Goals and strategies for improving anticoagulation management in inpatient settings have been identified and documented in the 2014 National Action Plan for Prevention of ADEs (see "Resources"). Furthermore, The Joint Commission (2019) identified the National Patient Safety Goal to reduce medication errors (omissions, duplications, dosing error, and drug interactions) by requiring MR at transitions from one level of care to another on admission and discharge.

Other strategies to improve monitoring include using health information technology to link laboratory data with pharmacies, delineation of risk, and patient outreach using a multidisciplinary team-based approach to patient management (direct patient contact and follow-up). Steinman et al. (2011) suggest initial prescribing requires that benefits and harms of drugs are actively monitored, managed, and reassessed over time. They also recommend the use of risk assessment tools. Those individuals predicted to be at risk should be followed with more intensive monitoring of medication regimens. Likewise, patient outreach and activation for lab follow-up is recommended to improve monitoring. Medication management led by pharmacists or nurses in contacting patients after beginning a drug requires that patients be asked about any side effects along with conducting target symptom assessment (Steinman et al., 2011). This would allow for efficient follow-up with the prescribing provider.

Computerized Provider Order Entry (CPOE)

Computerized Provider Order Entry (CPOE) has shown benefits and advantages over paper order writing. This method allows for similar drug names, drug interactions, and specific errors to be integrated into the patients' electronic medical and clinical record to support clinical decisions and ADE reporting. Furthermore, CPOE allows for expedited transmission of lab, pharmacy, and/or radiology results. A meta-analysis reported that the likelihood of prescribing errors decreased by 48% when CPOE was used rather than paper-based orders and reported to equal ~17.4 million medication error preventions in U.S. hospitals (Radley et al., 2013).

The Health Information Technology for Economic and Clinical Health Act (HITECH) was enacted in 2009 with the objective of improving overall health and patient care while decreasing errors and costs (Buntin, Burke, Hoaglin, & Blumenthal, 2011). Many criteria, such as electronic health record (EHR) use, had to be met prior to implementing CPOE and a Meaningful Use Program. Many CPOE systems include drug safety alerts that help to reduce prescribing errors and identify potential drug–drug interactions to improve patient safety. However, there are barriers to CPOE such as cost, efficiency and workflow, and lack of technical support, to name a few (Kruse, Regier, & Rheinboldt, 2014).

Formal surveillance systems and clinical pharmacists' involvement in patient care decision-making within multidisciplinary geriatric teams, in conjunction with CPOE, are likely to minimize ADR occurrences. In addition, several actions can be taken in hospitals to stimulate appropriate prescribing and to ensure adequate communication between primary care and hospital care. Use of team-based approaches to monitoring include:

- Pharmacist-based outreach programs
- Automated reminder calls to patients
- Provider computer alerts
- Collaborative agreements between physicians and pharmacists, in which physicians delegate test-ordering and prescribing authority to pharmacists
- Providing a legal mechanism for collaboration

Finally, engaging patients as active participants in monitoring use of systems that are acceptable to MR at admission and discharge to other levels of decision support in CPOEs can be a good tool to improve patient safety.

However, it is important to note that such methods may impair patient safety if poorly designed (Charles, Cannon, Hall, & Coustasse, 2014).

Evaluation and Management of Medication Adherence

Evaluation for adherence is very challenging as there is no gold standard other than observing a patient taking medication, which is typically not feasible. Managing patient adherence is a monitoring process that involves patients, providers, health systems, and their social networks (Vrijens et al., 2012). Research includes the following six measures for evaluating adherence: pharmacy refills, pill counts, electronic medication events monitoring systems (MEMS caps), biological measurements, self-reporting, and physician judgments. MEM devices contain a microprocessor inside a medication container that, when opened, activates an indication that a pill has been taken (Jansen & Brouwers, 2012). This recording can then be downloaded at an office visit. However, it is not a perfect measure as a patient may remove more than one medication at a time, thus not accurately representing the adherence with high costs, and frequent return visits too are limiting implementation (Jansen & Brouwers, 2012; Nieuwlaat et al., 2014).

In a systematic review, Viswanathan et al. (2012) reviewed medication adherence interventions in chronic disease. The study showed evidence for adherence improvement in diabetes using care coordination, behavioral support for hyperlipidemia, and a virtual clinic for osteoporosis. Improvement in health outcomes related to adherence in hypertension, depression, heart failure, and asthma were also reported with blister packs improving adherence for hypertension. It also showed reminder calls and pharmacist-led interventions aided in improving heart failure adherence. Case management and collaborative care enhanced antidepressant medication taking, while self-management and shared decision-making improved asthma treatment adherence (Viswanathan et al., 2012).

In another systematic review, financial incentives revealed an increase in adherence by a mean of 20% in 13 studies (Turner, Matthews, Linardatos, Tell, & Rosenthal, 2008). They also reported the following interventions improved adherence: reduced out-of-pocket costs, case management, and patient education. Other methods of monitoring adherence included self-reporting, questionnaires, interviews and/or logs, and simply asking patients and their families about problems or difficulties experienced with taking medications. Topinková, Baeyens, Michel, and Lang (2012) also reported that patient behavioral interventions showed a significant impact on adherence versus educational interventions (Topinková et al., 2012). E-prescribing is another intervention method used to improve medication adherence. In 2013, 92% of community pharmacies and 73% of office practices participated in some form of e-prescribing (Hubbard, O'Mahony, & Woodhouse, 2013) that allows pharmacist follow-up with patients when medications are not filled, which could lead to improvements in medication adherence. Furthermore, e-prescribing has been found to be increasingly expected by patients, with reports of better communication regarding use of medication between patient and provider (Schleiden, Odukoya, & Chui, 2015).

Reducing ADEs

There are three essential areas nurses must be vigilant toward in reducing ADEs: iatrogenic prevention including identification of system issues (avoiding interruptions during medication passing), monitoring potential inappropriate medications, and evaluating risk of nonadherence. Care should also focus on medication decisions from both the patient and his or her family (Dwamena et al., 2012) along with proper education on cultural competencies that may pose adverse medication effects. Likewise, nurses must take a collaborative, proactive, and interdisciplinary role with patients, patients' families, doctors, advance practice nurses, pharmacists, and any other care team member to prevent/reduce adverse medication outcomes.

A systemic review (Spinewine, Fialová, & Byrne, 2012) reported collaborative care by pharmacists and Geriatric Evaluation and Management (GEM) interdisciplinary teams improved appropriate use of medications during hospitalization admission and discharge, along with proactive medication review and education in patients over 70 years old. Also, similar research has shown that collaborative and proactive support among healthcare teams and geriatric medicine can improve proper medication taking in patients (Topinková et al., 2012).

The following outlines further interventions to reduce ADEs:

- Ask detailed questions about OTC medications/supplements, "recreational" drugs, alcohol use, and herbal or folk remedies. Provide a list of herbal remedies and folk medicines to choose from (Tachjian et al., 2010). Be specific about the actual amount and under what circumstances these substances are used. Accurate information can help explain symptoms that otherwise may not make sense.
- Evaluate for duplicate medications or medication classes that occur because of unrecognized trade names versus generic names, and OTCs with the same active ingredients in them, especially acetaminophens.

- Consider medications as the underlying cause when falls or other new symptoms occur.
- Consider recently added medications that are high risk for causing falls such as BZDs, diuretics, and psychotropics.
- Collaborate with the interdisciplinary team to effect change in reducing the numbers of ADEs and ADRs, many of which are preventable (Topinková et al., 2012). Consider an interdisciplinary approach including a medication care team (nurse, pharmacist, primary physician/nurse practitioner, social worker) with specific functions assigned to review medications at admission and discharge utilizing evidence-based recommendations. Discharge interventions may be performed by various team members (see Box 24.2).

BOX 24.2

Evidence-Based Interventions to Improve Adherence

Promising interventions to improve adherence and other key medicine-use outcomes, which require further investigation to be more certain of their effects, include:

- Simplified dosing regimens
- Interventions involving pharmacists in medicine management, for example, medicine reviews, pharmaceutical care services (consultation between pharmacist and patient to resolve medicine problems, develop a care plan, and provide follow-up)

Other strategies showed some positive effects, particularly relating to adherence and other outcomes, but their effects were less consistent overall and so need further study. These include:

- Delayed antibiotic prescriptions
- Practical strategies, such as reminders, cues, and/or organizers, reminder packaging, and material incentives
- Education delivered with self-management skills training, counseling, support, training, or enhanced follow-up; information and counseling delivered together; or education/information as part of pharmacist-delivered packages of care
- Financial incentives

Several strategies also showed promise in promoting immunization uptake, but require further study to be more certain of their effects. These include:

- Organizational interventions, reminders and recall, financial incentives, home visits, free vaccination, lay health worker interventions, and facilitators working with physicians to promote immunizations. Education and/or information strategies also showed some positive, but even less consistent, effects on immunizations
- Positive effects on adherence
- Positive effects on adherence and knowledge
- Effective in decreasing antibiotic use but with mixed effects on clinical outcomes, adverse effects, and satisfaction
- Positive, although somewhat mixed effects on adherence
- Positive effects on adherence, use of medicines, clinical outcomes, and knowledge, but with mixed effects in some studies
- Positive, but mixed, effects on adherence
- Needs further assessment of effectiveness and investigation of heterogeneity

There are many different potential pathways through which consumers' use of medicines could be targeted to improve outcomes, and simple interventions may be as effective as complex strategies. However, no single intervention was effective in improving all medicine-use outcomes across all diseases, medicines, populations, or settings.

Despite a doubling in the number of reviews included in this updated overview, uncertainty still exists about the effectiveness of many interventions, and the evidence on what works remains sparse for caregivers and people with multimorbidity.

Source: Data from Ryan, R., Santesso, N., Lowe, D., Hill, S., Grimshaw, J., Prictor, M., … Taylor, M. (2014). Interventions to improve safe and effective medicines use by consumers: An overview of systematic reviews. *The Cochrane Database of Systematic Reviews, 4*, CD007768. doi:10.1002/14651858.CD007768.pub3

Other recommendations for which to consider using an interdisciplinary approach include the following.

- *Reminder systems* may be instituted by pharmacists in collaboration with nurses that have been reported effective, particularly outreach to the patient at home for monitoring and follow-up of lab results (Steinman et al., 2011).
- *Pharmacist–physician or nurse collaboration* to review medication list at admission, when new medications are added, and prior to discharge for potential for drug–drug interactions, drug–disease interactions, and/or inappropriate medications. Monitoring and management of drug levels and medication changes in consultation with primary provider (preferably using

a computer-based program); see Chapter 9, Assessing Cognitive Function in the Older Adult, and Chapter 19, Late-Life Depression).

- *Assess abilities and limitations* such as functional ability, including the ability to read the medication label, to open the medication container, and consume or self-administer the prescribed medication as intended (Petrovic et al., 2012; see Chapter 10, Assessment of Physical Function in the Older Adult). The plan of care should address actual and potential problems and the need for reassessment at regular intervals and after major medical events (e.g., cerebrovascular accident or delirium).
- *Provide devices to accommodate impairments or barriers*. For example, tamperproof lids are often difficult for older adults to remove, particularly if there are arthritic changes. A simple request to the pharmacist to provide a nonchildproof lid may improve the safe and effective use of prescribed medication. Consult with occupational therapy for suggestions.
- *Assess health literacy*. Query whether the older person understands what the drug is to be used for, how often it is to be taken, circumstances of ingestion (e.g., with food), and other aspects of drug self-administration that signal intelligent drug use; use teach-back method to verify understanding.

SUMMARY

Finally, there is mounting evidence to reflect the impact and success of rigorous and reliable intervening models in the complex phenomena of ADEs. The age-friendly health system approach, as previously referenced along with efforts demonstrated by the NICHE, HELP, and ACE models, shows promising improvement when implemented reliably (Capezuti et al., 2012; Fulmer & Berman, 2016; Strijbos, Steunenberg, van der Mast, Inouye, & Schuurmans, 2013; Vollbrecht et al., 2015). Evaluations using a CGA may be helpful in simplifying drug prescriptions in older adults with complex medical problems and needs. It will also aid in prioritizing pharmacological and healthcare needs, resulting in an improvement in quality of prescribing. Prescriptions should be evaluated for benefit versus harm, choosing the safest and best medication for the individual. Prior to prescribing, providers should consider the individual's comorbidities such as liver or kidney disease or any other disease with possible drug interaction (Salvi et al., 2012). Likewise, consideration of life expectancy and health status should be evaluated in addition to the presence of frailty, which may increase the risk of ADEs and affect quality of life.

While many researchers have looked at reducing PIMs in research, the yield has been low. Computerized decision-support systems, pharmacist interventions, and CGA have shown more positive outcomes (Salvi et al., 2012). Nonpharmacological interventions, such as complementary and alternative medicine (CAM) therapies, are underutilized in healthcare and should be considered prior to prescribing or as an adjunctive therapy to prescribing.



NURSING STANDARD OF PRACTICE

Protocol 24.1: Reducing Adverse Drug Events in Older Adults

I. GOAL

To proactively identify older adults at risk for adverse drug events (ADEs).

Around 31% of all adverse events in hospitals are caused by medication-related problems. The use of prescription drugs has increased by 90% over the past 25 years with a consequent increase in ADEs reported to the FDA (National Center for Health Statistics [NCHS], 2012). ADEs, whether from drug–drug or drug–disease interactions, inappropriate prescribing, poor adherence, or medication errors, lead to serious or potentially fatal outcomes for older adults. Between 2004 and 2008, there was a 52% increase in the number of ADEs reported in U.S. hospitals (Lucado, Paez, & Elixhauser, 2008). In U.S. hospitals, ADEs increase costs to patients, healthcare expenditures, length of hospital stay, and morbidity and mortality, yet nearly half are likely preventable. Increase in ADEs has become common partly because of a considerable increase in prescription drug use. Analysis from NCHS reported that older adults taking five or more prescription drugs within a 30-day span increased by 28.4% between 1988 and 1994 and between 2013 and 2014 (National Center for Health Statistics, 2016–2017). Overall, ADEs continue to be a main priority in the U.S. healthcare system.

(*continued*)

Protocol 24.1: Reducing Adverse Drug Events in Older Adults (*continued*)

II. BACKGROUND

A. Definitions
   1. Adverse drug events (ADEs): Defined as an injury resulting from medical intervention related to a drug (Kohn et al., 2000). ADEs, compared with medication errors, are a more direct measure of patient harm.
   2. Medication errors: Refer to any "preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of a health care professional, patient, or consumer" (National Coordinating Council for Medication Error Reporting and Prevention, n.d.-a, para. 2).
   3. Adverse drug reaction: Any noxious or unintended and undesired effect of a drug that occurs at normal human doses for prophylaxis, diagnosis, or therapy. Inappropriate prescribing of high-risk medication to older adults and medication errors are all considered iatrogenic (World Health Organization, 1972). They are also preventable causes of harm to patients (Lavan & Gallagher, 2016).
   4. Drug–drug interactions: When one therapeutic agent alters either the concentration (pharmacokinetic interactions) or the biological effect of another agent or pharmacodynamic interactions (Levinson, 2018).
   5. Medication adherence: Defined as the extent to which a person's medication-taking behavior corresponds with agreed recommendations of a healthcare provider (Sabaté, 2003). It is also a two-way form of communication in which a patient and medical provider assume active roles in fulfilling the set therapeutic regimen (Lo et al., 2016).
   6. Drug–disease interactions: Undesired drug effects (exacerbation of a disease or condition caused by a drug) that occur in patients with certain disease states. Common drug–disease interaction is aspirin given in peptic ulcer disease and beta blockers given in diabetes (Salvi et al., 2012).
   7. Pharmacokinetics: The time course of absorption, distribution across compartments, metabolism, and excretion of drugs in the body. The metabolism and excretion of many drugs decrease, and the physiological changes of aging require dose adjustment for some drugs (Levinson, 2018; Steinman & Holmes, 2014).
   8. Pharmacodynamics: The response of the body to the drug that is affected by receptor binding, postreceptor effects, and chemical interactions. Pharmacodynamic problems occur when two drugs act at the same or interrelated receptor sites, resulting in additive, synergistic, or antagonistic effects. The effects of two or more drugs together can be either *additive* (combination of drugs "add up" to increase effect), *synergistic* (one agent magnifies the effect of the other), or *antagonistic* (one medication inhibits the effect of the other; Steinman & Holmes, 2014).
   9. Medication reconciliation: Defined by The Joint Commission (2010) as "the process of comparing the medications a patient is taking (and should be taking) with newly ordered medications" (p. 4). It is a process of comparing the patient's current medication regimen against the physician's admission, transfer, and/or discharge orders to identify discrepancies (The Joint Commission, 2010).

B. Epidemiology
   1. Older adults are the greatest consumers of medications, with older Americans taking three OTC medications and up to six or more prescription medications (Petrovic et al., 2012). Half of all prescriptions are prescribed to older adults, with those in office practices taking six or greater medications. Medicare patients (>65 y.o.) have the highest rates of ADEs, representing 75.3 per 10,000 discharges.
   2. Older adults experience a 10.7% prevalence rate of hospital admissions caused by ADRs; however, a confounding factor in the accuracy is the different methods and studies employed to gather the data (Kongkaew et al., 2013).

C. Etiology

Older adults, especially frail older adults, become increasingly susceptible to ADEs as they age (Hubbard et al., 2013). Physiological change and characteristics of aging predispose older adults to experience adverse events. ADEs increase the costs, length of hospital stay, and mortality yet often go unreported, and nearly half are likely preventable (Levinson, 2018; Salvi et al., 2012). Persons older than age 65 experience medication-related problems for five major reasons:

(*continued*)

Protocol 24.1: Reducing Adverse Drug Events in Older Adults (*continued*)

1. Age-related physiological changes that result in altered pharmacokinetics and pharmacodynamics (Levinson, 2018; Rochon, 2019; Steinman & Holmes, 2014)
2. Polypharmacy (multiple medications) that are often prescribed by multiple providers (Fulton & Riley Allen, 2005; Qato et al., 2016)
3. Therapeutic failures—over- or underdosing of medications (more than or less than a therapeutic dosage; Fillit et al., 2016; Marcum et al., 2012)
4. Medication consumption for the treatment of symptoms that are not disease dependent or specific self-medication and/or prescribing cascades (Rochon, 2019)
5. Iatrogenic causes such as:
   a. ADRs, including drug–drug or drug–disease interactions (Heuberger, 2012).
   b. Inappropriate prescribing for older adults (Hamilton et al., 2011).
   c. Problems with medication adherence (Lo et al., 2016; Marcum et al., 2012; Steinman & Hanlon, 2010; Steinman & Holmes, 2014).
   d. Medication errors (Charles et al., 2014; Steinman et al., 2011).

III. ASSESSMENT TOOLS AND STRATEGIES

A. Assessment Tools
1. Beers Criteria: American Geriatrics Society (2019) Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. Use to assess medication list for medications that should generally be avoided in older adults (American Geriatrics Society, 2019).
2. STOPP Criteria: Screening Tool of Older Persons—used to identify potentially inappropriate medications (Gallagher et al., 2011; Hamilton et al., 2011)
3. START Criteria: Screening Tools to Alert Doctors to the Right Treatment—use criteria to identify medications that are underutilized and potential prescription omissions (Gallagher et al., 2011; Lang et al., 2012).
4. Drug–Drug Interactions: Tables 24.1 and 24.2. Review list of common medications known to interact with other medications or using computer decision-support and computer drug–drug interaction alerts (Clyne, Bradley, Hughes, Fahey, & Lapane, 2012).
5. Cockroft–Gault Formula—Exhibit 24.1. Useful for estimating creatinine clearance based on age, weight, and serum creatinine levels (Terrell et al., 2006). A creatinine clearance of less than 50 mL/min places older adults at risk for ADEs (Fouts, Hanlon, Pieper, Perfetto, & Fernberg, 1997).
6. Brown Bag Method—used to assess all medications. Ask older adult to place all medications, OTCs, and herbal remedies in a bag and bring it to the hospital/other care setting to ensure med list is accurate (Nathan et al., 1999; Weiss et al., 2016).
7. Drug Regimen Unassisted Grading Scale (DRUGS) Tool—Used at transfer to other levels of care. Standardized method for assessing potential medication adherence problems. This requires a higher level of functioning (Edelberg et al., 1999; Hutchison, Jones, West, & Wei, 2006).
8. Functional capacity—Evaluate activities of daily living (ADL) and independent activities of daily living (IADL), Use Mini-Cog or Mini-Mental State Exam (MMSE) and evaluate ability to self-administer medications (see Chapter 9, Assessing Cognitive Function in the Older Adult and Chapter 10, Assessment of Physical Function in the Older Adult).

B. Assessment Strategies

See Figure 24.4.

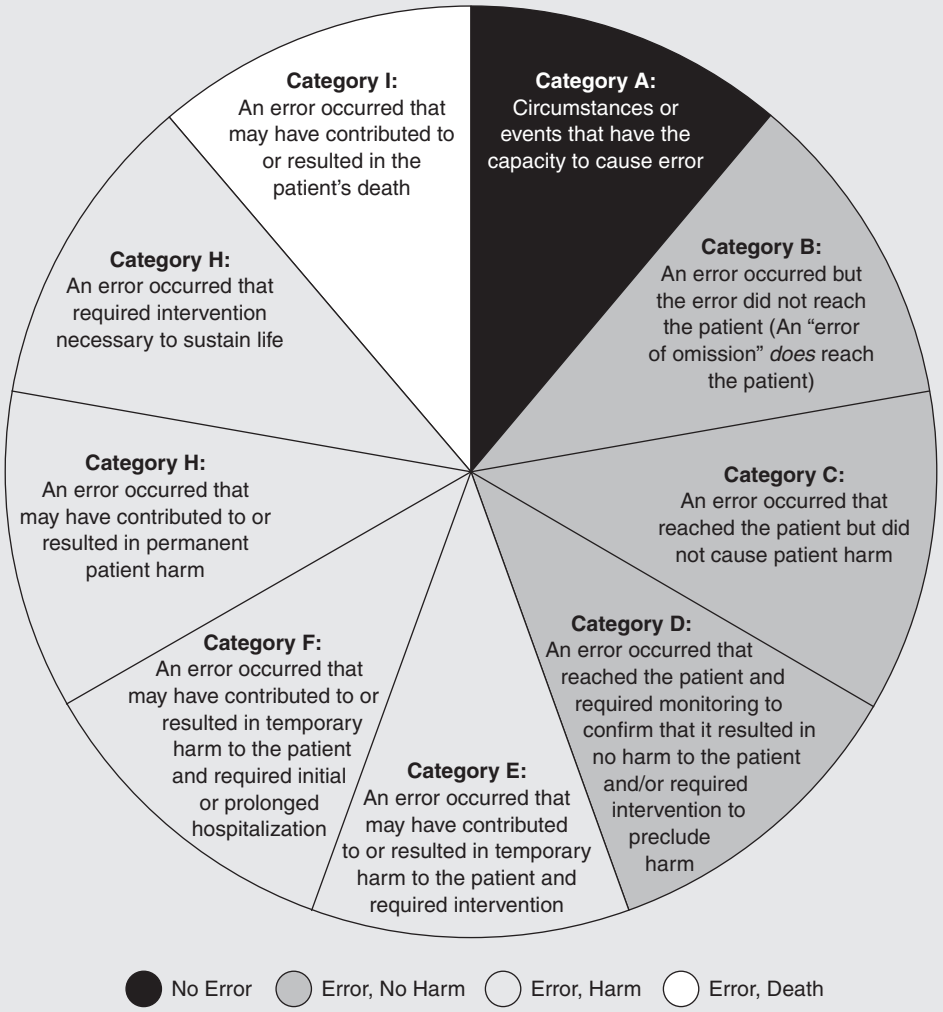
1. *Identify aging changes* in pharmacokinetics and pharmacodynamics when assessing medications in older adults (Levinson, 2018; Steinman & Holmes, 2014).

(*continued*)

Protocol 24.1: Reducing Adverse Drug Events in Older Adults (*continued*)

FIGURE 24.4

National Coordinating Council (NCC) for Medication Error Reporting and Prevention (MERP) index for categorizing medication errors.



Note: Harm, impairment of the physical, emotional, or psychological function or structure of the body and/or pain resulting therefrom; Monitoring, To observe or record relevant psychological signs; Intervention, May include change in therapy or active medical/surgical treatment; Intervention Necessary to Sustain Life, Includes cardiovascular and respiratory support (e.g., CPR, defibrillation, intubation, etc.)

Source: National Coordinating Council for Medication Error Reporting and Prevention. (n.d.-b). *Types of medication errors*. Retrieved from https://www.nccmerp.org/types-medication-errors.

(*continued*)

Protocol 24.1: Reducing Adverse Drug Events in Older Adults (*continued*)

2. *Perform a Comprehensive Geriatric Assessment:* Geriatric evaluation and management reduced inappropriate and unnecessary medications. A comprehensive assessment is important as it is a more global assessment that ensures a more specific plan for each single patient (Avelino-Silva et al., 2014; Petrovic et al., 2012).
3. Perform a comprehensive medication history (FitzGerald, 2009)
   a. Currently prescribed drugs, doses, route of administration, frequency taken, and duration of treatment
   b. Over-the-counter drugs and herbal remedies
   c. Drugs taken in the recent past
   d. Previous drug hypersensitivity reaction and the nature (rash or anaphylaxis)
   e. Previous adverse drug reactions and nature
   f. Adherence to therapy (what medications are you having difficulty with? Or how many pills have you missed this week/month?)
   g. Obtain up-to-date medication list from primary provider or pharmacy
   h. Check with pharmacy regarding prior ADRs and last order dates for each medication
   i. Inspect drugs and their container for name, dosage, and number of meds taken since dispensed
   j. The comprehensive medication assessment must include a formal evaluation of the ability to manage medications on an individual basis (Topinková et al., 2012). Perform at discharge and at times between transition between units
   k. Regular medication review to evaluate list for PIMs/PIPs (Beers Criteria and STOPP Criteria); consider drugs to discontinue (Gallagher et al., 2011).
4. Evaluate for patient-related and medication-related risk factors for ADRs (see Box 24.1).
5. Perform medication reconciliation at admission, discharge, transfers, and transitions to other levels of care in consultation with a pharmacist, geriatric expert, or computer-based program (Frankenthal et al., 2014).
6. At discharge from hospital, use appropriate tools to assess individual's ability to self-administer medications (Ho, Bryson, & Rumsfeld, 2009).

V. INTERVENTIONS AND NURSING CARE STRATEGIES

A. Reducing ADEs (during and post hospitalization)
   1. Patient/Family-centered care and decision-making include collaboration with interdisciplinary team members. Patients should be given the necessary information and the opportunity to exercise the degree of control they choose over healthcare decisions that affect them. Patients involved in decision-making are less likely to make decisions that may lead to ADRs, such as abruptly discontinuing a medication that should be tapered off (Parchman, Zeber, & Palmer, 2010).
   2. Comprehensive Geriatric Prescribing:
      a. *Evaluate prescriptions* for benefit versus harm.
      b. *Choose the safest* and best medication for the individual based on geriatric assessment and goals of care.
      c. *Prior to prescribing*, consider the individual's comorbidities such as liver or kidney disease or a disease that may interact with a drug (Salvi et al., 2012).
      d. *Prescribing principles*. Although bedside nurses are not involved in prescribing, they are involved in reviewing and signing off medications, and thus should be aware of prescribing principles.
      e. *Monitoring for appropriate prescribing* and alerting the prescriber to potential problem areas; monitoring for and reporting lab/drug levels to primary provider; monitoring for toxicity and medication effectiveness; and seeking consultation when necessary (Rochon, 2019).
         i. *Reduce the dose.* "Start low and go slow," providing the lowest possible dose and slow upward titration to obtain clinical benefit; many ADEs are dose related (Rochon, 2019). Primary provider should be notified if the dosage ordered is higher than the recommended starting dose (e.g., digoxin maximum dose less than 0.125 mg for treatment of *systolic* heart failure).

(*continued*)

Protocol 24.1: Reducing Adverse Drug Events in Older Adults (*continued*)

ii. *Discontinue unnecessary therapy*. Prescribers are often reluctant to stop medications, especially if they did not initiate the treatment. This practice increases the risk for an adverse event (Rochon, 2019; e.g., therapeutic activity kit for agitation).
iii. *Recommend safer drugs*. Avoid drugs that are likely to be associated with adverse outcomes (review Beers Criteria).
iv. *Assess renal function* using the Cockroft–Gault formula (for renally cleared drugs) to determine accurate dosage prior to prescribing, such as for many routinely prescribed intravenous (IV) antibiotics. Dosage recommendations are available based on this formula and are presented in common prescribing resources.
v. *Optimize drug regimen*. When prescribing medications, focus on risk versus benefit where the expected health benefit (e.g., relief of agitation in dementia with psychosis) exceeds the expected negative consequences (e.g., morbidity and mortality from falls that result in hip fracture).

f. *Initiation of new medication*. Assess risk factors for ADRs, potential drug–disease and drug–drug interactions, correct drug dosages, and follow-up to evaluate response to new medication.
g. *Avoid the prescribing cascade*. Avoid the prescribing cascade by *first* considering any new symptom as being an adverse effect of a current medication prior to adding a new medication.
h. *Avoid inappropriate medications*. Review Beers and STOPP criteria for PIMs, drug–disease interactions, and potential drug–drug interactions (see AGS website in references).
i. *Evaluate for patient concern regarding difficulties in adherence to medication* (Steinman & Hanlon, 2010).

B. Computerized Order Entry and Decision-Support Systems
1. Monitor and attend to alerts for potential drug–drug interactions
2. Pharmacist-based support of CPOE and electronic prescriptions direct to pharmacy
3. Reminder systems for monitoring (Charles et al., 2014)

C. Monitoring (Steinman et al., 2011)
1. Evaluate patient for adverse effects and efficacy after a new medication is started.
2. Educate patients about anticipated benefits and potential problems associated with a new drug. Partner with the patient to actively engage as a partner to assess drug effectiveness, adherence, and adverse effects. Partner with the patient to actively engage as a partner to assess drug effectiveness, adherence, and adverse, especially with patients taking drugs with narrow therapeutic ranges.
3. Report questionable dosing amounts or schedule and medication allergy prior to medication administration. (See also Documentation of Drug Allergies post hospital.)
4. Monitor for drug interactions and inform primary provider of new or recent medications that may be related to the cause.
5. Use health information technology (HIT) to monitor labs where available, for example, lab tracing systems.
6. Use team-based approaches to monitor medications.
7. Risk assessment tools—individualize monitoring based on individual risk.
8. Report generated when lab tests are not performed with follow-up mechanism.
9. Policy standards that mandate ability to track and report overdue lab tests easily.

V. EXPECTED OUTCOMES

A. Patients will:
1. Experience fewer adverse outcomes from medication-related events.
2. Demonstrate understanding of their medication regimens upon discharge from the hospital and keep an updated medication list.
3. Become active members of medication decision-making and monitoring.

B. Healthcare providers will:
1. Use a range of interventions to prevent, alleviate, or ameliorate medication problems with older adults, including nonpharmacological and complementary therapies.

(*continued*)

Protocol 24.1: Reducing Adverse Drug Events in Older Adults (*continued*)

2. Improve prescribing practices by documenting indications for initiation of new drug therapy, maintaining a current medication list, and documenting response to therapy as well as the need for ongoing treatment and follow-up monitoring.
3. Evaluate nature and origins of medication-related problems in a timely manner.
4. Increase their knowledge about medication safety in older adults.
5. Increase referrals to appropriate practitioners for collaboration and medication safety (e.g., pharmacist, geriatrician, geriatric/gerontological, or psychiatric clinical nurse specialist, nurse practitioner, or consultation-liaison service, social worker, case manager, or interdisciplinary team).

C. Institution will:
1. Provide a culture of safety that encourages safe medication practices.
2. Provide education to healthcare providers regarding prevention, identification, and reporting of ADRs.
3. Make information on ADRs accessible to patients.
4. Enhance surveillance and reporting of ADRs using a national surveillance system. Consider use of computerized physician order entry system and drug interaction software.
5. Track and report morbidity and mortality related to medication problem.
6. Provide a system for medication reconciliation, and follow up its effectiveness regarding rehospitalization rates caused by ADRs.
7. Review for careful documentation of iatrogenic medication and other iatrogenic events for continuous quality improvement (CQI).
8. Provide ongoing education related to safe medication management for physicians, other licensed independent providers, pharmacists, and nursing staff.

VI. FOLLOW-UP

A. Healthcare providers will:
1. Provide consistent and appropriate care and follow-up in the presence of a medication-related problem.
2. Monitor and evaluate with physical exam and/or laboratory tests (as appropriate) on a regular basis to ensure that the older adult is responding to therapy as expected.
3. Review the medications list, including OTC and herbal remedies, regularly and reconcile medications at transitions in care.
4. Monitor high-risk medications more frequently for potential adverse events.

B. Institutions will:
1. Provide ongoing assessment of staff competence in assessing and intervening for prevention of ADEs.
2. Embed reduction of ADEs in the institution's culture of safety.

VII. RELEVANT PRACTICE GUIDELINES

Medications at Transitions and Clinical Handoffs (MATCH) Toolkit for Reconciliation. (Agency for Healthcare Research and Quality (2012). *Medications at transitions and clinical handoffs (MATCH) toolkit for reconciliation* [AHRQ Publication No 11(12)-0059]. Rockville, MD. Retrieved from https://www.ahrq.gov/patient-safety/resources/match/index.html

ABBREVIATIONS

ADE	Adverse drug event
ADL	Activities of daily living
ADR	Adverse drug reactions
CPOE	Computerized Provider Order Entry
CPR	Cardiopulmonary resuscitation
CQI	Continuous quality improvement

(*continued*)

Protocol 24.1: Reducing Adverse Drug Events in Older Adults (*continued*)

DRUGS	Drug Regimen Unassisted Grading Scale
FDA	U.S. Food and Drug Administration
HIT	Health information technology
IADL	Instrumental activities of daily living
INR	International normalized ratio
IV	Intravenous
MATCH	Medications at transitions and clinical handoffs
MERP	Medication Error Reporting and Prevention
MMSE	Mini-Mental State Exam
NCC	National Coordinating Council
NCHS	National Center for Health Statistics
OTC	Over-the-counter
PIMs	Potentially inappropriate medications
PIPs	Potentially inappropriate prescriptions
WHO	World Health Organization

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RESOURCES

ASHP Guidelines on Medication Errors
https://www.ashp.org/news/2018/10/02/ashp-publishes-guidelines-on-preventing-medication-errors
https://academic.oup.com/ajhp/article-abstract/75/19/1493/5139896?redirectedFrom=fulltext

CDC: Adverse Drug Events
http://www.cdc.gov/MedicationSafety/program_focus_activities.html

Drugs With Potentially Serious Drug–Drug Interactions
http://www.merckmanuals.com/professional/clinical_pharmacology/factors_affecting_response_to_drugs/drug_interactions.html#v1108519

FDA: Medication Errors and Safety
http://www.fda.gov/Drugs/DrugSafety/MedicationErrors/default.htm

Institute for Safe Medication Practices
Offers webinars, lectures, and other programs related to safe medication practice, including reducing errors and identifying high-risk abbreviations. www.ismp.org

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Urinary Incontinence in the Older Adult*

Annemarie Dowling-Castronovo, Joanna Long, and Christine Bradway

25

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Discuss transient and established etiologies of urinary incontinence (UI).
2. Describe the core components of a nursing assessment for UI in older adults.
3. Discuss the importance of nurse collaboration within the interprofessional team in an effort to best assess, treat, manage, and document the type of UI.
4. Develop an individualized plan of care for an older adult with UI.

OVERVIEW

Despite evidence supporting UI management strategies (DuBeau, Kuchel, Johnson, Palmer, & Wagg, 2010; Fantl et al., 1996; Qaseem et al., 2014), nursing staff and laypersons often solely use containment strategies, such as adult briefs or other absorbent products, to manage UI (Meng, Busby-Whitehead, & Palmer, 2016). Individuals with UI believe that UI is a normal consequence of aging (Bush, Castellucci, & Phillips, 2001; Dowd, 1991; Kinchen et al., 2003; Milne, 2000; Mitteness, 1987a, 1987b; Strickland, 2014) and feel that UI is a personal problem that is difficult to discuss (Bush et al., 2001). Evidence suggests that persons with UI prefer self-help strategies, including containment, rather than seeking professional advice (Milne, 2000; Park, Yeoum, Kim, & Kwon, 2017) and that personal care strategies are often the result of information gained through lay media and personal contacts, not necessarily from healthcare professionals (Cochran, 2000; Miller, Brown, Smith, & Chiarelli, 2003; Milne, 2000; Park et al., 2017). However, patients also express a desire for help from nurses to control UI (Dowling-Castronovo, 2014; Gibson, Thomas, Harrison, & Watkins, 2018; Kohler, Mayer, Kesselring, & Saxer, 2018; Meng et al., 2016). Nurses should be empathetic "managers" of UI (Dowling-Castronovo, 2014; Kohler et al., 2018).

BACKGROUND AND STATEMENT OF PROBLEM

UI is defined as the complaint of involuntary urine loss (Abrams et al., 2003; Haylen et al., 2010) or involuntary loss of urine sufficient to be a problem (Fantl et al., 1996; National Association for Continence, 1998). Although UI should not be considered an inevitable consequence of aging, UI is more common among older adults (da Silva, Soler, & Wysocki, 2017; Erekson, Cogn, Townsend, & Ciarleglio, 2016; B. Hodgkinson, Synnott, Josephs, Leira, & Hegney, 2008; Holroyd-Leduc, Mehta, & Covinsky, 2004; Shamliyan, Wyman, Bliss, Kane, & Wilt, 2007; Jimenez-Cidre et al., 2014). Incidence and prevalence

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

rates of UI must be viewed cautiously. Numerous factors, such as underreporting and underassessment of UI (Milne, 2000; Park et al., 2017), variable or poorly articulated UI definitions (Abrams et al., 2003; Homma, 2008; Palmer, 1988), and a wide variety of measurements used to assess UI, some without age-standardization (Milsom et al., 2014), affect the accuracy of these rates. Nevertheless, it is important to understand how common UI is across healthcare settings.

In different healthcare settings across the globe, prevalence rates range between 5% and 70%, with most reporting between 25% and 45%. Prevalence estimates are lowest in the Asian population, ranging between 1.5% and 15.2%; whereas estimates for European and American populations are between 1.8% and 30.5% and 1.7% and 36.4%, respectively (Milsom et al., 2014). In the United States, more than 33 million individuals report some type of UI or bladder condition (https://www.nafc.org/urinary-incontinence). In comparison to acute care settings, UI has been studied more in older adult populations living in the community or long-term care settings. Among community-dwelling adults, the prevalence of UI ranges from 8% to 46% (Du Moulin, Hamers, Ambergen, Janssen, & Halfens, 2008; Erekson et al., 2016; Gorina, Schappert, Bercovitz, Elgaddal, & Kramarow 2014; Kwong et al., 2010; Lee, Cigolle, & Blaum, 2009; Sims, Browning, Lundgren-Lindquist, & Kendig, 2011); 37% of those living in residential care facilities; 40% of those receiving home care services; more than a third of short-term nursing home residents; and close to 75% of long-term NH residents have UI (Gorina et al., 2014). In acute care, 10% to 42% of older adults suffer from UI on admission (Dowd & Campbell, 1995; Fantl et al., 1996; McDowell et al., 1999; Palmer, Bone, Fahey, Mamon, & Steinwachs, 1992; Schultz, Dickey, & Skoner, 1997), and 12% to 36% develop UI during a hospital stay (e.g., new-onset UI, meaning that these individuals were continent on hospital admission; Kresevic, 1997; Palmer, Baumgarten, Langenberg, & Carson, 2002; Palmer, Myers, & Fedenko, 1997; Sier, Ouslander, & Orzeck, 1987; Zisberg, 2011). For medically complex vulnerable elderly, the annual prevalence of UI ranges from 35.8% to 38.6% (Luo et al., 2015).

In addition to being a common geriatric syndrome, UI significantly affects health-related quality of life (HRQOL; DuBeau, Simon, & Morris, 2006; Dugger, 2010; Goksin & Asiret, 2018; Hamid, Pakgohar, Ibrahim, & Dastjerdi, 2015; Kwong et al., 2010; Shumaker, Wyman, Uebersax, McClish, & Fantl, 1994). The consequences of UI may be characterized physically, psychosocially, and economically. For example, an episode of urge UI occurring once weekly, or more frequently, has been associated with falls or fracture in adults (Brown, Sawaya, Thom, & Grady, 2000; Chiarelli, Mackenzie, & Osmotherly, 2009; Hasegawa, Kuzuya, & Iguchi, 2010; Luo et al., 2015; Noguchi, Chan, Cumming, Blyth, & Naganathan, 2016). Other physical consequences associated with UI include skin irritations or infections, urinary tract infections (UTIs), bloodstream infections, pressure ulcers, and limitation of functional status (Fantl et al., 1996; Luo et al., 2015).

UI is associated with psychological distress (Bogner et al., 2002; de Vries, Northington, & Bogner, 2012), including depression, poor self-rated health, decreased quality of sexuality, social isolation, and condition-specific functional loss (Bogner et al., 2002; Fantl et al., 1996; Luo et al., 2015; Meng et al., 2016; Sims et al., 2011; Yilmaz, Kumsar, Demirel, & Yesildag, 2016). Post-stroke, UI is a risk factor for poor outcomes (Arkan, Beser & Ozturk, 2018; John, Primmaz, Crichton, & Wolfe, 2018; Pettersen, Saxby, & Wyller, 2007). Via an international survey, those with increased daily episodes of UI (mean age 54; majority female) experienced less employment (Jimenez-Cidre et al., 2014), which may affect healthy aging. An emerging focus of interprofessional scholarship addresses the relationships among common geriatric syndromes: sleep disturbances, impaired mobility, and impaired cognition and UI (Vaughan et al., 2018). Therefore, it is essential that nurses assess and treat UI when addressing other coexisting health problems, such as depression or falls.

Although there is conflicting evidence regarding the role of UI as a predictor for nursing home placement, UI has been identified as a marker of frailty in community-dwelling older adults (Engberg & Li, 2017; Holroyd-Leduc et al., 2004) and a predictor of 1-year mortality among older adults hospitalized for an acute myocardial infarction (Krumholz, Chen, Chen, Wang, & Radford, 2001). Furthermore, UI is associated with a 24% increase in all-cause mortality in older adults living in long-term care facilities (Damián, Pastor-Barriuso, García López, & de Pedro-Cuesta, 2016).

The negative psychosocial impact of UI is not limited to the individual, but includes family caregivers (CGs; Brittain & Shaw, 2007; Cassells & Watt, 2003; Gotoh et al., 2009; Jansen, McWilliam, Forbes, & Forchuk, 2013). Economically, varied study methods estimate the cost for all incontinent individuals to be in the billions among developed nations (Landefeld et al., 2008; Milsom et al., 2014; Wilson, Brown, Shin, Luc, & Subak, 2001). Estimates of costs varied with inclusion of absorbent products, provider visits, diagnostic testing, treatments, and time lost from work.

Nurses in all settings are in a key position to identify and manage UI, a quality indicator (Donald et al., 2013; Wenger et al., 2011). For example, UI is a known hazard of hospitalization, but is amenable to improvement through education of hospital staff (Wilkerson, Iwata, Wilkerson, & Heflin, 2014). This chapter reviews the etiologies and consequences of UI, with emphasis on the most common types of UI encountered among older adults. Assessment parameters and care strategies for UI are highlighted, and a nursing standard-of-practice protocol focused on comprehensive assessment and management of UI for older adults is included. This chapter will not focus on surgical options (Gomelsky et al., 2019).

ASSESSMENT OF UI

Adverse physiological consequences of UI that have been known for some time include an increased potential for UTIs and indwelling urinary catheter use, dermatitis, skin infections, and pressure ulcers (Sier et al., 1987). In addition, UI that results in functional decline predisposes older individuals to complications associated with bed rest and immobility (Harper & Lyles, 1988).

Etiologies of UI

For a comprehensive review, Gray (2000) provided a detailed analysis of voiding physiology. However, the body of evidence about the pathophysiology of UI continues to develop. Continence is a complex, multidimensional phenomenon influenced by anatomical, physiological, psychological, and cultural factors (Gray, 2000). Thus, continence requires intact lower urinary tract function, as well as cognitive and functional ability to recognize voiding signals and use a toilet or commode, the motivation to maintain continence, and an environment that facilitates the process (Barrie, 2016; Jirovec, Brink, & Wells, 1988). Physiologically, continence is a result of urethral pressure being equal to or greater than bladder pressure (C. P. Hodgkinson, 1965), of which angulation of the urethra, supported by pelvic muscles, plays a role (DeLancey, 1994, 2010). Using transperineal ultrasound, urethral changes were noted among women (mean age 60.4, range 19–89) with UI, but did not differentiate between subtypes of UI (Kupec et al., 2016). Continence also requires the ability to suppress autocontractility of the detrusor muscle (C. P. Hodgkinson, 1965). Micturition (urination) involves voluntary as well as reflexive control of the bladder, urethra, detrusor muscle, and urethral sphincter. When the bladder volume reaches approximately 400 mL, stretch receptors in the bladder wall send a message to the brain, and an impulse for voiding is sent back to the bladder. The detrusor muscle then contracts, and the urethral sphincter relaxes to allow urination (Gray, Rayome, & Moore, 1995). Normally, the micturition reflex can be voluntarily inhibited (at least for a time) until an individual desires to void or finds an appropriate place for voiding. UI occurs as the result of a disruption at any point during this process. Some evidence suggests that among older women with UI, the autonomic nervous system is impaired (Padilha et al., 2017). In addition, a study of 40 older women, with and without UI, noted morphometric differences in pelvic floor muscles among those with UI (Fradet, Morin, Kruger, & Dumoulin, 2018). Common age-associated changes, including a decrease in bladder capacity, benign prostatic hyperplasia (BPH), and menopausal loss of estrogen, can affect lower urinary tract function and predispose older individuals to UI (Bradway & Yetman, 2002). Despite these aging changes, UI is not considered a normal consequence of aging.

The two major types of UI are transient (or acute/reversible) and established (or chronic/persistent; Ermer-Seltun, 2006; Newman & Wein, 2009). Transient UI is characterized by the sudden onset of potentially reversible symptoms and typically has a duration of less than 6 months (Specht, 2005). There may be cases of acute UI that do not resolve, as in the case of acute UI caused by a spinal cord injury that then becomes an established UI. Causes of transient UI include delirium, infections (e.g., untreated UTI), decrease in mobility or function, excessive urine production, restricted mobility, and stool impaction or constipation (e.g., creates additional pressure on the bladder and can cause urinary urgency, frequency, and UI). Hospitalized older adults are at risk for developing transient UI. In the literature, these cases have been referred to as new-onset UI, hospital nosocomial, and hospital acquired (Ding & Jayaratnam, 1994; Kresevic, 1997; Paillard & Resnick, 1981; Palmer et al., 1997, 2002). Complicated by shorter hospital stays, older adults may also be at risk for being discharged without resolution of transient UI and, thus, urine leakage persists and may become established UI. However, transient UI is often preventable, or at least reversible (e.g., transient UI precipitated by a UTI that resolves with successful treatment, or acute UI related to diuretic therapy for heart failure exacerbation), if the underlying cause of the UI is identified and treated (Ding & Jayaratnam, 1994; Fantl et al., 1996; Palmer, 1996).

Established UI has either a sudden or a gradual onset; however, healthcare providers or family CGs may first

identify UI during the course of an acute illness, hospitalization, or abrupt change in environment or daily routine (Palmer, 1996). Types of established UI include stress, urge, mixed, overflow, and functional UI.

Stress UI is defined as an involuntary loss of urine associated with activities that increase intra-abdominal pressure. Symptomatically, individuals with stress UI usually present with complaints of small amounts of daytime urine loss that occurs during physical effort or exertion (e.g., position change, coughing, sneezing) that result in increased intra-abdominal pressure. Stress UI is more common in women; however, stress UI may also occur postprostatectomy (Abrams et al., 2003; Fantl et al., 1996; Hunter, Moore, Cody, & Glazener, 2004; Jayasekara, 2009).

Urge UI results from detrusor instability and is characterized by an involuntary urine loss associated with a strong desire to void (urgency; Haylen et al., 2010). Individuals with urge UI often complain of being unable to hold the urge to urinate and leak on the way to the bathroom. This history is most helpful to the identification of urge UI (Holroyd-Leduc, Tannenbaum, Thorpe, & Straus, 2008). In addition to urinary urgency, signs and symptoms of urge UI most often include urinary frequency, nocturia and enuresis, and UI of moderate to large amounts. Bladder changes common in aging make older adults particularly prone to this type of UI (Abrams et al., 2003; Fantl et al., 1996; Jayasekara, 2009). Individuals with overactive bladder (OAB) may complain of urgency, with or without UI, as well as urinary frequency and nocturia (Haylen et al., 2010). Assessment should focus on pathological or metabolic conditions that may explain these symptoms (Abrams et al., 2003).

Mixed UI is defined as involuntary urine loss as a result of both increased intra-abdominal pressure and detrusor instability (Fantl et al., 1996; Jayasekara, 2009). On history, individuals describe symptoms of stress UI in combination with symptoms of urge UI and OAB.

Overflow UI is an involuntary loss of urine associated with overdistention of the bladder, and may be caused by an underactive detrusor muscle or outlet obstruction leading to overdistention of the bladder and leakage of urine. Individuals with overflow UI often describe dribbling, urinary retention or hesitancy, urine loss without a recognizable urge, an uncomfortable sensation of fullness or pressure in the lower abdomen, and incomplete bladder emptying. Clinically, suprapubic palpation may reveal a distended or painful bladder as a result of urine retention, which may be acute or chronic. A common condition associated with this type of UI is BPH. Neurological conditions, such as multiple sclerosis and spinal cord injuries, or diabetes mellitus, which result in bladder muscle denervation, may also cause overflow UI (Abrams et al., 2003; Doughty, 2000; Fantl et al., 1996; Jayasekara, 2009).

Functional UI is caused by nongenitourinary factors, such as cognitive or physical impairments, that result in an inability of the individual to be independent in voiding. For example, acutely ill hospitalized individuals may be challenged by a combination of an acute illness and environmental changes. This, in turn, makes the voiding process even more complex, resulting in a functional type of UI (Fantl et al., 1996; B. Hodgkinson et al., 2008). In other settings, such as home settings, frail older adults may depend on others to avoid functional UI (Barrie, 2016). Home health nurses and rehabilitation therapists can be helpful in identifying barriers, such as fall hazards, and facilitators, such as bedside commodes and walking assistive devices to address functional UI.

ASSESSMENT PARAMETERS

It is essential to ask patients about the presence of UI because they may not offer this information or seek professional care (Hobdy, Huffaker & Bailey, 2018; Qaseem et al., 2014; Vethanayagam et al., 2017). Community-dwelling older women perceived UI as a normal part of aging that was not bothersome and lacked knowledge of curative strategies (Strickland, 2014); some evidence suggests that women who experience more daily episodes of UI are more likely to seek care than women with fewer daily episodes of UI (Jimenez-Cidre et al., 2014). Nurse continence experts suggested that entry-level nurses demonstrate the ability to collect and organize data surrounding urine control and implement nursing interventions that promote continence (Jirovec, Wyman, & Wells, 1998); yet, the extent to which this is actualized is not known.

Nurses play a critical role in the basic assessment and management of UI in older adults. Because UI is an interprofessional issue, collaboration with other members of the healthcare team is essential. It is not sufficient for nurses to only identify and document the presence of UI. Instead, the type of UI should be determined and documented based on a careful history and focused assessment; urodynamic tests are not required as part of the initial assessment of UI (DuBeau et al., 2010). Basic history and examination techniques are presented here to assist the nurse in identifying the type of UI along with a nursing standard-of-practice protocol (see Protocol 25.1 to guide UI assessment and management). Quality of care indicators for UI have been shown to be helpful in specialty and primary care settings and may also provide guidance for the standard of care for

patients with UI in other settings (Anger et al., 2016). Depending on the complexity of the case, interprofessional assessments that include gynecological, urological, gastroenterology, physiotherapy, and pharmacology specialties may be needed (Bonner & Boyle, 2017; Deeks, Naunton, & Nahon, 2017; Wright, Schorge, Kilcoyne, & Tambouret, 2017).

History

Nursing history should include questions to determine whether the individual has UI or risk factors for UI (Exhibit 25.1), while keeping in mind the shared relationship that UI has with other geriatric syndromes—delirium, falls, and insomnia—and assess for common risk factors,

EXHIBIT 25.1

Risk Factors Associated With Urinary Incontinence

- Age (da Silva et al., 2017; Erekson et al., 2016; B. Hodgkinson et al., 2008; Holroyd-Leduc et al., 2004; Jimenez-Cidre et al., 2014; Shamliyan et al., 2007)
- Caffeine intake (Holroyd-Leduc et al., 2004)
- Treatment of cervical and endometrial cancer, including radiation therapy and hysterectomy (Bernard et al., 2017; Donovan, Boyington, Judson, & Wyman, 2013)
- Immobility/functional limitations (Erekson et al., 2016; Fantl et al., 1996; Holroyd-Leduc & Straus, 2004; Kresevic, 1997; Offermans et al., 2009; Palmer et al., 2002; Parker-Autry et al., 2017; Shamliyan et al., 2007)
- Impaired cognition/confusion (Fantl et al., 1996; Palmer et al., 2002; Shamliyan et al., 2007)
- Medications (Fantl et al., 1996; Newman & Wein, 2009; Offermans et al., 2009)
- Overweight/Obesity (Erekson et al., 2016; Fantl et al., 1996; Parker-Autry et al., 2017; Subak et al., 2005; Subak, Richter, & Hunskaar, 2009; Suskind et al., 2017)
- Sedentary lifestyle (da Silva et al., 2017)
- Diuretics (Fantl et al., 1996)
- Smoking (Fantl et al., 1996)
- Constipation (Maeda et al., 2017); fecal impaction; fecal incontinence (Fantl et al., 1996; Offermans et al., 2009)
- Malnutrition (Kresevic, 1997)
- Depression/depressive symptoms (Erekson et al., 2016; Kresevic, 1997; Parker-Autry et al., 2017)
- Delirium (Fantl et al., 1996; Offermans et al., 2009)
- Pregnancy/vaginal delivery/episiotomy (DeLancey, 2010; Fantl et al., 1996; Holroyd-Leduc & Straus, 2004; Nygaard, 2006; Shamliyan et al., 2007)
- Large birth weight of baby (Bali, Mahalingam, & Bala, 2016)
- Treatment of prostate cancer, including radical prostatectomy and radiation therapy (Bernard et al., 2015; Hunter et al., 2004; Shamliyan et al., 2007)
- Hearing and/or visual impairment (Holroyd-Leduc & Straus, 2004)
- Heart failure (Meng et al., 2016)
- Low fluid intake (Fantl et al., 1996)
- Environmental barriers (Fantl et al., 1996; Offermans, Du Moulin, Hamers, Dassen, & Halfens, 2009)
- High-impact physical activities (Fantl et al., 1996)
- Multiple comorbidities (Erekson et al., 2016; Jimenez-Cidre et al., 2014)
- Diabetes mellitus (Fantl et al., 1996; Holroyd-Leduc & Straus, 2004; Shamliyan et al., 2007)
- Parkinson's disease (Buchman et al., 2016; Holroyd-Leduc & Straus, 2004; Nagaratnam et al., 2014; Vaughan et al., 2011)
- Stroke (Arkan et al., 2018; Fantl et al., 1996; Holroyd-Leduc & Straus, 2004; Meijer et al., 2003; Shamliyan et al., 2007; Thomas et al., 2005)
- Chronic obstructive pulmonary disease (Burge et al. 2017; Holroyd-Leduc & Straus, 2004)
- Estrogen depletion (Fantl et al., 1996; Holroyd-Leduc & Straus, 2004)
- Pelvic organ prolapse (Shamliyan et al., 2007)
- Pelvic muscle weakness (Bernard, Oullet, Moffet, Roy, & Dumoulin, 2015; DeLancey, 1994; Fantl et al., 1996; Fradet et al., 2018; Holroyd-Leduc & Straus, 2004; Kegel, 1956)
- Childhood nocturnal enuresis (Fantl et al., 1996)
- Race ([White] Erekson et al., 2016: Fantl et al., 1996; Holroyd-Leduc et al., 2004; Palmer et al., 2002 [Black]; Parker-Autry et al., 2017)
- Institutionalization prior to hospitalization (Palmer et al., 2002)
- Arthritis and/or back problems (Cassidy et al., 2017; Holroyd-Leduc & Straus, 2004)
- Menopause (da Silva et al., 2017)
- Gynecological surgery (da Silva et al., 2017)

such as age and decline in cognition and function (Luo et al., 2015; Vaughan et al., 2018). Because many patients affected by UI will not seek help, the nurse should include screening questions for all older adult patients, such as "Have you ever leaked urine? If yes, how much does it bother you?" (Vethanayagam et al., 2017). Although not validated in all settings, examples of screening instruments include the Urinary Distress Inventory-6 (UDI-6) and the Male Urinary Distress Inventory (MUDI). The UDI-6 is a self-report symptom inventory for UI that is reliable and valid for identifying the degree of bother and type of established UI in community-dwelling females (Lemack & Zimmern, 1999; Uebersax, Wyman, Shumaker, McClish, & Fantl, 1995). The MUDI is a valid and reliable measure of urinary symptoms in the male population (Robinson & Shea, 2002). Determining the degree of "bother" and the effect on HRQOL is important and appropriate and, with permission, may also include the perspective of lay CGs or significant others involved in caring for the person with UI. In addition, instruments for quantifying bother and HRQOL exist (Abrams et al., 2003; Bradway, 2003; Lobchuk & Rosenberg, 2014; Robinson & Shea, 2002; Shumaker et al., 1994).

Additional questions should focus on the characteristics of UI: time of onset, frequency, and severity of the problem. Questions also should review past health history and address possible precipitants of UI such as coughing, uncontrollable urinary urgency, functional decline, and acute illness (e.g., UTI, hip fracture). Nurses should inquire about lower urinary tract symptoms, such as nocturia, hematuria, and urinary hesitancy, as well as current management strategies for UI. The presence of and rationale for an indwelling urinary catheter should be documented (see Chapter 26, Prevention of Catheter-Associated Urinary Tract Infection [CAUTI]).

A bladder diary or voiding record is recommended as a tool for obtaining objective information about the patient's voiding pattern, incontinent episodes, and UI severity (Haylen et al., 2010; Lau, 2009). There are numerous voiding records available; for an example, see Dowling-Castronovo, 2018). Although the 7-day voiding record is a validated, reliable research instrument for quantifying UI and identifying activities associated with unwanted urine loss (Jeyaseelan, Roe, & Oldham, 2000), a 3-day voiding record may be more feasible in community and long-term care settings (DuBeau et al., 2010; Fantl et al., 1996). A voiding record completed for even 1 day may help identify patients with bladder dysfunction or those requiring further referral; in one study, participants reported that self-recording in a small notepad was less "cumbersome" than the diaries (Gibson et al., 2018). Advanced practice nurses or urological and continence specialists can assist nursing staff with interpretation and offer suggestions regarding nursing interventions based on information from the voiding record.

COMPREHENSIVE PHYSICAL ASSESSMENT

A helpful mnemonic to guide the assessment for conditions that contribute to transient UI is TOILETED (see Box 25.1). A wide variety of medications can adversely affect continence. Diuretics are the most commonly known class of medications that contribute to UI caused by polyuria, frequency, and urgency. Medications with anticholinergic and antispasmodic properties may cause mental status changes, urinary retention with or without overflow incontinence, and stool impaction. Various psychotropic medications (e.g., tricyclic antidepressants, antipsychotics, sedative–hypnotics) have anticholinergic effects, contribute to immobility, and cause sedation and possibly delirium—each of which negatively affects bladder control. Alpha-adrenergic blockers may cause urethral relaxation, whereas alpha-adrenergic agonists may cause urinary retention. Calcium channel blockers also may cause urinary retention (Deeks et al., 2017; Newman & Wein, 2009).

Nurses should document all over-the-counter, herbal, and prescription medications during assessments. In addition, nurses must closely scrutinize new medications as possible causes if UI suddenly develops. Medications that may contribute to iatrogenic UI include diuretics and sedative–hypnotics. When a patient develops transient UI, it is important for the nurse to ask the question: Could a new medication be affecting this patient's bladder control?

BOX 25.1

TOILETED

T **T**hin epithelial lining (atrophic vaginitis)
O stool **O**bstruction (constipation)
I urinary tract **I**nfection
L **L**imited Mobility
E **E**motional (psychological, depression)
T **T**herapeutic medications (Pharmacological)
E **E**ndocrine conditions (diabetes)
D **D**elirium

Source: Dowling-Castronovo, A. (2018). Urinary incontinence assessment in older adults: Part I—transient urinary incontinence. In S. Greenberg (Ed.), *Try This: Best Practices in Nursing Care to Older Adults,* (11.1). Retrieved from https://consultgeri.org/try-this/general-assessment/issue-11.1

If the answer is yes, then the nurse reviews this finding with the prescribing practitioner to learn whether the contributing medication may be discontinued or modified.

Important components of a comprehensive examination include abdominal, genital, rectal, and skin examinations. In particular, the abdominal examination should assess for suprapubic distention indicative of urinary retention. Inspection of the perineum and genitalia can be completed during bathing or as part of the skin assessment. In uncircumcised men, signs and symptoms of phimosis should prompt collaboration with a urological specialist (Gray, 2017). Signs and symptoms include the inability to retract tight foreskin, ballooning of the foreskin during urination due to the trapping of urine, and infections. In women, signs and symptoms of pelvic organ prolapse, such as vaginal bulging, pelvic pressure, and low backache (Haylen et al., 2010), should prompt a more thorough gynecological examination. Postmenopausal women are especially prone to atrophic vaginitis. Significant findings for atrophic vaginitis include perineal inflammation; tenderness (and, on occasion, trauma as a result of touch); and thin, pale genital tissues. During the genital examination, female patients should be instructed to cough or perform the Valsalva maneuver (sometimes referred to as a bladder stress test) to determine whether there is urine leakage caused by increased intra-abdominal pressure, which may be attributable to stress UI (Burns, 2000; Holroyd-Leduc et al., 2008).

Digital rectal and skin examinations are essential in identifying transient causes of UI such as constipation, fecal impaction, and the presence of fungal rashes. The "anal wink" (contraction of the external anal sphincter) indicates intact sacral nerve innervation and is assessed by lightly stroking the circumanal skin. Absence of the anal wink may suggest sphincter denervation (Burns, 2000) and risk of stress UI. In men, the prostate gland should be palpated during the rectal examination because BPH may contribute to urge or overflow UI. A normal prostate gland is symmetrically heart shaped, about the size of a large chestnut, and often described as "rubbery" or similar to the tip of the nose. When enlarged, as with BPH, the examiner may palpate symmetrical enlargement. Pain on palpation or asymmetrical borders may be indicative of prostatitis or prostate cancer, respectively (Gray & Haas, 2000).

In some cases, diagnostic testing may provide additional information. Initial diagnostic tests include urinalysis, urine culture and sensitivity, and postvoid residual (PVR) urine (DuBeau et al., 2010). Urinalysis and urine cultures are used to identify the presence of a UTI and bacterial agent responsible, which may contribute to acute UI. A measurement of PVR may reveal incomplete bladder emptying. Two methods for accurately evaluating PVR are bladder sonography and sterile catheter insertion after the patient has voided (Box 25.2). In addition, in some patients, it may be useful to determine optimal bladder volume, which in one study was defined as the sum of the voided volume plus the PVR (Iwatsubo, Suzuki, Igawa, & Homma, 2014). In comparison to the catheterization method, PVRs determined by sonograms do not carry the risk of CAUTI and should also be done during and after treatment for UI to determine response (Rosier et al., 2019).

BOX 25.2

Postvoid Residual

Instruct the patient to void. Post void (ideally within 15 minutes or less), measure the residual urine remaining in the bladder by either:

- Bladder sonography (scan): Noninvasive ultrasound of the suprapubic area identifies the residual amount of urine
- Sterile catheterization

A PVR of greater than 100 mL or 20% of the voided volume is considered abnormal and requires further evaluation by a urology specialist.

PVR, postvoid residual.

Source: Data from Diokno, A. C., Laijness, M. J., & Griebling, T. L. (2014). Urinary incontinence: Evaluation and diagnosis. In T. L. Griebling (Ed.), *Geriatric urology* (pp. 127–140). New York, NY: Springer. *Evidence Level V*; Dorsher, P. T., & McIntosh, P. M. (2012). Neurogenic bladder. *Advances in Urology, 2012*, 816274. doi:10.1155/2012/816274. *Evidence Level V*; Shinopulos, N. (2000). Bedside urodynamic studies: Simple testing for urinary incontinence. *Nurse Practitioner, 25*(6 Pt 1), 19–22, 25. doi:10.1097/00006205-200025060-00002. *Evidence Level VI*.

A simple pad test may provide additional information for the UI workup. To accomplish this, a perineal pad is weighed before and after a short time period, even as short as an hour, to determine the amount of urine loss (Krhut et al., 2014). Finally, a bedside cystometrogram urodynamic test, which provides information regarding detrusor activity, may be warranted in some cases (Burns, 2000; Lenherr & Clemens, 2013; Newman & Wein, 2009); however, owing to its invasive nature and potential for CAUTI, it should not be routinely done unless the benefits outweigh the risks (Rosier et al., 2019). Usually performed by an advanced practice nurse or physician, this test involves the following steps: (a) sterile urethral catheterization to empty the bladder (can be done to determine PVR), (b) maintaining the catheter in the bladder

and attaching a 50-mL syringe (without plunger) with the center of the syringe level with the symphysis pubis, (c) filling the bladder with sterile water, (d) monitoring the fluid level during filling for evidence of bladder contractions (evidenced by a fluctuation of the fluid level in the syringe), (e) documenting the volume at which bladder contractions occur, and (f) removal of the sterile urethral catheter (Homma et al., n.d.).

The International Consultation on Incontinence executive report recommends that patients who are not initially satisfied with their UI management based on symptom report and those with neurologic conditions that affect the lower urinary tract may benefit from complex urodynamic testing (Rosier et al., 2019). However, owing to the invasive nature of urodynamic testing, with tubes inserted into the bladder, clinicians need to determine the benefit, especially if considering for frail older adults. Therefore, more extensive testing, such as complex urodynamics and imaging studies, are typically initiated after consultation with a urological or urogynecological practice (Gray, 2017; Haylen et al., 2010).

Functional, environmental, psychosocial, and mental status assessments are essential components of the UI evaluation in older adults. The nurse should observe the patient voiding, assess mobility, note any use of assistive devices, and identify any obstacles that interfere with appropriate use of toilets or toilet substitutes, such as a bedside commode. Recent evidence suggests person-centered incontinence care has promise for improving UI and quality of life (Nazarko, 2015; Wijk et al., 2018). This care approach requires nursing staff to assess how UI affects their life-history. Cultural norms must also be considered when assessing the role UI plays in a person's life (Hamid et al., 2015; Park et al., 2017).

INTERVENTIONS AND CARE STRATEGIES

Evidence demonstrates that nurses in acute and long-term care settings lack the knowledge necessary for evidence-based care for UI, focusing more on containment strategies than on promoting continence (Cassells & Watt, 2003; Coffey, McCarthy, McCormack, Wright, & Slater, 2007; Colborne & Dahlke, 2017; Connor & Kooker, 1996). Although studies about the knowledge of community nurses have not been identified, it is reasonable to suggest that education of nurses is an essential component when implementing the UI protocol described in this chapter. For example, identifying nurses to serve as continence champions may facilitate incorporating evidence-based care of UI across care settings (Albertson, 2018; Hägglund & Olai, 2016; Hunter, 2016; Wijk et al., 2018). The Society of Urologic Nurses and Associates (SUNA) is a helpful resource for continence champions (www.suna.org). SUNA's Certification Board for Urologic Nurses also provides urological certifications, including the certified urologic registered nurse (CURN) and the certified urologic nurse practitioner (CUNP) for advanced practice registered nurses (SUNA, 2018). Additionally, wound, ostomy, and continence nurse (WOCN) certification is available to bachelor's prepared registered nurses to provide safe and evidence-based care to patients with conditions that affect continence (www.wocn.org). Nurses are likely to be the first to identify, and perhaps prevent, transient UI; however, more research is needed to understand the role nurses and other healthcare professionals play in preventing UI (Harlow et al., 2018; Sampselle, Palmer, Boyington, O'Dell, & Wooldridge, 2004).

Transient causes of UI should be identified and treated, and any individuals with a history of established UI who concurrently develop transient UI should have usual voiding routines and continence strategies immediately incorporated into the care plan, whenever possible. The use of indwelling urinary catheters should be avoided, and, if absolutely necessary, regular assessment of continued appropriateness should be included in the patient care plan to prevent prolonged use and negative sequelae (John et al., 2018).

The environment is vital in managing UI, particularly functional UI. Older adults who are incontinent often depend on adaptive devices (e.g., walker), family CGs, and formal CGs for assistance with voiding, making them "dependently continent." In institutional settings, call bells should be identified and within easy reach. If limited mobility is anticipated, nursing staff should consider using an elevated toilet or commode seat, male or female urinal, or bedpan. Nurses should obtain referrals to physical and occupational therapy for ambulation aids, gait training, further assessment of activities of daily living associated with continence, and improved overall muscle strength. Physical and chemical restraints should be avoided, including side rails (see Case Study 25.1). Patients should be encouraged and assisted to void before leaving the unit or traveling for tests or therapy (Fantl et al., 1996; Jirovec, 2000; Jirovec et al., 1988; Palmer, 1996). Incorporation of a general exercise program with support from physical therapists in nursing homes improved UI (Ouslander, Griffiths, McConnell, Riolo, & Schnelle, 2005). Moreover, a pilot study demonstrated that combining walking exercise with pelvic floor muscle exercises (PFMEs) improved UI for frail older women living in independent and assisted living (Talley, Wyman, Bronas, Olson-Kellogg, & McCarthy, 2017). In the hospital setting, patients described worrying

about having an "accident" in the therapy gym and requested "diapers" for fear of being sent back to the nursing unit if they "wet themselves" or having to ask the therapists for assistance to use the bathroom during a therapy session (Dowling-Castronovo, 2014).

Toileting programs (e.g., individualized, scheduled toileting programs, including timed voiding; prompted voiding) have varied success rates (Colling, Ouslander, Hadley, Eisch, & Campbell, 1992; Eustice, Roe, & Paterson, 2000; Gray, 2017; Ostaszkiewicz, Johnston, & Roe, 2004; Rathnayake, 2009c). In one study, acute care nurses reported preferring toileting programs over containment strategies, but this has not been explored further (Pfisterer, Johnson, Jenetzky, Hauer, & Oster, 2007). Timed voiding has been promoted as a strategy for managing UI in individuals who are not cognitively or physically able to participate in independent toileting (Rathnayake, 2009c; Thomas, Coupe, Cross, Tan, & Watkins, 2019). Stroke survivors reported that individualization of timed and prompted voiding was key to "getting back into the habit" (Gibson et al., 2018, p. 2046). In addition to its usefulness in the assessment of UI, a voiding record is essential for developing an individualized, scheduled toileting or timed voiding program, which mimics the patient's normal voiding patterns and requires continual assessment and reevaluation for successful outcomes. For example, if the initial scheduled toileting time is set for 8:00 a.m., yet at 6:30 a.m. the patient consistently attempts to independently void or is noted to be incontinent, then the toileting time should be adjusted to 6:00 a.m. Evidence is lacking in regard to the effectiveness of timed voiding as a primary management strategy for UI; however, it may be used based on the nurse's judgment of the clinical situation (Rathnayake, 2009c).

Prompted voiding requires someone (nurse or the family CG) to ask whether the patient needs to void, offer assistance, and then offer praise for successful voiding (Eustice et al., 2000; Jirovec, 2000; Ostaszkiewicz et al., 2004). Among nursing home residents with UI, prompted voiding may achieve short-term improvement in daytime UI and may be effective in reducing UI in cognitively intact older adults (B. Hodgkinson et al., 2008; Rathnayake, 2009b). Among hospitalized older adults in Japan, a prompted voiding program resulted in patients expressing a need to void, improvement in their ability to successfully void, and a decrease in the use of absorbent products (Iwatsubo et al., 2014).

The role of the family CG, such as spouses and children, needs to be explored in the acute care setting (Dowling-Castronovo, 2014). In the home care setting, evidence suggests that these CGs may provide better consistency strategies to manage UI than paid CGs (Egnatios, Dupree, & Williams, 2010). Moreover, a mutual learning process regarding management of UI (as well as other health problems) occurs when older adults with UI, their family CGs, nurses, and nursing aides interact (Jansen et al., 2013). Evidence supports improved coping of patients with UI who have strong social support and knowledge of the disease process (Szymona-Palkowka et al., 2016). In both home care and acute care settings, older adults attempt to build connections with nursing staff to meet their bladder needs (Dowling-Castronovo, 2014; Jansen et al., 2013). Therefore, from a practical and patient/family-centered approach, it is reasonable to suggest that both nurses and therapists "coach" (Frampton et al., 2008) patients and their family CGs in the skills needed to manage UI.

Healthy Bladder Behavior Skills

Traditionally, nursing interventions for UI focus on containment strategies by means of receptacles (e.g., bedpan, urinal, commode, indwelling urinary catheters) or by various absorbent products (e.g., sanitary napkin, adult brief, incontinent pad; Harmer & Henderson, 1955; Henderson & Nite, 1978; Palese et al., 2007). Various treatments beyond containment strategies require a multimodal approach (Gray, 2017; McClurg et al., 2016): dietary and fluid management, weight loss, PFMEs, pessaries, urge inhibition and bladder training (retraining) strategies, toileting programs (e.g., individualized, scheduled toileting programs/timed voiding, prompted voiding, habit training), constipation management, pharmacological therapy, and surgical options (Fantl et al., 1996; B. Hodgkinson et al., 2008; Qaseem et al., 2014). These treatments (excluding pharmacological and surgical options) are viewed as Health Bladder Behavior Skills (HBBS). Although the recommendation is to offer HBBS to all older adults with UI (Fantl et al., 1996; Teunissen, de Jonge, van Weel, & Lagro-Janseen, 2004), it is unclear how HBBS can be best incorporated in the care of older adults. Furthermore, despite the fact that contemporary nursing practice textbooks list and describe HBBS as nursing interventions (Kozier, Erb, Berman, & Snyder, 2004; Newman & Wein, 2009; Taylor, Lillis, & LeMone, 2005), many of these interventions have not been adequately examined across healthcare settings to understand how to best sustain their implementation. Nurses do not routinely implement these interventions (Bayliss, Salter, & Locke, 2003; Schnelle et al., 2003; Watson, Brink, Zimmer, & Mayer, 2003). Accurate assessment and identification of type of UI are needed before HBBS are initiated. Prior to instituting HBBS, the nurse needs to assess the motivation of the patient, family CG, and nursing staff because behavior modification

is a premise of HBBS (Palmer, 2004). It is also important to prioritize HBBS among competing interventions in a treatment care plan (Gibson et al., 2018) to empower individuals to better manage living by communicating in an open, compassionate manner to help empower patients to address their "incontinent body" (Hoogsteyns & van der Hoorst, 2015).

Examples of dietary management strategies include avoiding certain foods and beverages known to be bladder irritants such as caffeine, acidic foods or fluids, and aspartame (Gray & Haas, 2000; Vaughan et al., 2011). Women who are overweight or obese may benefit from a weight-loss program (Imamura, Williams, Wells, & McGrother, 2015; Subak et al., 2005, 2009; Wing et al., 2010). A weight loss of 5% to 10% significantly decreased UI episodes for some overweight and obese women with mean ages in the 50s (Subak et al., 2005). While these findings cannot be generalized to older adults, they do provide evidence that weight management is important to healthy aging. If not contraindicated, the nurse recommends adequate fluid intake, specifically water, and an increased intake of dietary fiber to maintain bowel regularity. It is important to work closely with older adults who fear that unwanted urine loss is a result of increased fluid intake. Education should focus on the adverse consequence of inadequate fluid intake, such as volume depletion or potential for dehydration, and that too little fluid intake may result in concentrated urine, which, in turn, may cause increased bladder contractions and increased feelings of urinary urgency. Finally, to manage and limit nocturia, patients may be advised to limit fluid intake a few hours before bedtime (Doughty, 2000; Fantl et al., 1996); however, this is questionable for older adults who do not have easy access to fluids or have diminished thirst sensation (DuBeau et al., 2010). One nursing intervention that may decrease nocturia involves assessing and tailoring diuretic doses to the needs of individual patients. For example, institutions may automatically schedule every-12-hour diuretic dose times at 10 a.m. and 10 p.m. For some patients, it will be extremely important that nurses navigate organizational processes to reschedule diuretic doses to an alternate time such as 6 a.m. and 6 p.m. or even 4 p.m. This simple strategy may decrease nocturia, which, in turn, may decrease the risk of falls. Research that examines which UI interventions best modify fall risk is needed (Wolf, Riolo, & Ouslander, 2000).

For community-dwelling, cognitively intact older adults, PFMEs are at least as effective as pharmacological therapies in treating stress and urge UI (B. Hodgkinson et al., 2008). There is sufficient evidence that for women, PFMEs effectively treat UI, may have long-term benefits, and are cost effective (Dumoulin, Cacciari, & Hay-Smith, 2018; Kegel, 1956; Qaseem et al., 2014; Vaughan et al., 2011). For men post prostatectomy, the evidence is inconclusive (Anderson et al., 2015). PFMEs also hold promise for the primary prevention of UI, but require additional research (Harlow et al., 2018; J. Hay-Smith, Herbison, & Mørkved, 2002). Recent evidence regarding the relationship among UI and other geriatric syndromes suggests that women who do not maintain active lifestyles and overall muscle strength are more likely than women who are active and have overall good muscle strength to develop UI (Parker-Autry et al., 2017).

Integrating PFMEs into the plan of care requires an assessment of the patient's baseline understanding of PFMEs to identify knowledge deficits. Ideally, PFMEs are taught during a vaginal or rectal examination, when the clinician manually assists the patient to identify the pelvic muscles by instructing the patient to squeeze around the gloved examination finger. This method allows for performance appraisal (J. Hay-Smith et al., 2002); together with weekly phone consults and monthly performance appraisal, this method is known to improve UI outcomes for community-dwelling individuals (Tsai & Liu, 2009). Alternately, PFMEs may be verbally taught by instructing the patient to gently squeeze or contract the rectal or vaginal muscles. Either teaching method includes instructions not to squeeze the stomach, buttocks, or thigh muscles (because this only increases intra-abdominal pressure), but to isolate the contraction of the pelvic muscles. Physical therapy specifically for UI has been shown to significantly improve UI severity and quality of life associated with UI in older adults (Neville, Beneciuk, Bishop, & Alappattu, 2016). For example, physical therapists specially trained in PFME therapy may offer complementary interventions, such as special stretching techniques, massage, and trigger point therapy (Hill, 2016).

Evidence suggests that supervised PFMEs, where a professional educates and coaches a client about how to correctly perform PFME, is key, although a standardized dose has not been identified (E. J. C. Hay-Smith, Herderschee, Dumoulin, & Herbison, 2011). Preferably, each exercise should consist of contracting for 10 seconds and relaxing for 10 seconds. Some patients may need to start with 3 or 5 seconds and then increase as their muscles become stronger. There is no set "exercise dose" (Du Moulin, Hamers, Paulus, Berendsen, & Halfens, 2005); one example is to recommend 15 PFMEs three times per day. For community-dwelling women with stress, urge, or mixed UI, PFMEs (at least 24 per day for at least 6 weeks) should be included in first-line conservative management programs (Choi, Palmer, & Park, 2007; Syah, 2010). Most

individuals notice improvement in 2 to 4 weeks, but not immediately. For community-dwelling older adults, a commercialized, evidence-based, PFME quality-improvement teaching program statistically improved UI outcomes (Albertson, 2018).

Adding biofeedback technology to clinician coaching for PFME may improve success for some individuals. For example, among older women without severe detrusor overactivity, mild to moderate urge UI predicted improvement occurred with two sessions of biofeedback combined with two clinician coaching sessions and home instruction (Resnick et al., 2013). In another study, improvement in UI frequency occurred even after only one session (Riley & Organist, 2014). In a study of community-dwelling older women, PFME instruction and reinforcement using biofeedback improved both UI outcomes and concurrent depressive symptoms (Tadic et al., 2007). A systematic review found that PFME coaching with biofeedback technology was more effective than provider feedback alone (Herderschee, Hay-Smith, Herbison, Roovers, & Heineman, 2011). However, the therapeutic relationship between providers and patients remains important (Wooldridge, 2017); individuals with UI will benefit from a referral to a continence nurse or other provider specializing in care of individuals with UI (e.g., urologist, gynecologist, urogynecologist).

Electrical stimulation (e-stim) and vaginal weights are additional strategies to consider for PFME training. Women with stress UI who have difficulty performing PFME, or who experience little improvement, may experience increased effectiveness by adding transcutaneous e-stim (via surface electrodes) of the nerves that innervate pelvic floor muscles (Stewart, Berghmans, Bø, & Glazener, 2017). For adults with OAB and mixed UI, e-stim has demonstrated benefit (Gray, 2017; Stewart, Gameiro, et al., 2017); however, men using e-stim post prostatectomy reported only short-term benefits, and some experienced pain or discomfort (Berghmans, Hendriks, Bernards, de Bie, & Omar, 2013).

For cognitively intact women with stress UI (and without severe pelvic organ prolapse), graduated vaginal weight training provides another option to enhance PFME training (Herbison & Dean, 2013). To accomplish this, a vaginal weight (usually in the form of a cone or ball) is inserted into the vagina, and the patient is instructed to retain the weight while walking or standing by contracting pelvic floor muscles around the weight. Weights are typically used for about 15 minutes once or twice per day. When the first weight is mastered (as evidenced by retention of the weight in the vaginal vault during walking or standing), a next higher weight is used.

For cognitively intact women with stress UI and pelvic organ prolapse that is not amenable to surgery, a pessary may be an option. A pessary is a support device typically made of medical grade silicone shaped like a ring, cube, or shelf. Women need to visit with a specially trained clinician, such as a physician, nurse, nurse practitioner, or physical therapist, to be evaluated and fitted with a pessary. The pessary supports the prolapsed organ and, in turn, may improve UI. For a comprehensive review, Atnip and O'Dell (2012) provide a detailed overview of appropriate assessment, fitting, and care of pessary support devices.

Urge inhibition and scheduled toileting times (also called bladder training, retraining, reeducation, or bladder drills) are other HBBS used to treat urge UI and OAB (DuBeau et al., 2010; Teunissen et al., 2004; Wallace, Roe, Williams, & Palmer, 2004). These techniques may be combined with functional incontinence training (FIT; DuBeau et al., 2010; Schnelle et al., 2003) and may be more effective if used in combination with PFMEs or anticholinergic drugs (Rathnayake, 2009a). Bladder training requires a baseline voiding record to assess the timing of voids and UI episodes.

If urinary frequency is assessed at baseline, the patient is instructed to lengthen the time between voids in an effort to retrain the bladder. When a strong urge to void occurs, the patient is instructed to use urge-inhibition techniques to suppress urinary urgency. Although the mechanism of how urge inhibition works is not well understood (Gray, 2005; Smith, 2000), urge inhibition includes distraction techniques (e.g., reciting a favorite poem or song), relaxation techniques, and several rapid pelvic floor muscle contractions, also called 'quick flicks' (Gray, 2005; Hill, 2016). The goal is to suppress the urge to void until desirable (Hill, 2016; Smith, 2000). Older women with urge UI have reported urge inhibition with quick flicks as being one of the most helpful HBBS (Riley & Organist, 2014); in contrast, patients after a stroke did not report benefit from this combination (Gibson et al., 2018). For individuals who rely on CGs, such as those who are cognitively impaired, bladder training was a challenge for family CGs to successfully implement (Ostaszkiewicz, Chestney, & Roe, 2009).

Preventing and treating constipation is important to address in patients with UI. Colonic massage, or abdominal massage, and using a stool for squatting during defecation are two methods to help manage constipation and improve UI (Hill, 2016; Hunter, 2016; McClurg et al., 2016; Vaughan et al., 2011). Additional first-line interventions for treating constipation include scheduled toileting (for bowel movements), increased fluid and dietary fiber intake, and increased physical activity, as tolerated

and with safety in mind (Mounsey, Raleigh, & Wilson, 2015; Schuster, Kosar, & Kamrul, 2015).

In some instances (e.g., for patients experiencing incomplete bladder emptying or overflow UI), patients and nursing staff can use Crede's maneuvers (i.e., deep suprapubic palpation) to facilitate bladder emptying. The Crede's maneuver is used with caution and requires manual compression over the suprapubic area during bladder emptying. The Crede's maneuver should be avoided if vesicoureteral reflux (i.e., abnormal flow of urine from the bladder back up the ureters) or overactive sphincter mechanisms are suspected because it may dangerously elevate pressure within the bladder (Doughty, 2000). Therefore, if the nurse suspects that UI is related to neurologic impairments, a urological specialist should be consulted before implementing this specific HBBS. In some cases, instructing patients to double void (i.e., after an initial void, instruct patients to stand or reposition for a second void) also facilitates bladder emptying.

Medication therapy for UI can be categorized by UI type. Antimuscarinic drugs (which target muscarinic receptors and, in turn, lead to detrusor relaxation) are FDA approved for the treatment of urge UI and OAB (Samuelsson et al., 2015); examples include oxybutynin, tolterodine, solifenacin, hyoscyamine, and darifenacin. An important consideration, especially in older persons, is side effects: dry mouth and constipation (McDonnell & Birder, 2017; Samuelsson et al., 2015). FDA-approved drugs to treat urge UI and OAB should be prescribed at the lowest possible dose and not used in combination (Deeks et al., 2017). Additionally, recent research suggests a link between cumulative use of antimuscarinic drugs with incident dementia and mood disorders, including depression, and, therefore, these drugs should be used with caution and in the lowest possible doses in older adults (McDonnell & Birder, 2017). Specifically, trospium, when included as part of a drug regimen of greater than seven total medications, carries a higher likelihood of side effects (Qaseem et al., 2014). A newer medication that has similar efficacy to the antimuscarinic class, but with increased tolerability, is mirabergron, a beta-3 agonist, FDA approved for treatment of urge UI and OAB (McDonnell & Birder, 2017). There are no FDA-approved drugs for the treatment of stress or overflow UI. For persons with mixed UI, a combination of behavioral strategies and pharmacological treatment of the urge UI and OAB may be beneficial (Wooldridge, 2017). Side effects of pharmacological therapies for UI, including dry mouth, constipation, and mood changes, must always be considered when caring for a patient with UI (American Geriatrics Society Beers Criteria® Update Expert Panel, 2019; Bardsley, 2015).

Additional Nursing Interventions

Maintaining skin integrity is a goal of nursing care. Decomposition of urinary urea by microorganisms releases ammonia and forms ammonium hydroxide, an alkali. This alkali makes the protective "acid mantle" of the skin vulnerable and jeopardizes skin integrity. If UI episodes persist despite management strategies, perineal skin care interventions should focus on maintaining the integrity of the protective acid mantle of the skin (Ersser, Getliffe, Voegeli, & Regan, 2005; see Chapter 28, Preventing Pressure Ulcers and Skin Tears) and specifically addressing incontinence-associated dermatitis (Gray, 2017). The use of evidence-based barrier creams and antifungals as indicated can be helpful in improving and maintaining skin integrity in individuals with UI (Callaghan, Hunt, Mohamud & Small, 2018; Gray, 2017).

Although many promising treatments for UI exist, when total cure is not achieved, containment strategies are an important component to consider for managing UI (Riemsma et al., 2017). Although absorbent products are commonly used for UI containment, there is little evidence available to guide product selection and no evidence of how absorbent products may interact with the acid mantle (Fader, Cottenden, & Getliffe, 2008). Community-dwelling women using products designed for light amount of urine loss reported important characteristics of absorbent pads, including the ability to hold and hide UI and ease of use (Getliffe, Fader, Cottenden, Jamieson, & Green, 2007). Yet those with heart failure and severe UI, defined as at least one episode of UI/day, were significantly more likely to seek care than those with less than severe UI because they believed the leakage could be improved (Meng et al., 2016). In an acute care setting, nursing staff reported problems with quality and availability of absorbent products (Clayman, Thompson, & Forth, 2005). Hospitalized patients fear "wetting the bed." Some gain a sense of control when able to contain and conceal UI with adult absorbent products; however, in one study, patients described a preference for brand name over the generic absorbent products provided by the hospital (Dowling-Castronovo, 2014).

In regard to reusable versus disposable absorbent products, there is no demonstrable risk of cross-infection with reusable absorbent products when appropriate laundering protocols are followed, and there are no clear cost savings associated with using one over the other. Reusable products have limited acceptability, especially among women, although men living at home preferred them at nighttime as a way to control costs (Fader, Cottenden, & Getliffe, 2007; Fader et al., 2008). Use of adult briefs

was significantly associated with an increased risk of infection (Zimakoff, Stickler, Pontoppidan, & Larsen, 1996). Although bed pads absorb urine, consumer satisfaction is questionable, and there are no studies on the use of chair pads. Although limited evidence suggests that disposable insert pads may be more effective for women with UI than other absorbent products (Rathnayake, 2009d), there is no clear evidence to suggest one absorbent product is superior to another. For men, penile sheaths and clamps are additional containment options but have risks for adverse events, such as skin and circulation impairment that require careful monitoring (Anderson et al., 2015; Nazarko, 2018). Post prostatectomy, men found a *Prostate Survivors' Toolkit* that included containment products, such as pads, to conceal UI helpful in managing UI (Weber & Roberts, 2015). Evidence supports pilot testing of absorbent products according to individual circumstances, including patient, family, and institutional preferences, and offering a choice of products to individuals with UI (Dunn, Kowanko, Paterson, & Pretty, 2002; Fader et al., 2007, 2008; Rathnayake, 2009d).

Trends to better understand and incorporate complementary modalities in the care of individuals with UI, such as acupuncture, reiki, guided imagery, yoga therapy, and naturopathic medicine, deserve consideration. Limited evidence exists for acupuncture, which may have a place in treating stress UI (Wang, Zhishun, Peng, Zhao, & Liu, 2013). Mindfulness-based stress reduction, which utilizes daily guided mindfulness meditation, is supported as a promising complementary modality alongside other HBBS methods (Baker, Costa, Guarino, & Nyagaard, 2014; Long, Khairat, Chmelo, & Palmer, 2018). Healthcare providers caring for persons with UI may consider referring patients to specialty practices or providers (such as Integrative Medicine) for assistance incorporating complementary modalities along with HBBS (Armstrong, Study, Zador, Peters, & Patricolo, 2019). In addition, innovative strategies to empower individuals to learn how to prevent and treat UI, such as nurse-led models in community fitness facilities (Cera, Twiss, & Struwe, 2019), are underway.

CASE STUDY 25.1

A student nurse received a report on A. G, an 86-year-old man with a history of Alzheimer's dementia (AD), who is hospitalized for delirium. The nurse was told that Mr. G was "pleasantly confused," required full assistance with personal care, and had spent a few hours in a bedside recliner. The student nurse performed an assessment that revealed the following:

- Patient sleeping in bed with all side rails up, call bell within reach, no urinal in sight
- Past health history: coronary artery disease, mild hypertension, mild osteoarthritis, AD
- Past surgical history: none
- Medications: enalapril (Vasotec) 5 mg by mouth every day for hypertension, multivitamin 1 tablet by mouth daily, donepezil (Aricept) 10 mg by mouth every day for AD
- Vital signs: 114/60, 72, 14, 98.0°F
- Alert and oriented to self; sleepy; no focal deficits
- Heart rate: regular
- Breath sounds clear, slightly decreased at the bases
- Abdomen: +BS (bowel sounds) in all quadrants, soft, nontender, no suprapubic tenderness; left quadrant slightly dull to percussion; no palpable masses
- Dry adult brief in place

The student nurse learns from the patient's wife (i.e., the primary CG at home) that the patient had experienced occasional urinary leaking in the past, but not to the extent of needing "diapers." He has a history of chronic constipation. With the nursing instructor's guidance, the student nurse assisted Mr. G to a dangling position at the side of the bed. After assessing and evaluating that the patient's muscular strength was strong, ambulation was attempted. The patient ambulated to the bathroom, the adult brief was removed, and Mr. G was prompted to void. He successfully voided and had a bowel movement. He proceeded to wash his hands and returned to the recliner. The adult brief was left off during the time the student nurse was there to assist him. During this time, Mr. G made one attempt to initiate voiding, successfully assisted by the student nurse.

Discussion

The importance of ongoing nursing assessment was stressed as being vital to quality of care. Had the student nurse just transferred the patient to the chair, he may not have effectively emptied his bowel and bladder. Mr. G's constipation was addressed by providing appropriate fluid and fiber intake and by continuing with an individualized toilet schedule as tolerated.

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CASE STUDY 25.1 (*continued*)

Evidence suggests that prompted voiding and individualized toileting schedules reduce the number of UI episodes (Eustice et al., 2000; Fink, Taylor, Tacklind, Rutks, & Wilt, 2008; Gray, 2017; Ostaszkiewicz et al., 2004; Thomas et al., 2019) and address constipation (Mounsey et al., 2015; Schuster, Kosar, & Kamrul, 2015). In addition, prompted voiding in cognitively impaired long-term care residents has demonstrated an increase in self-initiative toileting activities (Holroyd-Leduc & Straus, 2004). These strategies have not been extensively studied in the acute care setting; however, this case study demonstrates that nursing interventions used in other settings may also be beneficial for acutely hospitalized older adults. For example, one published case report highlights the importance of nurses working with older adults and their CGs to address UI during the transitional period from acute care to home (Bradway, Bixby, Hirschman, McCauley, & Naylor, 2013).

SUMMARY

UI is a significant health problem that should not be overlooked. Behavioral and supportive therapies and patient education should be initiated by nurses if the patient is cognitively, physically, and emotionally able to participate. Evidence from long-term care and community settings suggests that nurse continence experts play an essential role in improving the quality of continence care (Du Moulin et al., 2005; McDowell et al., 1999; Watson, 2004). An interprofessional approach including appropriate referral to specialists and follow-up is necessary to provide appropriate standard of care for patients with UI (Bonner & Boyle, 2017). Therefore, nurses that care for patients with UI, whether in acute, long-term, or community settings, have the responsibility to design a plan that includes referral to a continence nurse specialist or other continence expert for follow-up.

Other than identifying UI as a risk for falls, there are no requirements specific to UI from The Joint Commission (www.jointcommission.org), despite having evidence-based information for catheter-associated urinary tract infection (CAUTI); see Chapter 26, Prevention of Catheter-Associated Urinary Tract Infection Nevertheless, it is recommended that a continuous quality-improvement (CQI) criterion should encompass critical elements in an effective and successful urinary continence program. For example, quality indicators for UI in the vulnerable older adult population include documentation of (a) the presence of UI, (b) the bothersome nature for the older adult and significant other, (c) focused history and physical examination, (d) documentation of urinalysis and/or culture, (e) PVR and, if elevated to more than 100 mL, consider referral for further evaluation; (f) type of UI; (g) discussion of HBBS; (h) interprofessional evaluation for urodynamic evaluation and pharmacological/surgical treatments; and (i) response to treatment (Fung, Spencer, Eslami, & Crandall, 2007). Institutional quality-improvement teams may use an if-then approach (Schnelle & Smith, 2001). For example, if an older adult experiences transient UI, then a focused assessment is performed to identify etiology.

Nurses have a significant role in improving the assessment and treatment of UI. It is recommended that nurses are particularly vigilant for persons who are "admitted dry and become wet" during a stay in a healthcare facility. These patients will particularly benefit from evidence-based assessment and management. Moreover, nurses can help to promote changes in attitudes toward UI and provide education on individual, facility-wide, community, and national levels.

NURSING STANDARD OF PRACTICE

Protocol 25.1: Urinary Incontinence in Older Adults

I. GOAL

A. Nursing staff will utilize comprehensive assessments and implement evidence-based management strategies for patients identified with UI.
B. Nursing staff will collaborate with interprofessional team members to identify and document type of UI.
C. Patients with UI will not have UI-associated complications.

II. OVERVIEW

Population studies from multiple countries reported UI prevalence between 5% and 70%, with most reporting between 25% and 45%. Prevalence increases with age, with more than 40% for the 70-year-old and older population (Milsom & Gyhagen, 2018). Of those receiving home care services, 40% have UI; and more than one third of short-term nursing home residents and close to 75% of long-term NH residents have UI (Gorina et al., 2014). Medications, constipation/fecal impaction, low fluid intake, environmental barriers, diabetes mellitus, stroke immobility, impaired cognition, malnutrition, and depression are factors specific to identifying older adults at risk of UI (Fantl et al., 1996; Holroyd-Leduc & Straus, 2004; Kresevic, 1997; Meijer et al., 2003; Offermans et al., 2009; Shamliyan et al., 2007; Thomas et al., 2005). Complications of UI include falls, skin irritation leading to pressure ulcers, social isolation, and depression (Bogner et al., 2002; Brown et al., 2000; Fantl et al., 1996; Goksin & Asiret, 2018; Hamid et al., 2015; Meng et al., 2016; Morris & Wagg, 2007). Nurses play a key role in the assessment and management of UI.

III. BACKGROUND

A. Definitions
   1. UI is defined as the complaint of involuntary urine loss (Abrams et al., 2003; Haylen et al., 2010) or involuntary loss of urine sufficient to be a problem (Fantl et al., 1996; National Association for Continence, 1998).
      a. *Transient UI* is characterized by the sudden onset of potentially reversible symptoms that typically have a duration of less than 6 months (Specht, 2005).
B. Types of *established UI* include the following:
   1. *Stress UI* is defined as an involuntary loss of urine associated with activities that increase intra-abdominal pressure; more common among women, but occurs in men after a prostatectomy (Abrams et al., 2003; Fantl et al., 1996; Hunter et al., 2004; Jayasekara, 2009).
   2. *Urge UI* is characterized by an involuntary urine loss associated with a strong desire to void (urgency; Abrams et al., 2003; Fantl et al., 1996). An individual with OAB may complain of urinary urgency, with or without UI (Abrams et al., 2003; Haylen et al., 2010).
   3. *Mixed UI* is defined as a combination of stress UI and urge UI (Fantl et al., 1996; Jayasekara, 2009).
   4. *Overflow UI* is an involuntary loss of urine associated with overdistention of the bladder and may be caused by an underactive detrusor muscle or outlet obstruction, leading to overdistention of the bladder and overflow of urine (Abrams et al., 2003; Doughty, 2000; Fantl et al., 1996; Jayasekara, 2009).
   5. *Functional UI* is caused by nongenitourinary factors, such as cognitive or physical impairments that result in an inability of the individual to void independently (Fantl et al., 1996; B. Hodgkinson et al., 2008); however, continence may be achieved with support of caregivers (Barrie, 2016).
C. Epidemiology
   1. In different healthcare settings across the globe, prevalence rates range between 5% and 70%, with most reporting between 25% and 45% (Milsom et al., 2014). In the United States, more than 33 million individuals report some type of UI or bladder condition (https://www.nafc.org/urinary-incontinence).
   2. UI studies specific to the acute care setting demonstrate that UI is present in 10% to 42% of older adults (Dowd & Campbell, 1995; Fantl et al., 1996; Kresevic, 1997; Palmer et al., 1992; Schultz et al., 1997); and prevalence of UI ranges from 8% to 46% among community-dwelling adult populations (Du Moulin et al.,

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Protocol 25.1: Urinary Incontinence in Older Adults (*continued*)

2008; Erekson et al., 2016; Kwong et al., 2010; Lee et al., 2009; Sims et al., 2011); 37% among those living in residential care facilities; 40% of those receiving home care services; and more than a third of short-term nursing home residents and close to 75% of long-term NH residents have UI (Gorina et al., 2014). Therefore, implementation of an evidence-based protocol to guide assessment and care planning is essential.

IV. PARAMETERS OF ASSESSMENT

A. Document the presence or absence of UI for all patients (DuBeau et al., 2010).
B. Document the presence or absence of an indwelling urinary catheter (John et al., 2018).
C. For patients with UI, the nurse collaborates with interprofessional team members to:
   1. Determine whether the UI is transient, established (stress/urge/mixed/overflow/functional), or both and document (DuBeau et al., 2010; Fantl et al., 1996; Jayasekara, 2009; Johnson, Bulechek, McCloskey-Dochterman, Maas, & Moorhead, 2001; Qaseem et al., 2014). The mnemonic TOILETED (see Box 25.1), the UDI-6, and the MUDI may be used to help guide nursing assessment (Dowling-Castronovo, 2018; Lemack & Zimmern, 1999; Robinson & Shea, 2002; Uebersax et al., 1995).
   2. Identify and document the possible etiologies of UI (DuBeau et al., 2010; Fantl et al., 1996).

V. NURSING CARE STRATEGIES

A. General principles that apply to prevention and management of all forms of UI
   1. Identify and treat causes of transient UI (DuBeau et al., 2010).
   2. Upon admission to a healthcare facility, identify and continue successful prefacility management strategies for established UI.
   3. Develop an individualized plan of care using data obtained from the history and physical examination and in collaboration with other team members. Implement toileting programs as needed (Gibson et al., 2018; Gray, 2017; Ostaszkiewicz et al., 2004; Rathnayake, 2009c; Thomas et al., 2019).
   4. Avoid medications that may contribute to UI (American Geriatrics Society Beers Criteria® Update Expert Panel, 2019; Newman & Wein, 2009).
   5. Avoid indwelling urinary catheters whenever possible to avoid the risk of CAUTI (Bouza, San Juan, Muñoz, Voss, & Kluytmans, 2001; Dowd & Campbell, 1995; Gould et al., 2009; Zimakoff et al., 1996).
   6. Monitor fluid intake and maintain an appropriate hydration schedule.
   7. Limit dietary bladder irritants (Gray & Haas, 2000; Vaughan et al., 2011).
   8. Consider adding weight management as a long-term goal in discharge planning to achieve a healthy BMI (Qaseem et al., 2014; Subak et al., 2005; Suskind et al., 2017).
   9. Modify the environment to facilitate continence (Fantl et al., 1996; Jirovec, 2000; Palmer, 1996).
   10. Provide patients with usual undergarments in expectation of continence, if possible.
   11. Prevent skin breakdown by providing immediate cleansing after an incontinent episode and utilizing barrier ointments (Callaghan et al., 2018; Ersser et al., 2005; Fader et al., 2007, 2008; Getliffe et al., 2007; Gray, 2017).
   12. Pilot test absorbent products to best meet patient, staff, and institutional preferences (Dunn et al., 2002), bearing in mind adult briefs have been associated with UTIs (Zimakoff et al., 1996).
   13. Assign exercise deemed safe and appropriate by healthcare providers (Ouslander et al., 2005; Talley et al., 2017).
   14. Perform constipation management (Fantl et al., 1996; Hill, 2016; B. Hodgkinson et al., 2008; Hunter, 2016; McClurg et al., 2016; Mounsey et al., 2015; Qaseem et al., 2014; Schuster et al., 2015; Vaughan et al., 2011).
B. Strategies for specific problems:
   1. Stress UI
      a. Teach PFMEs (DuBeau et al., 2010; B. Hodgkinson et al., 2008; Qaseem et al., 2014).
      b. Provide toileting assistance and bladder training as needed (DuBeau et al., 2010; Qaseem et al., 2014).
      c. Consider referral to other team members if pharmacological or surgical therapies are warranted (Bonner & Boyle, 2017; Deeks et al., 2017; Wright et al., 2017).

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Protocol 25.1: Urinary Incontinence in Older Adults (*continued*)

2. Urge UI and OAB
   a. Implement bladder training (retraining; DuBeau et al., 2010; Qaseem et al., 2014; Teunissen et al., 2004).
   b. If patient is cognitively intact and motivated, provide information on urge inhibition (Gray, 2005; Hill, 2016; Smith, 2000).
   c. Teach PFMEs to be used in conjunction with bladder training, and instruct in urge inhibition strategies (Flynn, Cell, & Luisi, 1994; Rathnayake, 2009a; Teunissen et al., 2004).
   d. Collaborate with prescribing team members if pharmacological therapy is warranted.
   e. Initiate referrals for those patients who do not respond to the aforementioned strategies.
3. Overflow UI
   a. Allow sufficient time for voiding.
   b. Discuss with interprofessional team the need for determining a PVR (Newman & Wein, 2009; Shinopulos, 2000; see Box 25.2).
   c. Instruct patients in double voiding and Crede's maneuver (Doughty, 2000).
   d. If catheterization is necessary, sterile intermittent catheterization is preferred over indwelling urinary catheterization (Saint et al., 2006; Terpenning et al., 1989; Warren, 1997).
   e. Initiate referrals to other team members for patients requiring pharmacological or surgical intervention.
4. Functional UI
   a. Provide individualized scheduled toileting, timed voiding, or prompted voiding (Eustice et al., 2000; Gibson et al., 2018; Jirovec, 2000; Lee et al., 2009; Ostaszkiewicz et al., 2004; Thomas et al., 2019).
   b. Provide adequate fluid intake.
   c. Refer for physical and occupational therapy as needed (Hill, 2016).
   d. Modify environment to maximize independence with continence (Fantl et al., 1996; Jirovec, 2000; Jirovec et al., 1988; Palmer, 1996).

VI. EVALUATION OF EXPECTED OUTCOMES

A. Patients will
   1. Have fewer or no episodes of UI or complications associated with UI.
B. Nurses will
   1. Document assessment of continence status. If UI is identified, document and determine type of UI.
   2. Use interprofessional expertise and interventions to assess and manage UI.
   3. Include UI in discharge planning needs and refer as needed.
C. Institutions will
   1. Set achievable goals for preventing, reducing, and resolving transient UI.
   2. Require assessment and documentation policies for continence status (Fung et al., 2007; Schnelle & Smith, 2001).
   3. Provide access to evidence-based guidelines for evaluation and management of UI.
   4. Instruct staff to receive administrative support and ongoing education regarding assessment and management of UI.

VII. FOLLOW-UP MONITORING OF CONDITION

A. Provide patient/CG discharge education and referral to specialists, as needed.
B. Incorporate CQI criteria into existing program (Anger et al., 2016; Fung et al., 2007), and measure quality indicators using an if-then approach (Schnelle & Smith, 2001).
C. Identify areas for improvement and enlist interprofessional collaboration in devising strategies for improvement (Bonner & Boyle, 2017; Deeks et al., 2017; Wright et al., 2017).

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Protocol 25.1: Urinary Incontinence in Older Adults (*continued*)

VIII. RELEVANT PRACTICE GUIDELINES

American College of Physicians releases new recommendations for treating urinary incontinence in women
https://www.acponline.org/acp-newsroom/american-college-of-physicians-releases-new-recommendations-for-treating-urinary-incontinence-in

2012 Update: Guidelines for Adult Urinary Incontinence Collaborative Consensus Document for the Canadian Urological Association
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3478335

ABBREVIATIONS

BMI	Body mass index
CAUTI	Catheter-associated urinary tract infection
CG	Caregiver
CQI	Continuous quality improvement
NH	Nursing home
OAB	Overactive bladder
PFME	Pelvic floor muscle exercises
PVR	Postvoid residual
UI	Urinary incontinence
UTI	Urinary tract infection

RESOURCES

GeroNurseOnline

Geriatric Resources and tools
http://www.geronurse-online.org/

Hartford Institute for Geriatric Nursing
www.hartfordign.org

International Continence Society

A registered charity improving the quality of life for people across the globe affected by urinary incontinence
www.ics.org

National Association for Continence (NAFC)

A not-for-profit organization dedicated to improving the lives of individuals with incontinence
www.nafc.org

Society of Urologic Nurse and Associates (SUNA)

An international organization dedicated to nursing care of individuals with urologic disorders
www.suna.org

Wound, Ostomy and Continence Nurses Society

An international society providing a source of networking and research for nurses specializing in enterostomal and continence care
www.wocn.org

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Prevention of Catheter-Associated Urinary Tract Infection*

26

Michelle Kidd and Mary Beth Flynn Makic

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Define catheter-associated urinary tract infection (CAUTI).
2. Describe the epidemiology of CAUTI.
3. Define indications for indwelling urinary catheters (IUC).
4. Identify evidence-based strategies and interventions for the prevention of CAUTI.
5. Describe key components of a nurse-driven protocol for IUC removal.
6. Understand how to engage an interdisciplinary team in the prevention and management of CAUTIs.

OVERVIEW

Healthcare-associated infections (HAIs) have received increasing scrutiny over the past two decades. It is now widely recognized that HAIs are often preventable adverse events related to medical care. CAUTIs are among the most common HAIs, accounting for more than 12% of infections reported by acute care adult inpatient units (Centers for Disease Control and Prevention [CDC], 2019; Lo et al., 2014), and are associated with significant morbidity and excess healthcare costs (Chenoweth & Saint, 2016; Lo et al., 2014). Catheter use and CAUTIs are disproportionately reported among older adults and patients in intensive care units (Chenoweth & Saint, 2016; Vincitorio et al., 2014). Efforts to reduce CAUTI have been a focus in acute care practice environments, and although there was a relative reduction of 6% in overall CAUTI rates (2006–2016), this effort fell short of the goal of 25% (CDC, 2019; Fakih, George, Edson, Goeschel, & Saint, 2013). Although once largely overlooked as being part of the price of doing business in hospitals, a significantly changed regulatory environment has continued to drive efforts to reduce HAIs, and CAUTIs in particular. Oversight for HAI reporting includes process and outcome measurement paired with financial incentives to improve measures. Since 2008, the Centers for Medicare & Medicaid Services (CMS) no longer reimburses for additional costs required to treat hospital-acquired urinary tract infections (UTIs; CMS, 2007). Long-term care facilities also follow CMS regulatory guidance and their federal regulations (F-315 Tag) mandate that indwelling urinary catheter (IUC) use must be medically justified and care rendered to reduce infection risk in all residents with or without an IUC (CMS, 2005). Enhanced public reporting and financial incentives figure prominently in the Patient Protection and Affordable Care Act of 2010; HAIs were singled out for inclusion in both of these initiatives (Patient Protection and Affordable Care Act, 2010). In related rulemaking, CAUTI is included as a measure for

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

HAI reduction programs and the value-based purchasing composite measure (PSI 90) for acute care hospitals (Agency for Healthcare Research and Quality [AHRQ], 2013a; CMS, 2007, 2008; CDC, 2015). Although progress is indeed being made, there remain opportunities to continue to develop strategies and interventions to reduce IUC use and duration to prevent CAUTIs, thus benefiting both clinical and financial outcomes.

This focus on reducing harm occurs even as the evidence base for the prevention and reporting of CAUTI continues to evolve (Hooten et al., 2010; Joanna Briggs Institute, 2017; Lo et al., 2014; Meddings et al., 2017). Also, the CDC's National Healthcare Safety Network (NHSN) significantly revised the surveillance definition for CAUTI several times, including a major revision in January 2015, with the cumulative effect of focusing surveillance efforts on only the most clinically important events (CDC, 2019). Despite this attention, CAUTI rates have decreased only slightly, with the greatest success seen in practice areas outside of the ICU. Evidence continues to suggest that CAUTIs remain a clinical problem, with the risk of infection increasing 3% to 7% each day, and IUC remains a part of patient care interventions. (CDC, 2019). However, a large national collaborative, the Comprehensive Unit-Based Safety Program (CUSP), developed a bladder bundle, or a group of actions, that when used together reduce CAUTI by pairing a technical bundle with a socioadaptive change model (AHRQ, 2013b, 2017).

In light of these rapid changes in the field and the regulatory focus on CAUTI, the regular review of policies, procedures, practices, electronic record reminders, and products is imperative for all healthcare facilities. In this chapter, we review the rationale for CAUTI prevention strategies, suggest an approach to implementing a comprehensive CAUTI prevention program, and catalog the most important CAUTI prevention strategies.

BACKGROUND AND STATEMENT OF PROBLEM

Healthcare-associated UTIs are frequent and costly, resulting in increased morbidity and possible mortality in hospitalized adults. There are estimated to be more than 93,300 hospital-acquired UTIs in the United States annually (CDC, 2019). Although actual incidence rates are challenging to determine, data from NHSN in 2013 report 0.1 to 3.1 for adult inpatient floors and 1.2 to 5.3 for adult critical care units per 1,000 catheter days (Dudeck et al., 2015; Hollenbeak & Schilling, 2018; Shuman & Chenoweth, 2018). At an average cost of $13,793 ($5,019–$22,568), CAUTIs resulted in an estimated healthcare cost burden of $1.7 billion in 2016 (AHRQ, 2017; Hollenbeak & Schilling, 2018).

The majority of UTIs are associated with the ubiquitous IUC, also known as a Foley catheter, after urologist Frederick Foley, who developed the modern device. Urinary catheters are among the most widely used medical devices. Despite their utility in acutely ill patients, they have many downsides, including the CAUTI. Other complications include delirium (Inouye, 2006), accidental removal, gross hematuria, leakage, urethral injury, and restriction of mobility. Taken together, these complications of IUCs occur as frequently as CAUTI (Chenoweth & Saint, 2016; Hollingsworth et al., 2013). Therefore, the benefits of managing urinary output with an IUC must be weighed against the many risks.

Unfortunately, the indiscriminate use of IUCs is widespread. IUCs are used in up to 16% of adult hospital inpatients and are more commonly used in the older patient (Vincitorio et al., 2014). Female sex, older age (age greater than 50 years), diabetes mellitus, severe underlying illness, and serum creatinine greater than 2 mg/dL are host-level risk factors associated with CAUTIs (Shuman & Chenoweth, 2018; Vincitorio et al., 2014). According to the CDC, 12% to 16% of adult inpatients will have an IUC at some point during the acute care admission, and more than 50% of all IUCs are not medically indicated (CDC, 2019; Fakih et al., 2013; Hollenbeak & Schilling, 2018; Hooten et al., 2010). Thus, interventions aimed at evidence-based use of catheters are needed to reduce unnecessary use, overall catheter days, and ensure proper management of the IUC to prevent CAUTIs. To better understand the potential approaches to the prevention of CAUTIs, an understanding of CAUTI pathogenesis is essential.

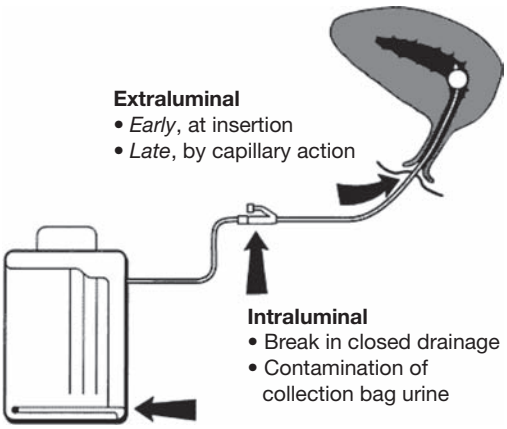
CAUTI Pathogenesis

The urinary tract is normally a sterile body site; therefore, any positive urine culture can be considered abnormal. Asymptomatic bacteriuria is of questionable clinical significance; however, these infections are not typically treated except in pregnant patients or those undergoing urologic surgery (Nicolle, 2016).

When a patient has an IUC, microorganisms can gain access to the urinary tract on either the extraluminal surface of the IUC or the intraluminal surface through breaks in the catheter system (Figure 26.1). Extraluminal infection can occur early if bacteria are introduced during insertion, but, more commonly, extraluminal infection occurs later (Elkbuli et al, 2018; Tillekeratne et al., 2014). Once microorganisms gain access to the urinary tract, they

FIGURE 26.1

Routes of entry of uropathogens to catheterized urinary tract.



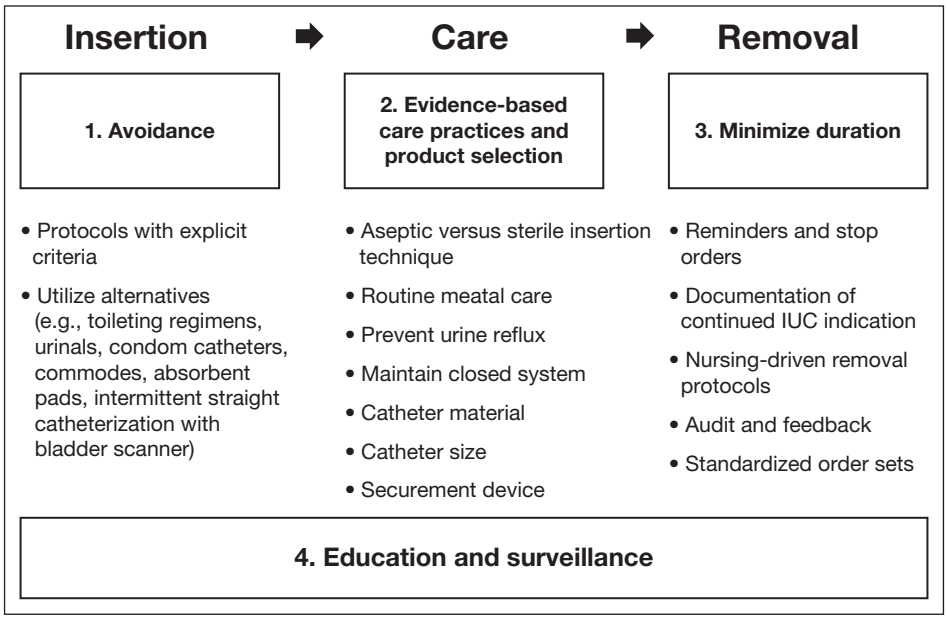
Source: Maki, D. G., & Tambyah, P. A. (2001). Engineering out the risk of infection with urinary catheters. *Emerging Infectious Diseases, 7*(2), 342–347. Retrieved from http://www.cdc.gov/ncidod/eid/vol7no2/makiG1.htm. *Evidence Level VI*.

can thrive in a "biofilm" layer on either the extra- or intraluminal surface of the IUC. The biofilm, made up of bacteria, host proteins, and bacterial slime, is thought to be important in the development of late CAUTIs. Because the formation of a biofilm and colonization with bacteria take time, most CAUTI occurs after 48 hours of catheterization and increases approximately 5% per day (Bossa, Kline, Mdougald, Lee, & Rice, 2017; Schaeffer, 1986; Stamm, 1975).

The mechanisms described earlier provide the rationale for evidence-based care of IUCs and highlight four potential opportunities for intervention during the use of IUCs (Figure 26.2). The first opportunity is avoidance of catheters at the time of the decision for insertion, the second is evidence-based product selection and care practices regarding IUCs (including insertion and maintenance), and the third is minimizing duration through timely removal. A fourth set of additional strategies for CAUTI prevention include education of providers, surveillance of processes, and reporting practice outcomes and CAUTI rates. This set of strategies can be applied at any of the opportunities for intervention. A comprehensive program to eliminate CAUTIs includes elements of each of the aforementioned strategies.

FIGURE 26.2

Stages of catheter use and potential intervention strategies.



ASSESSMENT OF THE PROBLEM

Surveillance Definition of CAUTI

Although clinical diagnosis of CAUTI allows for clinical judgment, the NHSN has developed explicit surveillance criteria for CAUTI in acute care for use by infection control practitioners (CDC, 2019). The current definitions focus on symptomatic urinary tract infection (SUTI), asymptomatic bacteremic UTI (ABUTI), and urinary system infection (USI; see Table 26.1).

All elements of the definition must occur within a 7-day window (i.e., Infection Window Period [IWP]), and the DOE refers to the first time within the 7-day IWP that criteria are met for a HAI event. A CAUTI diagnosed within 48 hours of arrival to a healthcare facility or unit is attributed to the previous location.

Of note, the CDC's surveillance definition for UTI in long-term care facilities differs substantially from the acute care definition. Practitioners in long-term care facilities should acquaint themselves with that definition (Stone et al., 2012).

CAUTIs are generally reported as infections per 1,000 catheter days on a given patient care unit. More than half of all states require public reporting of HAIs, and among them many specify reporting of CAUTIs. Hospitals participating in the Medicare program must report all CAUTIs to the CDC's NHSN for the purposes of surveillance, public reporting on Hospital Compare, and incentive programs.

Additional important process measurement includes the catheter usage ratio reported as catheter days per patient days. Since October 2009, the Surgical Care Improvement Project (SCIP) has been collecting a measure of postoperative catheter removal on catheterization day 1 or 2 for all surgical patients (The Joint Commission, n.d.).

TABLE 26.1

National Healthcare Safety Network (NHSN) Surveillance Criteria for Catheter-Associated Urinary Tract Infections (CAUTI) in Acute Care

SUTI 1a CAUTI	Meets all Criteria 1. IUC in place ≥ 2 days in an inpatient location on the date of event and IUC present on day of event or removed the day before the event 2. Signs/symptoms (at least one present): fever >38°C in a patient that is ≤ 65 years of age; suprapubic tenderness; costovertebral angle pain or tenderness; urinary urgency, frequency, dysuria (catheter not in place). 3. Positive urine culture with no more than two species of organisms; one that is bacterium $\geq 10^5$ CFU/mL a. Urine culture with yeast can be included as long as there is at least one bacterium $\geq 10^5$ CFU/mL and not more than two organisms. b. Urine culture with > two organisms are considered contaminated; also mixed flora, perineal or vaginal flora cultures are considered contaminated.
SUTI 1b non-CAUTI	Meets all Criteria 1. Patient has had an IUC, but it has not been in place ≥2 days in an inpatient location on the date of event OR did not have an IUC on the date of or the day before the date of the event. 2. Signs/symptoms (at least one present): Fever >38°C in a patient that is ≤ 65 years of age; suprapubic tenderness; costovertebral angle pain or tenderness; urinary urgency, frequency, dysuria (catheter not in place). 3. Positive urine culture with no more than two species of organisms; one that is bacterium $\geq 10^5$ CFU/mL 4. Urine culture with yeast can be included as long as there is at least one bacterium $\geq 10^5$ CFU/mL and not more than two organisms. Urine culture with > two organisms is considered contaminated; also mixed flora, perineal or vaginal flora cultures are considered contaminated.
ABUTI	Meets all Criteria 1. Patient with or without an IUC has no signs of UTI (patient >65 years of age with a non-CAUTI may have a fever). 2. Positive urine culture with no more than two species of organisms; one that is bacterium $\geq 10^5$ CFU/mL 3. Organism identified from blood specimen with at least one matching bacterium identified in the urine specimen or meets LCBI criterion 2 (without fever) and matching common commensal(s) in the urine.

ABUTI, asymptomatic bacteremic urinary tract infection; CFU, colony-forming unit; IUC, indwellling urethral catheter; LCBI, laboratory confirmed bloodstream infection; SUTI, symptomatic urinary tract infection

Source: Data from Centers for Disease Control and Prevention. (2019). *Urinary tract infection (catheter-associated urinary tract infection and non-catheter associated UTI and other urinary systems events) device-associated module*. Retrieved from https://www.cdc.gov/nhsn/PDFs/pscManual/7pscCAUTIcurrent.pdf

Indications for IUC

Avoidance of unnecessary IUCs may reduce CAUTI incidence and complications such as bloodstream infections. A decrease in IUC use is expected to result in decreases in length of stay and cost of hospitalization associated with treatment of CAUTI and bloodstream infections (Fakih et al., 2013; Lo et al., 2014; Meddings et al., 2014). Risk factors associated with the development of CAUTI in hospitalized patients can be divided into modifiable and nonmodifiable factors. Patient factors that increase risk of CAUTI include older age, female sex, underlying illness, diabetes mellitus, and renal disease; modifiable risk factors include duration of IUC, not maintaining a closed drainage system, improper provider training regarding insertion; insertion outside the operating room and after the sixth day of hospitalization (Lo et al., 2014; Shuman & Chenoweth, 2018). Explicit criteria for appropriate insertion may result in significant reductions in catheter duration and CAUTI prevalence. Criteria for appropriate insertion of IUCs in hospitalized patients based on evidence include perioperative use for specific surgical procedures; hourly assessment of urine output in critically ill patients; management of acute urinary retention; healing of open pressure injuries/wounds for patients with incontinence; and facilitating comfort at end of life (Chenoweth & Saint, 2016; Lo et al., 2014; Mori, 2014). It is important to ensure proper indications are well disseminated to nursing and physician staff through the integration of a nurse-driven protocol for IUC removal within the electronic health record (EHR; see Figure 26.3).

An IUC should not be used for routine care of patients who are incontinent, as a means to obtain urine culture or other diagnostic tests in a patient who can void, for prolonged postoperative duration without appropriate indications, or routinely in patients receiving epidural anesthesia/analgesia.

INTERVENTIONS AND CARE STRATEGIES

It is estimated that 12% to 16% of adult hospitalized patients will receive an IUC. For every day that a patient has an IUC, he or she has a 3% to 7% increased risk of receiving a CAUTI (CDC, 2019). Up to 70% of CAUTIs are considered preventable (Chenoweth & Saint, 2016; Gould et al., 2010; Sampathkumar, 2017). Specific interventions to prevent CAUTIs are summarized as follows and organized with regard to the four strategies illustrated in Figure 26.2. Many of these recommendations are supported by a growing body of evidence and expert opinion. Further study may impact these recommendations. A proposed approach to a comprehensive CAUTI intervention follows.

Strategy 1: Avoidance

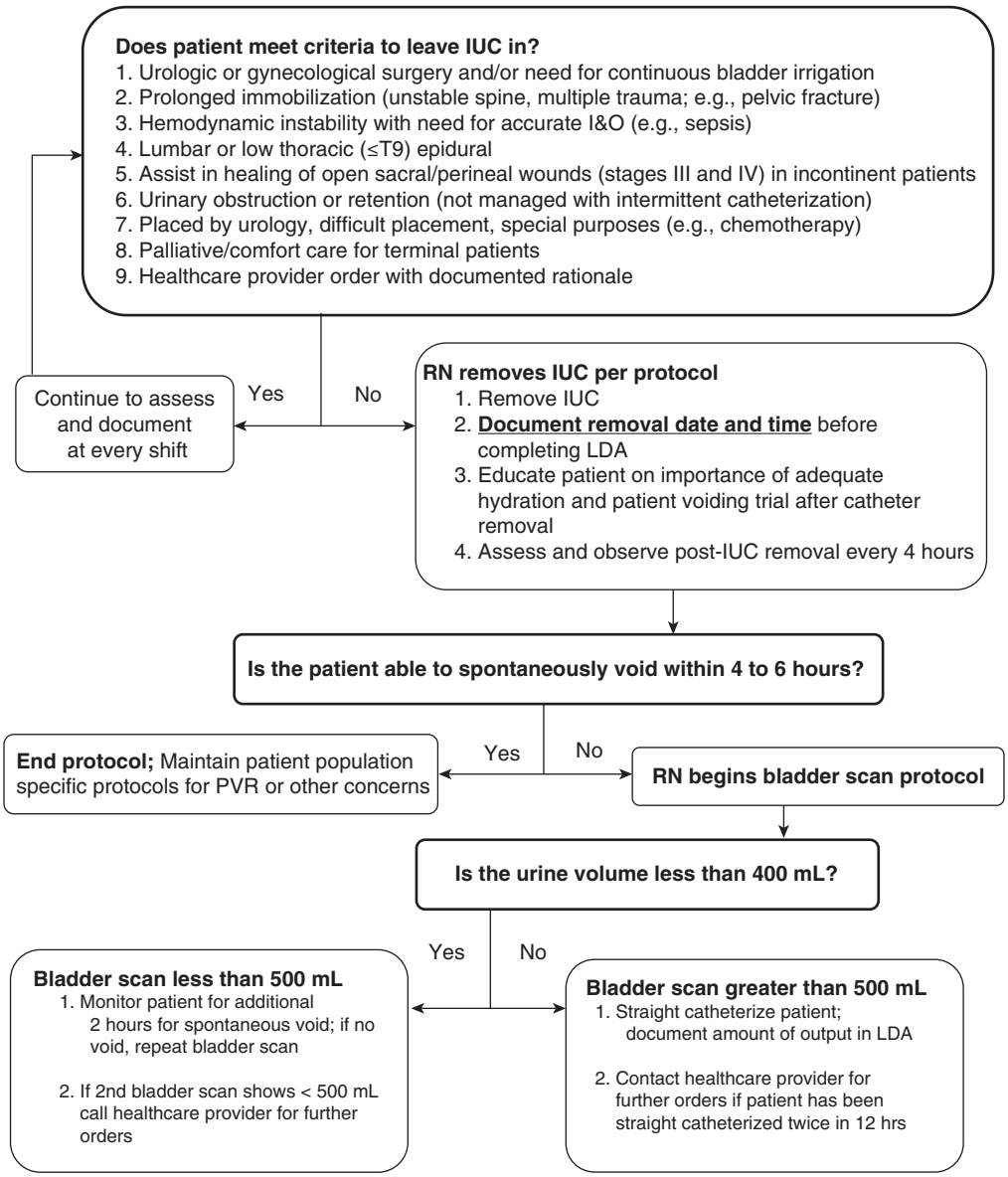
To reduce the incidence of CAUTI, it is important to rethink practice and systems and examine the "why" behind the clinical indication for the IUC. Elimination options other than an IUC should be explored before insertion. Similarly, providing documentation of a clear indication for the IUC can reduce inappropriate device use (Lo et al., 2014; Uberoi et al., 2013). The use of explicit criteria (as in Figure 26.3) to guide the insertion decision may be of assistance. If an IUC is placed, an algorithm may be used to determine continued need for the device or promote prompt removal.

To avoid catheterizations, alternative strategies for managing urine output are necessary. Completing a systems evaluation of available equipment to provide alternatives to IUC for urinary elimination is an important first step in reducing use. Developing toileting schedules and providing assistance with toileting incorporated into frequent nursing staff rounding is another strategy that can be used to reduce urgency and incontinence episodes (Elkbuli et al., 2018; Lo et al., 2014; Uberoi et al., 2013). If the patient is mobile or has limited mobility, alternatives to an IUC include the use of a bedside commode with a toileting schedule (Elkbuli et al., 2018; Uberoi et al., 2013), condom catheters for male patients (Saint et al., 2013), exdwelling urine collection devices for females (Beeson & Davis, 2018), moisture-wicking incontinence pads, intermittent straight catheterization with the use of a bladder scanner to determine bladder urine volume (Elkbuli et al., 2018; Parry, Grant, & Sestovic, 2013; Saint et al., 2013), as well as urinals and bedpans. Careful consideration of products and how and where they are stocked is essential to success. For instance, commodes need to be available in multiple sizes and need to include bariatric commodes; urinals need to fit snugly on bedrails; bladder ultrasound needs to be readily available for assessment.

For less mobile male patients, the condom catheter is an effective alternative to an IUC, although there is still a small risk of infection with condom catheters (Saint et al., 2013). For female patients, use of an external urinary collection device is a possible alternative to manage urinary incontinence or replace an indwelling urinary catheter (Beeson & Davis, 2018). Other possible solutions for incontinence management include use of skin barrier creams for skin protection and high-absorbency pads (or briefs when mobile) that wick moisture away from the skin and long-term care or home environments (NAFC.org; AHRQ, 2015). For a full discussion of incontinence management, please refer to Chapter 25, Urinary Incontinence in the Older Adult.

FIGURE 26.3

Algorithm for nurse-driven indwelling urinary catheter removal protocol.



I&O, input and output; IUC, indwelling urinary catheter; LDA, lines, drains, airways; PVR, postvoid residual.

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Urinary retention post surgery or after initial IUC removal may pose clinical care challenges. To prevent IUC insertion or reinsertion, intermittent catheterization should be considered as an avoidance strategy. The bladder scanner, which uses ultrasound technology, is clinically beneficial in determining urinary retention, reducing unnecessary intermittent catheterizations, enhancing patient comfort, and saving costs associated with inappropriate catheterizations and possible CAUTIs (Saint et al., 2013; Sampathkumar, 2017).

Strategy 2: Evidence-Based Product Selection, Insertion, and Routine Care

If an IUC is determined to be clinically indicated, selection of the right catheter, proper aseptic technique during insertion of the device, hand hygiene prior to insertion or manipulation of IUC, and evidence-based ongoing care management are needed to reduce infection (Yokoe et al., 2014).

Catheter material remains an area of ongoing debate. Although antimicrobial catheter materials have been shown to reduce catheter-associated bacteriuria (Galiczewski, 2016; Lo et al., 2014), the impact of antimicrobial catheters on symptomatic CAUTIs remains unproven. Research syntheses have failed to conclusively demonstrate the effectiveness of silver-coated or antibiotic-impregnated catheters on prevention of CAUTIs for short-term catheterization of adult patients versus standard materials, necessitating further studies on the effects of antimicrobial and antiseptic-impregnated catheters in the reduction of symptomatic UTI (APIC Implementation Guide, 2014; Boev & Kiss, 2017; Lo et al., 2014; Meddings et al., 2014). There is also insufficient evidence to determine whether selection of a latex catheter, hydrogel-coated latex catheter, silicone-coated latex catheter, or all-silicone catheter influences CAUTI risk (Lo et al., 2014). The decision to use a silver-coated or antibiotic-impregnated catheter should be made with the understanding that it does not substitute for a comprehensive CAUTI prevention program.

Selecting the smallest IUC size, when possible, is an additional consideration to reduce the risk of infection. The selection of a smaller catheter (e.g., <18 French) reduces irritation and inflammation of the urethra and reduces infection risk (APIC Implementation Guide, 2014; Lo et al., 2014).

Placing an IUC is a fundamental skill for nurses; however, current evidence supporting sterile versus aseptic technique for the procedure is inconclusive (Lo et al., 2014). A strict sterile technique involves using a sterile gown, mask, prolonged handwashing (>4 minutes), opening and using a sterile insertion kit, donning sterile gloves, cleansing the urethral meatus and perineal area with an antiseptic solution, and inserting the catheter using a no-touch technique (APIC Implementation Guide, 2014; Lo et al., 2014). Current recommendations suggest an IUC insertion be placed under aseptic technique with sterile equipment (Elkbuli et al., 2018; Hooten et al., 2010; Joanna Briggs Institute, 2017; Lo et al., 2014; Sampathkumar, 2017).

Once an IUC is placed, optimal management includes care of the urethral meatus according to "routine hygiene" (e.g., daily cleansing of the meatal surface during bathing with soap and water and as needed following a bowel movement; Joanna Briggs Institute, 2017; Rhee, Phelps, Meyer, & Reed, 2016). Meatal cleansing with antiseptics, creams, lotions, or ointment has been found to irritate the meatus, possibly increasing the risk of infection (Joanna Briggs Institute, 2017; Lo et al., 2014; Sampathkumar, 2017).

Securing the IUC after placement to reduce friction from movement is an important element of catheter management supported by current guidelines, researchers, and expert opinion panels (Clarke et al., 2013). Maintaining a closed catheter system is also supported by current guidelines (Joanna Briggs Institute, 2017; Lo et al., 2014) to eliminate the introduction of microbes that occurs when breaking the prepackaged seals on the IUC. A systems analysis should be conducted to purchase and stock the most commonly needed IUC insertion and drainage-bag kits to optimize the maintenance of a closed system. Similarly, maintaining the urine collection bag below the level of the bladder minimizes reflux into the catheter itself, preventing retrograde flow of urine (Clarke et al., 2013; Joanna Briggs Institute, 2017). Establishing workflow protocols to routinely empty the drainage bag frequently and before transport is important in reducing urine reflux and opportunities for CAUTI.

Strategy 3: Timely Removal

Developing systems that prompt healthcare providers to review the need for the IUC and encourage early removal has been found to reduce IUC use and CAUTI rates (Alexaitis & Broome, 2014; American Nurses Association CAUTI Prevention Tool, 2015; American Urological Association, 2014; Carter, Reitmeier, & Goodloe, 2014; Meddings et al., 2014; Mori, 2014; Parry, Grant, & Sestovic, 2013; Purvis et al., 2014; Saint et al., 2013; Scott et al., 2014). Meddings et al. (2014) updated an earlier systematic review and meta-analysis and found that urinary catheter removal reminders and stop orders appeared to reduce CAUTI rates. Implementation of systems that provide physicians and nurses with routine reminders to evaluate the need for the IUC or automatic stop orders were found to reduce the CAUTI rate by 53% ($p \leq .0001$). In this study, automatic

stop orders were more effective than reminders in reducing catheter duration ($p < .0001$ and $p = .071$, respectively). Incorporating EHR reminders into bladder bundles has been found to encourage evaluation of the need for the IUC and remove devices no longer clinically indicated (Elkbuli et al., 2018; Sampathkumar, 2017; Shuman & Chenoweth, 2018; Spencer, Makic, & Shaw, 2019).

Other approaches to reducing catheter days include audit and feedback and reminders to recommend reevaluation of the need for the IUC (Jones, Meyrick, Bath, Dunham, & McNulty, 2018; Meddings et al., 2014; Parry et al., 2013; Purvis et al., 2014; Saint et al., 2013) and early removal (Alexaitis & Broome, 2014; American Nurses Association CAUTI Prevention Tool, 2015; Meddings et al., 2014; Mori, 2014; Parry et al., 2013; Saint et al., 2013). EHR icons (Purvis et al., 2014) or flags that calculate the number of days the IUC has been placed are effective forms of electronic reminders that can easily be incorporated into the EHR. Automatic stop orders or IUC orders that expire in a defined time frame have been shown to reduce both catheter usage and CAUTI (Saint et al., 2013). Daily nursing rounds (Alexaitis & Broome, 2014; Purvis et al., 2014) and the use of checklists or algorithms (Durant, 2017; Galiczewski, 2016; Lo et al., 2014) have also been shown to reduce catheter usage and CAUTI.

Nurse-driven catheter removal protocols are being developed and implemented successfully in many acute care settings (APIC Implementation Guide, 2014; Carter et al., 2014; Durant, 2017; Purvis et al., 2014; Saint et al., 2013; Scott et al., 2014). Protocols range in degree of nurse autonomy in catheter removal decision-making; some require a physician order; most allow the nurse to remove the catheter when there is no evidence-based indication for continuation. Protocols also differ in complexity, with some only addressing the IUC removal aspect of the protocol and others addressing follow-up bladder management strategies with bladder scanning guidelines (Alexaitis & Broome, 2014; American Nurses Association CAUTI Prevention Tool, 2015; Carter et al., 2014; Mori, 2014; Purvis et al., 2014; Saint et al., 2013). According to The Joint Commission, professional nurses have a tremendous impact on care and safety when granted the power to make timely decisions under protocol guidelines and subsequently reduce ICU days and infections. Conversely, the American Medical Association has expressed opposition to this practice, withholding the decision to physicians who are trained. Nevertheless, nurse-driven CAUTI prevention protocols are supported and recommended by many prominent quality healthcare agencies (Durant, 2017). Figure 26.3 is an example of a nurse-driven IUC removal protocol developed and implemented by one hospital.

If premature, early removal of IUCs poses the risk of unnecessary recatheterization. It is important to monitor the need for recatheterization to avoid unintended harm. In the meta-analysis conducted by Meddings et al. (2014), low recatheterization rates were noted in studies using reminders and automatic stop orders. Duration of IUC is the most well-known CAUTI risk factor. Several studies that implemented protocol or criteria-based reminders have shown that IUC duration of less than 7 days is linked with a significant decrease in CAUTI rates (Galiczewski, 2016).

Most of the implementation and quality-improvement research employs multiple interventions (or bundles), as CAUTI prevention is a multifaceted issue. These bundled approaches are also effective and are providing explicit criteria for catheter usage and structured approaches to CAUTI reduction (Galiczewski, 2016; Purvis et al., 2014).

It is well established that the duration of IUC increases CAUTI risk. The SCIP is a national quality partnership of organizations interested in improving surgical care by significantly reducing surgical complications (The Joint Commission, n.d.). One of the key performance measures in this program is CAUTI prevention, specifically, that IUCs be removed by postoperation day 2, also known as SCIP-inf-9. This SCIP performance measure has had a significant impact on decreasing catheter usage in surgical patients (CDC, 2020).

Keeping the IUC as long as thoracic epidural analgesia is maintained (higher than T9) may result in a higher incidence of CAUTI and increased hospital stay. IUC removal on the morning after surgery while the thoracic epidural catheter is still in place does not lead to increased incidence of urinary retention, infection, or higher rates of recatheterizations (Hu et al., 2014; Stubbs et al., 2013).

Strategy 4: Surveillance and Education

Ensuring that leadership of organizations and systems is in place to effectively evaluate and sustain practice change is essential to improving patient outcomes (AHRQ, 2015). In particular, surveillance is the cornerstone of CAUTI prevention but is resource intensive, typically relying on manual surveillance by trained infection prevention personnel (Wald, Bandle, & Richard, 2014). There is emerging evidence that electronic surveillance, using EHR algorithms, is effective in increasing the efficiency of CAUTI identification (Elkbuli et al., 2018; Sampathkumar, 2017; Shepard et al., 2014; Shuman & Chenoweth, 2018; Wald et al., 2014). Catheter usage data and CAUTI rates are key data elements to collect and trend. IUC usage is determined by the number of catheter days divided by the number of patient days and is expressed as a ratio.

CAUTI rate is determined by the number of CAUTIs divided by 1,000 catheter days. Both data elements can then be benchmarked against the NHSN pooled means to assess unit-level performance. However, the use of a catheter days denominator can produce unstable CAUTI rates when catheter usage is low (CDC, 2019). The standard infection ratio (SIR) may be used to adjust for hospital and patient factors that contribute to risks. SIR compares the actual number of CAUTI observed with the number of predicted infections determined by 2015 NHSN population data (CDC, 2019). An SIR greater than 1 indicates more CAUTI are observed, providing additional information to interpret CAUTI rates/10,000 catheter days.

Measurement must be accompanied by provision of knowledge and skills to frontline providers through appropriate education and training, which may be central to a multicomponent CAUTI intervention. Multiple studies and quality-improvement projects found that multifaceted educational interventions bundled with the use of algorithms/checklists, automated stop orders, physician EHR reminder prompts, and/or nurse-driven removal protocols are effective in decreasing CAUTIs and catheter usage (Alexaitis & Broome, 2014; Carter et al., 2014; Mori, 2014; Purvis et al., 2014). Ongoing system evaluation, nursing reeducation, practice reminders, and public reporting of unit-based CAUTI-rate data are strategies to inform the healthcare team of current practice outcomes and effectiveness of CAUTI prevention strategies. Developing a bladder bundle that incorporates elements to critically evaluate IUC indication, use, removal, and care can assist with efforts to reduce CAUTI (Elkbuli et al., 2018; Shuman & Chenwoeth, 2018). Implementing systems that encompass the whole healthcare team to question the need for the IUC and, when indicated, ensuring proper care and early removal can be pivotal in reducing CAUTI rates (AHRQ, 2015).

Approach to a Comprehensive CAUTI Intervention

Evidence-based practice (EBP) guidelines derived from valid, current research and other evidence sources can successfully improve patient outcomes and quality care. However, simply disseminating scientific evidence is often ineffective in changing clinical practice. Learning how to implement findings is critically important to promoting high-quality, safe care. How EBPs are adopted in practice depends on the type, complexity, and strength of the evidence and how the knowledge is communicated to clinicians (Buckwalter et al., 2017; Titler, 2011). There are a number of models that can guide the implementation of EBP, but there is not a single way to implement new findings into practice. What works in one setting may need modification to be successful in another context (Buckwalter et al., 2017; Titler, 2011). Understanding healthcare provider decisions, experiences, practice processes, and barriers is considered essential. These elements must be explored to successfully implement practice change based on best evidence.

The explicit use of a socioadaptive model has been employed in large-scale HAI prevention activities, including the AHRQ's Comprehensive Unit-based Safety Program (CUSP): STOP CAUTI initiative. Here, the technical interventions for CAUTI reduction were paired with the Core CUSP Toolkit for improving safety climate on clinical units (AHRQ, 2015).

At a minimum, the development of an interdisciplinary champion team and the creation of a multifaceted intervention to implement evidence-based procedures for IUC insertion and maintenance must be a priority in all practice settings. Once high-risk factors for CAUTI have been identified, intervention strategies can be tailored to reduce incidence on infection. The ultimate goals are to reduce routine catheter insertions, provide evidence-based catheter care, and ensure prompt early removal when possible, thus decreasing the risk of and prevention of CAUTI.

Nurses are not the only clinicians to interact with catheterized patients. A culture of safety for all disciplines is a crucial step in the implementation and sustenance of change. The new norm must be catheters for a select group of patients as an exception. Team review of catheters and catheter indications at huddles, interdisciplinary rounds, and other forums provides opportunities for coaching and discussion of alternatives to IUC. Engaging and educating patients and families on risk factors and early removal can also be a helpful strategy (Lo et al., 2014; Smith, 2015).

Physician and hospital executive support is crucial to the success of any CAUTI prevention initiative. Involving physician champions and chief medical officers has been successful among some programs (Lo et al., 2014; Quinn, 2015; Spencer et al., 2019).

Steps used for protocol development should explore the following items:

Protocol Development

1. Recruit an interdisciplinary champion team to include nurses (clinical, educators, operating room [OR] RNs, emergency department [ED] RNs); physicians [hospitalists, infectious disease, ED MDs, surgeons, anesthesiologists]); rehabilitation therapists and transport personnel; infection prevention specialists; and quality-improvement, central supply, and clinical informatics representatives.

2. Review CAUTI data for the organization and units with the greatest risk and rates to identify opportunities.
3. Examine and synthesize the evidence (search, review, critique, and hold journal clubs in various care areas to present the evidence).
4. Identify and understand product use, availability, and costs in your healthcare setting. Refine product use based on the best evidence and cost analysis. Examine
   - Urinary catheter materials, sizes, kits, drainage bags
   - Catheter securement device
   - Urinal and bedpan availability
   - Commodes (availability and size)
   - Bladder scanners
   - Alternatives (incontinence pads, condom catheters, female external collection device, etc.)
5. Identify barriers to optimal IUC care practices by surveying staff or holding focus groups throughout your healthcare setting.
6. Update your policy and procedures related to IUC insertion and care based on the evidence.
7. Consider dividing the project into manageable phases. Avoidance strategies may require a different approach than care or removal strategies. For instance, avoidance starts in the ED and operating room (OR); removal occurs on inpatient floors.
8. Develop and use algorithms, decision aids, and factoid posters displaying evidence-based caveats.
9. Development of a nurse-driven IUC removal protocol.
   - Recruit an interdisciplinary team to include nurses (clinical educators, physicians [hospitalists, infectious disease physicians, surgeons, anesthesiologists]) and clinical informatics representatives.
   - Examine and synthesize the evidence (search, review, critique) and protocol examples.
   - Develop protocol with interdisciplinary and key stakeholder (clinical nurses, charge nurses, educators, physicians [all specialties], midlevel providers, regulatory personnel) input and feedback.
   - Incorporate protocol into hospital policy/procedure.
   - Develop EHR interface.
   - Plan education and implementation procedures.
     a. Identify champions to assist with implementation: infection control champions, nurse educators, clinical nurse educators, and specialists.
     b. Journal club presentations, registered nurse (RN) tip sheets, provider tip sheets, EHR screenshot tip sheets, nursing unit posters/clings, PowerPoint presentations.
   - Plan evaluation strategies
     a. Verbal feedback from clinicians
     b. EHR reports on protocol usage/documentation
     c. Audits
10. Update patient and family educational materials on the importance of prompt and early removal of IUCs.
11. Educate staff (including radiology, transport, rehabilitation therapy staff [physical therapy, occupational therapy]) focusing on policy and procedure revision, insertion indication guidelines, insertion procedures, maintenance and care, catheter-bag placement, removal prompts or removal protocols, and bladder scanner use and procedures.
12. Work with infection prevention specialists and clinical informatics staff to audit and measure outcomes. Provide feedback to staff. Potential measurable outcomes include:
    - CAUTIs/1,000 catheter days
    - Catheter days/hospital days
    - Postoperative catheter days/patient
    - Proportion of catheterized/admitted patients from ED or
13. Continually evaluate and update practice changes based on new evidence.

CASE STUDY 26.1

Mrs. F is an 87-year-old woman with a history of Alzheimer's dementia, incontinence, and a recent fall at home. She presents to your hospital with failure to thrive, increased pain on movement, and a Stage II pressure ulcer on her coccyx. Mrs. F lives at home alone; her daughter frequently checks on her condition.

Mrs. F presents at your medical unit with an IUC that was placed in the ED. Given the patient's incontinence, fall risk, pain, and concern about pressure ulcer progression, the IUC is left in place. After stabilization of her pain (no fractures are present), Mrs. F is able to ambulate with assistance. Three days after admission, while awaiting placement in a skilled nursing facility (SNF), Mrs. F develops fever and delirium and is diagnosed with a UTI. This delays her transfer to the SNF.

Questions to Consider

1. Was the IUC placement medically indicated? If so, what were the indications?
2. What could have been used as alternatives to IUC placement?

(*continued*)

CASE STUDY 26.1 (*continued*)

3. Discuss various strategies that may have been used to remind the nursing team to remove the patient's IUC in a timely manner.

Discussion

As incontinence, fall risk, pain, and a Stage II pressure ulcer are not medically appropriate indications for an IUC, it should have been avoided in the ED or removed as soon as the patient arrived on the floor. Alternatives to indwelling catheterization in this patient would include a bedside commode with nursing assistance and/or moisture-wicking incontinence pads. Attentiveness to the appropriate medical indications for catheter use, familiarity with catheter alternatives, and recognition of the clinical and economic impacts may have prevented the infection and eased the placement of this patient. The use of a nurse-driven IUC removal protocol, automatic stop orders in the EHR, and daily nursing rounds on patients with IUCs may call attention to the unnecessary use of the IUC and encourage timely removal.

CASE STUDY 26.2

Mr. B is a 69-year-old alert man with a diagnosis of nonsmall cell lung cancer admitted for a thoracotomy. The patient is transferred from the postanesthesia care unit to the surgical ICU with an IUC that was placed in the OR and a thoracic epidural for pain management with morphine and bupivacaine infusion. Mr. B is doing well 48 hours postoperatively, experiencing little pain, and is able to cough and breathe deeply. He is transferred out of the ICU to the surgical floor with the urinary catheter and thoracic epidural still in place. When prompted by nursing staff to write an order for urinary catheter removal, the surgeon says he is waiting for the anesthesiology team to pull the epidural catheter before removing the urinary catheter.

Questions to Consider

1. Was the IUC placement surgically indicated?
2. When should the IUC be removed?
3. When the IUC is removed, what can be used as alternatives?
4. If the patient does not void after the IUC is removed, when is a bladder scanner indicated? What are the indications for recatheterization?

Discussion

The IUC was probably indicated because of the length of surgery (>2 hours) and need for accurate monitoring for intake and output. The misconception that the IUC needs to be in place as long as the thoracic epidural remains for pain management purposes needs clarification. Multiple studies have supported IUC removal on the morning after surgery to decrease CAUTI risk in the setting of a thoracic epidural higher than the T9 level (Stubbs et al., 2013). Early removal typically does not lead to urinary retention or higher rates of recatheterization. After IUC removal, toileting with assistance, use of a bedpan or urinal, placement of an incontinence pad, or use of a bladder scanner for postvoid residual volume assessment and use of straight catheterization if indicated are alternatives.

If the patient is unable to spontaneously void 4 to 6 hours post-IUC removal, a bladder scanning protocol should be instituted to determine the amount of urine in the bladder. If the bladder scan indicates less than 400 mL of urine, then Mr. B should be monitored for 2 additional hours post void. If he is still unable to void, the bladder scan is repeated. If the second bladder scan shows greater than 400 mL post void, the nurse needs to straight catheterize the patient, documenting the amount of output in the EHR. Additional orders will be necessary if Mr. B has been straight catheterized twice or more within 12 hours.

SUMMARY

A rapidly changing evidence base and regulatory environment necessitates a continued focus on the prevention of CAUTI, which is informed by an understanding of CAUTI pathogenesis and rational IUC use. Critical elements of a CAUTI prevention program include maximizing catheter avoidance, ensuring EBP and product use, and timely catheter removal. Additional strategies include staff education, continuing monitoring of CAUTI incidence, and catheter use. Multicomponent technical interventions have been used successfully in the prevention of CAUTIs when paired with a socioadaptive change strategy.

NURSING STANDARD OF PRACTICE

Protocol 26.1: Prevention of Catheter-Associated Urinary Tract Infection

I. GOAL

To ensure that nurses in acute care are able to

A. Define CAUTI.
B. Describe the epidemiology of CAUTI.
C. Define indications for IUC.
D. Identify evidence-based strategies and interventions for the prevention of CAUTI.
E. Describe key components of a nurse-driven protocol for IUC removal.
F. Understand how to engage an interdisciplinary team in the prevention and management of CAUTIs in the setting.

II. OVERVIEW

A. CAUTIs are the single most common HAI, accounting for 12% of all HAIs and associated with significant morbidity and excess healthcare costs.
B. Since 2008, the CMS no longer reimburses for additional costs required to treat nosocomial UTIs.
C. Multiple EBP strategies, recommendations, and/or guidelines for preventing CAUTI in hospitals and long-term care have been published.
D. In light of these rapid changes in the field, the review of policies, procedures, practices, and products is imperative for all healthcare facilities.

III. BACKGROUND/STATEMENT OF PROBLEM

A. Introduction
   1. The vast majority of UTIs are associated with the ubiquitous IUC, also known as a Foley catheter.
   2. Risk of CAUTI increases 3% to 7% each day the IUC remains in use.
   3. IUC use is disproportionately reported among older adults and patients in intensive care units.
B. Definitions
   1. *Symptomatic UTI:* A patient has at least one of the following signs or symptoms with no other recognized cause: Fever (>38°C), suprapubic tenderness, and a positive urine culture; urgency, frequency, and dysuria may or may not be catheter associated.
   2. *Asymptomatic bacteriuria:* A positive urine culture in a patient who does not have fever or symptoms referable to the urinary tract; may or may not be catheter associated.
   3. *CAUTI:* A symptomatic UTI that occurs while a patient has an IUC inserted for at least 2 days or within 24 hours of its removal.
C. Essential elements
   1. The urinary tract is normally a sterile body site. In the presence of an IUC, microorganisms can gain access to the urinary tract on either the extraluminal surface of the IUC or intraluminal surface through breaks in the catheter system.
   2. Once bacteria gain access to the urinary tract, microorganisms can thrive in a "biofilm" layer on either the extra- or intraluminal surface of the IUC.
   3. Because the formation of a biofilm and colonization with bacteria takes time, most CAUTI occurs after 48 hours of catheterization and increases approximately 3% to 7% per day.
   4. The mechanisms described earlier provide the rationale for evidence-based care of IUCs. Four potential opportunities for intervention are:
      a. Avoid the use of catheters
      b. Evidence-based care practices and product selection

(*continued*)

Protocol 26.1: Prevention of Catheter-Associated Urinary Tract Infection (*continued*)

c. Timely removal
d. Education and surveillance

IV. ASSESSMENT OF CAUTI

A. The CDC has developed explicit surveillance criteria for CAUTI. In brief, the patient must have:
   1. A positive urine culture sent more than 48 hours after admission to the healthcare facility
   2. An IUC at the time of or within 24 hours before the culture
   3. One of the following: suprapubic tenderness, costovertebral angle pain or tenderness, or a fever more than 38°C without another recognized cause; or a positive blood culture with the same organism as in the urine
B. Measures
   1. Outcomes
      a. CAUTIs/1,000 catheter days
   2. Processes
      a. Catheter days/hospital days
      b. Surgical patients with catheter removed on postoperative day 1 or 2 (unless surgically contra-indicated)
C. Indications for IUCs can be operationalized using algorithms or protocols.

V. NURSING CARE STRATEGIES

CAUTIs are preventable through the application of evidence-based care strategies.

A. Catheter avoidance
   1. Established insertion guidelines
   2. Alternative strategies to manage urine output available:
      a. Bedside commodes
      b. Exdwelling catheters
      c. Moisture-wicking incontinence pads
      d. Intermittent straight catheterization
      e. Bladder scanner for monitoring and assessment
      f. Bedpans and urinals that are functional
   3. Toileting schedules and frequent nursing rounds
B. Product selection and routine care
   1. Catheter material:
      a. Antimicrobial catheter materials have been shown to reduce catheter-associated bacteriuria (colonization), but impact on prevention of symptomatic CAUTIs during short-term insertions is unproven.
      b. There is insufficient evidence to determine whether selection of a latex catheter, hydrogel-coated latex catheter, silicone-coated latex catheter, or all-silicone catheter influences CAUTI risk.
   2. Select the smallest size possible (<18 French).
   3. Use aseptic technique and sterile product during catheter insertion.
   4. Cleanse urethral meatus with soap and water while having a bath and after bowel movement.
   5. Secure catheter to leg using a catheter securement device.
   6. Maintain a closed system at all times.
   7. Keep drainage bag below level of bladder.
   8. Empty the bag when two thirds full and before transport.
C. Timely removal
   1. Systems that prompt providers to review need for the catheter and encourage early removal. Examples include stop orders and reminder systems; audit/feedback, nurse-prompted reminders, nurse-driven removal protocols.
   2. Measure of removal: SCIP, SCIP-inf-9 measure; catheter removal on postoperative day 1 or 2.

(*continued*)

Protocol 26.1: Prevention of Catheter-Associated Urinary Tract Infection (*continued*)

D. Surveillance and education
   1. Measurement of processes and outcomes
   2. Ongoing system evaluation, nursing reeducation, practice reminders, and public reporting of unit-based CAUTI-rate data are strategies to inform the healthcare team of current practice outcomes and effectiveness of CAUTI prevention strategies.

VI. EVALUATION/EXPECTED OUTCOMES

A. Plan of care
   1. Assessment that patient meets established insertion criteria
   2. Adherence to prompts for early catheter removal
   3. Standardized catheter care guidelines followed
B. Documentation
   1. Dates of insertion and removal
   2. Type of catheter (new indwelling, chronic indwelling, reinsertion, change of device)
   3. Reason for catheter insertion
   4. Justification that catheter is still necessary
   5. Postvoid residual catheter removal if patient is unable to void in 4 to 6 hours; bladder volume; intervention
C. Catheter usage
   1. Monitor unit-specific CAUTI rates.
   2. Monitor average catheter duration (catheter days).
   3. Monitor SCIP postoperative catheter removal on catheterization day 1 or 2.
   4. Trend unit-specific IUC usage.

ABBREVIATIONS

CAUTI	Catheter-associated urinary tract infection
CMS	Centers for Medicare & Medicaid Services
EBP	Evidence-based practice
HAI	Healthcare-associated infection
IUC	Indwelling urinary catheters
SCIP	Surgical Care Improvement Project

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Physical Restraints and Side Rails in Acute and Critical Care Settings*

27

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EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe the consequences of physical restraint use, including side rails, on older adults.
2. Describe the characteristics of an effective restraint reduction program.
3. Develop individualized care plan strategies that promote alternatives to restraint use through evidence-based care for falls, delirium, nutrition, medications, sleep, pain, and function.
4. Facilitate interprofessional team collaboration to ensure all aspects of restraint reduction programs are addressed.

OVERVIEW

The Centers for Medicare & Medicaid Services (CMS) defines *physical restraint* as "any manual method, physical or mechanical device, material, or equipment that immobilizes or reduces the ability of the patient to move his or her arms, legs, body or head freely" (U.S. Department of Health and Human Services [USHHS], 2006, p. 71383). Examples include wrist or leg restraints, Geri chairs, and, in certain situations, full side rails and reclining chairs. Many consider hand mitts a restraint only when wrist ties are used, but this is not universally agreed on; others consider hand mitts a type of restraint because they involuntarily limit the individual's ability to feed and groom himself or herself. Despite the federal regulations placed on hospitals since 1999, eliminating the use of physical restraints for the management of patients in acute nonpsychiatric settings has remained challenging. It is typical for healthcare professionals to use physical restraints and/or side rails to protect the patient or others (Evans & FitzGerald, 2002). However, the use of physical restraints or side rails for the involuntary immobilization of the patient may not only be an infringement of the patient's rights, but can also result in patient harm, including soft tissue injury, fractures, delirium, and even death (Burk, Grap, Munro, Schubert, & Sessler, 2014; Evans, Wood, & Lambert, 2003; Krexi, Georgiou, Krexi, & Sheppard, 2015; McPherson et al., 2013).

The standards from The Joint Commission (TJC) and regulations from CMS have raised concerns among hospital professionals about the feasibility and safety of eliminating the use of physical restraints and side rails in hospitals. The low to almost nonexistent use of physical restraint in other countries in comparable settings provides evidence that this can be achieved (De Jonghe et al., 2013; Elliott et al., 2013; Martin & Mathisen, 2005; O'Keeffe, Jack, & Lye, 1996). This chapter focuses on the issues of physical restraint in acute, nonpsychiatric hospital settings, paying particular attention to older adult patients.

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

BACKGROUND AND LEGAL ISSUES

U.S. Regulations and Accrediting Standards

In 1992, the U.S. Food and Drug Administration (FDA) issued a medical alert on the potential hazards of restraint devices (U.S. FDA, 2006a). Any harm that arises from the use of a restraining device, which now includes bedside rails, must be reported to the FDA. TJC hospital standards began to address the use of physical restraints in the early 1990s. In the ensuing years, the standards have become increasingly prescriptive.

In 1999, CMS established an interim rule for hospitals and, in December 2006, finalized the Patients' Rights Condition of Participation (USDHHS, 2006). These conditions establish the minimum protections of patients' rights and safety and may be superseded by state regulations or accrediting agencies. In brief, the use of physical restraint should be used as a last resort, only used when less restrictive mechanisms have been determined to be ineffective, the use of restraint must be in accordance with a written modification to the patient's plan of care, used in accordance with the order of a physician or licensed independent practitioner (LIP), and must never be written as an "as needed" order. Each order must be renewed every 24 hours for nonviolent behavior and every 4 hours for violent or self-destructive behavior. Orders must be renewed in accordance with hospital policy. Last, restraint must be discontinued at the earliest possible time.

Risks of Liability

A major obstacle in reducing clinicians' use of physical restraint or side rails is the fear of liability if restraints are not used and the patient incurs injury from falling or disrupting medical devices (e.g., see www.vanweylaw.com/whose-fault-patient-falls-hospital/). Case law has been mixed; hospitals have been found liable both for the use of physical restraints and for not using physical restraints (Kapp, 1994, 1996). Although hospitals have a clear duty to protect patients from harm, they do not have a duty to restrain patients. As the practice in hospitals becomes one of reduced restraints because of changing legal and accrediting standards, it will become easier for hospitals to justify nonuse of restraints in instances of patient injury in which use of nonrestraint interventions was clearly demonstrated (Kapp, 1999).

Professional Standards of Care

A number of organizations have established guidelines for the use of physical restraints in hospitals, including the American Nurses Association, the Society for Critical Care Medicine, and the Agency for Healthcare Research and Quality (Agency for Healthcare Research and Quality, 2018; American Nurses Association, 2012; Devlin et al., 2018; Maccioli et al., 2003). The National Quality Forum has designated physical restraint as a nursing-sensitive measure to be monitored in hospitals and nursing facilities. Last, as part of the condition for participation as a *Magnet® facility*, hospitals can examine the use of physical restraint in relation to nursing skill mix and hours. These guidelines have become the standard for customary practice and are used as an appropriate legal standard that defines the parameters of liability. Furthermore, these guidelines, in combination with TJC and CMS requirements, are used to establish hospital-based policies and procedures and quality of performance activities.

PREVALENCE AND RATIONALE OF STAFF

Extent of Use

These standards and guidelines have led to an overall decrease in physical restraint use in acute care and a change in practice patterns. In the 1980s, the overall prevalence rate of physical restraint use on general floors ranged from 6% to 13%, with higher rates (18%–22%) among older adult patients (Frengley & Mion, 1998). In the late 1990s, the overall hospital restraint prevalence decreased but varied as much as three-fold, with rates ranging from 39 restraint days/1,000 patient days to 82 restraint days/1,000 patient days (Minnick, Mion, Leipzig, Lamb, & Palmer, 1998; Mion et al., 2001). For the first time, restraint use was examined in critical care units and was noted to be as high as 500 restraint days/1,000 patient days. Intensive care unit (ICU) rates varied markedly among units in the same hospital setting as well as matched units among hospitals.

A U.S. national prevalence study, involving 434 units in 40 acute care hospitals selected at random from five geographical areas, was completed in 2005 (Minnick, Mion, Johnson, Catrambone, & Leipzig, 2007). Findings from this study revealed overall hospital prevalence of 50 restraint days/1,000 patient days but with a ten-fold variation among hospitals from a rate of 9 to 94 restraint days/1,000 patient days. The majority of use was accounted for in the ICUs. The pattern of differences by type of unit was again present (e.g., medical vs. surgical and adult vs. pediatric). However, even when controlling by type of unit, more than ten-fold variation existed among similar settings. For example, overall prevalence among the 41 general ICUs was 202.6 restraint days/1,000 patient days with a range of 9 to 351/1,000 patient days. Further, analyses revealed that variation in practice persisted even when controlling for size of hospital,

academic or nonacademic status, geographical region, type of hospital (e.g., nonprofit, profit, and government), staffing ratios, and nursing skill mix. Clearly, there are major practice differences *even when controlling for patient population*. Staggs and colleagues (Staggs, Olds, Cramer, & Shorr, 2017) conducted a longitudinal study from 2006 to 2010 of 3,101 medical, medical–surgical, and surgical units in the United States; they found that the prevalence of restraints decreased over time to a prevalence of 1.6% and was associated with the low unit skill mix. A Canadian study involving 51 ICUs revealed that (a) more than half of the patients were in restraints and (b) patient and hospital characteristics were *not* associated with restraint use of duration (Luk et al., 2014). Rather, treatment characteristics, such as use of sedative, analgesic, and antipsychotic drugs, were predictive of restraint use and duration.

Decision to Use Physical Restraint

Today's hospital nurses cite prevention of patient therapy disruption as the primary reason for restraint use followed by fall prevention (Benbenbishty, Adam, & Endacott, 2010; Choi & Song, 2003; Minnick et al., 2007; Staggs et al., 2017). Other less commonly voiced reasons included management of agitation or violent behavior, wandering, and positioning. Although most nurses cite patient care issues as the rationale for using physical restraint, a small proportion of nurses have cited insufficient staffing or legal concerns (Diercks de Casterle, Goethals, & Gastmans, 2015; Eskandari, Abdullah, Zainal, & Wong, 2017; Evans & FitzGerald, 2002).

The CMS regulations mandate that physicians or LIPs must order physical restraint. Similar to nurses, physicians vary in their decisions to order physical restraint (Mion et al., 2010; Sandhu et al., 2010). Factors associated with physicians' decisions to order restraint include (a) lack of knowledge of physical restraint and hospital policy, (b) higher appraisal of patient harm, (c) specialty (family practice or general surgery), (d) trusting the nurse, (e) patient behavior, and (f) presence of dementia. Given the variation in actual use of restraint, it appears that the decision to use physical restraint continues to be one based on individual judgment and beliefs rather than on scientifically validated guidelines or protocols.

ETHICAL ISSUES IN THE USE OF PHYSICAL RESTRAINT

The primary ethical dilemma resulting from physical restraint is the clinician's value of or emphasis on beneficence versus the patient's autonomy. (Clinicians believe that physical restraint maintains patient safety and prevents harm occurring from their behavior, such as falling or disrupting therapy; Via-Clavero et al., 2018.) The presence of a physical restraint, by its very nature, is applied against a patient's wishes and inevitably compromises the individual's dignity and diminishes respect for the person. Beneficence requires that at least no harm should arise from the use of physical restraint and that, optimally, a good outcome would result from use. The lack of beneficial results from the use of physical restraints has been well documented in many healthcare settings. Little is known, however, of the risk-to-benefit ratio of use or nonuse of physical restraint in patients who are critically ill (Devlin et al., 2018; Maccioli et al., 2003).

The discussion of physical restraints from an ethical viewpoint must also incorporate the sociocultural and political contexts. For example, clinicians have reported on low to nonexistent use of physical restraint in the United Kingdom, stemming perhaps from a legal mandate existing since the 1800s prohibiting their use. It has been suggested that in the United States, the domination of risk in geriatric assessment (e.g., prevent harm, prevent falls) shapes much of clinicians' understanding of old age (Kaufman, 1994). If one's primary focus is on the likelihood of patient risk resulting in harm, one is less likely to see self-esteem or dignity as the more important value or model to guide clinical decisions (Gastmans & Milisen, 2006; Slomka, Agich, Stagno, & Smith, 1998). Interestingly, Slomka and associates point to the contradictory nature of the frequent use of physical restraint in the United States—that is, a society that places a high value on autonomy yet is so willing to violate that autonomy in the interest of perceived patient benefit (Slomka et al., 1998).

The discussion of ethics in clinical practice must also acknowledge the realities of reduced resources and escalating costs (Minnick et al., 2007; Slomka et al., 1998). Decisions and protocols about the use of physical restraints and methods to reduce and/or eliminate restraints will be impacted by cost-containment efforts, and clinicians and administrators alike may be reluctant to minimize or eliminate restraints. If alternatives to physical restraints in acute care settings can be shown to contribute to quality outcomes (e.g., patient safety, patient dignity, or satisfaction) and to be within existing cost-containment efforts, then there is an increased likelihood of successfully implementing and maintaining practice guidelines. There is a chance, however, that if restraint reduction efforts are seen as too expensive (e.g., use of "sitters"), then the emphasis on cost constraint may trump other considerations (Slomka et al., 1998).

ADMINISTRATIVE RESPONSIBILITIES

Changing established practices and philosophies of care can be a daunting task. Although education and training are important, the most important factor in effecting a major shift in the present paradigm of care to one that is restraint-free care is the commitment by administrators and key clinical leaders (Enns, Rhemtulla, Ewa, Fruetel, & Holroyd-Leduc, 2014; Mion et al., 2001). Administrators, including nurse managers, set the tone for the practice on the unit. Reducing healthcare providers' reliance on physical restraint in managing confused or agitated patients, especially in the critical care units, is a major shift that leaves many staff uneasy. Clinical staff, especially the frontline care providers, must feel supported during the transition period. The goal set and supported by administration of a restraint-free environment would establish the presence of a physical restraint as an outlier that requires a full analysis as for a sentinel event. The outcome of such analyses may well lead to the recognition of system problems and organizational arrangements that can be improved, which, in turn, lead to even fewer restraints in use.

INTERVENTIONS AND CARE STRATEGIES

Studies of the prevalence of the use of physical restraints for nonpsychiatric purposes in hospitals have shown that there is great discrepancy among general medical and surgical units and ICUs in terms of the extent of use and rationale for it. Therefore, the use of physical restraints and approaches to possible alternatives can be considered separately for general hospital units and critical care units.

General Medical and Surgical Units

Rates of physical restraint use on general medical and surgical units have declined in the past 20 years, although variation exists (Staggs et al., 2017). It is apparent that there are units that demonstrate best practices but also that further efforts are needed to eliminate this practice as a national standard. Otherwise, significant numbers of patients will continue to be restrained.

Many hospitals provide care for acutely ill, frail older adults in settings that are not designed environmentally for the care of such older people (Catrambone, Johnson, Mion, & Minnick, 2009; Mion et al., 2007). Environmental structure can either facilitate or inhibit monitoring and surveillance, noise control, appropriate lighting, socialization, cognition, and function (Catrambone et al., 2009; Diercks de Casterle et al., 2015). Studies in long-term care settings have demonstrated that the use of environmental strategies can enhance function among those suffering from dementia; similar strategies need to be considered in acute care settings.

Besides environmental strategies, organizational factors, such as systems to determine staffing numbers and mix, models of care delivery, and transmission or communication of the plan of care among multiple disciplines and departments, are gaining increased recognition in the patient safety movement (Leape & Berwick, 2005). Many healthcare providers lack the knowledge, skills, and sensitivity in providing appropriate care to older adults. The TJC standard to ensure age-specific education and training is a step in the right direction, but further efforts are required.

No single approach to eliminating physical restraints on general medical and surgical units can be successful. Studies in a variety of settings have shown that the use of advanced practice nurses, comprehensive interprofessional approaches to enhance cognitive and physical function, staff education, organizational strategies, and environmental interventions can eliminate or reduce physical restraints in a cost-effective manner while promoting other patient outcomes such as reduced fall rates (Amato, Salter, & Mion, 2006; Enns et al., 2014; Mion et al., 2001).

Critical Care Units

The use of physical restraints now predominantly occurs within the ICUs to maintain needed life-sustaining therapies or life-maintaining therapies (Choi & Song, 2003; Devlin et al., 2018; Luk et al., 2014; Minnick et al., 2007). Strategies that have been used with success in long-term care settings, rehabilitation settings, and general hospital units are not as successful in critical care environments (Mion et al., 2001). The severity of illness of patients, the intensity and delivery of care, the pace of activity, and the consequences of interruptions, delays, or disruptions of therapeutic devices differ significantly between non-ICUs and ICUs. The thought of delirious patients dislodging external ventricular drains with subsequent brain damage, pulling out central lines with threat of hemorrhage, or self-extubation from mechanical ventilation with subsequent respiratory arrest is one that heavily influences critical care nurses' decisions to use physical restraints (Happ, 2000; Luk et al., 2014; Luk, Burry, Rezaie, Mehta, & Rose, 2015).

Efforts to limit physical restraint use in the ICU are hampered by lack of information regarding the extent of therapy disruption in these units or the resulting immediate and subsequent harm to patients (Devlin et al., 2018; Maccioli et al., 2003; Perez, Peters, Wilkes, & Murphy, 2019). A number of studies, mostly single site, have

examined self-extubation from mechanical ventilation (Kiekkas, Aretha, Panteli, Baltopoulos, & Filos, 2013). Rates have ranged from 0.3% to 14.3%, with higher rates in medical ICUs. Reintubation after self-extubation ranged from 11% to 76%. *It is important to note that 33% to 91% of those who self-extubated did so while physically restrained*. Mion and colleagues (Mion, Minnick, Leipzig, Catrambone, & Johnson, 2007) examined the prevalence of patient-initiated device removal, patient contexts, patient risk-adjusted factors, and consequences in 49 ICUs in 39 hospitals. Patients removed 1,623 devices on 1,097 occasions for an overall rate of 22.1 episodes/1,000 patient days. Similar to results on physical restraint prevalence, wide variation in rates was noted: from none to 102.4 episodes/1,000 patient days. Approximately half the episodes occurred on day shift, and 44% were in physical restraint at the time of the episode. Patient harm occurred in 250 (23%) events, mostly minor in nature. In 10 (0.9%) episodes, patients incurred major harm; no deaths occurred. The authors examined rates of reinsertion and found these varied by type of device. Devices that are easily applied, such as monitor lead or oxygen masks, had much higher reinsertion rates than devices that are more complex and difficult to insert (such as endotracheal tubes or surgical drains). It may be that devices are used too long, which could contribute to prolonged use of physical restraint. In turn, physical restraint may contribute to agitation and delirium (Burk et al., 2014; McPherson et al., 2013). Additional hospital resources (e.g., x-rays, laboratory tests) were used in slightly more than half the episodes, thus posing a potentially costly problem; others have reported similar findings (Fraser, Riker, Prato, & Wilkins, 2001; Kiekkas et al., 2013). Information gathered on staffing levels and mix showed little variation among these ICUs; hence, there was no association between staffing ratios and therapy disruptions. The authors found *no* association between a unit's restraint rate and rate of therapy disruption, a finding similar to some studies (Danielis, Chiaruttini, & Palese, 2018; Kapadia, Bajan, & Raje, 2000; Mion et al., 2001) but not others (Carrión et al., 2000).

Finally, the pattern of sedation and analgesia in these units was unclear, and 30% of the patients had received no analgesia or sedation in the 24 hours before the episode. Others have reported inconsistent sedation and analgesia practices in ICUs (Bair et al., 2000; Devlin et al., 2018; Egerod, Christensen, & Johansen, 2006; Mehta et al., 2006). In an earlier cohort study, the authors examined medical intensive care unit (MICU) patient outcomes after implementing sedation and analgesia guidelines and found that those cared for with the guidelines had less self-extubation events and less use of physical restraints (Bair et al., 2000). Examining appropriate strategies for sedation and analgesia in critically ill patients may well result in improved clinical outcomes while providing care in a more humane fashion (Devlin et al., 2018).

Attention to the environment of the ICU is as important as to any other setting. Indeed, the environment can affect more strongly persons whose personal competence is low and who are unable to exert control over the environment. Environmental features, such as noise, light, and unit design, have been shown to be associated with agitation, anxiety, and disorientation of ICU patients (Danielis et al., 2018; Devlin et al., 2018).

Lack of communication with ICU patients by care providers has been documented and results in distress, anxiety, and confusion (Dithole, Sibanda, Moleki, & Thupayagale-Tshweneagae, 2016). Attention to the physical environment; use of communication techniques with seemingly noncommunicative patients; encouragement of collaborative practice among ICU disciplines; and nonpharmacological approaches to relieve patient distress, anxiety, and agitation have been suggested (Devlin et al., 2018; Maccioli et al., 2003; Trotta, Hermann, Polomano, & Happ, 2019). A multipronged approach to optimize physical and cognitive function and address onset, as well as manage delirium and appropriate and adequate pain control, is likely to affect nurses' and physicians' reliance on physical restraint.

ALTERNATIVES TO PHYSICAL RESTRAINTS

This book has provided the reader with a number of protocols addressing care issues such as falls, delirium, sleep, nutrition, medications, and function. The reader is encouraged to review these protocols closely. Implementing best practices aimed at these areas will in itself reduce the use of physical restraints. A brief overview of an approach that the authors have found successful is presented herein.

Addressing the two major reasons for using physical restraints, to prevent therapy disruption and falls, requires comprehensive yet targeted approaches. The act of self-terminating therapy among hospitalized, acutely ill older adults is most likely a manifestation of delirium and less likely a desire to enact a clinical decision, as with advance directives. Both falls and delirium are well-known syndromes with significant morbidity and mortality among older adults. Both are complex syndromes with multiple underlying etiologies that require a combination of individual-, environmental-, and organization-specific strategies (Mudge et al., 2019). Inouye et al. (1999) have demonstrated a multicomponent approach to preventing delirium in a randomized controlled trial

that was subsequently implemented in a number of hospitals (Hshieh, Yang, Gartaganis, Yue, & Inouye, 2018). Fall prevention also requires a multicomponent approach (Barker et al., 2016; Cameron et al., 2018). Given the complexity of falls and delirium, it is unlikely that any single intervention will suffice as an alternative to physical restraint. Rather, attention to the environment and organization of the unit, as described in the two previous sections, combined with patient-specific approaches, provides the most successful way to eliminate restraint use (Amato et al., 2006; Enns et al., 2014; Mion et al., 2001).

Fall Prevention

Falls are common, serious events in hospitalized older patients. Although nurses perceive that physical restraint prevents falls from occurring, the reality is that physical restraints have not been shown to prevent falls and can actually contribute to fall injury (Frengley & Mion, 1998). The goal is to minimize the risk or probability of falling without compromising the older individual's mobility and functional independence. Using a systematic or standardized approach, the nurse and physician assess the patient for intrinsic (personal), extrinsic (environment), and situational (activity) factors. Common intrinsic risk factors include impaired gait or balance, sedating medications, vision and hearing impairments, and cognitive impairment, including impaired memory, impulsiveness, or poor judgment. Given the multiple potential causes of falls, no single intervention or combination of interventions has been found effective in preventing falls in hospital settings (Cameron et al., 2018; Hempel et al., 2013). A number of fall risk assessment guidelines are available (Oliver, Healey, & Haines, 2010). The reader is referred to Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care, for a more in-depth discussion. What is important to note is that the evaluation for intrinsic factors need not be complex or time consuming. For instance, the nurse can do a simple evaluation of gait and balance by simply observing the person's ability to transfer in and out of bed or chair and ability to walk to and from the bathroom. The nurse can quickly note any difficulty with steadiness, ability to stand up independently without using a rocking motion or use of upper extremities, ability to sit down without "plopping" onto the surface of the chair, and the ability to walk steadily to the bathroom without holding onto objects or the wall. At this time, notation can be made of lightheadedness or dizziness, presence of orthostatic hypotension, and use of sedating medications.

Extrinsic factors include clothing and footwear. Shoes or slippers should be nonskid, but rubber-soled footwear is not recommended because this material can "grip" the floor, causing the person to pitch forward. Furniture design, such as beds at a proper height and chairs with extended armrests for easier leverage, can facilitate mobility. Reclining chairs are helpful for those with poor trunk control and who slide out of chairs with a 90° seating angle. On the other hand, reclining chairs can act as a type of restraint if used for patients with general deconditioning or weakened states who subsequently struggle to rise out of the chair. Beds low to the floor assist with preventing fall injury because the distance from bed to floor is reduced (Bower, Lloyd, Lee, Powell-Cope, & Baptiste, 2008). Padded floor mats may be used in combination with the very low beds. However, caution must be exercised in determining which patients receive very low beds with or without the floor mats. There have been case reports of patient falls and injury from very low beds or floor mats (Bower et al., 2008; Doig & Morse, 2010). Falls can occur either because of difficulty rising to a standing position from a very low height and/or tripping on the mat. Thus, care must be taken in determining those patients most likely to benefit from these beds. We suggest use of these beds for patients who are identified at moderate to high risk for falls, unable to stand without assistance, and who forget or refuse to call for help (Bower et al., 2008; Capezuti et al., 2008; Doig & Morse, 2010; Tzeng & Yin, 2008). Use of these beds is no guarantee that falls or fall injuries will be reduced. Haines, Bell, and Varghese (2010) conducted a cluster randomized trial and found no effect on either falls or fall injury with the use of these beds. Similarly, another study found that bed and chair alarms have no effect on overall fall rates on general medical and surgical floors (Shorr et al., 2012). Last, hospital equipment can contribute to falls, such as legs collapsing on bedside commodes, wheelchairs tipping when a patient leans forward, or tubing from lower extremity intermittent-compression devices that may be left on when a patient stands up from bed. In determining equipment use, the nurse must weigh each patient's risk factors for the most effective and appropriate use.

The findings of either intrinsic or extrinsic factors should lead to targeted interventions. There are some fall-prevention strategies that one can consider "universal"—that is, to be implemented for all patients regardless of the risk level. For instance, all patients should have beds at appropriate heights for ease of exiting and entering, have call bells within reach, and have clear pathways. Depending on the type of unit, some units may elect to incorporate universal interventions that other floors would consider a targeted intervention. For example, an acute stroke unit may elect to automatically place all patients on a toileting schedule at the time of admission and reevaluate

continually whether this intervention is required, whereas the other units in the hospital would elect to use this as a targeted intervention only for those patients with cognitive impairment and incontinence. An important fall-prevention strategy in any setting is mobilization and exercise. Even in critical care settings, there is a growing body of literature that demonstrates the physiological and physical benefits of early mobilization and rehabilitation (Balas et al., 2018).

Protection of Medical Devices

Disruption of therapy or self-termination of devices can be dealt with by first identifying the underlying reason for the patient's attempts to terminate therapies. In many cases, the nurse will identify "confusion" as the underlying cause. As discussed in earlier chapters, the nurse needs to differentiate dementia, delirium, or delirium superimposed on dementia. Additionally, the interprofessional team must discern the underlying causes of delirium, including pain. A systematic approach to determine the cause of the behavior is necessary for treatment. For example, if an older adult is suffering from alcohol withdrawal, it is unlikely that interventions, such as increased surveillance or pain relief, will have much impact on the person's agitation and delirium. Refer to Chapter 9, Assessing Cognitive Function in the Older Adult; Chapter 21, Dementia: Assessment and Care Strategies; and Chapter 20, Delirium: Prevention, Early Recognition, and Treatment for further protocols to identify cognitive impairments and to prevent and manage delirium.

In the past, the options for managing agitation in the critical care unit have been sedation and/or physical restraint. The type and amount of sedation, however, may actually contribute to delirium and agitation (Devlin et al., 2018; Wunsch & Kress, 2009). Multiple studies suggest that limiting the use of benzodiazepines and use of an alternative medication, dexmedetomidine, can decrease ventilator time, length of stay, and long-term brain dysfunction (Wunsch & Kress, 2009). The use of physical restraint in critical care settings has been associated with delirium as well as posttraumatic stress disorder (Jones et al., 2007; McPherson et al., 2013; Micek, Anand, Laible, Shannon, & Kollef, 2005; Nirmalan, Dark, Nightingale, & Harris, 2004; Wallen, Chaboyer, Thalib, & Creedy, 2008).

As the healthcare team works to address the patient's behavior, nonpharmacological approaches to protecting the device from self-termination can be made. First, evaluate daily whether the device is absolutely necessary. Since the CMS designation of nonpayment of nosocomial catheter infections (e.g., urinary tract infections from indwelling catheters, ventilator-related pneumonia), many ICUs have implemented multidisciplinary daily mandatory checklists that incorporate assessment for compliance to infection control and timely discontinuation of devices (Byrnes et al., 2009; DuBose et al., 2010). Even in the critical care environment, major therapy devices may not be reinserted once a patient pulls it out. Thus, always question whether the device is absolutely necessary or whether a less noxious device or approach may be used instead. For example, if a nasogastric tube is used for nutrition, request the assessment of other disciplines, such as speech or occupational therapists (OTs), to determine whether oral feeding could be introduced. If long-term enteral feeding is required, an interprofessional team plan with the patient and family is warranted given the known deleterious effects of tube feedings with certain conditions.

Some therapeutic devices cannot be altered or discontinued, for example, use of endotracheal tubes, nasal cannula, or oxygen masks. A second approach is to use anchoring techniques to secure the device against the patient's attempts to dislodge the device or to use camouflage to "hide" the device from the patient. Proper anchoring addresses comfort as well as stabilization of the device(s). For example, it is not unusual for pressure ulcers to develop on the nares or behind the ears and neck because of undue pressure from the device; clearly, this creates a source of discomfort for the patient. Proper stabilization of the tube or device with secure anchoring can minimize accidental dislodgment as well as deter more purposeful removal. For instance, a nasogastric tube can be so placed as to avoid interfering with or interrupting the person's visual field. Seeing the tube dangling in front of one's eyes or pulling on one's nares is an obvious irritant. If a gastrostomy tube is determined to be appropriate in the person's plan of care, abdominal binders can aid in reducing the person's ability to pull it out. There are a number of commercial products available to secure various tubes, including nasogastric tubes, endotracheal tubes, intravenous (IV) lines, and indwelling bladder catheters. Although none of these devices is likely to prevent a determined person from pulling out a device, they do provide anchoring and stability of the device that is probably more secure than taping methods.

Side Rails

A discussion on physical restraints in hospitals would not be complete without mentioning side rails. Side rails, in and of themselves, are not considered a restraining device by either TJC or CMS. It is the nurse's intent of their use that determines whether side rails are a restraining device or a protective device. This has led to some confusion by nurses. Full

side rails to transfer patients in carts, during procedures (e.g., conscious sedation), or protect a sedated or lethargic patient from rolling out of the bed can be considered as protective devices. A number of specialty beds, such as ICU pulmonary beds or bariatric beds, require full side rails in use. Many bed manufacturers have bed controls and call systems embedded in the side rail frames, resulting in patients requesting the side rails be kept raised for ease of control. Hospital patients have also been observed to request partial to full side rails to be raised because of the narrowness of the beds or to facilitate movement (e.g., transfers, repositioning).

In ICU settings, full side rails are used, predominantly because of bed equipment specification (e.g., pulmonary beds) or because of procedural considerations (e.g., sedation protocols; Minnick, Mion, Johnson, Catrambone, & Leipzig, 2008). In non-ICUs, nurses may use full side rails primarily for fall prevention (46%), especially for older patients (Minnick et al., 2008). Full side rails used to keep patients in bed who *desire* to leave the bed are restraints. It does not matter what the cognitive level of the person is. If a severely demented patient wishes to leave the bed, full side rails are considered a restraint, even if the nurse believes that the side rails are for "patient safety." Side rails have been shown to increase fall injuries because patients either try to squeeze through rails or climb over the foot of the bed; hence, they are not recommended as a fall-prevention strategy for conscious patients, even in the presence of cognitive impairment (Braun & Capezuti, 2000). Rather, the use of side rails should be limited with patients who may inadvertently roll off the bed because of impaired levels of consciousness from sedation, anesthesia, or medical conditions. Indeed, the FDA has received reports of more than 400 deaths as a direct result of side rail entrapment from a variety of healthcare settings, including hospitals (U.S. FDA, 2006b). The reader is referred to Braun and Capezuti (2000) for an excellent review of the legal and medical aspects of side rail use.

SUMMARY

The pattern and rationale for physical restraint use has changed over the past two decades. Focusing on assessment and prevention of delirium and falls will likely minimize its use. Further work is needed in the ICU setting for best strategies to identify, prevent, and manage delirium that would include nonpharmacological as well as pharmacological approaches. To avoid the use of physical restraints, practical and cost-effective strategies need to be devised and tested. This would best be done in an interprofessional patient-centered fashion.



NURSING STANDARD OF PRACTICE

Protocol 27.1: Physical Restraints and Side Rails in Acute and Critical Care Settings

I. GOAL

To eliminate the use of physical restraints and side rails in acute and critical care settings

II. OVERVIEW

A. The use of physical restraints or side rails for the involuntary immobilization of the patient may not only be an infringement of the patient's rights, but can also result in patient harm, including soft tissue injury, fractures, delirium, and even death (Evans et al., 2003).
B. The primary ethical dilemma resulting from physical restraint is the clinician's value or emphasis of beneficence versus the patient's autonomy.
C. Physical restraint should be used as a last resort; that is, only when less restrictive mechanisms have been determined to be ineffective; the use of restraint must be in accordance with a written modification to the patient's plan of care, in accordance with the order of a physician or LIP, and must never be written as an "as needed" order. Each order must be renewed every 24 hours for nonviolent behavior and every 4 hours for violent or self-destructive behavior. Orders must be renewed in accordance with hospital policy. Last, restraint must be discontinued at the earliest possible time (USDHHS, 2007).

(*continued*)

Protocol 27.1: Physical Restraints and Side Rails in Acute and Critical Care Settings (*continued*)

III. BACKGROUND AND STATEMENT OF PROBLEM

A. Definition: The CMS defines physical restraint as "any manual method, physical or mechanical device, material, or equipment that immobilizes or reduces the ability of the patient to move his or her arms, legs, body or head freely" (USDHHS, 2006, p. 71383). Examples include wrist or leg restraints, Geri chairs, and, in certain situations, mitts, full side rails, and reclining chairs.
B. Etiology: Hospital nurses' reasons for use of physical restraint are prevention of patient disruption of medical devices and therapy (75%), confusion (25%), and fall prevention (20%) (Minnick et al., 2007; Perez et al., 2019).
C. Epidemiology
   1. Prevalence of physical restraint use on individual non-ICU rates has decreased significantly, with the overall rate on medical and surgical units being 1.6%. Variations exist across units (Minnick et al., 2007; Staggs et al., 2017).
   2. Individual ICU rates range from less than 20% to greater than 80% (Perez et al., 2019; Rose et al., 2016).

IV. PARAMETERS OF ASSESSMENT

A. Assess for underlying cause(s) of agitation and cognitive impairment leading to patient-initiated device removal (refer to Chapter 9, Assessing Cognitive Function in the Older Adult; Chapter 19, Late-Life Depression; Chapter 20, Delirium: Prevention, Early Recognition, and Treatment; and Chapter 21, Dementia: Assessment and Care Strategies).
   1. If abrupt change in perception, attention, or level of consciousness:
      a. Assess for life-threatening physiological impairments
      b. Review respiratory, neurological, fever and sepsis, hypoglycemia and hyperglycemia, alcohol or substance withdrawal, and fluid and electrolyte imbalance
      c. Notify physician of change in mental status and compromised physiological status
   2. Differential assessment (interprofessional)
      a. Obtain baseline or premorbid cognitive function from family and caregivers
      b. Establish whether the patient has history of dementia or depression
      c. Review medications to identify drug–drug interactions, adverse effects
      d. Review current laboratory values
B. Assess fall risk: intrinsic, extrinsic, and situational factors (refer to Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care)
C. Assess for medications that may cause drug–drug interactions and adverse drug effects (refer to Chapter 24, Reducing Adverse Drug Events in the Older Adult).

V. NURSING CARE STRATEGIES

A. Interventions to minimize or reduce patient-initiated device removal
   1. Disruption of any device
      a. Reassess daily to determine whether it is medically possible to discontinue device; try alternative mode of therapy (DuBose et al., 2010; Mion et al., 2001; Nirmalan et al., 2004).
      b. For mild to moderate cognitive impairment, explain device and allow patient to understand nurse's guidance.
   2. Attempted or actual disruption: ventilator
      a. Determine underlying cause of behavior for appropriate medical and/or pharmacological approach
      b. More secure anchoring
      c. Appropriate sedation and analgesia protocol
      d. Start with less restrictive means: mitts, elbow extenders
   3. Attempted or actual disruption: nasogastric tube
      a. If for feeding purposes, consult with nutritionist and speech or occupational therapist for swallow evaluation
      b. Consider gastrostomy tube for feeding as appropriate if other measures are ineffective

(*continued*)

Protocol 27.1: Physical Restraints and Side Rails in Acute and Critical Care Settings (*continued*)

   c. Anchoring of tube, either by taping techniques or commercial tube holder
   d. If restraints are needed, start with least restrictive: mitts, elbow extenders
4. Attempted or actual disruption: IV lines
   a. Commercial tube holder for anchoring
   b. Long-sleeved robes, commercial sleeves for arms
   c. Consider Hep-Lock and cover with skin sleeve. White gauze may also be used, but case reports exist in which patients focus on the white gauze and unravel it.
   d. Taping, securement of IV line under gown, sleeves
   e. Keep IV bag out of visual field
   f. Consider alternative therapy: oral fluids, drugs
5. Treatment (interprofessional)
   a. Treat underlying disorder(s)
   b. Judicious, low-dose use of medication if warranted for agitation
   c. Communication techniques: low voice, simple commands, reorientation
   d. Frequent reassurance and orientation
   e. Surveillance and observation: Determine whether family member(s) is willing to stay with patient, move patient closer to nurses' station, perform safety checks more frequently, redeploy staff to provide one-on-one observation if other measure is ineffective
6. Attempted or actual disruption: bladder catheter
   a. Consider intermittent catheterization if appropriate
   b. Proper securement, anchoring to leg; commercial tube holders available

B. Interventions to reduce fall risk
1. Patient-centered interventions
   a. Supervised, progressive ambulation even in ICUs (Devlin et al., 2018; Truong, Fan, Brower, & Needham, 2009)
   b. Physical therapist (PT)/Occupational therapist (OT) consultation: weakened or unsteady gait, trunk weakness, upper arm weakness
   c. Provide physical aids in hearing, vision, walking
   d. Modify clothing: skidproof slippers, slipper socks, robes no longer than ankle length
   e. Utilize bedside commode if impaired or weakened gait
   f. Postural hypotension: behavioral recommendations such as ankle pumps, hand clenching, reviewing medications, elevating head of bed
2. Organizational interventions (Mion et al., 2001)
   a. Examine pattern of falls on unit (e.g., time of day, day of week).
   b. Examine unit factors that can contribute to falls that can be ameliorated (e.g., report in staff room vs. walking rounds to improve surveillance during shift change).
   c. Restructure staff routines to increase number of available staff throughout the day.
   d. Set and maintain toilet schedules.
   e. Install electronic alarms for wanderers.
   f. Consider bed and chair alarms (note: no to little evidence on effectiveness; Shorr et al., 2012).
   g. Move patient closer to nurse station.
   h. Increase checks on high-risk patients.
   i. Perform video surveillance for high-risk patients.
3. Environmental interventions (Amato et al., 2006)
   a. Keep bed in low, locked position.
   b. Ensure safety features, such as grab bars, call bells, and bed alarms, are in good working order.
   c. Ensure bedside tables and dressers are within easy reach.
   d. Clear pathways of hazards.
   e. Bolster cushions to assist with posture; maintain seat in chair.

(*continued*)

Protocol 27.1: Physical Restraints and Side Rails in Acute and Critical Care Settings (*continued*)

f. Ensure adequate lighting, especially in bathroom at night.
g. Choose furniture to facilitate seating: reclining chairs (note: may be considered restraint in some instances), extended armrests, high back.

C. Review medications using Beers Criteria for potentially inappropriate medications.

VI. EVALUATION AND EXPECTED OUTCOMES

A. Patient will
   1. Remain free of restraints.
   2. Be put in physical restraints only as a last resort.
B. Nursing staff will
   1. Be able to accurately assess patients who are at risk for use of physical restraint.
   2. Only use physical restraints when less restrictive mechanisms have been determined to be ineffective.
   3. Have an increased use of nonrestraint, safety alternatives.
C. Organization will
   1. Have a decrease in incidence and/or prevalence of restraints.
   2. Not have an increase of falls, agitated behavior, and patient-initiated removal of medical devices.

VII. FOLLOW-UP MONITORING OF CONDITION

A. Monitor restraint incidence comparing benchmark rates over time by unit.
B. Document prevalence rate of restraint use on an ongoing basis.
C. Focus education on assessment and prevention of delirium and falls.
D. Consult with interprofessional members to identify additional safety alternatives.

VIII. RELEVANT PRACTICE GUIDELINES

A. American Nurses Association (2012)
B. Agency for Healthcare Research and Quality (2018)
C. Society of Critical Care Medicine (Devlin et al., 2018; Maccioli et al., 2003)

ABBREVIATIONS

CMS	Centers for Medicare & Medicaid Services
ICU	Intensive care unit
LIP	Licensed independent practitioner
OT	Occupational therapist
PT	Physical therapist
USDHHS	U.S. Department of Health and Human Services

RESOURCES

Additional Information About Restraints

Consult GeriRN
An online resource containing information regarding assessing and caring for older adults sponsored by the Hartford Institute for Geriatric Nursing at New York University College of Nursing.
consultgerirn.org/resources
The Joint Commission (TJC): Sentinel Event Alert
www.jointcommission.org/sentinel_event_alert_issue_8_preventing_restraint_deaths

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Preventing Pressure Injuries and Skin Tears*

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28

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Assess patients for pressure ulcer risk.
2. Classify pressure injuries using the correct staging definitions. (Check for applicability in your clinical care setting or country.)
3. Develop a comprehensive, holistic high-risk pressure injury prevention and treatment plan.
4. Identify high-risk individuals for skin tears (especially older adults).
5. Classify skin tears using the International Skin Tear Advisory Panel (ISTAP) classification system.
6. Develop a plan to prevent and treat skin tears.

OVERVIEW

The skin is the largest external organ, so preserving its integrity is an important aspect of nursing care. Performing a risk assessment and implementing a consistent prevention protocol may avoid disruption of the skin integrity, including the development of pressure injuries or skin tears. Although pressure ulcers, now referred to as pressure injuries as per the National Pressure Ulcer Advisory Panel 2016 guidelines (Edsberg et al., 2016), and skin tears may look similar, they are different types of skin injury. Skin tears are acute traumatic wounds, whereas pressure injuries are chronic wounds. It is important to assess the wound and to determine the correct etiology so that the proper individualized treatment plan can be implemented.

BACKGROUND AND STATEMENT OF PROBLEM

Pressure Injuries

Pressure injuries are a significant healthcare problem worldwide (Bolton, 2010) and have a significant impact on health-related quality of life (HRQL; Boyko, Longaker, & Yang, 2018; Gorecki et al., 2009). The word *friction* was first eliminated from the definition of a pressure ulcer in the 2009 joint pressure ulcer clinical guidelines written by the National Pressure Ulcer Advisory Panel and the European Pressure Ulcer Advisory Panel (EPUAP & NPUAP, 2019). See Box 28.1 for current NPUAP definitions. The NPUAP has upheld its position that friction is a superficial force that is not an important etiological factor for

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

BOX 28.1

National Pressure Ulcer Advisory Panel (NPUAP) Pressure Injury Stages

The NPUAP refined the definition of pressure injuries during the NPUAP 2016 Staging Consensus Conference that was held from April 8 to 9, 2016, in Rosemont, Chicago, Illinois, USA.

Pressure Injury

A pressure injury is localized damage to the skin and/or underlying soft tissue, usually over a bony prominence, or related to a medical or other device. The injury may present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of softer tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, comorbidities and condition of the soft tissue.

Stage 1: Pressure Injury: Nonblanchable erythema of intact skin

Intact skin with a localized area of nonblanchable erythema, which may appear differently in darkly pigmented skin. Presence of blanchable erythema or changes in sensation, temperature, or firmness may precede visual changes. Color changes do not include purple or maroon discoloration; these may indicate deep tissue pressure injury.

Stage 2: Pressure Injury: Partial-thickness skin loss with exposed dermis

Partial-thickness skin loss with exposed dermis. The wound bed is viable, pink or red, and moist, and may also present as an intact or ruptured serum-filled blister. Adipose (fat) is not visible, and deeper tissues are not visible. Granulation tissue, slough, and eschar are not present. These injuries commonly result from adverse microclimate and shear in the skin over the pelvis and shear in the heel. This stage should not be used to describe moisture-associated skin damage (MASD), including incontinence-associated dermatitis (IAD), intertriginous dermatitis (ITD), medical adhesive-related skin injury (MARSI), or traumatic wounds (skin tears, burns, abrasions).

Stage 3: Pressure Injury: Full-thickness skin loss

Full-thickness loss of skin, in which adipose (fat) is visible in the ulcer and granulation tissue and epibole (rolled wound edges), is often present. Slough and/or eschar may be visible. The depth of tissue damage varies by anatomical location; areas of significant adiposity can develop deep wounds. Undermining and tunneling may occur. Fascia, muscle, tendon, ligament, cartilage, and/or bone are not exposed. If slough or eschar obscures the extent of tissue loss, this is an Unstageable Pressure Injury.

Stage 4: Pressure Injury: Full-thickness skin and tissue loss

Full-thickness skin and tissue loss with exposed or directly palpable fascia, muscle, tendon, ligament, cartilage, or bone in the ulcer. Slough and/or eschar may be visible. Epibole (rolled edges), undermining, and/or tunneling often occur. Depth varies by anatomical location. If slough or eschar obscures the extent of tissue loss, this is an Unstageable Pressure Injury.

Unstageable Pressure Injury: Obscured full-thickness skin and tissue loss

Full-thickness skin and tissue loss in which the extent of tissue damage within the ulcer cannot be confirmed because it is obscured by slough or eschar. If slough or eschar is removed, a Stage 3 or Stage 4 pressure injury will be revealed. Stable eschar (i.e., dry, adherent, intact without erythema or fluctuance) on the heel or ischemic limb should not be softened or removed.

Deep Tissue Pressure Injury: Persistent nonblanchable deep red, maroon, or purple discoloration

Intact or nonintact skin with localized area of persistent nonblanchable deep red, maroon, purple discoloration, or epidermal separation revealing a dark wound bed or blood-filled blister. Pain and temperature change often precede skin color changes. Discoloration may appear differently in darkly pigmented skin. This injury results from intense and/or prolonged pressure and shear forces at the bone–muscle interface. The wound may evolve rapidly to reveal the actual extent of tissue injury or may resolve without tissue loss. If necrotic tissue, subcutaneous tissue, granulation tissue, fascia, muscle, or other underlying structures are visible, this indicates a full-thickness pressure injury (Unstageable, Stage 3, or Stage 4). Do not use DTPI to describe vascular, traumatic, neuropathic, or dermatological conditions.

Additional Pressure Injury Definitions

Medical Device-Related Pressure Injury

This describes an etiology. Medical device-related pressure injuries result from the use of devices designed and applied for diagnostic or therapeutic purposes. The resultant pressure injury generally conforms to the pattern or shape of the device. The injury should be staged using the staging system.

(*continued*)

BOX 28.1 (*continued*)

Mucosal Membrane Pressure Injury

Mucosal membrane pressure injury is found on mucous membranes with a history of a medical device in use at the location of the injury. Due to the anatomy of the tissue, these ulcers cannot be staged.

Sources: Reprinted with permission from the National Pressure Ulcer Advisory Panel ©. Retrieved from https://npiap.com/page/PressureInjuryStages; Edsberg, L. E., Black, J. M., Goldberg, M., McNichol, L., Moore, L., & Sieggreen, M. (2016). Revised National Pressure Ulcer Advisory Panel pressure injury staging system: Revised pressure injury staging system. *Journal of Wound, Ostomy, and Continence Nursing, 43*(6), 585–597. doi:10.1097/won.0000000000000281. *Evidence Level I.*

pressure injuries (Brienza et al., 2015). Pressure injuries are believed to develop as a result of the tissues' internal mechanical deformation in response to external mechanical loading (NPUAP, EPUAP, & PanPacific Pressure Injury Alliance [PPPIA], 2014). The NPUAP 2016 guidelines also include nutrition, comorbidities, perfusion, microclimate, and condition of the soft tissue as factors that affect tolerance of pressure and shear forces (NPUAP, 2016). A case series by Berke (2015) can help clinicians differentiate friction injuries from pressure injuries, moisture-associated skin damage (MASD) such as incontinence-associated dermatitis (IAD), and other skin problems or injuries.

The exact combination of pressure, ischemia, muscle deformation, and reperfusion injury that leads to a pressure injury remains unclear (NPUAP, EPUAP, & PPPIA, 2014). In adults, most pressure injuries are found on the sacrum, with heels being the second most common site (VanGilder, Amlung, Harrison, & Meyer, 2009). In a study of hospitalized adults, a Hospital-Acquired Pressure Injury (HAPI) rate of 4.5% was identified, with the majority of HAPIs on the coccyx or sacrum (41%), heels (23%), and hip/buttock region (also 23%; Lyder et al., 2012). Across the United States, HAPI rates have decreased from 40.3 to 30.9 per 1,000 discharges between 2010 and 2014, because of the efforts from the Centers for Medicare and Medicaid Services (CMS), along with the Agency for Healthcare Research and Quality (2011; Rondinelli et al., 2018). A 2015 study included 210 U.S. academic medical centers with documented HAPI Stage 3 and 4 incidence rates decreasing from 11.8 cases per 1,000 patients in 2008 to 0.8 case per 1,000 patients in 2012 (Padula, Makic et al., 2015). A study published in 2018 reports the prevalence of pressure injuries to be 7.2% and facility-acquired prevalence to be 3.1% (Kayser, VanGilder, Ayello, & Lachenbruch, 2018).

Data in 2009 from 92,408 U.S. facilities reported an overall prevalence rate of 12.3%, with a facility-acquired rate of 5.0%, which lowers to 3.2% when Stage I injuries are excluded (VanGilder et al., 2009). This same study of 86,932 U.S. acute care facilities reported an overall prevalence rate of 11.9%, with a facility-acquired rate of 5.0%, which reduced to 3.1% when Stage I injuries were excluded (VanGilder et al., 2009).

A 2017 study by VanGilder et al. on a 10-year pressure injury prevalence survey (2006–2015) of 918,621 patients in the United States showed that there was a decrease in overall prevalence of pressure injuries in all facilities from 13.5% (2006) to 9.3% (2015). This study also corroborated findings from other studies documenting the decline in HAPI from 6.2% (2006) to 3.1% to 3.4% (2013–2015; VanGilder, Lachenbruch, Algrim-Boyle, & Meyer, 2017). The overall prevalence of acute care patients also showed a decline from 13.3% (2006) to 8.8%–9.3% (2012–2015).

In long-term care, facility-reported data from the Centers for Medicare & Medicaid Services (CMS) MDS 3.0 Section M, Skin Conditions documentation, minimum data set (MDS) section M: Skin Conditions, reports pressure injury prevalence was 8.24% in the first quarter of 2013 and 7.98% in the last quarter of 2016 (Ayello, 2017).

Table 28.1 summarizes the number of pressure injuries by stages in acute care (VanGilder et al., 2009).

TABLE 28.1

2009 Pressure Ulcer Prevalence by Stages in Acute Care

Type of Pressure Ulcer	Number of Pressure Injuries
Stage 1 or 2	4,985
Stage 3 or 4, eschar or unable to stage	876
DTI	642
Stage unspecified	86
Device-related (MDRPI)	1,631

DTI, deep tissue injury; MDRPI, medical device-related pressure injuries.

Source: Data from VanGilder, C., Amlung, S., Harrison, P., & Meyer, S. (2009). Results of the 2008–2009 International Pressure Ulcer Prevalence Survey and a 3-year, acute care, unit-specific analysis. *Ostomy/Wound Management, 55*(11), 39–45. Retrieved from https://www.o-wm.com/content/results-2008-%E2%80%93-2009-international-pressure-ulcer-prevalence%E2%84%A2-survey-and-a-3-year-acute-care-. *Evidence Level IV*.

The distribution of pressure injuries has changed over the years, with the number of Stage 1 injuries decreasing and the number of unstageable pressure injuries increasing to 15% and suspected deep tissue injury (sDTI) increasing to 9% (VanGilder, MacFarlane, Harrison, Lachenbruch, & Meyer, 2010). The most common site for deep tissue injury (DTI) is the heel (41%) followed by the sacrum (19%) and buttocks (13%; VanGilder et al., 2010).

In hospice patients, in addition to the usual sites on the sacrum and heels, elbows are a common site for injuries, with most injuries occurring within 2 weeks before death (Hanson et al., 1991). Pressure injuries and skin injuries in palliative care are known by various terminologies and concepts, including Kennedy terminal injuries, Skin Changes At Life's End (SCALE), Trombley-Brennan Terminal Tissue Injuries (TBTTI), and skin failure (Ayello et al., 2019). There has been controversy as to what term best describes these skin phenomena and whether these are or include pressure injuries (Ayello et al., 2019). In one hospital's 10-bed palliative care unit, 5% of their patients developed a terminal pressure injury (shaped like a pear, over the sacrum, bruise-like discoloration that is yellow and brown-black; Brennan & Trombley, 2010). When those authors extended their study to a larger sample of 80 patients, "[a]ll but 1 of the documented 80 patients in our study had wounds that remained intact to time of death, progressing only in surface area" (Trombley, Brennan, Thomas, & Kline, 2012). Unlike the Kennedy terminal ulcers (Kennedy, 1989), these authors reported no pear-shaped terminal ulcers. Rather, they reported that these terminal skin injuries were butterfly (48%), linear (40%), and white-centered (12%). Most were located on the sacrum (39%) or the buttocks (35%) and were less frequently seen on the leg (17.5%), back (2.5%), ischium (1%), arm (4%), or heel (1%; Trombley et al., 2012). Furthermore, they described this observed clinical phenomenon, which they called the TBTTIs, as evolving rapidly in skin areas not in areas of pressure and despite prevention strategies including turning or repositioning (Trombley et al., 2012).

Device-Related Pressure Injuries

As defined in Box 28.1, medical device-related pressure injuries (MDRPI) are not a stage but an etiology of a pressure injury. Early data of medical device-related pressure injuries (MDRPI) accounted for 9.1% of injuries, with ears being the most common location (VanGilder et al., 2009; see Table 28.2). Using 2016 IPUP data, 6.9% of all pressure injuries were from medical devices (804/11,651; Kayser et al., 2018), representing a decrease in MDRPI compared to the 2009 finding of 9.1% (1,631/17,91; VanGilder et al., 2009). Seventy-five percent of these device-related pressure injuries were facility acquired, with the most common anatomic locations being the ears (29%) and feet (12%, Kayser et al., 2018). MDRPI should be staged using the NPUAP classification/staging system unless they are located on the mucosa.

TABLE 28.2

Location of Device-Related Pressure Injuries—2016 International Pressure Ulcer Prevalence Survey

Location	Percentage (%)
Head	51
Ears	29
Nose	10
Lower extremities	24
Pelvic area	7.5
Upper extremities	3.0
Back	1.5
Others	10.0

Source: Data from Kayser, S. A., VanGilder, C. A., Ayello, E. A., & Lachenbruch, C. (2018). Prevalence and analysis of medical device-related pressure injuries: Results from the international pressure ulcer prevalence survey. *Advances in Skin and Wound Care, 31*(6), 276–285. doi:10.1097/01.ASW.0000532475.11971.aa. *Evidence Level IV*.

It is important to differentiate pressure injuries from device-related pressure injuries that are "found on mucous membranes with a history of a medical device in use at the location of the injury." Device-related pressure injuries on the mucosa are not staged using the NPUAP classification system, as mucosa does not keratinize, and, therefore, the staging definitions cannot be applied (Position paper on device-related pressure injuries; NPUAP, EPUAP, & PPPIA, 2014). Because of this ruling, the U.S. Centers for Medicare and Medicaid Services (CMS) has directed long-term care (LTC) facilities and long-term acute care hospitals (LTCHs) not to record mucosal device-related pressure injuries on the resident assessment instrument (RAI) of MDS under section M (pressure ulcer section of skin conditions; CMS, 2004; Thomas, 2006).

The NPUAP has four prevention best practice posters available free for download on their website (www.npuap.org). In addition, an educational enabler with two mnemonics (SORE© and DEVICE©) has been published to assist clinicians in raising awareness about MDRPI (Delmore & Ayello, 2017).

Pressure Injury Risk Factors

No single factor puts a patient at risk for pressure injury skin breakdown. The 2014 NPUAP/EPUAP/PPPIA pressure injury clinical guideline confirms the CMS requirement that pressure injury risk assessment should be comprehensive, including assessment of all patient-risk factors. The CMS directive applies to several facilities, including LTC facilities, LTCHs, and inpatient rehabilitation units. Clinicians need to go beyond just relying on validated pressure ulcer risk-assessment tools, including the Braden, Norton, or other scales (NPUAP, EPUAP, & PPPIA, 2014).

Nonnemacher et al. (2009) addressed the question of what combination of factors increases the pressure injury risk by exploring 12 factors that may have the most impact on predicting pressure ulcer risk. Historically, pressure injuries occur from a combination of intensity and duration of pressure as well as from tissue tolerance (Bergstrom, Braden, Laguzza, & Holman, 1987; Braden & Bergstrom, 1987, 1989). Some of the important identified pressure injury risk factors include: (a) immobility (as seen in bedbound or chair-bound patients, especially those unable to change body positions that can also lead to shear), in addition to (b) pressure damage, (c) undernourishment or malnutrition, (d) incontinence, (e) friable skin, (f) impaired cognitive ability, and (g) decreased ability to respond to one's environment (Braden, 1998).

True pressure injuries need to be distinguished from MASD or surface injury in the buttocks region caused by the contact irritation of local friction (Berke, 2015) and moisture factors (Gray et al., 2011). In a large study by Bergquist-Beringer and Gajewski (2011), immobility and incontinence were the two predictors of pressure injury development in older persons receiving home care. In a study by Gray and Giuliano (2018), the authors distinguished the prevalence of pressure injuries in continent patients at 4.1% from a higher prevalence for incontinent patients at 16.3%. They concluded that incontinence was a risk factor for developing a pressure injury (Gray & Giuliano, 2018).

A 20-hospital surgery wait time study revealed a higher incidence of pressure injuries for longer surgery waiting times or time in an intensive care unit (ICU; Baumgarten et al., 2003). Most pressure injuries, in another study of 84 surgical patients, occurred within the first three postoperative days (Karadag & Gümüskaya, 2006). An additional large study of more than 50,000 hospitalized Medicare beneficiaries reported that 4.5% developed at least one new pressure injury during their hospital stay. Pressure injury (PI) patients had higher mortality rates during their hospitalization or within 30 days of discharge and had longer hospital stays (Lyder et al., 2012). The following patient characteristics were found in those who developed hospital-acquired pressure ulcers (HAPUs): diagnoses of congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), cardiovascular disease (CVD), or diabetes mellitus (DM), and presence of obesity (Lyder et al., 2012). A 2015 study identified several independent risk factors for hospital-acquired heel pressure injuries, including immobility, diabetes mellitus, peripheral vascular disease, and a Braden Scale score of 18 or under (Delmore, Lebovits, Suggs, Rolnitzky, & Ayello, 2015).

Patients With Hip Fracture and Pressure Ulcer Risk

In a study of nine hospitals, the cumulative incidence of Stage 2 or higher pressure injuries in older adults with hip fractures was 36.1% (Baumgarten et al., 2009). The less time patients waited to go to the operating room (OR) for repair of the hip fracture, the fewer the associated Stage 4 pressure injuries (Hommel, Ulander, & Thorngren, 2003). The length of time on the OR table increased the risk of pressure injuries in patients with hip fracture (Houwing et al., 2004). Campbell, Woodbury, and Houghton (2010b) found that one third of their sample of patients with hip fracture developed Stage 2 or higher pressure injuries. Implementation of a Heel Pressure Ulcer Prevention Program (HPUPP) for orthopedic patients in Canada resulted in complete elimination of heel pressure injuries compared to the preimplementation level of 13.8% (Baumgarten et al., 2008).

Critically Ill, Intensive Care Unit Patients, and Pressure Ulcer Risk

Patients in ICUs are at a higher risk for developing pressure injuries due to multiple comorbidities and other life-saving interventions. The prevalence of pressure injuries in ICUs ranges from 8.8% to 23% (Krupp & Monfre, 2015). In a case-control study of medical patients in two hospitals, Baumgarten et al. (2008) concluded that the odds of developing a PI were twice as high for those having an ICU stay. In contrast, Shahin, Dassen, and Halfens (2009) found a low incidence of pressure injuries in their 121 ICU patients as a result of prevention measures, including foam and alternating air-pressure-reducing mattresses.

Acute Physiology and Chronic Health Evaluation II (APACHE II) scores, physiological criteria, and Glasgow Coma Scale (GCS) scores are used to predict ICU outcomes, with higher scores indicating poorer outcome;

scores were higher in patients who developed pressure injuries. In contrast, other researchers found no relationship between PI development and APACHE II scores (Kaitani, Tokunaga, Matsui, & Sanada, 2010). Shanks, Kleinhelter, and Baker (2008) found that despite the consistent implementation of PI prevention protocols in their critically ill patients, the patients who developed more hypotensive episodes were more likely to develop pressure injuries.

Several case series by multiple authors provide emerging support for the reduced incidence of pressure injuries, with polyurethane foam dressings applied prophylactically on the sacrum of critically ill, emergency department (ED) or medical–surgical (med–surg) patients (Brindle, 2010; Brindle & Wegelin, 2012; Chaiken, 2012; Cubit, NcNally, & Lopez, 2013; Keily, 2012; Ohura, Takahaski, & Ohura, 2008; Park, 2014; Philbin, Shaw, Walker, & Bishop, 2013; Santamaria et al., 2013; Torra I Bou et al., 2009; Walsh et al., 2012). Based on their review of the evidence, the 2014 NPUAP, EPUAP, PPPIA Pressure Ulcer Clinical Guideline has provided a recommendation at the B level of evidence to consider using polyurethane foam dressing prophylactically to prevent pressure injuries on bony prominences, including the heels or sacrum (NPUAP, EPUAP, & PPPIA, 2014, p. 18). It will be interesting to evaluate the updated preventive foam dressing recommendation from the updated NPUAP, EPUAP, PPPIA International Guideline expected to be released in November 2019.

Regulatory and Government Initiatives

Regulatory and government initiatives continuously support the importance of pressure ulcer prevention. Beginning October 1, 2008, CMS no longer reimbursed hospitals at a higher rate for pressure injuries acquired during hospitalization (CMS, 2019). Recording of location and stage of any Stage 3 and 4 pressure injuries present on admission (POA) now holds clinicians who are legally responsible for establishing the medical diagnosis accountable for documenting this information in the patient's medical record; otherwise, the hospital is not reimbursed for the PI diagnosis (Russo, Steiner, & Spector, 2008). Data from the Healthcare Cost and Utilization Project (HCUP) statistical review reveal that, over the past years, pressure injuries have increased in hospitalized patients by 80%, even though the number of hospitalizations during this period of 1993 to 2006 increased by only 15% (Russo et al., 2008). In the state of New Jersey, Stage 3 and 4 pressure injuries are now reportable in acute care (New Jersey Department of Health and Senior Services, 2008). Pressure injuries are one of the 12 targeted areas to reduce harm to hospitalized patients in the United States as part of the Institute for Healthcare Improvement's (IHI's) "5 Million Lives Campaign" launched in December 2006 (IHI, 2006). Therefore, at the beginning of the 21st century, appropriate risk assessment and preventive care take on even more important meanings.

Several successful initiatives to decrease PI incidence are reported in the literature (Anderson et al., 2015; Lyder & Ayello, 2009; McInerney, 2008; Pancorbo-Hidalgo, Garcia-Fernandez, Lopez-Medina, & Alvarez-Nieto, 2006). Nurses will find the Agency for Healthcare Research and Quality (AHRQ) toolkit (available at www.ahrq.gov/professionals/systems/hospital/pressureulcertoolkit) helpful in developing quality initiatives to decrease PI incidence. A summary of successful characteristics of pressure ulcer injury initiatives can be found in the literature (Niederhauser et al., 2012; Padula, Valuck, Makic, & Wald, 2015).

ASSESSMENT OF THE PROBLEM

When to Do an Assessment

The assessment of the relative PI risk is the first step of any individual patient or healthcare system plan for prevention. Some PI clinical guidelines recommend that patients are assessed for PI development on admission to a care facility, on discharge, whenever the patient's condition changes, and then reassessed based on the person's acuity (NPUAP, EPUAP, & PPPIA, 2014).

Pressure Injury Risk-Assessment Tools

Guidelines recommend that a comprehensive assessment for PI risk be structured and include evaluation of all relevant risk factors and avoid reliance on just one risk factor or assessment tool total score (NPUAP, EPUAP, & PPPIA, 2014). The assessment should include a history (comorbidities, previous PI, medications, and so forth) and physical examination, documenting skin inspection for skin status, and a PI risk assessment using a valid and reliable assessment tool, including subscale scores. Both the Braden (Braden & Bergstrom, 1989) and the Norton Scales (Norton, McLaren, & Exton-Smith, 1962; Norton, McLaren, & Exton-Smith, 1975) are considered reliable and valid. A study of 429 patients in acute care found the modified Braden Scale to be a better predictor than the Norton Scale (Kwong et al., 2005). Although Kottner and Dassen (2010) found that the Braden Scale was more valid and reliable than the Waterlow Scale, they do not recommend either of these scales for ICU patients. Research to create new scales specific to ICU patients continues (Suriadi, Sanada, Sugama, Thigpen, & Subuh, 2008).

The Braden Scale was created in 1987 (Bergstrom et al., 1987) as part of a research study. The scale has six factors and is the most widely used scale in the United States. The first three subscales, sensory/perception, mobility, and activity, address clinical situations that predispose the patient to intense and prolonged pressure. The last three subscales, moisture, nutrition, and friction/shear, address factors that alter tissue tolerance for pressure. Each of the six categories is ranked with a numerical score, with 1 representing the lowest possible subscore and indicating the greatest risk. The sum of the six subscores and the greatest risk is the final Braden Scale score, which can range from 6 to 23.

A low Braden Scale score indicates that a patient is at risk for pressure injuries. The original onset-of-risk score on the Braden Scale was 16 or less (Braden & Bergstrom, 1987). Further research on older adults (Bergstrom & Braden, 1992) and on persons with darkly pigmented skin (Lyder et al., 1998, 1999) supports a score of 18 or less. Research by E. Y. Chan, Tan, Lee, and Lee (2005) also determined that the total Braden Scale score was the only significant predictor of pressure injuries in hospitalized patients. In 2009, W. S. Chan, Pang, and Kwong (2009) applied a modified Braden Scale and calculated a cutoff score of 19 in a 107-bed orthopedic department of an acute care hospital in Hong Kong, with 9.1% of patients developing a PI. In a retrospective study of intensive care patients in Korea using a cutoff score of 13, the Braden Scale (without a more comprehensive approach to patient-risk assessment) had low to moderate positive predictive performance (Cho & Noh, 2010). Increased pressure injury–associated ICU risk development can be evaluated on the first day of hospitalization with combined low Braden and Glasgow Scale scores (Fernances & Caliri, 2008).

The NPUAP, EPUAP, and PPPIA 2014 clinical guidelines recommend that clinicians not only consider total Braden Scale scores but also address any low subscale scores (these indicate a higher risk) in planning PI prevention care. Once high risk is identified, either for overall score or in *any* low subscales (CMS, 2004), prevention interventions need to be implemented. However, one study determined that in a sample of 792 hospitalized patients with a high risk of PI development, only 51% of patients 65 years and older had a preventive device in place (Rich, Shardell, Margolis, & Baumgarten, 2009).

DOES RACE MAKE A DIFFERENCE?

When it comes to severity of pressure injuries, race may make a difference. Ayello and Lyder (2001) analyzed and summarized the existing data about pressure injuries across the skin pigmentation spectrum. Blacks have the lowest incidence (19%) of superficial tissue damage classified as Stage 1 pressure injuries, and Whites have the highest incidence at 46% (Barczak, Barnett, Childs, & Bosley, 1997). Despite the lower Stage 1 rate, the more severe tissue injury detected in Stages 2 to 4 pressure injuries is higher in persons with darkly pigmented skin (Barczak et al., 1997; Meehan, 1990, 1994). Three national surveys identified that Black-skinned individuals had higher incidence of Stage 2 pressure injuries compared to Caucasians: 39% (Barczak et al., 1997), 16% (Meehan, 1990), and 41% (Meehan, 1994). Subsequent studies by Lyder et al. (1998, 1999) continue to support a higher incidence of pressure injuries in persons with darkly pigmented skin. Fogerty, Guy, Barbul, Nanney, and Abumrad (2009) determined that not only was there a higher prevalence of pressure injuries, but also that they occurred at a younger age in African Americans as compared to Caucasians.

Inadequate detection of Stage 1 pressure injuries in persons with darkly pigmented skin may be a result of clinicians erroneously believing that dark skin tolerates pressure better than light skin (Bergstrom, Braden, Kemp, Champagne, & Ruby, 1996) or that only color changes that are more difficult to detect in black skin indicate a PI (Bennett, 1995; Henderson et al., 1997; Lyder, 1996; Lyder et al., 1998, 1999; Rich et al., 2009). Research has begun to validate these assessment characteristics in the Stage 1 definition. In 2001, Lyder et al. reported a higher diagnostic accuracy rate of 78% using the revised definition of Stage 1 pressure injuries compared with 58% with the original definition. Sprigle, Linden, McKenna, Davis, and Riordan (2001) evaluated changes in skin temperature, in particular, that warmth followed by coolness accompanied most Stage 1 pressure injuries.

Clinicians should pay careful attention to a variety of factors when assessing a patient with darkly pigmented skin for Stage 1 pressure injuries. Differences in skin over bony prominences (e.g., the sacrum and the heels) as compared with surrounding skin may be indicators of a Stage 1 PI. The skin should be assessed for alterations in pain or local sensation. In addition, a change of skin color should be noted; clinicians need to be familiar with the range of skin pigmentation that is normal for a particular patient (Bennett, 1995; Henderson et al., 1997).

INTERVENTIONS AND CARE STRATEGIES

Determining a patient's risk for developing a PI is only the first step in the provision of best practice care. Once risk is identified, it is essential to implement a consistent protocol to prevent the development of a PI. A nursing

standard-of-practice protocol for PI prevention is presented later in the chapter to facilitate proactive interventions to prevent pressure injuries (Protocol 28.1). A change in the attitudes of healthcare professionals may be required to facilitate prevention (Buss, Halfens, Abu-Saad, & Kok, 2004). Educating nursing students (Holst et al., 2010) and nurses in an ICU unit resulted in a decrease in pressure injuries (Uzun, Aylaz, & Karadag, 2009). Several clinical guidelines exist detailing PI prevention (NPUAP, EPUAP, & PPPIA, 2014; Wound, Ostomy, and Continence Nurses Society, 2010) with an updated international guideline due to be released in November 2019 by the NPUAP, EPUAP, and PPPIA. Components of a PI prevention protocol should minimally include interventions targeting the following: skin care (including addressing moisture and friction), pressure redistribution, repositioning, and nutrition.

Skin Care

Skin that is too dry or too wet has been associated with pressure injuries. Although there is limited research, dry skin is believed to predispose to ulcer formation (Allman, Goode, Patrick, Burst, & Bartolucci, 1995; Reddy, Gill, & Rochon, 2006). The type of cream used on the skin for different parts of the body may make a difference, as evidenced by a study of 79 patients treated with dimethyl sulfoxide cream, with an increase in pressure injuries when this cream was used on the heels as compared to the buttocks (Houwing, van der Zwet, van Asbeck, Halfens, & Arends, 2008). Other researchers (Stratton et al., 2005) found that a silicone-based dermal nourishing cream reduced the proportion of HAPUs to zero after 8 months. Each of these creams is lubricating, adding an external ointment layer preventing insensible losses. The stratum corneum has 10% moisture content maintained by a complex structure of a number of chemicals referred to as the natural moisturizing factor (NMF). When the NMF falls below a critical level, the skin integrity is lost, with defects occurring between the keratin layers (dry skin, winter itch, eczema craquelé). The second way to moisturize the skin is with humectants (urea, lactic acid, glycerin, ceramides) that actually bind water to the stratum corneum. These substances will sting or burn when applied to open skin because of their hydroscopic properties, but this does not indicate an allergy. Skin can also be too wet, causing a macerated stratum corneum, decreasing the cutaneous barrier and subjecting affected individuals to an increased risk of yeast and bacterial infections.

The use of a soft silicone dressing on the sacrum of critically ill patients resulted in zero pressure injuries in one ICU (Brindle, 2010). Other researchers have reported reduced pressure ulcer occurrence when polyurethane foam dressings are placed prophylactically on the heels or sacrum (Brindle & Wegelin, 2012; Chaiken, 2012; Cubit et al., 2013; Keily, 2012; Park, 2014; Philbin et al., 2013; Santamaria et al., 2013; Walsh et al., 2012). The prophylactic use of a sacral dressing in a critical care unit resulted in a reduced incidence of pressure injuries from 19.9 per 1,000 patient population to 0.84 per 1,000 patients in 2014 (Thorpe, 2016). Hydrocolloid dressings decreased pressure injuries from nasotracheal intubation (Huang, Tseng, Lee, Yeh, & Lai, 2009). When hydrocolloid or film dressings were applied to the skin under face masks, there were fewer device-related pressure injuries (Weng, 2008).

Repositioning and Pressure Redistribution

Because hospitalized patient immobility is a risk factor for the development of pressure injuries (Lindgren, Unosson, Fredrikson, & Ek, 2004), efforts must be made to address pressure. Although repositioning patients is a key intervention to pressure redistribution and prevention of pressure injuries, the best frequency for turning and repositioning, as well as determining which support surface to use, remains a challenge (Defloor, De Bacquer, & Grypdonck, 2005; Norton et al., 1975; Young, 2004). Patients on a particular support surface may not have to be repositioned every 2 hours, depending on their tolerance to pressure. There is no one repositioning timetable for all; the timing needs to be individualized (EPUAP & NPUAP, 2019). For patients who are hemodynamically unstable, a critical care consensus panel recommended slow, gradual turns at 15° to 30° initially. For those who cannot be turned 15°, reassessment of stability every 8 hours and shifting weight every 30 minutes were recommended (Brindle et al., 2013). The use of a wedge-shaped cushion rather than a pillow may be more effective in decreasing pressure injuries in some patients (Heyneman, Vanderwee, Grypdonck, & Defloor, 2009).

Redistributing pressure is a key PI prevention component. When compared to alternating pressure overlays, alternating pressure mattresses reduced length of stay for hospitalized patients, thus decreasing costs as well as having the added benefit of delaying the time at which a PI appeared (Iglesias et al., 2006; Nixon et al., 2006).

The incidence of heel pressure injuries decreased when the appropriate heel-suspending device was used to relieve pressure (Gilcreast et al., 2005). In 2010, a prospective 150-patient, 6-month study by Campbell, Woodbury, and Houghton (2010a) indicated PI incidence was being lowered significantly, by 16% ($p = .016$), for those

who received help with pressure relief interventions. No new pressure injuries developed in a single study of persons with a body mass index (BMI) greater than 35 who were placed on appropriately sized low air-loss equipment (Pemberton, Turner, & VanGilder, 2009). Clinicians may find the Wound, Ostomy, and Continence Nursing Society (WOCN) evidence-based algorithm for selecting a support surface to be a helpful tool in practice (McNichol, Watts, Mackey, Beitz, & Gray, 2015).

In Australia, where medical grade sheepskin (animal source, not synthetic) is available, one study with some questionable methodology demonstrated that hospitalized patients randomly assigned to the animal-source sheepskin mattress overlay had a 9.6% lower incidence of risk of pressure injuries compared to the control group, which had a risk of 16.6% (Jolley et al., 2004). The results were that 58 patients developed pressure injuries (sheepskin group, 21; referent group, 37). The cumulative incidence risk was 9.6% in the sheepskin group (95% CI, 6.1%–14.3%) versus 16.6% in the referent group (95% CI, 12.0%–22.1%). Patients in the sheepskin group developed new pressure injuries at a rate less than half that of referent patients (rate ratio, 0.42; 95% CI, 0.26–0.67).

Nutrition

There is lack of consensus about the best way to assess nutritional impairment, but, generally, consultation by a dietitian for nutritional status, determination of any unintended weight loss, and evaluation of laboratory values, including serum albumin or prealbumin, should be considered. Montalcini et al. (2015) concluded in a study that a serum albumin level of lower than 3.1 g/dL was a good predictor of PI formation and was associated with higher mortality. Cordeiro et al. (2005) found that the concentrations of ascorbic acid and alpha-tocopherol were significantly decreased in patients with pressure injuries or active infection. In a randomized double-blind study on the effect of a daily supplement with protein, arginine, zinc, and antioxidants versus a water-based placebo supplement in patients with hip fractures, there was a 9% difference in the incidence of Stage 2 pressure injuries between the nutritionally supplemented group and the placebo group (Houwing et al., 2003). Any new onset weight loss and unintentional weight loss (more than 5% reduction in body weight within 6–12 months) are important risk factors for mortality for elderly patients (Thomas, 2008). The Cochrane Database reviewed the role of nutrition in PI prevention and treatment. The analysis of the database was inconclusive because of the lack of high-quality trials (Langer, Schloemer, Knerr, Kuss, & Behrens, 2003). When and how patients should be nutritionally supplemented to prevent pressure injuries remains unclear (Houwing et al., 2003; Reddy et al., 2006; Stratton et al., 2005), with contradictions in the literature. The NPUAP nutritional recommendations (NPUAP, EPUAP, & PPPIA, 2014; Posthauer, Banks, Dorner, & Schols, 2015) for PI prevention are included in Protocol 28.1.

SKIN TEARS

Skin tears were originally conceptualized as traumatic wounds caused by shear and friction (O'Regan, 2002) when the epidermis is separated from the dermis (Malone, Rozario, Gavinski, & Goodwin, 1991). Extensive work of the International Skin Tear Advisory Panel (ISTAP, LeBlanc et al., 2018) has provided the following new skin tear definition:

> A skin tear is a traumatic wound caused by mechanical forces, including removal of adhesives. Severity may vary by depth (not extending through the subcutaneous layer).

The updated best practice recommendations for prevention and management of skin tears in the aged skin (LeBlanc et al., 2018) further added to the definition by adding removal of adhesives as a mechanical force that can cause a skin tear. Skin tears occur more frequently in the very young or very old, largely because of thinner and fragile skin that is more likely to be affected by shear, friction, and/or blunt forces (LeBlanc & Baranoski, 2011). Because of the thinner epidermis of aging skin, a flatter dermal–epidermal junction with partial loss of the rete pegs histologically, and decreased dermal collagen, older persons are more prone to skin injury from mechanical trauma (Baranoski, 2000; Payne & Martin, 1993; White, Karam, & Cowell, 1994). Therefore, skin tears are common in older adults, with more than 1.5 million occurring annually in institutionalized adults in the United States (Thomas, Goode, LaMaster, Tennyson, & Parnell, 1999), although the incidence in acute care is unknown. A 2015 systematic review by Pulido et al. reported the prevalence of skin tears in acute settings between 3.3% and 22% and in home care settings between 5.5% and 19.5% (Strazzieri-Pulido, Peres, Campanili, & Santos, 2015). In the United States, data from the CMS MDS section M skin conditions reports a low of 4.57% for the first quarter of 2017 to a higher percentage of 5.40% in the fourth quarter of 2014 (Ayello, 2017). Skin tears are frequently located at areas of age-related purpura (Malone et al., 1991; White et al., 1994). Certain skin characteristics, including ecchymosis, senile purpura, hematoma, photo aging, and signs

of a previous skin tear that has healed, are more prone to developing skin tears (Koyano et al., 2016; Newall et al., 2017; Rayner, Caville, Leslie, & Dhliwal, 2019).

Assessment of Skin Tears

Timely identification of people who are at high risk for developing a skin tear is a fundamental pillar in the prevention of skin tears (LeBlanc et al., 2018). A thorough skin assessment, with emphasis on the shins, face, dorsal aspect of hands, and plantar aspect of the foot, should be conducted (LeBlanc et al., 2018; Malone et al., 1991). In addition to older adults, others with thinning skin who are at risk for skin tears are patients on long-term steroid therapy, women with decreased hormone levels, persons with peripheral vascular disease or neuropathy (the decreased sensation making them more susceptible to injury), and those with inadequate nutritional intake (O'Regan, 2002).

The 2018 ISTAP guidelines outlined a Skin Tear Framework to determine the patient's risk of developing a skin tear based on three risk factor categories: general health, mobility and skin, and other considerations for skin tears risk assessment (LeBlanc et al., 2018):

General Health: comorbidities, malnutrition, medications, impaired cognitive faculties (e.g., auditory, visual, sensory), malnutrition

Mobility: impaired mobility, requires assistance for activities of daily living, history of falls, mechanical trauma

Skin: extremes of age (very young or very old), fragile, dry skin, history of previous skin tear or a current skin tear

Any patient that has any of these factors is considered at risk for developing a skin tear and should be evaluated. The ISTAP risk reduction programme checklist adapted from LeBlanc and Baranoski (2011) is a recommended tool (LeBlanc et al., 2018).

Several authors have suggested protocols to prevent skin tears (Baranoski, 2000; Battersby, 1990; LeBlanc, Baranoski, Christensen et al., 2013; Mason, 1997; O'Regan, 2002; White et al., 1994). Lacking research in acute care, some nursing home research supports the value of skin ulcer care protocols to reduce the incidence of skin tears (Bank, 2005; Birch & Coggins, 2003; Hanson, Anderson, Thompson, & Langemo, 2005). After changing from soap and water to a no-rinse, one-step bed product, skin tears declined from 23.5% to 3.5% in one nursing home (Birch & Coggins, 2003). Hanson et al. (2005) also found that skin tears could be reduced in two different nursing homes when staff were educated in appropriate skin cleaning and protection strategies. A reduction in monthly average of skin tears from 18 to 11 after using longer lasting moisturizer lotion, sleeves to protect the arms, and padded side rails was reported in yet another nursing home study (Bank, 2005). One study claims a decrease in skin tears when skin is treated with a moisturizing cream (Groom, Shannon, Chakravarthy, & Fleck, 2010).

Interventions for Skin Tears

If a skin tear does occur, it is important to correctly identify it and begin an appropriate plan of care. ISTAP (LeBlanc, Baranoski, Holloway et al., 2013) has suggested replacing the original three-category Payne–Martin classification system (Payne & Martin, 1993) with their newer and more simplified classification system of three types, as follows:

- Type 1: A skin tear with no skin loss
- Type 2: A skin tear with partial flap loss
- Type 3: A skin tear with total flap loss

The usual healing time for skin tears is 3 to 10 days (Krasner, 1991). Although skin tears are prevalent in the older adult patient, there is no consistent approach to managing these skin injuries (Baranoski, 2000; O'Regan, 2002). The extensive work of ISTAP has attempted to provide a research base for consistent care to prevent and treat skin tears worldwide (LeBlanc, Baranoski, Christensen et al., 2013, 2016; LeBlanc et al., 2018; LeBlanc, Baranoski, Holloway, Langemo, & Regan, 2014).

Research is just beginning to provide evidence on the best dressings for skin tears. One study (Edwards, Gaskill, & Nash, 1998) compared the use of four different types of dressings in treating skin tears in a nursing home: three occlusive (transparent film, hydrocolloid, and polyurethane foam) and one nonocclusive dressing of Steri-strips covered by a nonadhesive cellulose-polyester material. The nonocclusive dressing facilitated healing at a faster rate than the occlusive dressings. Another study by Thomas et al. (1999) evaluated older adult skin tears in three nursing homes and found a higher rate of complete healing with foam dressings compared to transparent films. ISTAP has published a skin tear product selection guide that directs clinicians to avoid adhesives, hydrocolloids, transparent films, and closure strips, and instead consider using lipocolloid mesh, silicone mesh, foam, impregnated gauze, hydrogel, calcium alginate, hydrofibers, or acrylic dressings (LeBlanc, Baranoski, Christensen et al., 2013).

Goals of care for skin tears include retaining the skin flap if present, providing a moist, nonadherent dressing, and protecting the site from further injury (LeBlanc, Baranoski, Christensen et al., 2013, 2018; O'Regan, 2002). A consensus protocol for treating skin tears based on suggested plans of care has been

developed by several authors (Baranoski, 2000; Baranoski & Ayello, 2008; Baranoski, LeBlanc, & Gloeckner, 2016; Edwards et al., 1998; LeBlanc, Baranoski, Christensen et al., 2013, 2018; O'Regan, 2002) as well as ISTAP and can be found in Protocol 28.2.

CASE STUDY 28.1

Mr. Randy Gonnagetawound, 70 years old, has diabetes mellitus with several microvascular and macrovascular complications. He was admitted to the hospital after a right-sided cerebral vascular accident. Past history includes retinal hemorrhages, a previous myocardial infarction, peripheral vascular disease, and a neuroischemic foot ulcer (healed after a left femoral popliteal bypass, intravenous antibiotics, and plantar pressure redistribution with deep-toed shoe and orthotic). He is incontinent of feces and urine and responds by nodding to verbal commands. His left arm and leg are paralyzed. He has a gag reflex but cannot swallow. His Braden Score is 10.

Current Data

Physical examination: There is an area of persistent erythema with bruising on the left buttock along with a number of superficial nonpalpable purpuric lesions on the arms and legs.

Physical Assessment and Pertinent Admission History

General: Responds to verbal questioning but he cannot move his left side. Over the past 3 days, he has been increasingly fatigued and completely bedridden. He can change position only with movement of the right side.

Vital signs
- Temperature: 39.2°C
- Respiration: 10 breaths/minute and regular
- Pulse: 88 and irregular
- Blood pressure: 162/94 mmHg
- Weight: 195 pounds
- Height: 5 feet, 9 inches
- Abdominal: Intake has been limited to half bowl of cereal twice a day and piece of toast and tea for lunch for the past 3 days. Last bowel movement was 3 days ago; + bowel sounds.
- Cardiovascular: Irregular heartbeat, no S_3S_4 at apex, +1 pedal edema, faintly palpable pedal pulses; capillary refill prolonged at 8 seconds.
- Respiratory: Crackles over right lower lobe, coughing periodically, nonproductive of mucus
- Renal: Episodes of urinary incontinence for the past 3 days before admission
- Integumentary: Skin is warm, dry, and translucent; tenting noted

Laboratory data: hemoglobin 10, hematocrit 28, red blood cells: 3.2, white blood cells: 11,000 shift to the left. Albumin 3.0 g/dL, potassium: 3.1, blood urea nitrogen (BUN): 32 mg/100 mL, glucose and/or HbA1c not available

Medical Orders

Dextrose 5% in water with equal parts normal saline and 10 mEq KCl at 100 mL/hr
- Colace 100 mg by mouth, three times a day
- Pulse oximetry monitoring continuously
- Metamucil one package every day
- Bed rest
- Multivitamin one tablet every day
- Daily weights
- Soft diet as tolerated

Discussion

Mr. Gonnagetawound is a prime candidate for developing a pressure injury (PI). His low numerical score on the Braden Scale (10), comorbidities, lack of movement, and other risk factors put him at high risk. Immediate strategies to prevent the occurrence of a PI are needed. Immobility is a leading risk factor for PI development, so a major part of his plan of care needs to first be directed to initiate moving as much as possible. A physiotherapy consult is needed to evaluate and recommend a plan of progressive exercise and activity. The plan should be to get him out of bed and moving within the constraints of his limitations from the stroke, as well as being in the chair rather than the bed. When in the chair, he should have a gel cushion for pressure redistribution. He will need to be repositioned every hour when in the chair. A Group 2, alternating low-air-loss mattress needs to be placed on his bed. For the limited time when he is in bed, he needs to be turned and positioned. His skin should be assessed every shift to evaluate signs for early skin injury.

A consult with a speech therapist is essential. A swallowing study is warranted to determine his ability to safely take an oral diet. A nutritional consult with a dietitian will address his needs for appropriate calories,

(*continued*)

CASE STUDY 28.1 (*continued*)

protein, and vitamins or minerals. A toileting regimen needs to be implemented to address the fecal and urinary incontinence. A discussion with the prescribing healthcare provider can explore whether he should continue on the Colace and Metamucil. His skin needs cleansing after each episode of incontinence. Use of a no-rinse bathing system is preferred here rather than soap and water. This vulnerable skin needs protection through use of one of the many skin barriers available on the market.

Both Mr. Gonnagetawound and his family need instruction on why it is so important to get him moving and why nutrition, skin care, turning, and repositioning are so critical to his skin health.

Considering his general health, low hemoglobin, possibility of sepsis, and increase in capillary refill must also be monitored and addressed. It would be beneficial to know the HbA1c to determine blood sugar control and prevent long-term complications.

CASE STUDY 28.2

Mrs. Keri Sight, 88 years old, is admitted to the hospital from an LTC facility with a primary diagnosis of pneumonia and secondary diagnosis of senile dementia of the Alzheimer's type with impaired communication skills. She has a history of congestive heart failure and osteoporosis. She spends most of the day in a wheelchair and needs two-person assistance for ambulation. Her skin is thin and dry, resembling an onion; each arm and leg has a purpura area. She weighs 15 pounds less than her ideal body weight and has difficulty swallowing. Laboratory values are as follows: total protein, 5.5 g/dL; albumin, 2.6 g/dL; and BUN, 28. She is verbally aggressive to the staff on which she depends for assistance for her activities of daily living (ADL).

Assessment of Mrs. Sight on admission for skin integrity as well as pressure ulcer risk needs to be done. Because she has four of the criteria from Group 2 of the skin tear risk-assessment tool developed by White et al. (1994; impaired decision-making skills caused by senile dementia, dependence for ADL, wheelchair or bed confined, unsteady gait), she is at risk for developing skin tears. Other factors that would put her at risk are her thin, dry skin with four purpura present and poor nutritional status (LeBlanc, Baranoski, Christensen et al., 2013). Her dependence on staff for ADL and assistance, coupled with her dementia, predispose her to skin injury during bathing and other ADL. A comprehensive pressure ulcer risk assessment, including her skin assessment, comorbidities, and Braden Scale score, puts her at very high risk for developing pressure injuries. A PI prevention protocol, such as in Protocol 28.1, is implemented. The rest of this case discussion focuses on her skin tear risk needs.

Discussion

A skin tear prevention protocol needs to be implemented for Mrs. Sight immediately. In order to achieve a safe environment for her, the staff must know how to approach her with her dementia. To address her nutrition and hydration risk factors, a dietary consultation should be performed. Her ability to safely swallow needs to be evaluated by a speech therapist. After the swallowing evaluation, a plan to encourage frequent fluids and assistance with eating should be implemented. To protect Mrs. Sight's skin from additional injury, avoid using hot water to bathe her and, instead, use one of the nonrinse, soapless bathing products. Her family can be asked to bring in a soft fleece jogging suit for her to wear. The purpura areas on her arms and legs should be covered with stockinet or some other soft nonadherent dressing or skin-protective barrier product to further protect these areas. Her bed rails, and the arms and legs of her wheelchair, should be padded. Staff should use the palms of their hands and a turn sheet when repositioning Mrs. Sight in bed. A moisturizer can be applied twice a day to her dry skin. Daily assessment of her skin, including the five minimal characteristics proposed by CMS, should be performed (Rich et al., 2009).

SUMMARY

The skin is the body's largest organ, so pay attention to it. Although the research into prevention strategies is limited, there is support for following the appropriate risk assessment and practice guidelines for these two types of skin injuries: pressure injuries (NPUAP, EPUAP, & PPPIA, 2014) and skin tears (LeBlanc et al., 2018). Make sure you correctly identify the type of skin injury so the proper plan of care can be implemented.

General skin assessment is important for early breakdown, protecting the skin by using appropriate bathing techniques, using products to minimize the effects of friction and shear on the skin, and paying attention to

nutritional status. In the case of pressure injuries, redistributing the pressure by turning and repositioning and appropriate use of support surfaces are also critical. Immediate initiation of prevention protocols after risk identification is key with correction of each major abnormal risk factor part of the treatment protocol. Following these suggestions can prevent and optimally treat skin integrity problems including skin tears and pressure injuries.

NURSING STANDARD OF PRACTICE

Protocol 28.1: Pressure Injury Prevention

I. GOAL

A. Prevention of PI
B. Early recognition of PI development and skin changes

II. BACKGROUND AND STATEMENT OF PROBLEM

A. Pressure injury 2009: Occurrence data reported for 2009 (VanGilder et al., 2009)
   1. All U.S. facilities
      a. Overall prevalence: 12.3%
      b. FA prevalence: 5.0%
      c. Prevalence excluding Stage 1: 9.0%
      d. FA prevalence excluding Stage 1: 3.2%
   2. Acute care
B. Etiology and/or epidemiology
   1. Risk factors (immobility, undernutrition or malnutrition, incontinence, friable skin, impaired cognitive ability)
   2. Higher incidence of Stage 2 and higher in persons with darkly pigmented skin

III. PARAMETERS OF ASSESSMENT

A. Perform a structured pressure ulcer risk assessment that includes complete skin assessment, consideration of all risk factors, and inclusion of subscores as well as total score when using a valid risk-assessment tool (NPUAP, EPUAP, & PPPIA, 2014).
   1. Inspect skin regularly for color changes such as redness in lightly pigmented persons and discoloration in darkly pigmented persons (EPUAP & NPUAP, 2019).
   2. Look at the skin located under any medical device (e.g., catheters, oxygen, airway or ventilator tubing, face masks, braces, and collars at least twice daily and more frequently in persons with fluid shifts or localized or generalized edema [NPUAP, EPUAP, & PPPIA, 2014]).
   3. Palpate skin for changes in temperature (warmth), edema, or hardness.
   4. Ask the patient whether he or she has any areas of pain or discomfort over bony prominences.
B. Assess for intrinsic and extrinsic risk factors.
C. Braden Scale risk score—18 or less for older adults and persons with darkly pigmented skin; pay attention to low subscale scores also.

IV. NURSING CARE STRATEGIES AND INTERVENTIONS

A. Risk-assessment documentation
   1. On admission to acute care

(*continued*)

Protocol 28.1: Pressure Injury Prevention (*continued*)

2. Reassess at intervals, taking into account the patient's acuity, any change in condition, and based on patient care setting:
   a. Based on patient acuity every 24 to 48 hours on general units
   b. Assess critically ill patients every 12 hours
3. Use a reliable and standardized tool as part of a risk assessment, such as the Braden Scale, as part of a comprehensive risk assessment (available at http://www.bradenscale.com/images/bradenscale.pdf). Do not rely only on a standardized tool for risk assessment!
4. Document risk-assessment scores and implement prevention protocols based on overall scores, low subscores, and the comprehensive assessment of other risk factors.
5. Assess risk of surgical patients for increased risk of PI, including the following factors: length of operation, number of hypotensive episodes, and/or low-core temperatures intraoperatively, as well as reduced mobility on first day postoperatively.

B. General care issues and interventions
1. Culturally sensitive early assessment for Stage 1 PI in patients with darkly pigmented skin.
   a. Use a halogen light to look for skin color changes—may be purple hues or other discoloration based on patient's skin tone.
   b. Compare skin over bony prominences to surrounding skin—may be boggy or stiff, warmer or cooler.
2. Prevention recommendations:
   a. Skin care (NPUAP, EPUAP, & PPPIA, 2014)
      i. Assess skin regularly.
      ii. Clean skin at time of soiling—avoid hot water and irritating cleaning agents.
      iii. Use emollients on dry skin.
      iv. Do not massage bony prominences as a pressure injury prevention strategy; do not vigorously rub skin at risk for PI.
      v. Protect skin from moisture-associated damage (e.g., urinary and/or fecal incontinence, perspiration, wound exudates) by using barrier products.
      vi. Use lubricants, protective dressings, and proper lifting techniques to avoid skin injury from friction and shear during transferring and turning of patients. Avoid drying out the patient's skin; use lotion after bathing.
      vii. Avoid hot water and soaps that are drying when bathing older adults. Use body wash and skin protectant (Hunter et al., 2003).
      viii. Teach patient, caregivers, and staff the prevention protocol.
      ix. Manage moisture by determining the cause; use absorbent pad that wicks moisture away from the skin.
      x. Consider protecting high-risk areas, such as elbows, heels, and sacrum, prophylactically from friction injury using foam dressing (NPUAP, EPUAP, & PPPIA, 2014).
   b. Repositioning and support surfaces
      i. Assess skin and other patient characteristics, as well as pressure injury risk, and consider using the WOCN evidence and consensus-based support surface algorithm (McNichol et al., 2015).
      ii. Keep patients off the reddened areas of skin.
      iii. Repositioning schedules should be individualized on the basis of the patient's condition, care goals, vulnerable skin areas, and type of support surface being used (NPUAP, EPUAP, & PPPIA, 2014).
      iv. Communicate the repositioning schedule to all the patient's caregivers.
      v. Raise heels of bedbound patients off the bed using either pillows or heel-protection devices; do not use donut-type devices (Gilcreast et al., 2005).
      vi. Use a 30° tilted, side-lying position; do not place patients directly in a 90° side-lying position on their trochanter.

(*continued*)

Protocol 28.1: Pressure Injury Prevention (*continued*)

vii. Keep head of the bed at lowest height possible.
viii. Use transfer and lifting devices (trapeze, bed linen) to move patients rather than dragging them in bed during transfers and position changes.
ix. Use pressure-reducing devices (static air, alternating air, gel, or water mattresses; Hampton & Collins, 2005; Iglesias et al., 2006). Use higher specification foam mattresses rather than standard hospital mattress for patients at risk for PI. If the patient cannot be frequently repositioned manually, use an active support surface (overlay or mattress).
x. Use high-specification reactive or alternating pressure support surfaces on the operating table for patients identified at risk for developing PI. Additional support surfaces, such as facial pads, are needed for patients in the prone position (NPUAP, EPUAP, & PPPIA, 2014).
xi. Reposition chair-bound or wheelchair-bound patients every hour. In addition, if patient is capable, have him or her do small weight shifts every 15 minutes.
xii. Use a pressure-reducing device (not a donut) for chair-bound patients.
xiii. Keep the patient as active as possible; encourage mobilization.
xiv. Avoid positioning the patient directly on his or her trochanter.
xv. Avoid using donut-shaped devices.
xvi. Offer a bedpan or urinal in conjunction with turning schedules.
xvii. Keep heels off the bed using heel suspension devices or other equipment that also avoids placing pressure on the Achilles tendon (NPUAP, EPUAP, & PPPIA, 2014).
xviii. Manage friction and shear:
a. Elevate the head of the bed no more than 30°.
b. Have the patient use a trapeze or other transfer devices to lift self up in bed.
c. Staff should use transfer devices, a lift sheet, or mechanical lifting device to move patient.

c. Nutrition
i. Assess nutritional status of patients at risk for PI.
ii. Assess and monitor weight status (NPUAP, EPUAP, & PPPIA, 2014).
iii. For at-risk patient, follow nutritional guidelines for hydration (1 mL/kcal of fluid/d), calories (30–35 kcal/kg of body weight/d), and protein (1.25–1.5 g/kg/d). Give high-protein supplements or tube feedings in addition to the usual diet in persons at nutritional and pressure ulcer risk (NPUAP, EPUAP, & PPPIA, 2014; Posthauer et al., 2015).
iv. Manage nutrition.
v. Consult a dietitian and correct nutritional deficiencies by increasing protein and calorie intake and A, C, or E vitamin supplements as needed (CMS, 2004; Houwing et al., 2003).
vi. Offer a glass of water with turning schedules to keep patient hydrated.

C. Interventions linked to Braden risk scores (Ayello & Braden, 2001)
Prevention protocols linked to Braden risk scores are as follows:
1. At risk: score of 15 to 18
a. Frequent repositioning, turning; use a written schedule
b. Maximize patient's mobility.
c. Protect patient's heels.
d. Use a pressure-reducing support surface if patient is bedbound or chair bound.
2. Moderate risk: score of 13 to 14
a. Same as cited, but provide foam wedges for 30° lateral position.
3. High risk: score of 10 to 12
a. Same as cited, but add the following (b and c).
b. Increase the turning frequency.
c. Do small shifts of position.

(*continued*)

Protocol 28.1: Pressure Injury Prevention (*continued*)

4. Very high risk: score of 9 or less
   a. Same as cited but use a pressure-relieving surface.
   b. Manage moisture, nutrition, and friction and shear.

V. EVALUATION AND EXPECTED OUTCOMES

A. Patient
   1. Skin will remain intact.
   2. Pressure ulcer will heal.
B. Provider or nurse will
   1. Accurately perform PI risk assessment using standardized tool.
   2. Implement PU prevention protocols for patients interpreted as at risk for PI.
   3. Perform a skin assessment for early detection of PI.
C. Institution will
   1. Reduce development of new PI.
   2. Increase number of risk assessments performed.
   3. Develop cost-effective prevention protocols.

VI. FOLLOW-UP MONITORING OF CONDITION

A. Monitor effectiveness of prevention interventions.
B. Monitor healing of any existing PU.

ABBREVIATIONS

EPUAP	European Pressure Ulcer Advisory Panel
FA	Facility acquired
NPUAP	National Pressure Ulcer Advisory Panel
PI	Pressure injury
PPPIA	Pan Pacific Pressure Injury Alliance
PU	Pressure ulcer

NURSING STANDARD OF PRACTICE

Protocol 28.2: Skin Tear Prevention

I. GOAL

A. Prevent skin tears in older adult patients (LeBlanc, Baranoski, Christensen et al., 2016; LeBlanc & Baranoski, 2017; LeBlanc et al., 2018)
B. Identify patients at risk for skin tears (Mason, 1997; LeBlanc, Baranoski, Christensen et al., 2016; LeBlanc & Baranoski, 2017; LeBlanc et al., 2018).
C. Foster healing of skin tears by:
   1. Retaining skin flap
   2. Providing a moist, nonadherent dressing (Edwards et al., 1998; LeBlanc, Baranoski, Christensen et al., 2013; 2016; Thomas et al., 1999)
   3. Protecting the site from further injury

(*continued*)

Protocol 28.2: Skin Tear Prevention (*continued*)

II. BACKGROUND AND STATEMENT OF THE PROBLEM

A. Traumatic wounds from mechanical injury of skin
B. Need to clearly differentiate etiology of skin tears from PU
C. Common in the older adult, especially over the areas of age-related purpura

III. PARAMETERS OF ASSESSMENT

A. Use either the three-group risk-assessment tool (White et al., 1994) or the ISTAP (LeBlanc, Baranoski, Christensen et al., 2013; LeBlanc et al., 2018) recommendations to assess for skin tear risk.
B. Use ISTAP-validated simplified classification system to classify skin tears (LeBlanc, Baranoski, Christensen et al., 2013; LeBlanc et al., 2018).
   1. Type 1: a skin tear with no skin loss
   2. Type 2: a skin tear with partial flap loss
   3. Type 3: a skin tear with total flap loss

IV. NURSING CARE STRATEGIES AND INTERVENTIONS

A. Preventing skin tears (Baranoski, 2000; Baranoski & Ayello, 2012; LeBlanc, Baranoski, Christensen et al., 2013, 2016; LeBlanc et al., 2018)
   1. Provide a safe environment:
      a. Do a risk assessment of older adult patients on admission.
      b. Implement prevention protocol for patients identified as at risk for skin tears.
      c. Have patients wear long sleeves or pants to protect their extremities (Bank, 2005).
      d. Have adequate light to reduce the risk of bumping into furniture or equipment.
      e. Provide a safe area for wandering.
   2. Educate staff or family caregivers in the correct way to handle patients to prevent skin tears. Maintain nutrition and hydration:
      a. Offer fluids between meals.
      b. Use lotion, especially on dry skin on arms and legs, twice daily (Hanson et al., 1991).
      c. Obtain a dietary consultation.
   3. Protect from self-injury or injury during routine care:
      a. Use a lift sheet to move and turn patients.
      b. Use transfer techniques that prevent friction or shear.
      c. Pad bed rails, wheelchair arms, and leg supports (Bank, 2005).
      d. Support dangling arms and legs with pillows or blankets.
      e. Use nonadherent dressings on frail skin.
         i. Apply skin-protective products (creams, ointments, liquid sealants, and so forth) or a nonadherent wound dressing, such as hydrogel dressing with gauze, as a secondary dressing, silicone, or Telfa-type dressings.
      f. Use gauze wraps, stockinettes, flexible netting, or other wraps to secure dressings rather than tape.
      g. Use no-rinse, soapless bathing products (Birch & Coggins, 2003; Mason, 1997).
      h. Keep skin from becoming dry; apply moisturizer (Bank, 2005; Hanson et al., 1991).
B. Treating skin tears (Baranoski & Ayello, 2012; LeBlanc, Baranoski, Christensen et al., 2013, 2016; LeBlanc et al., 2018)
   1. Gently clean the skin tear with normal saline.
   2. Let the area air dry or pat dry carefully.
   3. Approximate the skin tear flap.
   4. Use caution when removing dressings as skin damage can occur when removing dressings (LeBlanc, Baranoski, Christensen et al., 2016).

(*continued*)

Protocol 28.2: Skin Tear Prevention (*continued*)

5. Consider adding an arrow on the dressing to indicate the direction of the skin tear to minimize any further skin injury during dressing removal.
   a. Skin sealants, petroleum-based products, and other water-resistant products, such as protective barrier ointments or liquid barriers, may be used to protect the surrounding skin from wound drainage or dressing, or tape-removal trauma.
   b. Always assess the size of the skin tear; consider doing a wound tracing.
   c. Document assessment and treatment findings.

V. EVALUATION AND EXPECTED OUTCOMES

A. No skin tears will occur in at-risk patients.
B. Skin tears that do occur will heal.

VI. FOLLOW-UP MONITORING OF CONDITION

A. Continue to reassess for any new skin tears in older adults.

ABBREVIATIONS

CMS	Centers for Medicare & Medicaid Services
EPUAP	European Pressure Ulcer Advisory Panel
ISTAP	International Skin Tear Advisory Panel
NMF	Natural moisturizing factor
NPUAP	National Pressure Ulcer Advisory Panel
PI	Pressure injuries
PPPIA	Pan Pacific Pressure Injury Alliance

RESOURCES

Tools

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Authoritative Sites

Agency for Healthcare Research and Quality. (2011). *USDHHS Supported clinical guidelines: Pressure injuries*. Retrieved from http://www.guideline.gov

International Skin Tear Advisory Panel (ISTAP)
http:www.skintears.org

National Pressure Ulcer Advisory Panel (NPUAP)
Pressure ulcer prevention and treatment, research, and policy information
http://www.npuap.org

Wound, Ostomy, and Continence Nursing Society (WOCN)
Guidelines, position statements, best practices, and much more
http://www.wocn.org

Other Related Professional Organizations

American Professional Wound Care Association (APWCA)
http://www.apwca.org

European Pressure Ulcer Advisory Panel (EPUAP)
http://www.epuap.org

World Council of Enterostomal Therapists (WCET)
http://www.wcetn.org

World Union of Wound Healing Societies (WUWHS)
http://www.wuwhs.org

Wound Healing Society (WHS)
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Optimizing Mealtimes for Persons Living With Dementia*

Melissa Batchelor

29

EDUCATIONAL OBJECTIVES

Upon completion of this chapter, the reader should be able to:

1. Assess the person with dementia for sensory, cognitive, and functional changes in dementia, as well as manage mealtime behaviors and environmental factors that impact meal intake.
2. Use a problem-solving framework to determine strategies that promote independence but adequately support and facilitate meal intake for a person with dementia.
3. Educate caregivers on how to deliver individualized assistance at mealtimes, using verbal and nonverbal cues and three Handfeeding techniques (sensorimotor cues).

OVERVIEW

Nearly 6 million people are living with Alzheimer's disease or a related dementia (dementia) in the United States today, and by 2050, this number is expected to triple (Alzheimer's Association, 2019). Of the top 10 leading causes of death in the United States, it stands alone as the only disease no one has survived. In fact, while death rates from heart disease and cancer have been steadily decreasing over the past decade, there has been a 145% increase in the number of deaths from dementia (Alzheimer's Association, 2019). While we wait for a cure for this burdensome disease, all caregivers need training to care for persons living with this disease. For family caregivers, managing mealtimes is among the most challenging of caregiving, from preparing food for special diets to helping the person to eat (Reinhard, Levine, & Samis, 2012). In the nursing home, mealtimes are the most time consuming of all of the activities of daily living (ADLs), and current training standards do not include content on Handfeeding techniques and/or managing mealtime behaviors (Batchelor-Murphy, Amelia, Zapka, Mueller, & Beck, 2015; Batchelor-Murphy et al., 2017). Mealtime behaviors in dementia are more complex than managing feeding behaviors. Caregivers must manage functional and cognitive challenges, trouble with swallowing (dysphagia), and elopement/wandering from the dining table to maximize meal intake effectively.

In the mid-1990s, feeding behaviors such as turning the head away and clamping the mouth shut were conceptualized as "aversive" behaviors. Caregivers typically interpreted these behaviors as "resistive" and stopped providing assistance (Pelletier, 2004, 2005; Watson, 1993; Watson & Green, 2006). The primary clinical instrument for "aversive" or "resistive" feeding behaviors is the Edinburgh Feeding Evaluation in Dementia (EdFED) Scale. Studies

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

using the EdFED aimed to decrease "aversive" feeding behaviors and increase meal intake.

Another line of inquiry for understanding behaviors in dementia involves conceptualizing behaviors in dementia as an attempt to communicate an "unmet" need (Algase et al., 1996; Batchelor-Murphy et al., 2015; Watson & Deary, 1994). Within this model, caregivers attempt to figure out what the behavior(s) mean and adapt the care provided through trial and error, and then the meal continues. Evidence that feeding behaviors are more likely a *form of communication*, and the *only form of control* a person with dementia has during a meal interaction, is emerging, with tremendous implications for clinical care (Batchelor-Murphy et al., 2015, 2017). For example, if a person with dementia doesn't open his or her mouth (rather than clamps the mouth shut), maybe the person is trying to communicate the need for a sip of his or her drink. Once the drink is offered, the meal resumes, increasing meal intake. Viewing these nonverbal feeding behaviors as communication of an "unmet" need is a paradigm shift for future research and clinical practice and creates the opportunity for caregivers and researchers to respond differently to the behaviors to improve nutritional outcomes (Algase et al., 1996; Batchelor-Murphy et al., 2015).

Malnutrition is a hidden epidemic among older adults across weight categories (underweight, normal, and obese/overweight) and across care settings (home, healthcare systems, and long-term care institutions). If an older adult is experiencing cognitive decline, the risk of malnutrition is greater. In the community setting, unintentional loss of body weight may be the first indicator of a cognitive issue for caregivers and providers (Batchelor-Aselage, Bales, Amella, & Rose, 2015). In the hospital setting, malnutrition is the biggest risk factor associated with readmission and mortality (The Gerontological Society of America, 2014); and in the nursing home setting, malnutrition is more prevalent than falls or pressure ulcers (Centers for Medicare and Medicaid Services, 2019a). Interventions to combat malnutrition fall into five major categories: nutritional supplements, training/education, environment/routine modification, feeding assistance, and mixed interventions (Wen, Jooyoung, & Thomas, 2014). The majority of interdisciplinary studies to date are descriptive and correlational studies, pointing to the need for research in the areas of eating ability, cognitive and behavioral function, and tailoring interventions according to level of dependence (Aselage, Amella, & Watson, 2011; Wen et al., 2014). Randomized controlled clinical trials are predominantly in the category of nutritional supplements and training/education (Aselage et al., 2011; Hanson, Ersek, Gilliam, & Carey, 2011; Wen et al., 2014). In spite of all efforts, current evidence demonstrates that specialized feeding interventions may not impact how long a person with dementia lives or improve function (Hanson et al., 2011). Given this, discussions among providers, caregivers, and the person living with dementia about the goals of care should be discussed shortly after dementia is diagnosed and continue throughout the disease trajectory. Issues related to managing meal intake will be a major factor at end-of-life. Advance directive discussions should include information related to Handfeeding or tube feeding until death early in the disease process. This allows caregivers, who will eventually be responsible for making the decisions at end-of-life, to be guided by the expressed wishes of the person with dementia and for these wishes to be documented and communicated to the healthcare team (Hickman, Keevern, & Hammes, 2015).

Several reviews have demonstrated that feeding tube placement in advanced dementia does not decrease negative outcomes such as aspiration pneumonia or pressure ulcers (Finucane, Christmas, & Travis, 1999; Mitchell, Buchanan, Littlehale, & Hamel, 2004). The reality for persons diagnosed with dementia and their caregivers is that dementia is a terminal illness; the person will die *from dementia* or *with dementia*, but not from "starving to death." Unfortunately, this reality is not well understood by the public. The "decision" to place a feeding tube or continue care with Handfeeding is an emotionally difficult one for a legally authorized representative. Skillful and educated clinicians must be available to provide the necessary emotional support for family caregivers as the disease reaches end stage and to explain that although there is no cure for dementia, there are care options—and Handfeeding until death is the preferred care option (American Geriatrics Society, 2014; Palecek et al., 2010; Sekerak & Stewart, 2014; Sherman, 2003). The purpose of this chapter is to present strategies caregivers can use throughout the disease trajectory to optimize nutritional intake, tailored to the ability of the person with dementia in the moment.

BACKGROUND AND STATEMENT OF PROBLEM

The ability to feed oneself is the first ADL mastered in childhood, and the last one lost in dementia (Katz, Downs, Cash, & Grotz, 1970; Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963). As the disease progresses, memory loss disrupts daily life and makes it difficult for the person living with dementia to complete familiar tasks such as eating. Changes in sensory perception alter self-care ability, and caregivers tend to focus on the *disability* rather than recognizing and supporting remaining *ability*. Reframing the caregiver focus to be on the ability of the person with dementia promotes dignity and sets the stage for meaningful

engagement during meals. The ability of a person with dementia to self-manage meals may vary from day to day and meal to meal. Adapting care to provide adequate support without taking over is critical, as is the need to use approaches that preserve dignity and promote quality of life.

Sensory Changes in Dementia

Alzheimer's disease and related dementias are neurodegenerative diseases that impact vision, taste, smell, hearing, and touch. These impairments do not typically occur in isolation. The complexity of concurrent sensory impairments and understanding how they impact cognition has been challenging; the relationship between and direction of causality for each is still a great unknown (Lin et al., 2014; Whitson et al., 2018). The degree of change in sensory ability varies from individual to individual, and caregivers must understand how these sensory changes drive behavior(s) in dementia.

Changes in Vision

Rates of impaired near and distance visual acuity increase with age. In normal aging, the most common changes are impaired visual processing, the ability to adapt to darkness and light, the ability to recognize patterns, and loss of peripheral vision (Beurskens & Bock, 2012; Whitson et al., 2018). In addition to normal age-related changes, as dementia progresses, peripheral vision is reduced significantly to binocular vision (top, bottom, and both sides of the visual field [Snow, 2018]). Reduced peripheral vision in dementia can be simulated as "binocular vision" by placing the fingers around your own eyes as if holding up a pair of binoculars. You would not be able to see a meal placed directly in front of you with this visual field; therefore, a person with dementia may not be able to see his or her food when placed directly in front of him or her. But what you can see is the food of your dining companions. This change in vision may be a reason a person with dementia will reach across the table to eat another person's food when his or her own tray is directly in front of him or her. As a caregiver, redirecting the individual back to his or her own plate may prove futile; therefore, a better strategy may be to move the dining companion and place the person with dementia's tray in that location, so the patient eats his or her own food. Other strategies to compensate for vision include using a high-contrast plate and place mat (white plate/black place mat), and organizing utensils and cups in locations one would typically look for them in a customary place setting—and replacing those items to correct locations if misplaced by the person with dementia after using.

Changes in Smell

The loss of ability to smell has been linked to neurodegenerative diseases as an early indicator of the disease and in later stages of Alzheimer's disease, Lewy body dementia, and vascular and frontotemporal dementias (Devanand, 2018; Doty, 2017; Woodward et al., 2018). The spectrum of loss ranges from mild to severe in dementia, but very few studies have been able to make clear distinctions between loss associated with normal aging compared to neurodegenerative changes (Doty, 2017; Woodward et al., 2018). Loss of smell is linked to taste, which impacts a person's ability to enjoy food and drink, but also poses a threat given the inability to smell spoiled food (Doty, 2017). Caregivers should be cautious to ensure food near expiration is removed and routinely check that smoke and carbon monoxide detectors are working.

Taste and Return of Suck Reflex

Although it is commonly known that taste and smell are linked, for those living with dementia, relatively little is known about the underlying mechanisms driving changes in the sense of taste (Sakai, Ikeda, Kazui, Shigenobu, & Nishikawa, 2016). Clinical observations of persons with Alzheimer's disease and related dementias indicate a common preference for sweet foods, particularly in frontotemporal dementia (Ahmed et al., 2017; Aiello, Silani, & Rumiati, 2016; Kai et al., 2015; Sakai et al., 2016). Food intake behaviors are linked to certain anatomical areas of the brain, but also driven by complex neurobiological pathways. Foods high in sugar and fat are potent rewards that promote food intake (Volkow, Wang, & Baler, 2011). As science delves deeper into how these complex systems interact, from a clinical perspective, caregivers that work with persons with dementia have already figured out that adding sugar to food does increase meal intake (Aselage, 2013). Adding sugar to meat loaf or carrots may not be typical in food preparation, and perhaps unconventional, but this strategy works in practice for increasing intake of real food. If food intake improves using sugar (or a sugar substitute), this intervention will likely reduce the need for expensive supplements or added snacks that are often not distributed in institutional settings. If the person with dementia has diabetes, the medical providers can adjust the medical regimen.

In Alzheimer's disease and related dementias, the suck reflex may also return (Damasceno et al., 2005; Schott & Rossor, 2003; Walker, 1990). For persons with dementia who exhibit this primitive reflex, offering drinks through a straw may be easier than drinking from a cup. To promote independence, a closed cup with a self-contained straw would be a better choice.

Hearing and Ability to Understand Language

Age-related hearing impairment affects nearly two thirds of adults over the age of 70 and is associated with accelerated cognitive decline (Lin et al., 2011). Additionally, comorbid occurrence of hearing loss and dementia results in compounded communication difficulties that can exacerbate dementia-related behaviors (Mamo et al., 2018). Hearing impairment is associated with brain atrophy in the temporal lobe, impacting language processing ability (Lin et al., 2014). As dementia progresses, a person loses the ability to use and understand language, significantly impairing verbal communication. This leaves nonverbal (behavior) cues as the primary form of communication. Caregivers should be aware that persons with dementia will automatically mimic their facial expressions and nonverbal behavior, and synchronize their emotional state to that of the caregiver (Sturm et al., 2013). In other words, when speaking to a person with dementia, our words may sound like those of Charlie Brown's teacher; but if coupled with a nonverbal cue (e.g., mimicking eating), this may increase understanding that it is mealtime. Whenever possible, caregivers should eat at the same time as the person with dementia to optimize the verbal and nonverbal cues that it is time to eat.

Touch and Return of Palmar Reflex

With the progression of neurodegeneration of the frontal lobe that occurs in Alzheimer's disease and related dementias, the palmar reflex returns (Damasceno et al., 2005; Schott & Rossor, 2003; Walker, 1990). The grasp reflex is elicited when a caregiver places his or her hand in the palm of a person with dementia; in other words, a traditional handshake will elicit the grasp reflex in a person with advanced dementia, and his or her grip is very strong. The person with dementia is not able to control the length of time before he or she releases the grip, and it can be a fairly painful experience for an unassuming caregiver. Persons with dementia retain strength much longer than fine motor skills. Therefore, the way to avoid a painful interaction is to greet persons with dementia using the Under Handshake (see Figure 29.1). When in the Under Handshake, the person with dementia can squeeze as hard as he or she would like, and it will not hurt the caregiver. The Under Handshake combined with a "palm pump" (gently squeezing and releasing the hand of the person with dementia in a rhythm similar to that of a heartbeat) can also be very soothing to the person with dementia.

APPROACH TO CARE

The amygdala controls our emotional response when we encounter a threatening situation and activates the sympathetic nervous system to reflexively respond with a fight, flight, or fright response. These areas of the brain remain intact with dementia. Caregivers should keep this in mind along with the sensory changes in hearing and vision. Be sure to call out to the person (verbal cue) and get into his or her field of vision from the front (visual cue, considering

FIGURE 29.1

Demonstration of the Under Handshake for use with persons with dementia.



loss of peripheral vision) before you touch the person (tactile cue). Imagine that you don't hear or see someone approaching you and he or she touches you first. When cues are not delivered in this order by unassuming caregivers, this sets off a fight, flight, or fright response in the person with dementia. A mnemonic to remember this approach is SHAKE Hands: Be sure the person **S**ees you and **H**ears you, **A**pproach slowly, **K**neel down, and **E**ngage with the Under Handshake. This order of cueing will minimize behavioral responses in the person with dementia that are often interpreted as "disruptive," when the caregiver may inadvertently have caused the behavior.

CARE STRATEGIES

Formal and informal caregivers should promote self-feeding as much as possible, for as long as possible, and only offer the least amount of support necessary to maximize meal intake. Assessing functional, cognitive, and sensory ability is a critical need when making decisions about how much assistance to provide to a person with dementia, and which handfeeding technique may be most appropriate for any given meal, bite of food, or drink. Observing all three daily meals, in their entirety, for multiple days and documenting the ability and challenges of the person with dementia may help caregivers identify patterns of better intake.

Meal Observation

As the meal begins, functional ability should be assessed by observing the ability of the person to scoop the proper amount of food and move the food into the mouth (each bite is a feeding cycle), ending in successful intake (or not.) Caregivers should observe the ability of the person with dementia to use his or her "skill fingers" (use of first two fingers and thumb to manipulate utensils; Figure 29.2), upper extremity range of motion, strength, endurance, and individual preference(s) (Batchelor-Murphy et al., 2017). Other functional and cognitive indicators to observe include the ability to begin a meal; use utensils; maintain attention and alertness during the meal; bite, chew, and swallow without choking; and end the meal (Edahiro et al., 2012; Lee & Song, 2015; Tully, Matrakas, Muir, & Musallam, 1997).

Self-Feeding

If the person with dementia has the functional, cognitive, and sensory ability needed to initiate, maintain, and end a meal with adequate intake, caregivers should promote self-feeding. Observing where difficulty occurs may require creative interventions, including finger foods if utensils are difficul to manage or a covered cup with a straw if drinking from a normal cup is challenging. If maintaining attention to the meal is difficult, caregivers can use person-centered verbal cues (e.g., redirecting attention to the meal, orienting to food items, expressing approval) and nonverbal cues (e.g., mimicking act of eating, positive gestures, and facial expressions) to promote self-feeding (Gilmore-Bykovskyi & Rogus-Pulia, 2018; Reimer & Keller, 2009). Monitoring the person during the entire meal is important as assistance may be required during part of or near the end of a meal to finish eating.

Handfeeding Assistance

For all three handfeeding techniques, the feeding assistant should first assess which hand is the dominant hand of the person with dementia. The feeding assistant should sit on the dominant side of the person with dementia and use the same hand to provide assistance (e.g., if the person with dementia is right-handed, the feeding assistant should sit on the right side and use his or her right hand to provide assistance). For each bite of food, assistance should be provided through the middle of the body, as that is the normal trajectory for moving food from a plate to the mouth in self-feeding. It is recommended that the person with dementia be in a chair during mealtimes as much as possible, as assistance is more challenging if the person with dementia is in bed.

The handfeeding techniques are identified according to where the caregiver (feeding assistant) places his or her hand in relation to the person who is being assisted. A Handfeeding demonstration video can be viewed at http://MelissaBPhD.com/NOSH to learn placement of the hands and available modifications for each technique. When first learning about these techniques, it is helpful to "role-play" with a partner. Each person can alternate being in the role of the feeding assistant and the person with dementia. Kinesthetically experiencing each technique oneself provides insight for the feeding assistant as to how the person with dementia may perceive that type of feeding assistance—these handfeeding techniques feel different, as though you have control over the movement or someone is forcing your hand toward your face. The handfeeding techniques may be used interchangeably during a meal. Decisions on which technique to use should consider the ability of the person with dementia and which technique(s) are preferred. Every person with dementia is an individual, and clinical judgment should be exercised by caregivers to promote safety, comfort, dignity, and quality of life during every meal interaction.

Over Hand. The Over Hand technique can be used when the person with dementia just needs a little help initiating, maintaining, or finishing a feeding cycle. The person possesses the "skill finger" ability necessary to hold the utensil, has the upper extremity range of motion and strength to move the utensil with food from the plate to the mouth, but just needs some physical guidance. To do so, the feeding assistant places his or her hand *over* the hand of the person being assisted with the meals. This technique may also be used to stabilize any hand tremor that results in spillage of food off the utensil. The feeding assistant may need to keep his or her hand over the hand of the person with dementia all the way through the feeding cycle, or just long enough to initiate the movement of the utensil to the mouth. If the person with dementia pushes away the feeding assistance, it may be because he or she is capable of performing the movement on his or her own and/or feels as though you are forcing his or her movement, so be mindful to provide this assistance gently at the other person's pace and not your own.

Under Hand. As dementia progresses, older adults will lose skill finger (fine motor) ability before they lose strength (gross motor ability), demonstrated with elicitation of the palmar reflex (Bottiggi & Harrison, 2008). The Under Hand technique can be used for a person with dementia who no longer has skill finger ability but is still able to engage in the act of eating. Caregivers should practice getting into the Under Handshake (detailed earlier) with one another, as this is the correct position for the Under Hand feeding technique. Once in the Under Handshake, the caregiver providing feeding assistance will have use of his or her skill fingers to support the loss of this ability in the person with dementia.

If the person with dementia has limited upper extremity range of motion, caregivers may need to modify the Under Hand technique to accommodate these functional limitations. If the person has partial range of motion, the caregiver can load the utensil with food and then continue the feeding cycle with the Under Hand technique. And if the person with dementia has a contracture in the upper extremity, the caregiver can slide a bowl of food under the person's arm and perform the Under Hand technique with shorter movements. The handfeeding demonstration video at http://MelissaBPhD.com/NOSH includes these limited range of motion modifications.

Direct Hand. In current practice, spoon-feeding is typically observed as the first (and only) type of assistance offered to a person with dementia. The problem with spoon-feeding is two-fold. The caregiver does not provide a tactile cue that he or she is present, and the spoon is moved from the plate to the person's mouth in more of a "swoop." This approach does not provide any cues before the food shows up in the person's mouth and may be spit out (feeding behavior) as a result of not expecting the food. Spoon-feeding needs to be adapted to Direct Hand feeding to include a tactile cue (hand on shoulder), and the spoon should be lifted until it is in the person's visual field (visual cue). The handfeeding demonstration video demonstrates these modifications for vision.

Rather than using Direct Hand as the first choice when providing feeding assistance, this Direct Hand technique should be reserved as the last resort when caregivers need to do all of the work for the person with dementia. Direct Hand assistance typically does not engage the person in the act of eating, making it a more passive experience. If used first, this can create excess disability. Therefore, this technique is most appropriate at the end stage of dementia, when the person is totally dependent for care. However, if the person with dementia is not used to caregivers using the Over Hand or Under Hand techniques, they may initially prefer the Direct Hand technique because it is what they are more familiar with. As caregivers use the Over and Under Hand techniques, the person with dementia will become more familiar, so allow some adjustment time. See Figures 29.2 and 29.3 for different feeding assistance techniques.

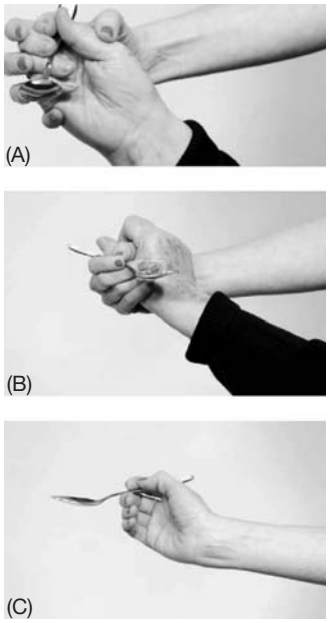
FIGURE 29.2

"Skill fingers": First two fingers and thumb used to manipulate utensils.



FIGURE 29.3

Demonstration of caregiver (bare arm) hand placement for handfeeding techniques when providing assistance to another person (dark sleeve) (A) Over Hand, (B) Under Hand, and (C) Direct Hand.



PROBLEM-SOLVING FRAMEWORK: THE C3P MODEL

The C3P Model is a problem-solving strategy that frames how licensed nurses can think through an identified mealtime difficulty: Change the Person, Change the People, and/or Change the Place (Amella & Batchelor-Aselage, 2014). The assessment and interventions for this chapter are framed around this model. The recommendations for assessment of mealtime difficulties and nutritional assessment will vary depending on the place of residence (community, long-term care, or acute care) of the person with dementia. Assessment is not a static event, especially when an older adult experiences the downward spiral of a life-limiting cognitive or physical illness. As an individual ages, the likelihood of functional impairment increases. With increased frailty, loss of function follows a predictable pattern, with the ability to feed oneself the last ADL to be lost (Katz et al., 1963; Katz et al., 1970).

Quite often, mealtime difficulties are first noticed by caregivers when the person with dementia has lost weight. In the nursing home setting, weight loss is quantified as a 5% loss in one month, or 10% loss in the past six months (Centers for Medicare and Medicaid Services, 2011). These parameters are a good "rule of thumb" for community-dwelling elders also. In early dementia, weight loss may be a sign of forgetting to prepare and eat meals. In moderate to advanced dementia, there may be issues more related to functional ability and/or deficits related to the disease process with apraxia, agnosia, and aphasia. As the disease progresses, if meal intake is affected, the general "rules" for dietary restrictions should be carefully weighed for risk versus benefit. Liberalizing diets may increase intake, especially when the goals of care are comfort, quality of life, and dignity (Sekerak & Stewart, 2014).

Change the Person

Physical Assessment and Daily Care Record Review

A head-to-toe physical assessment by licensed nursing personnel is vital. Investigation should focus on identifying any reversible, physical cause of weight loss. Potential factors at the individual level include, but are not limited to, pain, infection, medication interaction, abnormal lab values, food preferences, and/or sociocultural considerations. Along with the physical assessment, review any daily care documents available in the medical record. Looking back over several days (or weeks, if available) for patterns of daily intake through the meal intake record may provide information related to the onset of a reversible problem (e.g., urinary tract infection, constipation, new medication that causes a decrease in meal intake). Additionally, these patterns may provide insight into the best time of day to target meal intake. For example, if a person consumes 100% of breakfast and less over the course of the day, one strategy would be to double the breakfast portions to increase caloric intake at that time of day. Review of lab values for any abnormalities that may be easily remedied and/or new or unnecessary medications that could be eliminated are important components of a comprehensive geriatric assessment.

In addition to the physical exam and meal intake records, output records for "regular" bowel movements should be reviewed for regularity or changes in bowel habits. Teaching staff to correctly quantify bowel movement size is also a little known but critical assessment skill. Small bowel movements should be quantified as the size of a closed fist, medium bowel movements as half the length of the forearm, and large bowel movements as the full length of the forearm. The rationale for quantifying in this manner is that the full forearm is the same length as the colon. If a person is only outputting a series of small bowel movements every few days, he or she is not emptying the colon—increasing the risk of a major constipation episode or fecal impaction, which will impact any person's appetite.

Change the People

Successful completion of the meal is dependent on who assists or feeds the patient and the interpersonal process that the person uses to interact with the patient (Altus, Engelman, & Mathews, 2002; Amella, 2002). Caregivers who are able to let the patient set the tempo of the meal and allow others to make choices will be more effectual in increasing intake. These studies point to a need to use patient-centered approaches that individualize mealtimes for patients and suggest that the responsibility for ensuring this occurs rests with a sensitive and well-trained staff.

Several patient-centered factors have been identified as being critical to older adults: Each mealtime was seen as a unique process, and patients are central to the process through their actions not only at meals but also during the time surrounding meals, such as when socializing while waiting (Evans, Crogan, & Shultz, 2005; Gibbs-Ward & Keller, 2005). Encouraging the family to eat with the patient can be beneficial; this has been shown to be an effective strategy in nursing homes, increasing body weight and fine motor function in a randomized controlled trial (Altus et al., 2002; Nijs et al., 2006).

Change the Place

Because of the strong social and cultural components of eating, where one dines is sometimes as important as what one eats. Nurses should simply ask themselves, "Would I want to eat my next meal where this person is eating?" If the answer is no, then steps should be taken to improve the dining environment. Small changes in the dining environment may make large improvements in a patient's capacity and motivation to eat or be fed. Unfortunately, in institutions, the mealtime experience is often not focused on individual needs (Sydner & Fjellström, 2005). External factors such as decreased noise, increased lighting, and playing of relaxing music at meals positively influenced appetite (Hicks-Moore, 2005; McDaniel, Hunt, Hackes, & Pope, 2001). Using contrasting colors (foreground/background) in tableware and tablecloth and placing dishes in similar positions may help persons with low vision to be more independent (Ellexson, 2004). Proper positioning using the appropriate, supportive chair (instead of eating in bed or sitting on the bedside) promotes good eating posture (Rappl & Jones, 2000). Meals eaten in small groups—much like family dining—are considered an ideal method; however, this intervention had a greater effect on staff's perception of meals and willingness to spend time in the process of attending to meals (Kofod & Birkemose, 2004).

Role of Nutritional Supplements

Nutritional supplements include high-calorie supplements and appetite stimulants (Hanson et al., 2011). Although there is evidence that nutritional supplements improve body weight by 1 to 4 pounds in persons with dementia, there is less evidence that these supplements reduce risk of infections or promote wound healing (Hanson et al., 2011). In addition, these supplements have not demonstrated improvement in function or improved life expectancy (Hanson et al., 2011). Nutritional supplements are expensive, and between 55% and 65% of the time are not actually consumed by the person with dementia (Allen, Methven, & Gosney, 2014; Kayser-Jones et al., 1998). A recent randomized controlled clinical trial indicated that when offered the supplement in a glass/beaker rather than in a container with a straw inserted into it, persons with dementia did increase the amount of the supplements consumed (Allen et al., 2014). Even with this delivery modification, supplement consumption averaged 65%. Nutritional supplements given midmorning have also been associated with decreasing lunch intake (Young, Greenwood, van Reekum, & Binns, 2004).

The interdisciplinary team may have neglected to perform a thorough assessment of underlying issues prior to using nutritional supplements. Potentially reversible conditions such as adequate staffing and lack of supervision, poor oral health, or identifying other factors requiring intervention such as dysphagia should be investigated (Kayser-Jones et al., 1998). This in-depth assessment of the etiology of a mealtime difficulty should occur and results documented prior to using a nutritional supplement. Real food should be offered first, with deliberate attention to providing adequate support in order to achieve meal intake, based on individual preferences and functional ability, as outlined in this chapter.

CASE STUDY 29.1

Mr. Jones is an 85-year-old man admitted to the skilled nursing facility after a 3-day hospital stay after a fall. Prior to his hospitalization, Mr. Jones lived with his son's family in the community. The family's goal for discharge is for Mr. Jones to return home after rehabilitation. For his initial Minimum Data Set (MDS) assessment, the staff report fluctuations between needing assistance to being total care with meals.

(*continued*)

CASE STUDY 29.1 (*continued*)

On one particular midmorning round, the certified nursing assistant (CNA) enters Mr. Jones' room by first calling his name (auditory cue) and entering his visual field (visual cue) before finally touching his shoulder (tactile cue). The CNA spoon-feeds Mr. Jones, and he will occasionally clamp his mouth shut and turn his head away when offered his food. After several failed attempts to encourage eating, she consults the nurse about his "refusal" to eat.

The nurse uses the C3P Model and begins with *Change the Person*: She conducts a head-to-toe physical exam, medication reconciliation, meal intake review, and bowel review. The physical assessment is negative; no new medications have been added and all have a supporting diagnosis; his meal intake has been steady around 50% to 75% for all three meals; and he has been having regular, large bowel movements. Mr. Jones has (and is wearing) corrective eyeglasses, and he responds when his name is called.

Change the People: Next, the nurse uses the EdFED scale and observes several mealtimes over the course of the day. The nurse also observes the staff offering spoon-feeding assistance off and on while standing beside Mr. Jones at the table. When spoon-feeding assistance is provided, she observes Mr. Jones clamping his mouth shut and turning his head away when offered some food items. Some staff members offer him a sip of water with a straw when this behavior occurs, and the meal resumes; other staff interpret these behaviors as "refusing," and they walk away. If staff are not actively assisting him to eat, he does not sustain his attention to the meal, and verbal cues being used by staff in passing are ineffective. *Change the Place:* During the meal observations, the nurse also notes that several staff members enter and exit the room frequently. When a staff member catches Mr. Jones' attention, it takes additional time to get him refocused on his meal. The tables are set with contrasting place mats, and the noise level is kept to a minimum.

In addition to this assessment information, the nurse also consults the interdisciplinary team to decide what options would be available for improving Mr. Jones' meal intake. To assess his swallowing abilities, a speech and language pathologist conducts a bedside swallowing study. The study reveals no apparent pathology with his physiological swallowing function, but a mechanical soft diet is recommended because he is not able to cut his own food. Occupational therapy notes Mr. Jones has adequate upper extremity range of motion and moderate skill finger ability for self-feeding and recommends using adaptive equipment to help him independently hold his utensils owing to limited dexterity and fine motor control to hold a regular utensil. The dietary manager reviews food preferences with Mr. Jones' son, and adjustments are made to foods served to him to also include finger foods when possible.

With the *Change the Person* interventions recommended by the therapy departments in place (modified texture, adaptive equipment, food preferences), the nurse and CNA work collaboratively to provide meal assistance. *Change the People:* After initial attempts to verbally encourage independent feeding are not successful, the nurse and CNA begin trying the Handfeeding techniques to determine which would be most appropriate for Mr. Jones given his current ability. The CNA provides Mr. Jones with his adaptive utensil, which he is able to hold. Using the Over Hand technique, she begins to guide the utensil toward his face. During use of this technique, Mr. Jones begins to push the assistance away, but he is unable to complete the feeding cycle on his own and eat his food. In the next attempt to provide assistance, the CNA holds his utensil and uses the Under Hand feeding technique. Mr. Jones seems to like this technique and pulls the CNA's hand toward his mouth to eat his food. After a few cycles of Under Hand, Mr. Jones clamps his mouth shut and turns his head away. The nurse encourages the CNA to offer a sip of water at this point and notes this behavior occurs when he is offered carrots. Mr. Jones takes several sips of water. The CNA adds a little bit of sugar to the carrots and resumes providing assistance with the Under Hand feeding technique. When offered carrots again, Mr. Jones eats them. The CNA continues to respond to his feeding behaviors by offering some more food and then fluids, and Mr. Jones consumes 100% of his meal and fluids. *Change the Place:* A brief in-service is held with staff to praise use of contrasting place mats in the dining room and minimizing noise. Staff are encouraged to try to limit the traffic in and out of the dining room, as it is a distraction for the residents with dementia.

The effective strategies identified are added to his care plan. Over the next several weeks, Mr. Jones improves his meal intake to 75% to 100% consistently, and the staff are able to transition from Under Hand assistance to Over Hand assistance, and he regains the ability to self-feed part of his meal. As his nutritional status improves, he makes gains with his rehabilitation therapy. His functional and cognitive status return to baseline prior to the hospitalization for the fall. The social worker collaborates with the son and prior community support is available, and Mr. Jones returns home with his son.

SUMMARY

Mealtimes spent with family and friends are an integral part of life, and dementia can impact dignity and quality of life by slowly eroding the ability to eat independently. When caregivers understand some of the unique challenges this disease brings to the table, they are able to promote independence and tailor assistance to the individual. Caregivers who provide verbal, visual, and sensorimotor cues with the Handfeeding techniques will increase meal intake, allowing an opportunity for a person with dementia to understand our intentions as caregivers when language ability is lost. Given that what works during one meal may not work during another, the C3P Model provides a problem-solving framework to guide caregivers in adapting care strategies. Supportive Handfeeding offers a novel addition to the feeding assistance repertoire and allows caregivers to assist a person to eat in a way that promotes relationship, while optimizing food intake, quality of life, and dignity.

NURSING STANDARD OF PRACTICE

Protocol 29.1: Assessment and Management to Optimize Mealtimes in Dementia

I. GOAL

To maintain or improve nutritional intake during mealtimes and provide a quality mealtime experience that fosters dignity and maximum independence in eating, while respecting personal preferences and cultural/social aspects, for as long as possible.

II. OVERVIEW

Guiding Principles

A. Adequate intake of nutrients is necessary to maintain physical and emotional health.
B. Mealtimes are critical to socialization as well as maximizing nutritional intake; therefore, mealtime rituals, cultural norms, and food preferences will be observed to the extent possible.
C. Caregivers must be aware of sensory changes that occur in dementia and adapt care to include verbal, nonverbal (visual), and sensorimotor cues to optimize meal intake.
D. Persons should be encouraged to self-feed as long as possible, and level of support should be adjusted to compensate for the person's ability through Handfeeding techniques.
E. As persons require more assistance with eating, dignity will be maintained.
F. The quality of mealtime interactions is an indicator of quality of life and care provided to individuals.

III. BACKGROUND

A. Definitions

Basic

1. Feeding is "the process of getting the food from the plate to the mouth. It is a primitive sense without concern for social niceties" (Katz et al., 1970, p. 23).
2. Eating is "the ability to transfer food from plate to stomach through the mouth" (Katz et al., 1970, p. 23). Eating involves the ability to recognize food, the ability to transfer food to the mouth, and the phases of swallowing.
3. Dysphagia is "an abnormality in the transfer of a bolus from the mouth to the stomach" (Groher, 1997, p. 2).

Impact of dementia on independent meal management

(*continued*)

Protocol 29.1: Assessment and Management to Optimize Mealtimes in Dementia (*continued*)

Cognition

1. Attention and executive function are impaired. As it relates to eating, the person with dementia may have difficulty staying focused on the meal and initiating and maintaining self-feeding until the meal is consumed.
2. Agnosia is the inability to recognize familiar items when sensory cuing is limited. As it relates to feeding, a utensil (e.g., spoon or fork) is not recognized as an object for moving food from the plate to the person's mouth.
3. Aphasia is the inability to communicate effectively, and may be receptive or expressive. As it relates to feeding, spoken language may not be spoken or understood.

Function

4. Apraxia is an inability to carry out voluntary muscular activities related to neuromuscular damage. As it relates to eating and feeding, it involves loss of the voluntary stages of swallowing or the manipulation of eating utensils.
   a. "Skill fingers" ability: The person with dementia possesses the fine motor skill to use the first two fingers and thumb to hold and manipulate the utensil.

Handfeeding Techniques

For all techniques, the feeding assistant assesses the person with dementia for (a) skill finger ability and (b) upper extremity range of motion. Handfeeding technique use is in response to these abilities, which may fluctuate from meal to meal and day to day. Feeding assistants sit on the dominant side of the person with dementia, place their hand on the person's shoulder for touch cue, and provide feeding assistance through the middle of the person with dementia's body (self-feeding is naturally delivered through the body's midline).

NOTE: Direct Hand should be used last, and only when necessary. It is the least engaging technique for a person with dementia and can create excess disability if used when the person with dementia can still engage in the act of eating.

1. Over Hand: The person with dementia still possesses the fine motor skill needed to hold the utensil. The caregiver puts his/her hand *over* the hand of the person with dementia and guides it toward the individual's mouth. The person being assisted is active in the process, but may misinterpret the assistant as controlling and push assistance away (Batchelor-Aselage et al., 2015).
2. Under Hand: The person with dementia no longer possesses the fine motor skill needed to hold the utensil, so the caregiver holds the fork or spoon, and places his or her hand *under* the hand of the person with dementia. From the perspective of the person with dementia, this type of assistance may convey a feeling of control over the movement and provides fine motor assistance when it no longer exists (Batchelor-Aselage et al., 2015).
   a. Modify technique if person with dementia has limited upper extremity range of motion.
3. Direct Hand: The caregiver does all of the work: The caregiver holds the fork or spoon and moves food from plate to mouth; the person being assisted is passive in the interaction (Batchelor-Aselage et al., 2015).
   a. Modification: The caregiver using this technique should ensure visual cues are being received by the person with dementia through eye contact with food and/or the person opening his or her mouth before putting it in.

For a video demonstration depicting the three techniques and modifications, please visit the following website: http://melissabphd.com/nosh (Batchelor-Murphy, 2018)

B. Etiology

Mealtime difficulties Can have multiple causes from sensory, cognitive, functional, psychological, and iatrogenic origins. Health professionals need to consider multiple etiologies and not assume that difficulties are related only to increased confusion from a cognitive decline.

1. Sensory/Cognitive: Changes related to Alzheimer's disease and related dementia, including loss of peripheral vision, agnosia, and aphasia; Parkinson's disease; amyotrophic lateral sclerosis; stroke.
2. Functional: Changes related to Alzheimer's disease and related dementia, including apraxia; Parkinson's; stroke; deconditioning, including loss of upper extremity range of motion, strength, and/or endurance.
3. Psychological/Physiological: Depression, anxiety, constipation, infection.
4. Iatrogenic: Lack of adaptive equipment; use of physical restraints that limit the ability to move, position, or self-feed; improper chair or table surface, or discrepancy of chair to table height; use of wheelchair in lieu of table chair; being assisted to eat while lying in bed; use of disposable dinnerware, especially for patients with cognitive or neuromuscular impairments.

(*continued*)

Protocol 29.1: Assessment and Management to Optimize Mealtimes in Dementia (*continued*)

IV. PARAMETERS OF ASSESSMENT

A. Physical examination
   1. Look for reversible causes of low meal intake: Pain? Constipation? Infection?
   2. Psychological factors: Depression? Anxiety?

B. Meal observation
   1. Cognitive challenges: Able to initiate eating? Able to maintain attention to the meal? Behaviors that may indicate sensory deficit (e.g., reaching across table to eat another person's food may indicate decreased peripheral vision and inability to see meal/meal tray directly in front of them).
   2. Functional challenges: Self-feeding ability versus response to Handfeeding assistance? Trouble with utensils?
   3. Feeding behaviors: EdFED scale: Observe a few mealtimes at different times of the day using the EdFED scale to examine the presence of feeding behaviors and possible meaning of behavior (Watson, 1996):
      a. Turning head away, clamping mouth shut: Are these behaviors indicating a dislike of food offered, or desire for fluids at that moment? When choice is honored, does meal intake continue?
      b. Refusing to open mouth/not swallowing/allowing food to drop out of mouth: Does speech therapy need to evaluate swallowing problem? Dental consult?
      c. Spillage of food: Does person need stabilization of utensils with Over Hand or Under Hand feeding technique(s)?
      d. Spitting food out: Spits food into hand? Is it related to the food taste, temperature, or texture?
   4. Dysphagia: Coughing? Not swallowing food? Involve speech therapy, or observe for optimized cueing by feeding assistants.
   5. Wandering/Elopement from dining room: Timing of tray delivery? Finger food while walking, rather than making person sit at the table?

C. Care record review
   1. Medication reconciliation: Any new or missing medication? Medications given only for current medical diagnoses?
   2. Review recent lab values and urinalysis
   3. Patterns of intake and output:
      a. Meal intake record for patterns of increased or decreased intake. Clinical investigation should occur to determine underlying cause, as these patterns may indicate:
         i. Acute illness/onset of infection (e.g., meal intake decreased few days prior)
         ii. Daily patterns of meal intake (e.g., breakfast always 100%, dinner 25%).
      b. Review bowel movement records and auscultate for bowel sounds: look for patterns of 3 days with equivalent of a "large" bowel movement.
         i. Constipation will affect appetite. A "large" bowel movement is equivalent to the length of the lower arm, from elbow to fist (the length of the colon). Daily "small" bowel movements do not empty the colon, resulting in constipation.

V. NURSING INTERVENTIONS

A. Change the Person
   1. Allow time for rituals before meals (e.g., handwashing and toilet use); dressing for dinner; saying blessing of food or grace, if appropriate.
   2. Observation of religious rites or prohibitions observed in preparation of food or before meal begins (e.g., Muslim, Jewish, Seventh-Day Adventist; consult pastoral counselor or family as needed).
   3. Cultural or special cues: family history, special holiday occasions, especially rituals surrounding meals

(*continued*)

Protocol 29.1: Assessment and Management to Optimize Mealtimes in Dementia (*continued*)

4. Preferences about end-of-life decisions regarding withdrawal or administration of food/fluids in the face of incapacity, or request of designated healthcare proxy; ethicist or social worker may facilitate process.
5. Develop interdisciplinary care plan for any chronic, treatable conditions such as constipation, depression, or anxiety that may impact meal intake.

B. Change the People
1. Provide an adequate number of well-trained staff.
2. Deliver an individualized approach to meals, including choice of food and, tempo of assistance.
3. If meal patterns indicate one meal eaten better than other (100% breakfast intake, 25% dinner), provide double meal portions for the preferred meal.
4. Position of caregiver relative to older adult: caregiver seated beside older adult, on older adult's dominant side; eye contact; older adult able to see facial expressions and feeding behaviors emulated by the caregiver with visual cueing.
5. Self-feeding: Encouragement to self-feed with multiple methods based on functional ability; allow time for person to complete task, rather than provide assistance to minimize time.
6. Cueing:
   a. Verbal: Short statements of simple commands to direct meal behavior (e.g., here is your corn, open your mouth, swallow the food).
   b. Visual: Mimic behavior you want person to do (e.g., pretending to move food from plate to food to imitate eating).
   c. Sensorimotor: Using Handfeeding techniques with modifications based on person's cognitive, sensory, and functional abilities.
7. Mealtime rounds: Interdisciplinary team to examine multifaceted process of meal service, environment, and individual food preferences.

C. Change the Place
1. Odor: Food prepared in area adjacent to or in dining area. The smell and sounds of food being prepared can facilitate understanding of impending mealtime and stimulate appetite.
2. Adaptive equipment: Available, appropriate, and clean; caregivers and/or older adult knowledgeable in use; occupational therapist assists in evaluation.
3. Noise level: Environmental noise from music, caregivers, and television is minimal; personal conversation related between person and caregiver is encouraged.
4. Music: Pleasant, preferred by patient.
5. Light: Adequate and nonglaring versus dark, shadowy, or glaring.
6. Dining or patient room: Encourage the older adult to eat in the dining room to increase food intake, personalize the dining room; no treatments or other activities occurring during the mealtime; no distractions.
7. Tableware: Use of standard dinnerware (e.g., glasses, cups, saucers, flatware) versus disposable tableware and bibs.
8. Contrasting background/foreground: Use contrasting background and foreground colors with minimal design to aid person with decreased vision.
9. Furniture: Older adult seated in stable armchair; table of appropriate height versus eating in wheelchair or in bed.

VI. EVALUATION/EXPECTED OUTCOMES

A. Change the Person
1. Corrective and supportive strategies reflected in plan of care.
2. Quality-of-life issues emphasized in maintaining social aspects of dining.
3. Culture, personal preferences, and end-of-life decisions regarding nutrition respected.

(*continued*)

Protocol 29.1: Assessment and Management to Optimize Mealtimes in Dementia (*continued*)

B. Change the People
   1. System disruptions at mealtimes minimized.
   2. Family and staff informed and educated to patient's special needs to promote safe and effective meals.
   3. Maintenance of normal meals and adequate intake for the patient reflected in care plan.
   4. Competence in diet assessment; knowledge of and sensitivity to cultural norms and preferences for mealtimes reflected in care plan.

C. Change the Place
   1. Documentation of nutritional status and eating and feeding behavior meets expected standard.
   2. Alterations in nutritional status; eating and feeding behaviors assessed and addressed in a timely manner.
   3. Involvement of interdisciplinary team (geriatrician, advanced practice nurse, dietitian, speech therapist, dentist, occupational therapist, social worker, pastoral counselor, ethicist) appropriate and timely.
   4. Nutritional, eating, and/or feeding problems modified to respect individual preferences and cultural norms.
   5. Adequate number of well-trained staff who are committed to delivering knowledgeable and individualized care.

VII. FOLLOW-UP MONITORING

A. Providers' competency to monitor eating and feeding behaviors.
B. Documentation of eating and feeding behaviors.
C. Documentation of care strategies, and follow-up of alterations in nutritional status and eating and feeding behaviors.
D. Documentation of staffing and staff education; availability of supportive interdisciplinary team.

ABBREVIATION

EdFED Edinburgh Feeding Evaluation in Dementia

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Disorders of Sleep in the Older Adult*

30

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EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Identify common sleep disorders in the older adult.
2. Describe the signs, nighttime and daytime symptoms, and usual treatments for primary sleep disorders: obstructive sleep apnea (OSA), restless legs syndrome (RLS), insomnia.
3. Discuss the bidirectional relationships of chronic illness, medications, and acute hospitalization with sleep.
4. Provide nursing care that incorporates sleep-hygiene measures and consistent ongoing treatment for existing sleep disorders.
5. Educate patients and families about sleep disorders and sleep-hygiene measures.

OVERVIEW

Many factors can affect nighttime sleep and result in daytime sleepiness in older adults. These include psychological disorders, symptoms of chronic illnesses (e.g., pain), medication side effects, environmental factors, and lifestyle preferences. Problems with sleep can result from age-related changes in chronobiology and sleep disorders. In older adults, the most common primary sleep disorders are obstructive sleep apnea (OSA), restless legs syndrome (RLS), and insomnia. The extent to which changes in sleep patterns experienced by older adults are caused by normal physiological alterations, pathological events, sleep disorders, or poor sleep hygiene remains unclear. Hospitalization and institutionalization can also interfere with sleep quality or quantity. There are many effective treatments for sleep disorders, but the first step is to identify their cause and then to quantify and aggressively treat the condition in the older adult. This chapter outlines an overview of sleep pathophysiology, sleep disorders, and outcomes in older adults; describes how to assess them; and provides interventions to improve their sleep.

PHYSIOLOGICAL CHANGES IN SLEEP THAT ACCOMPANY AGING

Normal changes in sleep that occur as part of human development and lifestyle choices must be differentiated from pathological sleep conditions, which are common among older adults. The habitual sleep–wake pattern is mediated by the endogenous circadian pacemaker, located in the suprachiasmatic nucleus, along with exogenous environmental cues and a homeostatic need for sleep (Carskadon &

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

Dement, 2017). The propensity of older adults to get sleepy early in the evening and wake up earlier in the morning than in their younger years has been attributed to both an advanced phase circadian rhythm and an increased homeostatic sleep drive (Bliwise & Scullin, 2017). Although older adults require as much sleep as younger adults, older adults may divide their sleep between nighttime slumber and daytime naps, rather than a single consolidated period.

Additionally, alterations in *circadian activity rhythms* accompany aging and include changes in patterns for sleep–wake cycles, including decreases in amplitude, weakening of sleep–wake patterns, and decreased sensitivity to phase-resetting signals, such as light or sleep medications (Tranah, Stone, & Ancoli-Israel, 2017). Changes in *sleep architecture* associated with normal aging include increased difficulty in falling asleep, poorer sleep quality with decreased sleep efficiency (SE), more time awake after sleep onset, increased "light" sleep (stages 1 and 2 sleep), and decreased quantity and amplitude of restorative "deep" slow-wave sleep (stages 3 and 4; Bliwise & Scullin, 2017).

BACKGROUND AND STATEMENT OF THE PROBLEM

The Institute of Medicine has reported that 50 to 70 million Americans are affected by chronic disorders of sleep and wakefulness. Recent data from the Behavioral Risk Factor Surveillance System (BRFSS), conducted by the Centers for Disease Control and Prevention (CDC), found that among community-dwelling persons older than 65 years, over a quarter (26.3%) reported sleeping, on average, less than 7 hours in a 24-hour period (Liu et al., 2016). Data from the 2005 to 2008 National Health and Nutrition Examination Survey (NHANES) show that 32% of persons older than 60 years (n = 3,716) slept less than 7 hours per night on weekdays or workdays (CDC, 2011). Too short sleep duration (fewer than 6 hours) and too long sleep duration (more than 8 hours) in older adults are both associated with higher mortality risk (Ferrie et al., 2007). Rates of insomnia disorders in older adults are estimated at 5%, and apnea disorders are at 20% or higher (Gooneratne & Vitiello, 2014). Recently, problems of sleep duration and sleep disorders have been found to be associated with cognitive impairment in the older adult (Givens, Mezzacappa, Heeren, Yaffe, & Fredman, 2014). Further, some sleep disorders are more common in patients in acute and chronic care settings. Ancoli-Israel et al. (1991) and Ancoli-Israel, Kripke, and Mason (1987) studied only persons older than 65 years and found undiagnosed sleep apnea in 24% of those living independently in the community, in 33% of those in acute care settings, and in 42% of older adults in nursing home settings. Finally, older women report more subjective complaints of sleep disturbance than older men (Grandner et al., 2012).

CONSEQUENCES OF SLEEP DISORDERS

Excessive Daytime Sleepiness

Excessive daytime sleepiness in the older adult is not normal, and it results in decreased alertness, delayed reaction time, and reduced cognitive performance (Ohayon & Vecchierini, 2002). The Cardiovascular Health Study documented excessive sleepiness in 20% of subjects older than 65 years (n = 4,578; Whitney et al., 1998). Nevertheless, recent studies suggest that healthy adults from midlife to around 75 years of age are less likely to be sleepier than younger adults (Grandner et al., 2012). Although older adults may be more likely to nap, possibly because they have the opportunity to do so, no causal relationship between napping and excessive daily sleepiness has been established in this population (Grandner et al., 2012). Excessive daytime sleepiness is significantly associated with a higher likelihood of disability, increased risk of mortality, and substantially shorter disability-free life expectancy at age 60 and higher levels of depressive symptomatology (Anderson et al., 2014). It is also predictive of cognitive decline in the older adult (Jaussent et al., 2012). In one study, daytime sleepiness was the only sleep symptom associated with mortality, incident cardiovascular disease morbidity and mortality, myocardial infarction, and congestive heart failure, particularly among women (Newman et al., 2000).

Impaired Mood

Good sleep quality is a prerequisite for maintaining mental health, and research indicates that sleep disorders and poor sleep quality are often comorbidities of depression and impaired mood (Baglioni et al., 2016; Buysse, 2014). In addition, sleep quality has been identified to be a significant predictor of severe depression in a sample of elders (Rashid & Tahir, 2015). In older women, reports of poor sleep and objectively fragmented sleep at baseline indicated greater odds of worsening depressive symptoms 5 years later (Maglione et al., 2012). Healthcare practitioners should routinely screen for both sleep disorders and impaired mood and depression.

Falls

A significant association between sleep disturbances and falls in older adults exists, especially in individuals who have trouble staying asleep because of nocturia or

urinary urgency (Helbig et al., 2013). Although there is a well-documented relationship between nocturia and high risk of falls, past assumptions that "rushing to the bathroom" at night contributes to the risk of falls may not be correct. Instead, urge incontinence at night (as a symptom of nocturia) and risk of falls may instead be symptoms of both frailty and overall physical decline or cognitive impairment (Gibson et al., 2018). Thus, while nocturia has multiple causes, it may also be a symptom of frailty in the older patient and should not be overlooked as a simple nuisance. Two common fall risk assessment scales used in hospitals do not include questions on sleep disturbances (Hendrich, Bender, & Nyhuis, 2003; Morse, Black, Oberle, & Donahue, 1989), suggesting that frailty and nocturia may be missed as fall risk factors in acute care hospital patients.

PRIMARY SLEEP DISORDERS

Obstructive Sleep Apnea

OSA is a condition in which intermittent pharyngeal obstruction causes cessation of respiratory airflow (apneas) or reductions of airflow (hypopneas) that last for at least 10 seconds. This results in a microarousal that restores upper airway patency, permitting breathing and airflow to resume. According to the American Academy of Sleep Medicine (Fick et al., 2019) Task Force, OSA is diagnosed when these events occur at a rate of greater than 5 per hour of sleep and is accompanied by daytime sleepiness and impaired daytime functioning. It is common for patients with severe symptoms to experience multiple arousals during the night. These multiple arousals severely fragment sleep, preventing the deep sleep (stages 3 and 4) and rapid-eye movement (REM) sleep necessary for healthy mental and physical functioning (Yue, Bardwell, Ancoli-Israel, Loredo, & Dimsdale, 2009).

Age-related risk factors for OSA in older adults include an increased prevalence of overweight and obesity. Conversely, age-dependent risk factors include increased collapsibility of the upper airway, decreased lung capacity, altered ventilatory control, decreased muscular endurance, and altered sleep architecture (Edwards et al., 2014). Treatments for OSA depend on the contributing pathology and patient preference and include nocturnal positive airway pressure, surgical procedures designed to increase the posterior pharyngeal area, oral appliances, and weight reduction when obesity is a contributing factor. Nasal continuous positive airway pressure (CPAP) therapy, which is highly effective when individually titrated to eliminate apneas and hypopneas, is currently the gold standard for treating OSA (Freedman, 2017). Older adults tolerate CPAP therapy, with patterns of compliance similar to that of middle-aged adults (Weaver & Chasens, 2007). Although oral appliances offer a low-tech treatment option, they require a stable dentition that may be problematic for persons with extensive tooth loss or dentures.

OSA and Cardiovascular Disease

OSA is common in adults with cardiovascular disease and is associated with increased incidence and progression of coronary heart disease, heart failure, stroke, and atrial fibrillation, as well as with coronary and cerebrovascular morbidity and mortality. In recent years, trials have begun to examine the effect of CPAP on cardiovascular outcomes in older adults. Large-scale randomized controlled trials have demonstrated a beneficial effect from the treatment of OSA with CPAP therapy on excessive daytime sleepiness, quality of life, and mood, as well as intermediate cardiovascular end points such as systolic and diastolic blood pressure. Possibly because of low to modest levels of CPAP adherence, improvement in cardiovascular mortality has not been shown (McEvoy et al., 2016; McMillan et al., 2014).

Insomnia

Chronic Insomnia Disorder, defined as trouble initiating or maintaining sleep for at least three times per week for 3 months that is associated with daytime consequences despite adequate opportunity to sleep (Sateia, 2014), is one of the most common sleep disturbances in older adults (Carney et al., 2012). Clinical and population science studies have revealed U.S. prevalence rates of 5% to 31% for chronic insomnia disorder in older adults (Gooneratne & Vitiello, 2014; Mallon, Broman, & Hetta, 2000). Consequences of insomnia, if left untreated, include an increased risk for developing depression (Jaussent et al., 2011), heart disease (Laugsand, Vatten, Platou, & Janszky, 2011), diabetes (Gottlieb et al., 2005), metabolic syndrome (Troxel et al., 2010), prostate cancer (Sigurdardottir et al., 2013), and cognitive impairment (Yaffe, Falvey, & Hoang, 2014). Chronic insomnia can result in a conditioned response of anxiety and arousal at bedtime in anticipation of difficulty falling asleep; this may prompt the use of hypnotic medications, over-the-counter (OTC) drugs, or alcohol. Although the use of hypnotics may produce short-term relief, they also affect sleep architecture and consequently lead to deterioration of sleep quality. The cycle of dependency and substance abuse is a potential problem in this age group (see Chapter 24, Reducing Adverse Drug Events in the Older Adult). The 2019 Beers Criteria® recommend avoiding medications commonly prescribed for insomnia, such as benzodiazepines and other hypnotic medications, in view

of increased risk of falls and daytime confusion in the older adult (Fick et al., 2019).

Risk factors for insomnia include older adult age, female sex, comorbidities, and lower socioeconomic status, measured by education, employment, and income (Olfson, Wall, Liu, Morin, & Blanco, 2018). Both the cause and duration of insomnia should inform the choice of treatment. For example, insomnia associated with a psychological origin, such as depression or anxiety, is best treated from that perspective. If pain is affecting sleep, pain management should be addressed first, and strategies to promote sleep onset should be added secondarily. Short-term pharmacotherapy may be appropriate if insomnia is situational and of recent onset. When insomnia has been "learned" and the behavior becomes chronic, behavioral interventions are most appropriate. Behavioral treatments for insomnia include stimulus control, progressive muscle relaxation, paradoxical intention, sleep restriction, biofeedback, and multifaceted cognitive behavioral therapy (Morin, Colecchi, Stone, Sood, & Brink, 1999; Trauer, Qian, Doyle, Rajaratnam, & Cunnington, 2015; Zachariae, Lyby, Ritterband, & O'Toole, 2016). Data show that 70% to 80% of patients benefit from behavioral therapies and that improvement in sleep is often sustained for a minimum of 6 months after treatment.

Restless Legs Syndrome

RLS is a neurological condition that is characterized by the irresistible urge to move the legs. It is usually associated with disagreeable leg sensations that become worse during inactivity and often interferes with initiating and maintaining sleep (Rye & Trotti, 2012). As a secondary condition, this movement disorder can be caused by iron deficiency anemia, uremia, neurological lesions, diabetes, Parkinson's disease, or rheumatoid arthritis, or it can be a side effect of certain drugs (e.g., tricyclic antidepressants, serotonin reuptake inhibitors, lithium, dopamine blockers, xanthines). Periodic leg movement disorder (PLMD) is a similar condition (Rye & Trotti, 2012), but it is characterized by involuntary flexion of the leg and foot that produces microarousals or full arousals from sleep that interfere with achieving and maintaining restorative slow-wave sleep (stages 3 and 4). Although the etiology and associated mechanism of this specific movement disorder are not well defined, this condition has been linked to metabolic, vascular, and neurologic causes (Claman et al., 2013). Dopaminergic drugs are the most effective agents for treating RLS and PLMD as well as opioids, benzodiazepines, anticonvulsants, adrenergics, and iron supplements (Ancoli-Israel & Martin, 2006; Gamaldo & Earley, 2006). A study of adults with RLS (n = 78; mean age 43.79 ± 6.04) and matched (sex, BMI) normal controls (n = 123; 44.75 ± 9.59) found a significant association (p < .001) between vitamin D insufficiency and RLS severity (Wali et al., 2018). Vitamin D, recognized as important to reduce the risk of osteoporosis and fractures, is frequently low in older adults because of decreased sunlight and milk consumption (Mosekilde, 2005). Unfortunately, there is a lack of data to determine the association of vitamin D level and RLS symptoms in older adults or whether treatment of deficiency results in improved symptoms.

REM Behavior Disorder

REM Behavior Disorder (RBD) is a parasomnia that is characterized by a loss of muscle atonia during the REM stage of sleep. It is prevalent in approximately 0.5% of the population, usually men, beginning between ages 40 and 70 (Boeve, 2010). In this disorder, the sleeper may kick, punch, shout, jump, or act out any other scenarios of a dream and may cause injury to the bed partner (Boeve, 2010). The activity occurs during the REM stages of sleep, particularly in the hours just before wakening. People with narcolepsy, periodic limb movement disorder, and sleep apnea are at higher risk for the disease, and it is often associated with Parkinson's disease and other neurodegenerative disorders (Boeve, 2010). Certain medications such as selective serotonin reuptake inhibitors (SSRIs) and selective noradrenergic reuptake inhibitors (SNRIs) have also been implicated. RBD is diagnosed using polysomnography (PSG) with video monitoring (Boeve, 2010). Several questionnaires have been developed for use in situations when PSG is not available (You et al., 2017). In patients without OSA or cognitive impairment, medications such as clonazepam and melatonin have been found to be affective treatments. Until an effective medication is found for the patient, it is necessary to protect the bed partner. Various strategies can include oven mitts tied around the patient's hands, use of sleeping bags to keep the patient in a cocoon, and use of homemade barriers or even separate bedrooms (Boeve, 2010). Nurses working night shifts at the hospital should assess for these behaviors and plan to protect roommates or others accordingly.

SECONDARY CAUSES OF IMPAIRED SLEEP

Alzheimer's Disease or Other Neurological Disease

Sleep problems, such as changes in sleep architecture and an increased incidence of OSA, are prevalent among persons with Alzheimer's disease (Harper, 2010). A recent

meta-analysis found that persons with Alzheimer's disease have a five-fold increased risk of presenting with OSA compared to age-matched controls and that about 50% experience OSA after their initial Alzheimer's diagnosis (Emamian et al., 2016). The known relationship between sleep problems and reduced cognition is complex and dependent on multiple factors. Persons with Alzheimer's disease demonstrate a pattern of decreased slow-wave sleep similar to older adults with normal aging. However, patients with Alzheimer's disease also exhibit greatly reduced rapid-eye movement (REM) sleep and decreased stability of their circadian sleep–wake cycle that is not part of normal aging. Frequently, before the diagnosis of a permanent neurocognitive disorder, an evaluation of sleep is performed to rule out impaired cognitive functioning resulting from a potentially treatable sleep disorder. The link between sleep and cognitive and functional impairment is consistent with the 2005 to 2008 NHANES results, which demonstrated a greater rate of sleep-related problems with concentration, memory, and activities of daily living among women (CDC, 2011). Better sleep consolidation, thought to be protective, substantially reduced the negative impact of the ε4 allele on the incidence of Alzheimer's disease risk and has led investigators to conclude that interventions to enhance sleep consolidation should be studied as potential means to reduce the risk of Alzheimer's disease in APOE ε4+ individuals (Lim, Kowgier, Yu, Buchman, & Bennett, 2013).

Although OSA could be a consequence of events in the progression of Alzheimer's disease, alternatively, it may initiate Alzheimer's disease pathogenesis (Bubu et al., 2017; Lutsey et al., 2018). Studies evaluating Alzheimer's disease-specific cerebrospinal fluid biomarkers support OSA as a potential risk factor for Alzheimer's disease pathology (Liguori et al., 2017; Osorio et al., 2014; Sharma et al., 2018). A recent 2-year follow-up study of cognitively normal nondepressed community-dwelling adults between the ages of 55 and 90 investigated longitudinal associations between OSA and increased risk of Alzheimer's disease pathology (Sharma et al., 2018). The data showed that older people affected by OSA have higher levels of amyloid beta, the peptides involved in the brain plaque buildup that is a marker of Alzheimer's disease, and that the combination of sleep fragmentation and hypoxia as a result of OSA may be an underlying mechanism. Conversely, successfully treating OSA has been shown to delay the age of onset of mild cognitive impairment (Osorio et al., 2015) and to improve cognitive function in persons with Alzheimer's disease (Ancoli-Israel et al., 2008) and in those without (Kushida et al., 2012).

Polypharmacy

Painful chronic conditions, such as arthritis, or simply changing body position, may be painful enough to cause nighttime awakenings. Because older adults frequently have multiple medical conditions, they are also more likely to take OTC and prescription medications for symptom relief. However, many medications and nonprescription drugs (e.g., pseudoephedrine, alcohol, caffeine, and nicotine) interfere with sleep. Thus, healthcare providers must be acutely aware of which OTC medications and beverages can cause sleep problems. Symptom management must be balanced against preventing polypharmacy (Fick et al., 2019) in older adults to maintain sleep quality (Ancoli-Israel, 2005).

Nocturia

Nocturia, the need to void at night, is a common but burdensome problem for older adults. Seventy percent of adults over the age of 40 are estimated to void at least once per night, and approximately one third of these adults void two or more times per night (Madhu et al., 2015). While voiding once per night is commonly considered nonpathological, it is the increased frequency of nocturia, two or more nighttime voids, that results in sleep fragmentation, difficulty in returning to sleep, and may result in excessive daytime sleepiness or fatigue (Asplund, 2005; Cornu et al., 2012; Madhu et al., 2015). Factors associated with increased frequency of nocturia include reduced bladder capacity in women, enlarged prostate with urinary retention in men, use of diuretic medications, congestive heart failure, untreated OSA, and poor glycemic control in persons with diabetes (Madhu et al., 2015). It is often unclear whether the urge for urination causes the awakenings or whether some other cause of awakening led to the need for urination (Zeitzer, Bliwise, Hernandez, Friedman, & Yesavage, 2013). The nurse should always assess for nocturia in the older adult because it is an important risk factor for insomnia and reduced sleep quality and may be indicative of other serious medical disorders.

Sleep Disturbance During Hospitalization

As many as 22% to 61% of hospitalized patients experience impaired sleep (Redeker, 2000). Many older adults have primary sleep disorders (OSA, insomnia, RLS), and these conditions can become more pronounced or severe during acute illness and hospitalization. Sleep disorders may go unrecognized during a hospital stay, and thus patients may experience acute sleep deprivation concurrently with a medical crisis or surgical intervention. Additionally, sleep deprivation while hospitalized can also lead to poor

cardiovascular and metabolic effects, as well as delirium (Pilkington, 2013).

Protecting sleep and monitoring sleep quality should be routine elements of care in hospital settings (Young, Bourgeois, Hilty, & Hardin, 2008). There are three common environmental causes for sleep disruption in hospitals that are often overlooked by nursing staff: noise, light, and patient-care activities (Redeker, 2000). Further, anesthesia, cardiopulmonary disorders, and pain medications can inadvertently reduce the respiratory drive and lead to hypopneas and apneas. Pain medications typically administered postoperatively can affect alertness by causing excessive sedation, changes in sleep architecture, decreased REM sleep, nightmares, or insomnia. Pain and anxiety may also place older adult patients at increased risk for insomnia. Inadequate sleep impedes healing and recovery and may be associated with acute mental confusion in older adults (Young et al., 2008).

While sleep in hospitalized adults is a problem, it is generally recommended that nonpharmacological interventions should be the first line of therapy. Benzodiazepines as well as other hypnotic medications are on the Beers Criteria list identified by the AGS to avoid in older adults (Fick et al., 2019).

The sleep environment and the quality of patients' sleep can be improved in hospital settings if caregivers recognize the essential importance of sleep in illness and health. The American Academy of Nursing (2014) recommends that nurses should not wake patients for routine care unless the patient's condition necessitates it. As a standard practice, nurses should include a thorough sleep history (Exhibit 30.1) during admission to determine usual sleep patterns and/or symptoms of sleep disorders. Patients with OSA who use CPAP at home should be instructed to bring their machines with them to the hospital. Anticipatory and preventive pain management is also an important element of care to promote adequate sleep in the hospital setting (Young, Bourgeois, Hilty, & Hardin, 2009). Sleep-hygiene measures should be incorporated into nursing care routines during evening and night hours and also into care plans on every nursing unit. This includes simple practices, such as reducing light intensity, maintaining a quiet environment, and efficient delivery of patient care, to minimize sleep disruption. Enhancing the sleep environment in the hospitalized older adult may lead to better health outcomes.

ASSESSMENT OF SLEEP PROBLEMS

It is important to utilize appropriate screening tools to diagnose sleep disorders in older adults who do not present with symptoms. Although some sleep disorders are more common in older patients in both acute and chronic care settings, older adults may be vulnerable to disparities in the clinical evaluation for sleep disorders such as sleep apnea. In a nationally representative sample of adults 65 years and older (N = 1,052), a majority (56%) were found to be at risk for OSA, but only 8% of those individuals had been evaluated for OSA (Braley et al., 2018). Although OSA can only be diagnosed with a sleep study, the risk of OSA is frequently evaluated in adults using the Berlin questionnaire (Netzer, Stoohs, Netzer, Clark, & Strohl, 1999) or the Snore, Tired, Observed, Pressure, Body Mass Index, Age, Neck, Gender (STOP-Bang) Questionnaire (Chung et al., 2008). However, a study of older adults (n = 643; mean age of 65.6 years) found that the Berlin questionnaire was unable to accurately identify OSA in older adults (Sforza et al., 2011). The STOP-Bang, first developed to screen for OSA in persons scheduled for anesthesia, consists of eight questions and has sensitivity from 76% to 96%. The STOP-Bang may underestimate OSA in older women because men are automatically scored one point higher than women. The Insomnia in the Elderly Scale (IES) has been validated in persons aged 65 years and older. With only nine questions to be scored, it can easily be completed in less than 5 minutes and takes only a minute or 2 to assess (Navarro et al., 2013). The Functional Outcomes of Sleep Questionnaire (Weaver et al., 1997) is used to evaluate the impact of sleepiness on functional status, and the Pittsburgh Sleep Quality Index (Buysse et al., 1989) quantifies sleep quality over the past month. Many sleep clinicians use the Epworth Sleepiness Scale (ESS) to screen for sleepiness and track symptoms over the previous week during common activities such as sitting and reading, watching TV, or riding in a car. It is easy to administer and includes a scoring parameter to indicate the need for a medical evaluation (Johns, 1991), but recent research questions the validity of the ESS in older adults (Onen et al., 2013). Results of a study of independently living older adults (n = 104; age > 65 years) who affirmatively answered the question "Do you feel excessively sleepy during the day recently?" found that over half the participants could not answer at least one of the questions on the ESS and that only 25% had an abnormal ESS score. Therefore, although subjective questionnaires should be used to assist in the evaluation of sleep disorders in the older adult, the nurse needs to recognize that older adults may not be as aware of impaired sleep. The diagnosis of sleep disorders requires both an in-depth history (Exhibit 30.1) and an objective sleep evaluation in both younger and older adults.

EXHIBIT 30.1

Sleep History

Basic Sleep History Questions	Follow-Up Questions	Sleep Disorders to Consider
■ Do you have any difficulty falling asleep? ■ Are you having any difficulty sleeping until morning? ■ Are you having difficulty sleeping throughout the night? ■ Have you or anyone else ever noticed that you snore loudly or stop breathing in your sleep? ■ Do you find yourself falling asleep during the day when you do not want to?	■ What time do you usually go to bed? ■ What time do you fall asleep? ■ What prevents you from falling asleep? ■ Review intake of alcohol, nicotine, caffeine, all medications ■ Review of depressive symptoms: weight loss, sadness, or recent losses ■ How often do you waken? ■ How long are you awake? ■ Do you have any pain, discomfort, or shortness of breath during the night? ■ How many times do you void during the night? ■ What prevents you from falling back to sleep? ■ Are you sleepy or tired during the day? ■ Review risk factors (e.g., obesity, arthritis, poorly controlled illnesses) ■ Do your legs kick or jump around while you sleep? ■ Do you stay outdoors in natural daylight on most days?	■ Shift work/sleep schedule disorders ■ Psychophysiological insomnia ■ RLS ■ Psychiatric disorders ■ Substance/medications-related disorders ■ Depression ■ Insomnia ■ Medical causes of sleep disturbance ■ Obstructive sleep apnea ■ Functional impairment resulting from sleep disorder ■ PLMDs

PLMDs, periodic leg movement disorders; RLS, restless legs syndrome.

Source: Data from Avidan, A. Y. (2005). Sleep in the geriatric patient population. *Seminars in Neurology, 25*(01), 52–63. doi:10.1055/s-2005-867076. *Evidence Level I*; Bloom, H. G., Ahmed, I., Alessi, C. A., Ancoli-Israel, S., Buysse, D. J., Kryger, M. H., … Zee, P. C. (2009). Evidence-based recommendations for the assessment and management of sleep disorders in older persons. *Journal of the American Geriatrics Society*, *57*(5), 761–789. doi:10.1111/j.1532-5415.2009.02220.x. *Evidence Level I.*

Polysomnography

In a sleep-laboratory setting, a complete evaluation of sleep is conducted using PSG that includes electroencephalogram (EEG), electromyogram (EMG), electrooculogram, respiratory effort, oxygen saturation, and electrophysiological cardiac aspects of sleep. Additional electrophysiological tests, such as the Multiple Sleep Latency Test, used to test for narcolepsy, are also used to quantify daytime sleepiness.

Actigraphy/Fitbit

Discordance between subjectively measured and objectively measured sleep outcomes are common. As such, actigraphy provides an objective assessment of sleep disorders such as insomnia (Dzierzewski et al., 2019; Kay, Buysse, Germain, Hall, & Monk, 2015). The AASM developed recommendations for the use of actigraphy to evaluate adults with sleep disorders using FDA-approved devices. These recommendations include using actigraphy to assess adults with insomnia, circadian rhythm disorders, in conjunction with sleep apnea test devices at home to estimate total sleep time. Additionally, the use of actigraphy is suggested to assess for suspected hypersomnolence disorders and suspected insufficient sleep syndrome (Smith et al., 2018). Although more people of all ages are utilizing multisensory wristbands for many purposes, it is important to note that although they do show promise in detecting sleep–wake states, more research to assess and evaluate sleep disorders in different scenarios (at home, for multiple nights, etc.) and specific populations (elderly) is needed (de Zambotti, Goldstone, Claudatos, Colrain, & Baker, 2018).

Sleep History for Nurses to Use With Hospitalized Patients

Hospitalization may represent a missed opportunity to screen patients for and identify underlying sleep disorders that may, in turn, be associated with poor health outcomes (Stewart & Arora, 2018). Although no particular sleep questionnaires have been validated for use in hospital settings, it is recommended that nurses assess all hospitalized patients for sleep disorders, and a brief sleep history can be obtained by using the questionnaire in Exhibit 30.1.

SLEEP HYGIENE

The best way to ensure good sleep quality is a lifestyle that promotes and ensures adequate sleep and rest. By maintaining a daily routine, sleep quality can be maximized and daytime fatigue and sleepiness minimized. Characteristics of a routine that have been found to be helpful are timing, frequency, and duration of activities (Zisberg, Gur-Yaish, & Shochat, 2010). Although humans have a natural drive to sleep, environment and habituation play an important behavioral role in sleep. Sleep hygiene, those practices that permit and promote sleep onset and sleep maintenance, have many behavioral aspects that require regular reinforcement to maintain good quality of sleep. Regardless of health status, sleep-hygiene practices and routines are as important for older adults as they are for children, adolescents, and other adults. Most important in the assessment of sleepiness is an evaluation of the patient's knowledge and application of sleep-hygiene measures (Box 30.1) that are also effective behavioral strategies to maximize, promote, and protect sleep.

BOX 30.1

Sleep-Hygiene Measures

- Use the bed only for sleeping or sex.
- Develop consistent and rest-promoting bedtime routines.
- Allow for adequate time in bed to obtain 7 to 8 hours of sleep.
- Maintain the same bedtime and waking time every day.
- Exposure to bright sunlight is desirable on awakening.
- On awakening, get out of bed slowly, no matter what time it is, to prevent postural hypotension.
- If awakened during the night, avoid looking at the clock; frequent time checks may heighten anxiety and hinder sleep onset.
- Avoid naps if they negatively affect nighttime sleep. Limit naps to 30 minutes' duration and time early in the afternoon.
- Sleep in a cool, quiet environment.
- If you cannot fall asleep after 15 or 20 minutes in bed, get up and go into another room, read, or do a quiet activity, using dim lighting, until you are sleepy again.
- Before bedtime, avoid the following:
  - Caffeine and nicotine after noon
  - Alcohol intake (more than three drinks)
  - Large meals or exercise 3 to 4 hours before bedtime
  - Emotional upset or emotionally charged activities, including television programs that are troubling

CBTI

Cognitive behavioral therapy for insomnia (CBTI), the recommended treatment for insomnia, improves sleep by restricting sleep to sleep needs and reestablishing positive associations while breaking negative ones between the sleep setting and sleep (Qaseem, Kansagara, Forciea, Cooke, & Denberg, 2016). CBTI components (e.g., sleep restriction, stimulus control, relaxation, cognitive restructuring, and sleep hygiene) are employed to reduce physiological and cognitive arousals (Schwartz & Carney, 2012). CBTI results in clinically significant, reliable, and durable improvements in sleep (e.g., sleep latency, nocturnal wake after sleep onset, early morning awakenings) in older adults (McCurry, Logsdon, Teri, & Vitiello, 2007). The comparative efficacy of Behavior Therapy, Cognitive Therapy, and CBTI in 188 individuals with chronic insomnia revealed that all treatment groups had significant improvements on measures of insomnia severity, nighttime sleep disturbances, and daytime functioning and that these improvements were generally sustained at 6-month follow-up (Harvey et al., 2014). Although effective, traditional CBTI has disadvantages, including the need for a trained therapist and significant time commitment on the part of the patient. Currently, a manualized version of brief behavioral treatment for insomnia is available for clinical use (Troxel, Germain, & Buysse, 2012).

Napping

Napping is common in older adults, and it is unclear whether it is beneficial for older adults or whether it is indicative of worse health and outcomes. Several studies with older adults found an association between napping behavior and increased weight gain, risk for diabetes, hypertension, and dementia (Han et al., 2016; Kowall et al., 2016; Leng et al., 2016). A cross-sectional study of community-dwelling older adults examined the independent association between nighttime sleep and daytime napping for all-cause mortality for 19 years from baseline. Increased mortality was associated in women sleeping more than 9 hours per night and in men napping 30 minutes or more during the day (Jung, Song, Ancoli-Israel, & Barrett-Connor, 2013). These results are akin to a recent systematic review and meta-analysis, which examined napping and all-cause mortality, finding that daytime napping of 30 minutes or more was associated with a significantly increased risk for all-cause mortality (RR 1.27; 95% CI 1.08–1.49; da Silva et al., 2016). However, data from a study by Devine and Wolf (2016) suggest that negative health outcomes may be associated with persons who nap and have poor nighttime sleep, whereas persons who had

infrequent naps or those with frequent naps but good nighttime sleep did not exhibit negative health consequences. In addition, a study of 2,974 persons 65 years and older found "moderate" nappers had better cognitive function compared to non-, short, or extended nappers (Li et al., 2017).

All of these studies were observational, and therefore causality or directionality between naps and health outcomes cannot be inferred. These conflicting findings suggest that healthcare providers need to personalize their recommendations about napping. While napping behavior in older adults with comorbid diseases may predict worse outcomes, naps may be required by an individual in order to function when excessively sleepy or fatigued to improve functional outcomes. Napping behavior may be discouraged in older adults who describe difficulty in initiating sleep so as to increase the sleep drive and improve their ability to fall asleep. Finally, napping behavior in the generally healthy person with good nighttime sleep may be a positive part of his or her health behavior and should be encouraged.

CASE STUDY 30.1

Ms. K stopped attending her weekly bingo night with her girlfriends, saying, "I just don't have the energy." Usually the ringleader, she had become more withdrawn from her friends and family. Work had also become a struggle for Ms. K, but she blamed it on poor sleep. Her daughter suggested that she may need professional help and encouraged her to make an appointment with her primary care provider.

Ms. K is a 67-year-old African American woman who is overweight (height, 62 inches; weight, 140 lbs; body mass index [BMI] 25.6). She is a lung cancer survivor. She is hypertensive and takes a variety of medications. She has a 53-pack-year history of smoking and currently smokes approximately three to 12 cigarettes per day because she is bored and lonely. She lives alone in a second-story apartment with a cat, although she states that she is a dog person. She reports that she stopped going to bingo night at the local fire station about 2 months ago. She said that she loved hanging out with her girlfriends but feels like it is such an effort now. She is a self-employed aide working in the home care setting.

Fatigue, irritability, and the inability to get going in the morning are her major complaints because they interfere with her ability to work and socialize. Ms. K worries when she goes out whether she will make it back home under her own power. She would like to stop smoking, but because of her poor energy level, she stays home and smokes. She can only work 4 hours per day and must take frequent rest periods because she becomes short of breath easily. She takes long naps and then cannot fall asleep at night. Her cat wakes her up frequently, too. She also becomes short of breath when climbing the stairs to her apartment.

Ms. K has severe fatigue and worries about her lack of nighttime sleep, which may be the result of comorbid insomnia related to her diagnosis of lung cancer and poor sleep hygiene. Ms. K often falls asleep watching TV with the cat, and then the cat wakes her up in the middle of the night and she cannot get back to sleep, tossing and turning, worrying about her poor sleep. She will then have a cigarette because she is bored. Although Ms. K has no bed partner, her daughter has stayed overnight and never reported to Ms. K about any loud snoring, gasping for breath, or breath holding. She also denies the occurrence of morning headaches. Because her sleep problem is interfering with her daytime functioning (e.g., ability to work), Ms. K warrants a referral to a sleep specialist. The self-limiting of her socialization and reports of boredom and loneliness suggest a need for depression screening.

The sleep specialist ordered an overnight portable screening for sleep apnea (e.g., ApneaLink) to rule out OSA, which is a common cause of daytime sleepiness. The results demonstrated that Ms. K does not have OSA (Table 30.1). A 14-day sleep-diary screening for insomnia revealed the following: SE = 62% (slept 240 minutes; in bed 390 minutes); sleep latency (SL) = 33 minutes; wake after sleep onset (WASO) = 117 minutes; naps = 84 minutes; ESS = 9.

TABLE 30.1
Results of Overnight Apnea Link to Rule Out OSA

Total recording time	274 minutes	Apnea/ Hypopnea Index	1.9/hours of sleep
Lowest O2 saturation	88%	Saturation less than or equal to 90%	10 minutes

(*continued*)

(*continued*)

CASE STUDY 30.1 (*continued*)

Normal Sleep Values

SE greater than 85%; SL lower than 30; WASO lower than 30; ESS lower than 11; naps lower than 30

Ms. K was also referred for CBT for her insomnia. CBT for insomnia (CBTI) is now accepted as the standard of care for patients with insomnia regardless of etiology. CBTI consists of sleep restriction, stimulus control, relaxation, sleep–hygiene education, and cognitive therapy that focuses on dysfunctional sleep-related thoughts and unhelpful sleep behaviors that may exacerbate insomnia.

Ms. K returned to her primary care provider, who diagnosed her as having a major depressive episode and discussed further treatment options. Her insomnia is being managed with CBTI; it is improving, but not yet resolved. Therefore, an antidepressant medication with sedating side effects was indicated. Celexa, Lexapro, Paxil, and Zoloft were considered. Zoloft was eventually chosen, but knowing that there were other alternatives was appealing to Ms. K.

Diagnosis

Comorbid insomnia with major depressive episode

Treatment

CBTI—individual therapy

6-Month Follow-Up

While working with the CBTI therapist, who just happened to be a nurse practitioner, Ms. K's 14-day sleep-diary data improved: SE = 86% (slept 360 minutes; in bed 420 minutes); SL = 15 minutes; WASO = 45; naps = 36 minutes; ESS = 8. Although she is still taking naps, she is not taking them every day, and she is taking them earlier so that they do not interfere with her ability to fall asleep at bedtime. The cat is out of the bedroom, and she has started to volunteer at her local library and has rejoined her friends at bingo. She is still smoking but is now down to only three to five cigarettes per day. The nurse practitioner discussed how smoking is a stimulant that may increase insomnia and the importance of smoking-cessation programs. Ms. K declines to stop smoking completely at this time; she states she is "working at it on her own," but agrees to give up her bedtime cigarette. The nurse practitioner plans to continue to encourage sleep hygiene and smoking cessation on follow-up visits.

(*continued*)

SUMMARY

No other group of healthcare providers watch more people sleep than nurses, and sleep disorders can affect all aspects of health and illness. Nurses must be able to identify, screen, and refer patients either at risk for or with symptoms of sleep disorders. Sleep medicine is a relatively new specialty, and many healthcare providers have had little preparation in the science of sleep. Nurses must also incorporate sleep-hygiene measures and actively address existing sleep disorders in care plans of older adults to ensure adequate sleep in all settings: acute care, primary care, long-term care, and at home. Failing to identify, diagnose, or treat excessive sleepiness and its underlying cause(s) can adversely affect the health and longevity of older adults.



NURSING STANDARD OF PRACTICE

Protocol 30.1: Disorders of Sleep in the Older Adult

I. GOAL

Older adults will maintain an optimal state of alertness while awake and optimal quality and quantity of sleep during their preferred sleep period.

II. OVERVIEW

Although normal aging is accompanied by decreased "deep sleep," sleep efficiency, and increased time awake after sleep onset, these changes should not result in excessive daytime sleepiness, increased risk of falls, or insomnia. Impaired sleep results in decreased health and functional outcomes in the older adult.

III. BACKGROUND

A. Definition
   1. Sleep disorders involve problems with the quality, timing, and amount of sleep, which cause problems with functioning and distress during the daytime.
   2. Sleep disorders can affect overall health, safety, and quality of life. In the older adult, OSA, insomnia, restless legs syndrome, and REBD are common. These disorders result in excessive daytime sleepiness, cognitive dysfunction, nocturia, high risk of falls, and increased morbidity and mortality.

B. Etiology and epidemiology
   1. There are many types of sleep diagnoses, and the most common disorders reported by older adults are OSA, insomnia, and RLS.
   2. Approximately 5% to 31% of older adults have insomnia, 18% have obstructive sleep apnea (Punjabi, 2008), and 9.4% to 15% of adults older than 40 report RLS (Ohayon, O'Hara, & Vitiello, 2012).

IV. PARAMETERS OF ASSESSMENT

A. A sleep history (see Exhibit 30.1) should include information from both the patient and the family members. People who share living and sleeping spaces can provide important information about sleep behavior that the patient may not be able to convey.

B. The Epworth Sleepiness Scale (Johns, 1991) is a brief instrument to screen for severity of daytime sleepiness in the community setting. It can also be found under "Resources" at consultgerirn.org/resources.

C. The Pittsburgh Sleep Quality Index (Buysse et al., 1989) is useful to screen for sleep problems in the home environment and to monitor changes in sleep quality. This instrument can be found under "Resources" at consultgerirn.org/resources.

D. Insomnia Severity Index (Bastien, 2001) is a seven-item self-report questionnaire used to screen for insomnia severity. This single measure allows a clinician the ability to assess the mismatch between sleep opportunities and sleep ability, and the effects of treatment.

V. NURSING CARE STRATEGIES

A. Vigilance by nursing staff in observing patients for snoring, apneas during sleep, excessive leg movements during sleep, and difficulty staying awake during normal daytime activities (Ancoli-Israel & Martin, 2006; Avidan, 2005)

B. Management of medical conditions, psychological disorders, and symptoms that interfere with sleep, such as depression, pain, hot flashes, anemia, or uremia (Ancoli-Israel & Martin, 2006; Avidan, 2005)

C. For patients with a current diagnosis of a sleep disorder, ongoing treatments, such as CPAP should be documented, maintained, and reinforced through patient and family education (Avidan, 2005). Nursing staff should reinforce patient instruction in cleaning and maintaining positive airway pressure equipment and masks.

D. Instructions for patients and families regarding sleep-hygiene techniques to protect and promote sleep among all family members (see Box 30.1; Avidan, 2005)

(*continued*)

Protocol 30.1: Disorders of Sleep in the Older Adult (*continued*)

E. Review and, if necessary, adjust medications that interact with one another or whose side effects include drowsiness or sleep impairment (Ancoli-Israel & Martin, 2006), referring also to the Beers Criteria for potentially inappropriate medications for older adults (Fick et al., 2019; Ancoli-Israel & Martin, 2006).
F. Referral to a sleep specialist for moderate or severe sleepiness or a clinical profile consistent with major sleep disorders such as OSA or RLS (Avidan, 2005)
G. Aggressive planning, monitoring, and management of patients with OSA when sedative medications or anesthesia are given (Avidan, 2005)
H. Ongoing assessment of adherence to prescriptions for sleep hygiene, medications, and devices to support respiration during sleep (Avidan, 2005)
I. Hospital staff should avoid waking a patient for routine care, such as baths, vital signs, and routine blood tests (American Academy of Nursing, 2014).

VI. EVALUATION AND EXPECTED OUTCOMES

A. Quality-assurance actions
   1. Provide staff education on the major causes of sleep disorders (i.e., OSA, insomnia, RLS).
   2. Provide staff with in-services on how to use and monitor CPAP equipment.
   3. Have individual nursing units conduct environmental surveys regarding noise level during the night hours, and then develop strategies to reduce sleep disruption caused by noise and care patterns.
   4. Add sleep as a parameter of the admission assessment for patients, and provide written instructions for patients using CPAP at home to always bring the equipment with them to the hospital. Include sleep quality (e.g., see PSQI tool; www.hartfordign.org) in the assessment.
   5. Use posthospital surveys of patient satisfaction with sleep while in the hospital, and provide feedback for nursing staff (see www.hartfordign.org, Sleep topic).
B. Quality outcomes
   1. Improved quality of sleep during normal sleep intervals as reported by patients and staff.
   2. Improved quantity of sleep during normal sleep intervals as reported by patients and staff.

VII. FOLLOW-UP MONITORING

A. Depending on the diagnosis, follow-up may include long-term reinforcement of the original interventions along with support for adhering to treatments prescribed by a sleep specialist. For example, patient compliance with CPAP therapy for OSA is critical to its efficacy and should be assessed during the first week of treatment (Weaver et al., 2012). All patients benefit from positive reinforcement while trying to acclimate to nightly use of a positive airway pressure device.
B. CPAP masks may require minor adjustments or refitting to find the most comfortable fit. Most such changes are needed during the acclimation period, but patients should be encouraged to seek assistance if mask problems develop (Weaver et al., 2012). In the acute care setting, respiratory care technicians are valuable in-house resources when staff from a sleep center are not readily available.
C. During the initial treatment phase of insomnia, sleep deprivation may cause rebound sleepiness, which should subside over time. Follow-up should include ongoing assessment of napping habits and sleepiness to track treatment effectiveness (Avidan, 2005).
D. If obesity has been a complicating health factor, weight loss is a desirable long-term goal. Treatment of sleep disorders should include planning for strategic changes in lifestyle that include weight loss and regular exercise, which is also consistent with cardiovascular health and long-term diabetes control (Ancoli-Israel & Ayalon, 2006).

ABBREVIATIONS

CPAP	Continuous positive airway pressure
OSA	Obstructive sleep apnea
PSQI	Pittsburgh Sleep Quality Index
RLS	Restless legs syndrome

RESOURCES

American Academy of Sleep Medicine (AASM)

This organization for sleep professionals is also a great source of information for the public and for practice guidelines for professionals.
http://www.aasmnet.org

Basics of Sleep Guide

This Sleep Research Society publication is designed for students, sleep researchers, and nonsleep professionals interested in studying sleep across the life cycle, sleep deprivation or restriction, and sleep physiology. Information about this publication and how to order it can be found on the *Sleep Research Society* website: https://my.sleepresearchsociety.org/SRS_Product?id=a1341000004QTb0AAG

National Institutes of Health, National Center on Sleep Disorders Research

This site includes brochures that may be downloaded or printed for distribution to patients or for the education of other healthcare providers.
For healthcare professionals: http://www.nhlbi.nih.gov/health/prof/sleep/index.htm
For patients and the general public: http://www.nhlbi.nih.gov/health/resources/sleep

Sleep Research Society

This professional organization fosters scientific investigation, professional education, and career development in sleep research and academic sleep medicine. It is an excellent resource for nurses who are interested in studying issues of sleep and circadian processes.
http://www.sleepresearchsociety.org

Willis-Ekbom Disease Foundation (formerly Restless Legs Syndrome Foundation)

This organization is dedicated to improving the lives of those living with this often devastating disease. The organization's goals are to increase awareness of WED/RLS, to improve treatments, and to find a cure through research.
http://www.rls.org

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The Frail Hospitalized Older Adult*

Stewart M. Bond

31

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:
1. Describe frailty in hospitalized older adults.
2. List complications associated with frailty in hospitalized older adults.
3. Discuss the importance of early recognition of frailty.
4. Develop a patient-centered plan for frail hospitalized older adults.

OVERVIEW

Frailty is a multidimensional geriatric syndrome characterized by multisystem dysregulation and decreased physiological reserve. The interaction of these biological abnormalities (including inflammation) results in an increased vulnerability to stressors and adverse health outcomes (Clegg, Young, Iliffe, Rikkert, & Rockwood, 2013; Song, Mitnitski, & Rockwood, 2010). Frailty is characterized by diminished strength, endurance, and reduced physiological function that increases an individual's risk of dependence on caregivers and/or death. Frailty is a risk factor for hospitalization, and hospitalization often results in new or worsening frailty (Hogan et al., 2017). A longitudinal study conducted among community-dwelling older adults found that the course of disability closely mirrored the prevalence of hospital admission, indicating that aggressive measures are needed to prevent complications in frail older adults during hospitalization (Gill, Gahbauer, Han, & Allore, 2015). Nurses play a central role in the detection of frailty and in providing timely interventions to prevent complications in those who are frail, both during hospitalization and the transition to the postacute setting.

BACKGROUND AND STATEMENT OF PROBLEM

Presentation and Prevalence

While different definitions exist, frailty is generally understood as a multidimensional concept characterized by physical components such as low physical activity, decreased muscle strength, and unintentional weight loss, as well as cognitive, emotional, social, and spiritual aspects (Dent, Kowal, & Hoogendijk, 2016; Hogan, 2018; Turner & Clegg, 2014). In a systematic review, although the reported prevalence of frailty in community-dwelling older adults varied widely (range 4.0%–59.1%), the overall weighted prevalence was 10.7% (Collard, Boter, Schoevers, & Oude Voshaar, 2012). Frailty increases with increasing age. It is estimated that 25% to 50% of people older than 85 years are frail (Song et al., 2010). Declines in physiological reserves and resilience are the essence of being frail (Fedarko, 2011).

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

The development of frailty involves declines in energy production, energy usage, and repair systems in the body, resulting in declines in the function of many different physiological systems (Bandeen-Roche et al., 2006). This decline in multiple systems affects the normal, complex adaptive behavior that is essential to health (Fried et al., 2009). Frail individuals are significantly more likely to have cognitive decline, memory decline, and sarcopenia than nonfrail older adults (Nishiguchi et al., 2014).

Primary frailty occurs in the absence of significant overt disease, whereas *secondary* frailty is associated with known advanced disease. Although many frail older adults have chronic medical conditions and may have disability when frailty is detected, in the Cardiovascular Health Study (CHS), 63% of frail patients had no impairment in activities of daily living (ADL), and 32% had none or only one of nine chronic diseases (Fried et al., 2001). Persons with secondary frailty may have worse prognoses than those with primary frailty, as suggested by a study in which patients with diabetes, cancer, heart failure, and lung disease showed worse 4-year survival independent of features such as low weight and decreased walking (S. J. Lee, Lindquist, Segal, & Covinsky, 2006). Frailty can potentially be prevented or treated with specific modalities, such as exercise, protein-calorie supplementation, vitamin D, and reduction of polypharmacy (Morley et al., 2013). In the hospitalized older adult, the clinical presentation of frailty often includes nonspecific symptoms (e.g., extreme fatigue, unexplained weight loss, and frequent infections) and gait and balance impairment with potential falls, delirium, and functional abilities that vary from day to day (Parker, Fadayevatan, & Lee, 2006).

Etiology and Epidemiology

A number of risk factors have been identified for frailty, including (a) chronic diseases, such as cardiovascular disease, diabetes, chronic kidney disease, depression, and cognitive impairment (Fried, Ferrucci, Darer, Williamson, & Anderson, 2004); (b) physiological impairments, such as activation of inflammation and coagulation systems (Walston et al., 2002); (c) anemia (Chaves et al., 2005; Roy, 2011); (d) atherosclerosis (Chaves et al., 2008); (e) autonomic dysfunction, (Varadhan et al., 2009); (f) hormonal abnormalities (Cappola, Xue, & Fried, 2009); (g) obesity (Blaum, Xue, Michelon, Semba, & Fried, 2005); (h) hypovitaminosis D in men (Shardell et al., 2009); and (i) environmental factors within the living space and the neighborhood (Xue, Fried, Glass, Laffan, & Chaves, 2008). The occurrence of frailty increases incrementally with advancing age and is more common in older women than men and among those of lower socioeconomic status (Fried et al., 2004).

Pathophysiology

The pathophysiology of frailty is multifaceted. In addition to sarcopenia (Ferrucci, Penninx, & Volpato, 2002), a proinflammatory state that is present in cardiovascular disease, diabetes mellitus, renal insufficiency, and other diseases (Walston et al., 2002) are believed to contribute to frailty. Anemia (Chaves et al., 2005; Roy, 2011), deficiencies in anabolic hormones (e.g., androgens and growth hormone; Cappola et al., 2009), excess exposure to cortisol (Varadhan et al., 2008), insulin resistance (Barzilay et al., 2007), compromised altered immune function (Wang et al., 2010; Yao, Li, & Leng, 2011), micronutrient deficiencies, and oxidative stress (Semba et al., 2007) are also each individually associated with a higher likelihood of frailty. Thus, frailty is a consequence of cumulative decline in many physiological systems during a lifetime rather than the presence of a measurable disease state.

Outcomes Associated With Frailty

Frail older adults are at high risk for major adverse health outcomes, including disability, falls, institutionalization, hospitalization, and mortality (Fried et al., 2001; Lahousse et al., 2014). Frailty, cognitive impairment, and functional status were markers of perceived risk for negative outcomes (e.g., institutionalization, hospitalization, and death) in frail older adults (O'Caoimh et al., 2014). In older surgical patients, frailty independently predicts postoperative complications, length of stay, discharge to a skilled or assisted-living facility, and mortality (Afilalo et al., 2010; D. H. Lee, Buth, Martin, Yip, & Hirsch, 2010; Makary et al., 2010; Sundermann et al., 2011). A systematic review conducted by Sepehri et al. (2014) examined the relationship between objective frailty assessments and postoperative outcomes. Frailty, defined using multiple criteria, had a strong positive relationship with the risk of major adverse cardiac and cerebrovascular events (MACCE; odds ratio, 4.89; 95% CI [1.64, 14.60]). The authors concluded that further study is needed to determine which components of frailty are most predictive of negative postoperative outcomes before integration in risk prediction scores (Sepehri et al., 2014). In a study of older adults admitted to a Geriatric Evaluation and Management Unit (GEMU) in Australia, Dent, Chapman, Howell, Piantadosi, and Visvanathan (2014) found that psychosocial factors modify the association of frailty with adverse outcomes. Frail patients had an increased likelihood of 12-month mortality, discharge to a higher level of care, longer length of stay, and 1-month emergency rehospitalization. Psychosocial factors that increased the likelihood of adverse outcomes included

anxiety and low ratings for well-being, sense of control, social activities, and home/neighborhood satisfaction.

Frailty Models

Frailty models are underpinned by biological principles of causality and are offered to predict the clinical course and response to treatment (Bell, 2010). The two main emerging models of frailty are the phenotype model (Fried et al., 2001) and the cumulative deficit model (Rockwood et al., 2005).

The frailty phenotype proposed by Fried et al. (2001) includes five dimensions: unintentional weight loss, exhaustion, muscle weakness, slowness while walking, and low levels of activity (Table 31.1). A criticism of this model is that cognitive impairment, a highly prevalent condition associated with functional decline and disability, is not included as part of the phenotype (Rothman, Leo-Summers, & Gill, 2008). In addition, it may be difficult to use this model in hospitalized older adults whose clinical presentation may be altered by the acute illness or injury.

The cumulative deficit model views frailty as the combined effect of individual symptoms (e.g., low mood), signs (e.g., tremor), abnormal laboratory values, disease states, and disabilities (collectively referred to as deficits). This model supports the idea of reduced homeostatic reserve, as no single deficit causes frailty; rather, it is the accumulation of deficits that contribute to risk. Frailty, then, is viewed as a gradable syndrome (Rockwood & Mitnitski, 2007).

TABLE 31.1

The Phenotype Model: Indicators of Frailty and Measures

Indicators	Measures
Unintentional weight loss	Self-reported weight loss of 10 lb or recorded weight loss of 5% or more per year
Exhaustion	Self-reported exhaustion on U.S. Center for Epidemiological Studies Depression Scale (3–4 days/week or most of the time)
Slow gait speed	Standardized cutoff times to walk 15 feet, stratified by sex and height
Muscle weakness	Grip strength, stratified by sex and body mass index
Low activity levels	Energy expenditure less than 383 kcal/week (men) or less than 270 kcal/week (women)

Source: Data from Fried, L. P., Tangen, C. M., Walston, J., Newman, A. B., Hirsch, C., Gottdiener, J., … McBurnie, M. A. (2001). Frailty in older adults: Evidence for a phenotype. *Journals of Gerontology: Series A, 56*(3), M146–M156. doi:10.1093/gerona/56.3.m146

ASSESSMENT OF THE PROBLEM

The International Frailty Consensus Group recommends that all individuals with significant weight loss (≥5%) resulting from chronic disease should be screened for frailty (Morley et al., 2013). Although many methods have been proposed in academic trials, a universally accepted screening tool for frailty in acute admissions does not exist.

Single Markers of Frailty

Grip strength and walking speed are commonly used single measures of frailty. Grip strength is evaluated as the maximum of three attempts of the dominant hand using a handheld dynamometer: low grip strength is less than 18 kg in women and less than 30 kg in men (Fairhall et al., 2008). Walking speed is measured over 6 m, with or without the use of a walking aid. Slow walking speed is defined as an inability to walk 6 m in less than or equal to 30 seconds (Smith, 1994).

Phenotypic Frailty Indices

The frailty phenotype (Fried et al., 2001), with its five indicators described earlier, is commonly used to identify frailty. Older adults with three or more of the five factors are considered to be frail, those with one or two factors as prefrail, and those without any factors as robust or not frail. Table 31.1 describes the measures associated with each indicator.

The SOF (Study of Osteoporotic Fractures) Index defines frailty as two or more of the following: weight loss (5% loss either intentional or unintentional over the past year), self-report of low energy, and low mobility (unable to rise from chair five times; Ensrud et al., 2008). The CHS Index defines *frailty* as three or more of the following: shrinking (unintentional weight loss of 4.5 kg or more in the past year), weakness (low grip strength), exhaustion (self-report), slowness, and low physical activity (low walking speed, defined as unable to walk 6 m in 30 seconds; Fried et al., 2001).

Multidimensional Indices

Frailty, conceptualized as an accumulation of deficits, can be assessed using a frailty index (Rockwood & Mitnitski, 2007). A frailty index allows one to quantify frailty or vulnerability resulting from multiple, interacting health-related problems (i.e., individuals with more accumulated deficits

are more likely to be frail). A frailty index demonstrated greater discriminatory ability for people with moderate and severe frailty than that shown by the categorical phenotype model—a finding that has been validated independently (Kulminski et al., 2008).

A frailty index can be constructed using different numbers and types of health deficits (Searle, Mitnitski, Gahbauer, Gill, & Rockwood, 2008). It is recommended that a frailty index include at least 30 to 40 deficits to enhance its precision. Typically, the index includes information that is gathered in routine health assessments or health surveys. To score the frailty index, the deficits that are present are summed and divided by the total number of deficits on the index. Kulminski et al. (2008) created a Cumulative Deficit Index (DI) based on a set of 48 deficits, including multiple chronic medical conditions, health attitudes, symptoms, functional impairments, ADL, depression and other mental health problems, eyesight/hearing difficulties, and social support. Hubbard et al. (2011) used a frailty index based on a comprehensive geriatric assessment (FI-CGA) in conjunction with balance and mobility to assess illness and recovery in older hospitalized patients. The FI-CGA comprised 52 items covering the following: cognition, mood, motivation, health attitude, communication, strength, mobility, continence, nutrition, instrumental and basic ADL, sleep, medical problems, and medications. Similarly, Dent et al. (2014) developed and used the Frailty Index of Cumulative Deficits (FI-CD) to predict outcomes in patients admitted to a GEMU. The FI-CD included 50 multidimensional health-related deficits that were largely obtained from patients' CGAs.

SHERPA (Score Hospitalier d'Evaluation du Risque de Perte d'Autonomie) dimensions include age, falls in the previous year before hospitalization, Mini-Mental State Exam (first 21 questions), perception of health, and instrumental activities of daily living (IADL). Scores are summed and frailty is defined as scores greater than 6 out of 11.5, consistent with the category of high risk for functional decline during hospitalization (Cornette et al., 2006).

The Multidimensional Prognostic Index (MPI) is based on a CGA and includes the following components: ADL, IADL, mental status, comorbidity, nutrition, pressure ulcer risk assessment, medication number, and living status. Problems for each component are classified as: major (1 point), minor (0.5 point), and none (0 point). Scores were summed and divided by eight, and scores greater than 0.66 are graded as frailty (Pilotto et al., 2008).

Two tools are efficient for use in the busy acute care setting. The nine-point Clinical Frailty Scale is easy to use and classifies frailty status on a range from very fit to terminally ill (Dalhouse University, n.d.). The scale has been shown to be valid and reliable and highly correlated ($r = 0.80$) with the frailty index (Rockwood et al., 2005). The five-item FRAIL scale (Fatigue, Resistance, Ambulation, Illnesses, & Loss of Weight) is another tool used to screen for frailty and the risk of disability (Abellan van Kan et al., 2008). The tool inquires about whether patients are fatigued, are unable to climb a flight of stairs or walk one block, have more than five illnesses, and lost more than 5% of body weight in the past year. Three or more positive items indicate frailty.

CARE OF THE HOSPITALIZED FRAIL OLDER ADULT

The older adult who demonstrates characteristics of frailty requires a multifaceted approach to address the potential for or actual presence of the hazards of hospitalization. In addition to the increased predisposition to deep vein thrombosis and adverse medication effects, frail individuals are at increased risk for worsening functional status, delirium, falls, nosocomial infections, malnutrition, dehydration, immobilization, and decubitus ulcers while in the hospital (Boockvar & Meier, 2006).

Nutritional supplements, including fortified foods and essential vitamins and minerals, may be necessary (Torpy, Lynm, & Glass, 2006). Randomized controlled trials showed oral nutritional supplements during acute illness, and recovery was associated with reduced nonelective hospital readmissions (Bergstrom, 2007) and, in patients recovering from hip fracture, a decreased hospital length of stay (Myint et al., 2013). Ongoing oral assessment and adequate oral hygiene are standard care.

Increased exercise and physical activity during hospitalization have demonstrated significant positive benefits, including decreased fatigue, pain, delirium, urinary tract infections, deep vein thromboses, pneumonia, anxiety, and depression, as well as decreased length of stay, decreased costs, decreased mortality, increased functional recovery, increased independence, increased quality of life, and an increased likelihood of being discharged to home (de Morton, Keating, & Jeffs, 2007; Hartley, Adamson, Cunningham, Embleton, & Romero-Ortuno, 2016; Kalish, Lee, & Dabney, 2014; Martinez-Velilla, Cadore, Casas-Herrero, Idoate-Saralegui, & Izquierdo, 2016). Strategies to mitigate fall risk should be implemented without restricting physical activity. Multidisciplinary and nursing care models and processes such as comprehensive geriatric assessment (CGA; Ellis et al., 2017; Turner & Clegg, 2014), function-focused care (Boltz, Chippendale, Resnick, & Galvin, 2015; Boltz, Resnick, Chippendale, & Galvin, 2014; Resnick & Boltz, 2019; Resnick et al., 2016), and the Acute Care

for Elders model (Fox et al., 2012, 2013) may potentially benefit frail older adults, particularly those with dementia or those at high risk for delirium and other geriatric syndromes. These proactive, coordinated, patient/family-centered, multifaceted approaches emphasize the promotion of physical and cognitive activity, the maintenance of adequate nutrition and hydration, the use of nonpharmacological strategies for sleep and behavioral manifestations of distress, the avoidance of both physical restraint and the use of indwelling urinary catheters, the use of appropriate assistive devices, and ongoing assessment of patient responses. It is critical to mobilize these interventions in tandem to address the clinical complexity of the frail older adult. Multidisciplinary collaboration with physicians, dietitians, rehabilitation therapists, and social workers will facilitate these interventions. Evidence-based approaches to prevent, detect, and manage the syndromes associated with frailty are described in detail in various chapters throughout this book.

Discussions of goals of care, treatment preferences and intensity, and advance care planning are routinely indicated when the frail older person is hospitalized (Boockvar & Meier, 2006). For patients with advanced frailty, palliative care focused on relief of discomfort and enhancement of quality of life is highly appropriate and beneficial (Pal & Manning, 2014; Stow, Spiers, Matthews, & Hanratty, 2019). Studies suggest that patients with serious end-stage conditions, such as cancer, end-stage kidney disease, or neurodegenerative disease, have the following priorities for treatment: symptom management, measures to optimize quality of life, sense of control, minimized burden on family, and promoting relationships with loved ones (Singer, Martin, & Kelner, 1999; Steinhauser et al., 2000).

Current evidence indicates that hospital discharge planning for frail older people can be improved if interventions address family inclusion and education, communication between healthcare workers and family, interdisciplinary communication, and ongoing support after discharge (Bauer, Fitzgerald, Haesler, & Manfrin, 2009). Interventions that combine discharge planning and discharge support (i.e., postacute health monitoring and teaching) tend to have the greatest effects (Mistiaen, Francke, & Poot, 2007). In addition to the traditional approaches that include coordination and teaching related to the management and follow-up of the acute admitting problem, discharge planning of the frail older adult requires attention to preventing future disability (Clegg et al., 2013; Parker et al., 2006). Transitional planning requires additional foci: (a) exercise, including resistance, strength, physical movement (gait and balance) training, and lingual exercise; (b) nutritional maintenance and/or supplementation; (c) maintenance of oral health; (d) environmental modifications; and (e) family and professional caregiver education (Benefield & Higbee, 2013).

Referral to postacute services is warranted to address rehabilitative needs, dental care, assistive support, and social engagement. Alerting the postacute provider to the degree and nature of the older adult's frailty status is critical to promote a smooth transition and prepare for care in the postacute setting. An important priority is modifying the living environment to enhance opportunities for independence and self-reliance. These interventions include grab bars; walk-in showers with shower seats; counter and cabinet height adjustments; wide doors and hallways; contrasting colors of counters, floors, walls, and dishes; nonslip surfaces; ramps; proper lighting; and emergency call systems (Crews & Zavotka, 2006). Physical therapy should include both resistance and aerobic exercise training (Carr, Flood, Steger-May, Schechtman, & Binder, 2006). Resistance training involves weight-lifting or weight-bearing exercises of the large skeletal muscle groups to increase lean body mass and improve strength, exercise tolerance, and walking speed (Fiatarone et al., 1994). After the older adult's condition stabilizes, a recommendation for tai chi may be considered. Tai chi is a slow and gentle exercise regimen that involves both physical movement and meditation to improve balance and gait (Adler & Roberts, 2006). Additionally, lingual exercises (i.e., isometric exercises compressing an air-filled bulb between the tongue and hard palate) may help to enhance swallowing (Robbins et al., 2005).

When a frail older adult is transferred to the nursing home, details of the treatment of the acute problem as well as supportive measures to promote functional recovery need to be communicated. Family and caregiver education are needed to address the need for use of medications, nutritional approaches, oral health, promotion of socialization, and engagement in physical activity.

CASE STUDY 31.1

Ms. T is an 88-year-old woman who was admitted to the medical unit after being brought to the emergency department from the assisted-living facility, where she resides. Her admitting diagnosis is acute change in mental status. Her other medical problems include Alzheimer's disease, a history of falls, and atrial fibrillation. The emergency department reports that Ms. T has a low-grade fever and an area of consolidation in the right lower lobe. Her lab values indicate dehydration

(*continued*)

CASE STUDY 31.1 (*continued*)

and an elevated international normalized ratio (INR). Her medications before admission included donepezil hydrochloride/Aricept, Coumadin, and Risperdal. After spending 6 hours in the emergency department because of high patient volume and demands there, Ms. T is restless and irritable on transfer to the medical unit. Her daughter, who has her power of attorney, reports that Ms. T was admitted to the assisted-living facility 6 months ago after she lost 20 lb over several months and began to require assistance with medications, bathing, and dressing.

Ms. T's physical examination reveals a small, disheveled woman with an anxious appearance. An intravenous (IV) line is running; she is receiving hydration and antibiotics. The IV site is "camouflaged" and secured for comfort. Her oral mucosa is dry and dentition is fair (a few missing teeth). Ms. T is oriented to person and place but has difficulty with the Clock Draw test and can recall only one of three words. She is able to respond to a two-step verbal command. Her heart rate is 80, with an irregularly, irregular rhythm. She is able to rise from the chair very slowly with maximum help and states she is "too tired" and "too weak" to walk. Ms. T's balance is poor, as she sways back onto the bed, when assisted to stand. Her motor strength is diminished in all extremities; range of motion is intact. Her body mass index is 18. Ms. T's unintended weight loss, exhaustion, muscle weakness, and low activity levels are consistent with a frailty state.

The initial plan of care developed with the input of Ms. T and her daughter includes:

- Evaluation with the geriatric consultation service with a plan to secure physical therapy consultation, nutritional evaluation, and discussion of treatment goals and advance directives
- A fall-prevention plan, including an adjustable height low bed and a room close to the nurses' station
- Careful monitoring of her INR is warranted, especially with the addition of new medications
- Diligent oral care
- Careful monitoring of food and fluid intake; follow-up with the dietitian to provide dietary supplements and address food preferences
- Ongoing monitoring for delirium and implementation of nonpharmacological delirium prevention strategies
- Avoiding physical and chemical restraints
- Encouraging her daughter to bring in a few familiar items from home
- A plan for family visits/frequent presence at the bedside
- Assistance to a chair for meals and a commode for elimination. Range of motion and self-care during bathing are encouraged. Follow-up needed with physical therapy to develop a plan for ambulation, including the assistive device, as soon as possible
- Discuss with the assisted-living facility staff the supports and resources available at discharge, including the need for postacute rehabilitation, nutritional support and monitoring, and therapeutic activities that provide social engagement, cognitive stimulation, and physical activity

(*continued*)

SUMMARY

Frailty has been conceptualized as a diminished capacity to withstand stress that places individuals at risk for adverse health outcomes (Boockvar & Meier, 2006). The acute care stay creates further risk for disability and other complications for the frail older adult. A multifaceted, nurse-led approach provided by a multidisciplinary team that engages family caregivers is warranted to prevent hospital-acquired complications. Hospitalization also provides an opportunity to initiate measures to promote maximum function, health, and quality of life while acknowledging the patient's unique circumstances and preferences.

NURSING STANDARD OF PRACTICE

Protocol 31.1: Frailty in the Hospitalized Older Adult

I. GOALS

To ensure that nurses in acute care are able to

A. Describe frailty in hospitalized older adults.
B. List complications associated with frailty in hospitalized older adults.
C. Discuss the importance of early recognition of frailty.
D. Develop a patient-centered plan for frail hospitalized older adults.

II. OVERVIEW

A. Frailty is a multidimensional geriatric syndrome characterized by multisystem dysregulation and decreased physiological reserve.
B. Frailty is associated with increased vulnerability to stressors.
C. Frailty is characterized by diminished strength, endurance, and reduced physiological function that increases an individual's vulnerability for developing increased dependency and/or death.
D. Hospitalization increases the risk of disability in frail older adults.
E. Nurses play a central role in the detection of frailty, timely interventions to both prevent frailty and prevent complications in those who are frail, both during hospitalization and during the transition to the postacute setting.

III. BACKGROUND/STATEMENT OF PROBLEM

A. Presentation and prevalence
    1. Frailty is characterized by physical factors such as low physical activity, decreased muscle strength, and unintentional weight loss, as well as cognitive, emotional, social, and spiritual aspects.
    2. Between 25% and 50% of people older than 85 years are estimated to be frail with an estimate of 10.7% reported in noninstitutionalized, community-dwelling older adults.
    3. Decline in multiple systems affects the normal complex adaptive behavior that is essential to health.
    4. Primary frailty occurs in the absence of significant overt disease, whereas secondary frailty is associated with known advanced disease.
    5. Frailty can potentially be prevented or treated with specific modalities, such as exercise, protein-calorie supplementation, vitamin D, and reduction of polypharmacy.
    6. In the hospitalized older adult, the clinical presentation of frailty often includes nonspecific symptoms, and gait and balance impairment with potential falls, delirium, and functional abilities that vary from day to day.
B. Etiology and epidemiology
    1. Risk factors include (a) chronic diseases; (b) physiological impairments, such as activation of inflammation and coagulation systems; (c) anemia; (d) atherosclerosis; (e) autonomic dysfunction; (f) hormonal abnormalities; (g) obesity; (h) hypovitaminosis D in men; and (i) environmental characteristics.
    2. The occurrence of frailty increases incrementally with advancing age and is more common in older women than men and among those of lower socioeconomic status.
C. Pathophysiology
    1. The pathophysiology of frailty is considered to be multifaceted, and it reflects a consequence of cumulative decline in many physiological systems during a lifetime.
    2. Contributors to frailty include sarcopenia, a proinflammatory state, anemia, deficiencies in anabolic hormones, excess exposure to cortisol, insulin resistance, compromised or altered immune function, micronutrient deficiencies, and oxidative stress.
D. Outcomes of frailty
    1. Frail older adults are at high risk for disability, falls, institutionalization, hospitalization, and mortality.
    2. Frailty increases risk of MACCE.

(*continued*)

Protocol 31.1: Frailty in the Hospitalized Older Adult (*continued*)

3. Frailty independently predicts postoperative complications, length of stay, discharge to a skilled or assisted-living facility in older surgical patients, and mortality.
4. Psychosocial factors that increase the likelihood of adverse outcomes include anxiety, as well as low sense of well-being, sense of control, social activities, and home/neighborhood satisfaction.

E. Frailty models
1. The frailty phenotype proposed by Fried et al. includes five dimensions: unintentional weight loss, exhaustion, muscle weakness, slowness while walking, and low levels of activity.
2. The cumulative deficit model views frailty as the combined effect of individual symptoms (e.g., low mood); signs (e.g., tremor); and abnormal laboratory values, disease states, and disabilities (collectively referred to as deficits).

IV. ASSESSMENT OF FRAILTY

A. Single markers of frailty
1. Grip strength is evaluated as the maximum of three attempts of the dominant hand using a handheld dynamometer: low grip strength is less than 18 kg (women), less than 30 kg (men).
2. Walking speed is measured over 6 m, with or without the use of a walking aid. Slow walking speed is defined as unable to walk 6 m in 30 seconds.

B. Phenotypic frailty indices
1. The frailty phenotype, with its five indicators, is commonly used to identify frailty. Those with three or more of the five factors are considered as frail, those with one or two factors as prefrail, and those with no factors as not frail or robust older adults.
2. The SOF Index (Study of Osteoporotic Fractures frailty scale) defines *frailty* as two or more of weight loss (5% loss either intentional or unintentional over the past year) and self-report of low energy and low mobility (unable to rise from a chair five times).
3. The FRAIL Index classifies frailty as three or more of fatigue (self-report), resistance (unable to rise from a chair five times), ambulation (slow walking speed), illnesses (greater than or equal to five illnesses on CCI), and loss of weight of 5% or more in the past year.
4. The CHS Index defines frailty as three or more of shrinking (unintentional weight loss of 4.5 kg or more in the last year), weakness (low grip strength), exhaustion (self-report), slowness, and low physical activity (low walking speed, defined as unable to walk 6 m in 30 seconds).

C. Multidimensional indices
1. A frailty index can be constructed using different numbers and types of health deficits.
2. The DI is based on a set of 48 deficits, including multiple chronic medical conditions, health attitudes, symptoms, functional impairments, ADL, depression and other mental health problems, eyesight/hearing difficulties, and social support.
3. The FI-CGA comprises 52 items covering the following: cognition, mood, motivation, health attitude, communication, strength, mobility, continence, nutrition, instrumental and basic ADL, sleep, medical problems, and medications.
4. The FI-CD includes 50 multidimensional health-related deficits largely obtained from patients' CGAs.
5. SHERPA dimensions include age, falls in the previous year before hospitalization, Mini-Mental State Exam (first 21 questions), perception of health, and IADL.
6. The MPI components include ADL, IADL, mental status, nutrition, pressure ulcer risk assessment, number of medications, and living status.
7. The nine-point Clinical Frailty Scale is easy to use and classifies frailty status on a range from very fit to terminally ill. The scale has been shown to be valid and reliable, highly correlated ($r = 0.80$) with the frailty index.
8. The five-item FRAIL scale is another tool used to screen for frailty and the risk for disability.

(*continued*)

Protocol 31.1: Frailty in the Hospitalized Older Adult (*continued*)

V. CARE OF THE HOSPITALIZED FRAIL OLDER ADULT

A. Multifaceted plans of care: require multidisciplinary collaboration
   1. Evaluate need for nutritional supplements, including fortified food and supplements of essential vitamins and minerals mass.
   2. Ensure oral assessment and adequate oral hygiene.
   3. Promote self-care, continence, mobility, and cognitive stimulation; avoid restraints.
   4. Avoid indwelling urinary catheters.
   5. Implement strategies to decrease fall risk.

B. Involvement of patient and family in decision-making
   1. Establish clear goals of care based on patient preferences and needs.
   2. For patients with advanced frailty, offer palliative care focused on relief of discomfort and enhancement of quality of life.
   3. Whenever possible, combine discharge planning and discharge support (postacute follow-up).
   4. Plan to prevent future disability: (a) exercise, including resistance, strength, physical movement (gait and balance) training, and lingual exercise; (b) nutritional maintenance and/or supplement; (c) maintenance of oral health; (d) environmental modifications; and (e) family and professional caregiver education.

C. Referral to postacute services is warranted to address rehabilitative needs, dental care, assistive services, social engagement, and environmental home safety.

D. Communication to the postacute provider details the treatment of acute problems as well as supportive measures to promote functional recovery.

E. Family and caregiver education is needed to address the need for use of medications, nutritional approaches, oral health, promotion of socialization, and engagement in physical activity.

VI. EVALUATION/EXPECTED OUTCOMES

A. Patient outcomes
   1. Improved functional and nutritional outcomes
   2. Delirium detection, avoidance, and abatement
   3. Prevention of complications: falls, delirium, pressure ulcers, adverse drug events
   4. Less hospital readmissions and decreased length of stay

B. Clinician outcomes
   1. Assessment, identification, and management of older adults susceptible to or experiencing frailty
   2. Documentation and communication of the patient's functional and cognitive capacity, interventions used, and outcomes
   3. Competence in preventive and restorative strategies for preserving independence and function
   4. Educate older adult and family caregiver(s) on intervention strategies to preserve function and reduce task demand in the preferred home or care setting.

C. Organizational outcomes
   1. Assessment of frailty as indicated
   2. Prompt and accurate referral for evaluation of frailty
   3. Increase in prevalence of patients who leave the hospital care facility or professional home care with baseline or improved functional status
   4. Support of institutional policies and programs that promote function, for example, caregiver educational efforts and walking programs
   5. Evidence of continued interdisciplinary assessments and evaluation of care
   6. Environmental approaches that support function and comfort

(*continued*)

Protocol 31.1: Frailty in the Hospitalized Older Adult (*continued*)

ABBREVIATIONS

ADL	Activities of daily living
CCI	Charlson Comorbidity Index
CHS	Cardiovascular Health Study
DI	Cumulative Deficit Index
FI-CD	Frailty Index of Cumulative Deficits
FI-CGA	Frailty Index based on a comprehensive geriatric assessment
FRAIL	Fatigue, Resistance, Ambulation, Illnesses, and Loss of Weight scale
IADL	Instrumental activities of daily living
MACCE	Major adverse cardiac and cerebrovascular events
MPI	Multidimensional Prognostic Index
SHERPA	Score Hospitalier d'Evaluation du Risque de Perte d'Autonomie
SOF	Study of Osteoporotic Fractures

RESOURCES

Frail Project
www.frail-project.eu

FRAILTY.NET

www.frailty.net

International Conference on Frailty and Sarcopenia Research
frailty-sarcopenia.com

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HIV Prevention and Care for the Older Adult*

Rosanna F. DeMarco and Simon Manga

32

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe HIV prevalence, burden, population at risk, and risk behavior.
2. Discuss HIV prevention in the older adult.
3. Describe community-based care and acute care services for the older adult living with HIV.
4. Identify strategies to promote successful aging in the older adult living with HIV infection.
5. Discuss the case to support palliative care in HIV and aging.

OVERVIEW

At the beginning of the HIV pandemic, the most affected population was that of younger adults, especially those aged 15 to 24 (HIV/AIDS and Work, 2006). With the emergence of antiretroviral therapy (ART), people living with HIV infection (PLWH) are now living longer. As such, there are more and more PLWH who are aging, and the number is predicted to rise in the ensuing years (Karpiak & Havlik, 2017). Because of this increase in prevalence rates, there is a great need to understand more about the pattern in which people age with HIV. To date, HIV has not been sufficiently studied in this emerging group of aging individuals (Karpiak & Havlik, 2017). At the same time, there is a dramatic decrease in HIV incidence (new infections), yielding a paradigm shift of the population of PLWH from younger adults to older adults. Older adults, that is, those over 50, will soon disproportionately represent the future experiences of the HIV pandemic (Beaulaurier, Fortuna, Lind, & Emlet, 2014). The rate at which people age varies from one part of the world to another, probably because of differences in culture, living standards, and genetic makeup. Therefore, the number of older PLWH also varies by region as well as by the relative risk of contracting the infection and disease (Joint United National Programme on HIV/AIDS [UNAIDS], 2013).

Africa is the continent most affected by the HIV pandemic. The current prevalence ranges from 0.1% in Northern Africa to 26.5% in Swaziland. Over 70% of PLWH globally are in Sub-Saharan Africa (SSA; UNAIDS, 2013). It has been difficult to understand the demographics of aging in SSA because of the absence of vital registration/identification data systems (Sprague & Brown, 2017). There has been a significant change in the size and age distribution of SSA as a result of increased mortality related to HIV (Velkoff & Kowal, 2007). Since the availability of ARTs, the life expectancy in SSA has been on the rise. For

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

instance, in South Africa, life expectancy has recently risen to 60 years from 56.5 years thanks to the role of ARTs (Bradshaw, Dorrington, & Laubscher, 2012).

According to the Concerted Action on SeroConversion to AIDS and Death in Europe (CASCADE), there is an increase in the median age of HIV infection in Europe from 26.2 years prior to 1986 to 33.2 years between 2006 and 2010. The North America AIDS Cohort Collaboration on Research and Design (NA-ACCORD) reveals an increase in the number of older adults aged 50 and over who are newly enrolled into HIV care and treatment from 8.5% to 19.1% in men and from 6.6% to 19.5% in women between 1993 and 2012. The NA-ACCORD also indicated that in North America, the proportion of adults aged 50 and above presenting for HIV care and treatment from 1997 to 2007 increased from 17% to 27% (Althoff et al., 2010).

Men who have sex with men (MSM) carry a high risk for contracting HIV. In the United States, MSM was the group with the highest increase in HIV prevalence between 2007 and 2010, from 28,077 to 30,573, and male-to-male sexual intercourse accounted for up to 65% of HIV incidence in the United States in 2011. In 2016, the number had risen from 30,573 to 154,730 (CDC, 2019). The prevalence among Black MSM is even higher than among their White counterparts (Millet et al., 2012). In 2016, there were 272,527 Black MSM in the US compared to 262,510 of their White counterparts (CDC, 2019). In addition, Black MSM are more likely to be ignorant of their HIV status, have lower rates of HIV care and treatment, have poor adherence to ART, and are less likely to achieve viral load suppression (Cohen et al., 2014). Prevention of HIV transmission among MSM has had limited achievement (Sullivan et al., 2012).

One of the lowest worldwide HIV prevalence rates is in the Eastern Mediterranean region. This low rate of the total number of PLWH in a cross-section of time who are aging could be attributable to cultural and social norms that discourage premarital and extramarital sexual encounters. In 2012, the HIV prevalence was as low as 0.2%, and the most affected individuals were sex workers, MSM, and injecting drug users (World Health Organization [WHO], 2010). Even though the prevalence in this region seems to be rising in recent times, there are insufficient data to capture the exact situation and to identify those most at risk. The region has the lowest HIV care and treatment coverage rate worldwide, particularly in Sudan, South Sudan, Iran, Somalia, and Pakistan, with a coverage rate of only 10% (WHO & UNAIDS, 2013). In the Eastern Mediterranean, HIV care and treatment is free, but the major barrier to treatment coverage is stigma, discrimination, frequent ART stockout, and shortage of health personnel (WHO, 2010). Data on HIV available in this region cover mostly the 15 to 49 age group; there are little to no data on older adults (WHO & UNAIDS, 2013).

The South East Asia Region (SEAR) has the second highest burden of HIV after SSA, with 3.4 million PLWH and an HIV care and treatment coverage rate of 32% (WHO-SEAR, 2013). Although India has a very low HIV prevalence of 0.26%, because of its huge overall population of 1.2 billion people, the absolute number of PLWH is high, at over 2,500,000 people (National AIDS Control Organization, 2013). The country with the highest HIV prevalence in this region is Thailand, with a prevalence of 1.1% (WHO-SEAR, 2012). Stigma and discrimination are a major barrier to HIV testing and treatment within the region. Data on PLWH over 50 are poor.

In the Western Pacific Region (WPR), the HIV prevalence is less than 1% (WHO-WPR, 2012). The region has a strong HIV surveillance system but lacks comprehensive data on older PLWH (Yu, Wi, & Calleja, 2011). The most affected countries in this region are Cambodia, China, Malaysia, Papua, New Guinea, and Vietnam, with a prevalence of 5% (WHO-WPRO, 2014). China is the most populated country in the region, and the most common mode of transmission in adults is injecting drugs and sexual intercourse (WHO-WPRO, 2014). In Nanning, China's second largest city of PLWH, the prevalence of older adults with HIV increased from 16.5% in 2007 to 42.7% in 2011 (Zhang, Fuller-Thomson, Mitchell, & Zhang, 2013). In Australia, the prevalence of PLWH aged 50 to 64 has increased from 6.1% in 2006 to 10.6% in 2009 (Kirbi Institute, 2015).

In summary, this historical and international review highlights the variation in HIV prevalence, burden, population at risk, and risk behavior from one part of the world to another. Because the HIV pandemic started as a problem of young people, very little focus has been placed on older adults with HIV in most parts of the world. With the rapid paradigm shift of the population affected by HIV from younger to older adults, more research is needed to study the phenomenon of HIV and aging in order to better respond to the needs of older PLWH.

PREVENTION IN THE OLDER ADULT

The modes of transmission of HIV have been well documented since the 1980s. These include unprotected penetrative anal or vaginal intercourse; blood transmission, including infected injecting needles; and vertical transmission, that is, during pregnancy, delivery, and/or breastfeeding (Evans & Dukes, 2018). Among these

modes of transmission, the sexual route is the most common route of transmission. Sexuality is a vital aspect of life and health across all ages (WHO, 2002), even though sexual activities decline in older adults with increasing age with men experiencing erectile dysfunction and women experiencing problems with vaginal lubrication (Lindau et al., 2007). However, some authors have argued that older adults remain sexually active, and perhaps even more so when pregnancy may not be an issue after women reach menopause (Eden & Kevan, 2009). In some cases, sexual activity in older age might increase (Grossman, 1995). In one study, 40% to 65% of persons between 60 and 71 admitted being sexually active (Whipple & Scura, 1996). In another study, 75% of older adults between 57 and 64, over 50% of older adults between 65 and 74, and over 25% of older adults above 75 years of age were sexually active (Kuehn, 2008). In South Africa, 50% of adults over 50 have sexual intercourse one to five times a month (Negin et al., 2012). In China, heterosexual contact is the principal mode of HIV transmission among older adults (Liu et al., 2012). Nearly 58% of all cases of HIV in adults over 50 admit that sexual intercourse is the primary risk factor for HIV infection (CDC, 1999). Considering that sexual intercourse is the principal mode of HIV transmission among adults aged 50 and over reaffirms the likelihood of the need to address sexual risk behaviors in prevention efforts among older adults (Chiao, Ries, & Sande, 1999). However, very few studies have been completed on sexuality in older adults as it relates to HIV risk (Cahill & Valadez, 2013). HIV prevention among older adults must take sexual transmission strongly into account.

Disease prevention generally consists of three levels: primary prevention, secondary prevention, and tertiary prevention. Primary prevention involves stopping the disease from happening among those who do not yet have the disease. Secondary prevention involves stopping the progression of the disease among those who already have it. Tertiary prevention involves decreasing the impact of the disease among those in whom the disease is already advanced (WHO, 2014). In the case of HIV prevention in adults, primary prevention involves lifestyle modifications aimed at avoiding infection with the virus such as sexual abstinence, fidelity to sexual partner, or proper use of condoms. Secondary HIV prevention involves screening to identify early nonsymptomatic infections in order to begin early treatment. HIV prevention programs in adults usually focuses on primary and secondary prevention.

Adults over 50 are less likely to be engaged in HIV risk behaviors compared to younger persons (Costagliola, 2014) as well as being less likely to use condoms, that is, a low-cost and easily accessible method to decrease transmission if used properly (UNAIDS, 2014). The rate of newly acquired HIV infections among older adults seems to be higher than formerly thought. However, there is very little information about the sexual behaviors and practices, as well as HIV incidence among older adults (Negin et al., 2016). Older adults tend to have less knowledge of risk factors for HIV transmission compared to younger persons (Negin et al., 2012). Among individuals at an older age, the assumption is that HIV and other sexually transmitted infections are phenomena for the younger generation.

Because of the lack of awareness of the risk of acquiring HIV, as described previously, older adults often do not consider the key secondary prevention method of screening for HIV as part of routine care even if they are sexually active. They often consider HIV testing very late in the acute phase of the infection because of this belief compared to younger persons (Negin et al., 2012). This leads to delay in diagnosis, and course of treatment, and often addressing care and treatment when the immune system has been substantially damaged, yielding a diagnosis of AIDs (CD4 counts so low that there is no defense for opportunistic infections; Costagliola, 2014). Even in Europe and America, older adults have been diagnosed with HIV very late after manifestations of AIDS-defining illness (el-Sadr & Gettler, 1995). A study in Europe indicated that older age is associated with late diagnosis and delayed initiation of ART (Costagliola, 2014). Persons over 50 years old who acquire HIV usually have persistently low CD4 counts (little immunity strength) and thus poor response to treatment compared to younger persons (Costagliola, 2014; McDonald, Elliott, & Saugeres, 2013). Even when older adults have initiated treatment for HIV, they maintain a lower CD4 count for a sustained period before any improvement is noticed, putting them at higher risk for disease progression and death (Costagliola, 2014). This could be why HIV-related mortality is higher among older PLWH than among their younger counterparts (Greig, Casas, O'Brien, Mills, & Ford, 2012). All of these differences in diagnosis time and physiological response in older PLWH affect the general health and survival time of this group. In the context of prevention, these insights highlight the importance of both primary and secondary HIV prevention among older adults, that is, getting "lead time" to diagnose and treat for a better trajectory of health and wellness. Consequently, efforts should be directed toward making HIV testing and treatment programs available, sensitive, and responsive to the needs of older adults (Negin et al., 2016). More studies are needed on HIV attitudes, awareness, testing, and prevention among older adults (Sprague & Brown, 2017).

COMMUNITY-BASED CARE AND ACUTE CARE CONSIDERATIONS

HIV has no effective cure, but with coordinated acute and community-based care, it can be managed and controlled from a public health perspective. If accessible, ART taken right after diagnosis and as directed can dramatically prolong the lives of many PLWH, keep them healthy, and greatly lower their chance of infecting others. Despite the increasing availability of ART, accessibility and acceptability are still a major concern in some areas. In Ethiopia, PLWH who failed to disclose their HIV status to their relatives had difficulties in adhering to ART in attempts to conceal their HIV status (Yakob & Ncama, 2016). In an antenatal clinic in Ethiopia practicing Option B plus, 14.8% of the pregnant women living with HIV did not adhere to ART because of forgetfulness and challenges in adopting a time schedule (Tesfaye et al., 2019). In Uganda, adolescents living with HIV reported a number of barriers. These included keeping and taking the ART pills while at school, because taking pills in school frequently among classmates and friends could create difficulties in preserving confidentiality, and those whose HIV-positive parents had died, while struggling to deal with the loss, also have to face a frequent change in guardianship, contributing to problems with adherence to ART (MacCarthy et al., 2018).

Before the introduction of ART in the mid-1990s, PLWH could progress to AIDS, the most severe form of the virus, where the immune system is severely damaged, in just a few years. Today, someone diagnosed with HIV and treated before the disease is far advanced can live nearly as long as someone who does not have HIV. As such, acute and community-based care for those PLWH parallel the chronic care trajectory of most persons who are aging in a context of varying comorbidities.

Community services constitute a vital part of a nation's response to HIV (Beck, Fasawe, Ongpin, Avilla, & De Lay, 2013). For example, a U.S. federally funded, state-administered community service called AIDS drug assistance program (ADAP) provides access to ART to over 110,000 PLWH annually who lack suitable health insurance. The aim of the ADAP is to provide adequate ART coverage to PLWH who lack Medicaid or other forms of insurance (Pinkerton, Kibicho, & Galletly, 2013). Such community programs can bridge the gap between the privileged and the underprivileged in terms of ART access.

Persons living with HIV infection can experience three stages of illness if they are not treated with ART or do not have access to quality and cost-effective primary, acute, and community-based care. HIV advances in stages by overwhelming the immune system and getting worse over time without treatment. The three stages of HIV infection are: (a) acute HIV infection, (b) clinical latency, and (c) AIDS (Ginaldi et al., 1997). PLWH may progress through these stages at different rates, depending on a variety of factors, including their genetic makeup, how healthy they were before they were infected, how much virus they were exposed to and its genetic characteristics, how soon after infection they are diagnosed and linked to care and treatment, whether they see their healthcare provider regularly and take their HIV medications as directed, and different health-related choices they make, such as decisions to eat a healthy diet, exercise, and not smoke. Of course, the interaction or the ecology of aging cannot be studied without consideration of other systemic effects of HIV or the evolving knowledge of physiological aging, which may be different in onset and severity than those of PLWH. In a 1-year prospective study among PLWH in Mexico, over 50% of the participants developed an increase in cardiovascular risk factors at the end of 1 year (Cibrián-Ponce et al., 2018). In a study aimed at evaluating the renal function of PLWH on a tenofovir disoproxil fumarate–based regimen, renal dysfunction was found in 25.4% of the participants and PLWH over age 50 were more likely to develop renal dysfunction (Yazie, Orjino, & Degu, 2019). Care must include what we know and what we are discovering over time about the needs of those now living longer and longer toward successful aging with HIV.

CARE FOR THE OLDER ADULT AND AGING SUCCESSFULLY WITH HIV INFECTION

Vance, McGuinness, Musgrove, Orel, and Fazeli (2011) adapted a model by Baltes and Baltes (1998) to categorize eight areas of successful aging for those living with HIV infection: (a) length of life, (b) mental health, (c) cognitive efficiency, (d) social competence, (e) biological health, (f) productivity, (g) personal control, and (h) life satisfaction. Vance and colleagues (2011) chose this model to understand and guide care of aging HIV-infected adults for the following reasons: (a) the extensive use of the model's guide points in gerontology, (b) specific benchmarks that are specifically identified to describe aging as a process that met selection, optimization, and compensation (SOC) of abilities that would guide successful aging, and (c) the understanding that all eight categories of successful aging interact with each other and, therefore, create an "ecology of an aging" experience within the confines of living with a life-threatening and chronic illness. The following sections use the derivation of the Baltes and Baltes (1998) model updated recently in Vance and colleagues

(2019) to organize and identify how care needs to be addressed for those aging with HIV infection locally and globally in terms of community-based care and acute care considerations.

Although acute care experiences occur across a trajectory of chronic care with PLWH, the most significant difference over the last 30 years in acute and subacute settings for those living with HIV infection is notably the widespread use of universal infectious disease precautions for all people, including those not living with HIV infection. Initially, many of those living with HIV infection experienced acute care in hospitals and other settings as traumatic experiences, including the overuse of infection control devices and care worker protections as well as physical and emotional isolation based on the fear of transmission (Janssen et al., 1992). Although science is still building an understanding of the interaction of aging and HIV infection, comorbidities of aging are treated in the same way for those living with HIV infection and those that are not living with HIV infection (Guaraldi et al., 2011; Schouten et al., 2014). As such, the key focus in this chapter is community-based care of those living with HIV because most live within a trajectory of chronic care in the context of their family and community life over time. Included in this presentation is the need to consider palliation during all acute phases of illness directly related to or correlated with HIV.

Length of Life

Length of life is a very important indicator of successful aging (Vance et al., 2019). The advent of ART provided PLWH with the chance to live longer, much like their HIV-uninfected counterparts (Harrison, Song, & Zhang, 2010). The number of PLWH entering into older age has been rising steadily, creating a new challenge in healthcare because the needs of older adults living with HIV infection appear to be different than those of younger PLWH or even different than those of the same age without HIV infection. In the United States, it is estimated that over 50% of PLWH are over the age of 50 (CDC, 2019; Effros et al., 2008), and the proportion is higher in SSA (Bendavid, Ford, & Mills, 2012). Unfortunately, care of older adults living with HIV infection has not been studied sufficiently, and HIV in adults over age 50 has different manifestations in terms of predisposition to multimorbidity and side effects of drugs compared to younger PLWH (Negin & Cumming, 2010), giving rise to the need for community-based care and acute care considerations. For example, aging is independently associated with multimorbidity (Guaraldi et al., 2011; Schouten et al., 2014), cognitive declines (Barter & Foster, 2018), stigma (Levy & Macdonald, 2016), and lack of productivity (Rueda et al., 2011). When aging is accompanied by positive HIV status, these conditions might become more pronounced.

Life expectancy has become similar between PLWH and those who are HIV negative (Samji et al., 2013). However, PLWH engaged in risky behaviors such as smoking, physical inactivity, substance abuse, and poor social networking may have reduced life expectancy. Comparing life expectancy between PLWH who smoke to those who do not, Helleberg et al. (2013) found a difference of approximately 15.8 years. That is, PLWH who are smokers have a life expectancy that is about 15 years less than that of their HIV-infected counterparts who are nonsmokers. Therefore, community-based programs should be designed to discourage smoking among PLWH. In a randomized controlled trial in the United States, using video-call intervention and voice-call intervention for smoking cessation among women living with HIV, researchers found that participants in the video group were significantly more likely to abstain from smoking than those in the voice group (log rank chi(2) = 4.02, $p < .05$). However, the voice call was more feasible than the video calls among poorer women (Kim, Darwish, Lee, Sprague, & DeMarco, 2018).

Mental Health and Cognitive Efficiency

Older adults with HIV face a lot of challenges, including physiological declines that are associated with aging, deteriorating health status, and loss of partner(s), friends, and relatives (Wallach & Brotman, 2013). Also, such individuals, especially those with multiple health problems, may develop poorer self-esteem when they see themselves as different from the healthy population and may thus develop the tendency to withdraw socially (Kara & Mirici, 2004). On the other hand, relatives and friends may want to withdraw from them to avoid the psychological distress of being around a loved one who is always sick (Miller, 1985). A study found that 39% of older adults with HIV over age 50 were socially isolated as opposed to only 25% of younger PLWH (Charles, 2006). Social isolation therefore has to be addressed when considering community-based programs for older PLWH. For example, support groups for PLWH over age 50 can help in preventing social isolation. However, PLWH of more advanced age, such as those over 90, may have difficulties in participating in such support group activities, such as riding, without additional support from friends/family members. In a qualitative study of a support group of older PLWH aged over 50 in Helsinki, Finland, the majority of the research participants reported having most of their social support from their HIV-positive peers. They

also noted that formal support came principally from the HIV support group (Ribeiro, Jari, Tapio, & Marco, 2016). In another qualitative study in Baltimore, United States, researchers found that older PLWH are able to employ active and meaningful coping mechanisms through support group activities, including accessing support and assisting peers. This enables them to engage in productive or better quality of life despite the HIV infection and multimorbidity as well as their related stressors (DeGrezia, 2012).

These challenges easily give rise to mental instability and depression. Older adults with HIV have been found to exhibit worse depression than their HIV-negative counterparts and younger persons (Pantalone, Czajkowski, & Taylor, 2017). Depression in older adults with HIV has been strongly associated with loneliness, social withdrawal, and stigma (Arseniou, Arvatini, & Samakouri, 2014). Cognitive problems such as dementia are also an issue with older adults with HIV. However, the prevalence of dementia has reduced drastically with the advent of more effective ARTs (Vance et al., 2019). Persons living with HIV infection have been found to have significant aging of the brain cells of approximately 2.15 years compared to their HIV-negative counterparts (Horvath & Levine, 2015). Providers caring for older adults with HIV must include mental health in their package of care. This should take into consideration the substantial impact of sociodemographic variables that interlace to affect mental well-being among older PLWH such as class, gender, race, and sexual orientation (Furlotte & Schwartz, 2017).

Social Competence

Social competence, which is the ability to construct and maintain social interactions to enhance physical and emotional well-being (Vance et al., 2011), is a challenge among older adults with HIV. Social competence/support, in addition to medical support, must be considered when dealing with older adults with HIV (Brennan-Ing, Seidel, & Karpiak, 2017). When individuals are no longer socially competent, community-based support becomes their hope.

Community-based care can be formal or informal. Informal community-based care is that which is usually offered by relatives and friends of the affected person mostly on a voluntary basis, that is, without a salary (Cantor & Brennan, 2000). The informal caregivers usually perform tasks like rides to the hospital for appointments, as well as housekeeping, including cooking, laundry, and cleaning. Formal community-based care, on the other hand, is provided by professionals, and they do it as part of their means of earning a living. They usually carry out tasks of personal care such as bathing and counseling. Such professionals may be nurses, psychologists, or social workers. In some cases, the informal and formal caregivers work together as a team. Social workers can assist older PLWH in addressing their most urgent needs and linking them to ongoing medical care. The objective of the community-based caregiving team is to help the patient be independent as much as possible and to remain at home. The team usually coordinates services such as adherence to medication, medical care, counseling, nutritional support, and mental health (Brennan-Ing et al., 2017). In the United States, it was noted that anticipating the needs of the patients is crucial in constructing relationships between community-based workers and the patients as well as with their families (Vanderboom, Holland, Targonski, & Madigan, 2013), leading to better understanding of the patient and his or her needs.

Formal community-based care also involves outreach services. Outreach workers assist patients with HIV in making and adhering to their medical appointments, understanding the importance of adhering to their medications as prescribed, and accessing other support services (Bradford, Coleman, & Cunningham, 2007; Shippy & Karpiak, 2005). Outreach referrals are done to patients who have defaulted appointments, missed laboratory tests, or need any form of medical support. Outreach services also target persons with HIV who have never been linked to care. Outreach activities include principally phone calls and home visits (Cox & Brennan-Ing, 2017). Putting aside older adults who have aged with HIV, there are older adults who acquire HIV in their old age. Those who acquire the virus at an older age have a different set of challenges. For example, older age is associated with late diagnosis (Costagliola, 2014) because older adults do not do HIV testing frequently (Negin et al., 2012). New HIV infection in older age is usually associated with persistent lower CD4 counts and poor response to treatment (Stall & Catania, 1994). Therefore, outreach services could be helpful in tracking older adults with new HIV infection and navigating them to care as soon as possible. Even though it has been demonstrated that community-based outreach services can improve linkage to care in SSA (Hatcher et al., 2012), outreach services are not well established in most of SSA (Bogart et al., 2017). In England, outreach care, including waiting times, patient satisfaction, patient convenience, and follow-up, was better in outreach than in regular stationary hospitals. The authors also found that 60% (81) of the outreach clients had shorter distances compared to 28% (22) of stationary hospitals (X2:49.96; 1 df; $p < .0001$; Bowling, Stramer, Dickinson, Windsor, & Bond, 1997). In rural Zambia, on the other hand, both caregivers and healthcare providers reported lower quality of services at the outreach clinics compared to those at the

regular stationary hospitals (van Dijk, Moss, Hamangaba, Munsanje, & Sutcliffe, 2014).

In the United States, some social support services are provided through assistance from governmental and community-based organizations. Older adults living with HIV also do benefit from these social supportive services. Some of these services include transportation support, support groups of PLWH, recreational support, personal and environmental hygiene, financial assistance, housing assistance, and nutritional assistance, including food vouchers and food pantries. These services usually augment the services provided by the informal caregivers (Cantor & Mayer, 1978). Without such external assistance, the burden might be quite high for the informal caregiver, and he or she may suffer from economic hardship related to increased expenditure and absenteeism from work. For example, in the United States, the Ryan White Care Act is a source of federal public funding for HIV care that ensures that HIV services are accessible and delivered according to conventional HIV treatment protocol at the community level. In 1998, an evaluation showed that patients in the Ryan White–supported sites had better quality of care than patients in the non–Ryan White-supported sites (Sullivan, Denniston, Mokotoff, Buskin, & Broyles, 2008). With the advent of the Affordable Care Act (ACA), some policy makers questioned the continued importance of the Ryan White HIV/AIDS Program. Nevertheless, research has found that the Ryan White Program is still vital in facilitating quality care for PLWH in the United States in the ACA era (Sood, Juday, Vanderpuye-Orgle, Rosenblatt, & Romley, 2014). However, this external assistance is not available in most resource constraint settings such as SSA. Thus, the informal caregivers have to bear all the cost, leading to deepening financial hardship and sufferings.

Studies have shown that social support increases the well-being of older adults with HIV. One study showed that availability and adequacy of social support among older adults with HIV resulted in better adaptability to the disease as well as psychological stability (Brennan, 2004). In another study, the level of psychological distress was found to be lower among older adults with HIV (Chesney, Chambers, Taylor, & Johnson, 2003). In addition, older lesbian, gay, bisexual, and transgender (LGBT) individuals living with HIV were found to experience better quality of life when offered social support.

Biological Health

Both HIV and aging are chronic conditions. Multimorbidity, a situation in which a person suffers from a combination of morbid conditions or illnesses, usually noncommunicable diseases, increases with increasing age (Guaraldi et al., 2011; Schouten et al., 2014). Some of these noncommunicable diseases include cardiovascular disease (CVD) and diabetes mellitus in addition to general organ degeneration with its associated complications. These conditions tend to further increase in older adults living with HIV. According to the U.S. Medicaid data from 2003 to 2013, increasing prevalence of noncommunicable diseases was noted among older adults with HIV as follows: CVD, 3% to 7%; diabetes mellitus, 9% to 19%; renal impairment, 5% to 11%; and osteoporosis, 4% to 6% (Meyer, Gallant, Hsue, & Song, 2015). Multimorbidity of chronic conditions is generally common in the general population of all ethnic groups, and the frequency increases with increase in age. In addition to the age factor, multimorbidity of chronic conditions is higher among those with lower socioeconomic status and among those with concomitant mental disorders. In the population of PLWH, the burden of multimorbidity is higher than expected with regard to age alone (Brown & Guaraldi, 2017).

A combination of factors contributes to multimorbidity in older adults with HIV. First, HIV itself is a chronic inflammatory condition. The longer one lives with HIV, the higher the likelihood that he or she suffers from the chronic inflammatory response. With the advent of ART, PLWH are now living longer to reasonable old age (WHO, 2013), thus giving room for prolonged HIV inflammatory response. Chronic HIV inflammation is associated with CDV (Shaked et al., 2014), diabetes mellitus (Brown, Tassiopoulos, Bosch, Shikuma, & McComsey, 2010), psychiatric problems (Lake et al., 2015), osteoporosis (Yin et al., 2010), and renal impairment (Abraham et al., 2015). Co-infection with other viral infections, especially hepatitis C virus (HCV), further enhances systemic inflammation. Chronic HCV alone can lead to multimorbidity, including CVD, osteoporosis, psychiatric impairment, and renal impairment (Soriano & Berenguer, 2015). These conditions will therefore be exaggerated if the person is infected with both HCV and HIV at the same time. Even though considerable progress has been made in the development of ARTs with lesser metabolic toxicities in recent years, prolonged use of ART is still associated with the risk of multimorbidity. For example, one of the most widely used nucleoside reverse transcriptase inhibitors (NRTIs), tenofovir disoproxil fumarate, is associated with toxicities of the kidney and bone (Cooper et al., 2010). Another widely used NRTI, Abacavir, has been found to be associated with CVD in some studies (Brown et al., 2015; Ofotokun et al., 2015). All these further increase the risk of multimorbidity among PLWH. The third factor is behavioral influences such as smoking and substance abuse.

This tends to be higher among the population of PLWH than in the general population (Hasse et al., 2011). In a Swiss study, CVD, renal, and hepatic diseases were more prevalent among PLWH who smoked (Hasse et al., 2015). The prevalence of illicit drug use such as cocaine and heroin, which are associated with CVD, is higher among the HIV-infected population (Dettmeyer, Friedrich, Schmidt, & Madea, 2009). Physical inactivity, which increases with increasing age, is associated with CVD, diabetes mellitus, and psychiatric impairment (Schouten et al., 2014). Older adults with HIV are even more prone to physical inactivity because of the likelihood of multimorbidity.

In addition to the foregoing noncommunicable diseases, some types of cancers, such as Kaposi's sarcoma, have been strongly associated with HIV disease. Some of these cancers are infection-causing cancers, for example, non–Hodgkin's lymphoma, cervical and anal cancers, and liver cancer (Ball, 2014). Cervical cancer is particularly a problem for women living with HIV because they have an over five-fold increased risk of developing the disease than their HIV-negative counterparts (Denslow et al., 2017). In SSA, where cervical cancer rates are the highest, the rates are further increased among HIV-infected women. This is because ART is causing the women to live longer, and then they end up developing cervical cancer at older age (Harris, 2017).

Generally, multimorbidity is associated with polypharmacy, or the need for more than five different drugs within a given time (Gleason, Luque, & Shah, 2013). The various health conditions that emerge with aging require drug management (Wastesson, Canudas-Romo, Lindahl-Jacobsen, & Johnell, 2016). Thus, an older adult with multimorbidity will have to deal with the problems of polypharmacy. The burden of polypharmacy will be even higher in the case of older adults living with HIV, who are more likely to suffer from serious multimorbidity. In addition, they are equally expected to remain on their ARTs. One major concern of polypharmacy is secondary effects and drug interactions. Older age is independently associated with increased risk of secondary effects (Brooks, Buchacz, Gebo, & Mermin, 2012). Adherence to medications as prescribed can also be a burden with polypharmacy. It has been shown that the greater the number of drugs to be taken per day, the lesser the adherence (Clay, 2014). Some drugs, especially anti-infectious agents, require strict adherence for optimal benefit.

The combination of the complications of multimorbidity and polypharmacy in older adults with HIV can give rise to acute conditions. In the past decades, PLWH were more likely to suffer from acute conditions arising from opportunistic infections (Brooks et al., 2012). Since the advent of ARTs, these opportunistic infections have reduced dramatically. Hence, acute conditions in elderly PLWH are likely to occur from those associated with multimorbidity and polypharmacy. Acute care of older adults with HIV requires a multidisciplinary approach, which can be composed of an acute care specialist, a geriatrician, an infectious disease/HIV specialist, a cardiologist, a pharmacologist, and so on. When providing acute care to older adults, the acute care team must guard against falls and pressure ulcers (Krall et al., 2012). Having acute care units for the older adults only has been found to produce better results than caring for older adults in acute care units for the general population (Krall et al., 2012).

Productivity

Productivity is centered on meeting one's needs or enjoying a good quality of life by an individual through his or her efforts such as employment and contributions to development of the society (Rueda et al., 2011). Productivity can be affected by ageism. Ageism is a natural life process that involves breakdown of the different body systems (Shorthill & DeMarco, 2017). It is associated with a decrease in physical and behavioral health as well as an increase in frailty (DeMarco, Brennan-Ing, Brown, & Sprague, 2017). Therefore, as the individual ages and these traits become pronounced, he or she loses his or her productivity on an increasing basis. Such individuals find it increasingly difficult to work and take care of themselves. So they tend to be dependent on others for their immediate or daily needs. As already noted, ageism is more accelerated or pronounced in PLWH. Therefore, older adults with HIV or persons aging with HIV have lesser productivity as compared to their HIV-negative counterparts of the same age group, thus requiring more community-based care.

Ageism is associated with stigma (Levy & Macdonald, 2016). Considering that HIV is also associated with stigma, older adults with HIV have double stigma to deal with, and consequently further decreases in their productivity. Older adults with HIV who are LGBTs or sexual minorities have an additional stigma to handle because they are stigmatized on the basis of age, HIV status, and sexual orientation (Wight, LeBlanc, Meyer, & Harig, 2015), thus experiencing increased psychological distress and a consequential decrease in productivity.

Personal Control

Persons living with HIV are sometimes tempted to feel that they lack personal control over their health or social issues (Solomon, O'Brien, Wilkins, & Gervais, 2014). This

is probably because of the fear of imminent breakdown of the immune system with consequential multimorbidity and polypharmacy. It has been shown that improvements in personal control are associated with improvements in psychological indicators. Improvements in personal control are dependent on preliminary control level. For example, patients who start with very high control levels show subsequent improvements, whereas those who start with very low control levels show subsequent decline (Zhu, Schroevers, van der Lee, Garssen, & Stewart, 2015). To improve personal control, McVey, Madill, and Fielding (2001) recommended that (a) there should be improvements in provider–patient communication in order for the provider to become more aware of the psychological needs of the patient, and (b) providers should be trained in identifying patients with very low personal control as well as delayed psychological adaptation.

Life Satisfaction

Life satisfaction deals with the state of well-being of an individual, that is, how an individual is contented with his or her life (Vance et al., 2019). Life satisfaction is nonstatic, that is, it changes from time to time with changes in situation. For example, having a diagnosis of a chronic illness like HIV and irreversible life processes such as aging can affect a person's life satisfaction. Therefore, it is likely that older adults with HIV do experience altered life satisfaction and need support from community-based programs.

THE CASE TO SUPPORT PALLIATIVE CARE IN HIV AND AGING

Palliative care is care aimed at preventing and relieving sufferings of patients afflicted with chronic or life-threatening diseases in order to improve their quality of life. Palliation should be considered an important aspect of care when considering older PLWH (WHO, 2015). It is a vital component of HIV care from diagnosis to end of life (WHO, 2015). Even with the advent of effective ARTs, palliative care continues to have an essential role in HIV/AIDS care because over time the treatment might become less effective or harmful to some patients (Shorthill & DeMarco, 2017). In the past, palliative care was primarily used in the context of terminal diseases such as cancers and end-of-life care, but currently it is being integrated into all areas of healthcare (Weissman, 2012). Owing to the success of ARTs, HIV is no longer regarded as a life-threatening illness, so the ties between HIV and end-of-life care are no longer as strong as they were at the beginning of the pandemic. However, in some developing countries where some of the very effective ARTs are neither available nor affordable, HIV care is still strongly integrated with end-of-life care to address the burden of multimorbidity, opportunistic infections, and physical and psychological distress (Huang, 2013).

Ideally, patients with HIV are supposed to be enrolled in palliative care as soon as they are diagnosed. Unfortunately, they are often enrolled late, when other options have failed. Some patients have died shortly after being enrolled in palliative care despite the fact that they lived with the infection for a long time (Weissman & Meier, 2011). These patients failed to get the benefits of the palliative care services. Palliative care was the mainstay of HIV care before the availability of ARTs, especially in reducing anxiety related to the uncertainty of dealing with an incurable illness (Lowther et al., 2012), and it still has a role in modern practice.

In relation to older PLWH, the following recommendations are of significant importance: (a) increase community awareness on the importance of palliative care for older PLWH through sharing of best practices (Shorthill & DeMarco, 2017); (b) make members of the community recognize the value of a higher quality of life among older PLWH that can be attained through palliative care (Kovacs, Bellin, & Fauri, 2006); (c) establish more opportunities for interdisciplinary studies that focus on older PLWH (Harkness & DeMarco, 2016); and (d) promote comprehensive follow-up care of older PLWH in the community (Greene et al., 2015).

CASE STUDY 32.1 (PANTON, 2017)

Stephen (Note: This is a pseudonym.) tested positive for HIV some 30 years ago; at that time, he had a history of periodic intravenous drug use for 8 years. For 10 years, he was nonadherent to HIV care, and during this time he had a baby. The relationship with his partner broke down, but he remained close to his baby, and this is what motivated him to start and continue ART. For the past 20 years, he has been adherent to his ART, and for the most part, he has maintained an undetectable viral load. His family is supportive, and he has a great relationship with his HIV community mental health nurse, who makes home visits to him regularly. For several years, he has not taken intravenous drugs, and he is maintained on 100 mL of daily methadone. He uses diazepam, as prescribed, and smokes huge quantities of cannabis. He was reviewed in the hospital

(*continued*)

CASE STUDY 32.1 (*continued*)

last year, and he was on ART. His viral load was still undetectable, even though he said he does not take his ART frequently. His mental health nurse and HIV clinical nurse specialist made a home visit to him 5 months afterward because he defaulted care. He had problems of memory and general instability and weight loss. He had lost value for life and admitted defaulting ART for 4 months. Meanwhile, he had stopped taking his antidepressant medications. He was admitted, detained, and cared for under the Adults with Incapacity Act 2006. During his admission, the staff noticed that he was suffering from disorientation to time, person, and place. He demonstrated a suicidal tendency and admitted having planned this previously. He had body weight loss of 13%. He had an ECG that revealed a prolonged QTc interval, so his dose of methadone and other drugs had to be reduced. He had cerebral atrophy higher for his age on CT brain scan. After admission, his mood got better, and the suicidal tendency abated. He expressed willingness to recommence ART and wanted to try a dosette box. His mental health nurse has been following up with him. He felt all his drugs were being stopped rather than reduced, so he was unhappy. This was in line with his periodic confusion because of a combination of drug misuse, being off ART, and depression. He accepted from a social worker a referral to a caregiver for provision of daily help. Even though he misses his dog, his family members have decided that he is no longer capable of caring for it. He recently had a mental health evaluation; he remains unhappy about the dose reduction of his trazadone, methadone, and diazepam because he thinks no one has the legitimacy to interfere with his drugs, since he has been doing well with the drugs for several years. He is still on daily heavy consumption of cannabis and has no plans of reducing it. He gets bored and admits getting upset and emotional about simple issues. He continues taking his antidepressants but does not want to continue on ART.

Discussion

This case study highlights some of the challenges faced when caring for older adults with HIV. Though Stephen's age is not given, it is most plausible that he was over age 50, considering that he has been living with HIV for 30 years. For several years, he was adherent to his ART and was stable. As he got older, he became nonadherent to ART but adherent to his other non-ART medications and would not even want to resume his ART after counseling. The reason why he prefers his non-ART medications to the ART is not understood. His mental status deteriorated when he stopped his ART. However, it is not clear whether it is the stopping of the ART that has caused deterioration of his mental state or the deterioration of his mental state that has caused him to stop his ART. This reaffirms that a lot still needs to be understood about aging with HIV.

The brain CT revealed cerebral atrophy higher for his age. It has been discovered that PLWH have significant aging of the brain cells of approximately 2.15 years compared to their HIV-negative counterparts (Horvath & Levine, 2015). This highlights the importance of integrating mental health in the care of older PLWH.

When Stephen defaulted his appointments, his mental health nurse and his HIV specialist nurse went out to his home to look for him and refer him for acute care. Had these nurses not made this home visit, Stephen's condition could have continued to deteriorate, and he would have died at home or committed suicide. Community care including home visits is a very important component of care when dealing with older PLWH (Cox & Brennan-Ing, 2017).

(*continued*)

SUMMARY

There is a gradual shift in HIV incidence and prevalence from younger adults to older adults. Persons aging with HIV face a number of challenges, including multimorbidity, polypharmacy, depression, and stigma. Also, individuals who acquire HIV at older age have a different set of challenges, including rapid destruction of the immune system, persistently low CD4 count, and poor response to ART. Unfortunately, the literature on HIV and aging is scanty across most parts of the world. Research programs need to be developed to better understand the phenomenon of HIV and aging in order to design interventions that will respond to the challenges surrounding older PLWH.

NURSING STANDARD OF PRACTICE

Protocol 32.1: HIV Prevention and Care for Older Adults

I. GOAL

Determine strategies for preventing HIV transmission among older adults and caring for older adults living with HIV.

II. OVERVIEW

Older adults remain sexually active but are less likely to use condoms for HIV prevention. They are equally less likely to be involved in HIV risk reduction behaviors as well as in carrying out routine HIV testing. As such, they are usually diagnosed at late stages of the disease. Older adults who acquire HIV are likely to have persistent low CD4 count and poor response to ART, and, of course, higher morbidity and mortality. Therefore, HIV prevention among older adults ought to be taken seriously.

More than 50% of PLWH in the United States are over age 50. Because of the advent of ARTs, PLWH are living longer, and life expectancy between HIV-infected and HIV-uninfected persons has become very similar. So a lot of people are now aging with HIV, and this number will continue to rise in ensuing years. These persons aging with HIV have a number of additional challenges to deal with, including multimorbidity, polypharmacy, physical inactivity, nonproductivity, social isolation, and dementia. Care of older adults with HIV has not been sufficiently studied. Therefore, more research is needed to explore how care of older adults with HIV can be ameliorated.

III. BACKGROUND/STATEMENT OF THE PROBLEM

Preventing HIV Transmission Among Older Adults

1. Acquisition of HIV is possible in all age groups, including older adults. Sexual transmission remains the most common method of transmission among young and older adults. Older adults remain sexually active, and perhaps even more so when pregnancy may not be an issue after women reach menopause (Eden & Kevan, 2009).
2. About 58% of all cases of HIV in adults over 50 are acquired through sexual intercourse (CDC, 1999).
3. Adults over 50 are less likely to be engaged in HIV risk behaviors compared to younger persons (Costagliola, 2014) as well as being less likely to use condoms, that is, a low-cost and easily accessible method to decrease transmission if used properly (UNAIDS, 2014).
4. Considering that sexual intercourse is the principal mode of HIV transmission among adults aged 50 and over reaffirms the likelihood of the need to address sexual risk behaviors in prevention efforts among older adults (Chiao et al., 1999).
5. Older adults often usually consider HIV testing very late in the acute phase of the infection compared to younger persons (Negin et al., 2012).
6. Persons who acquire HIV who are over 50 years old usually have persistently low CD4 counts (little immunity strength) and thus poor response to treatment compared to younger persons (Costagliola, 2014; McDonald et al., 2013).
7. Even when older adults have initiated treatment for HIV, they maintain a lower CD4 count for a sustained period of time before any improvement is noticed, putting them at higher risk for disease progression and death (Costagliola, 2014).

Caring for Older Adults Living With HIV

1. In the population of PLWH, the burden of multimorbidity is higher than expected with regards to age alone (Brown & Guaraldi, 2017).
2. The longer one lives with HIV, the higher the likelihood that he/she suffers from the chronic inflammatory response.

(*continued*)

Protocol 32.1: HIV Prevention and Care for Older Adults (*continued*)

3. With the advent of ART, PLWH are now living longer to reasonable old age (WHO Regional Office for South-East Asia, 2013), thus, giving room for prolonged HIV inflammatory response.
4. Multimorbidity is associated with polypharmacy, which is the need for more than five different drugs within a given time (Gleason et al., 2013).

IV. NURSING STRATEGIES

1. HIV prevention among older adults must take sexual transmission into strong consideration because it is the major mode of transmission in this age group.
2. More studies are needed on HIV attitudes, awareness, testing, and prevention among older adults (Sprague & Brown, 2017).
3. Nurses caring for older adults with HIV must include mental health to their package of care. This should take into consideration the substantial impact of sociodemographic variables which interlace to affect mental well-being among older PLWH such as class, gender, race, and sexual orientation (Furlotte & Schwartz, 2017).
4. Having acute care units for the older adults only has been found to produce better results than caring for older adults in acute care units for the general population (Krall et al., 2012).
5. To improve personal control among older adults with HIV: (a) there should be improvements in nurse-patient communication in order for the nurse to become more aware of the psychological needs of the patient; and (b) Nurses should be trained on identifying patients with very low personal control as well as delayed psychological adaptation (McVey, Madill, & Fielding, 2001).
6. Increase community awareness on the importance of palliative care for older PLWH through sharing of best practices (Shorthill & DeMarco, 2017).
7. Make members of the community recognize the value of higher quality of life among older PLWH, which can be attained through palliative care (Kovacs et al., 2006).
8. Establish more opportunities for interdisciplinary studies with focus on older PLWH (Harkness & DeMarco, 2016).
9. Promote comprehensive follow-up care of older PLWH in the community (Greene et al., 2015).

ABBREVIATIONS

ART	Antiretroviral therapy
CDC	Centers for Disease Control and Prevention
HIV	Human immunodeficiency virus
PLWH	People living with HIV infection
UNAIDS	Joint United National Programme on HIV/AIDS
WHO	World Health Organization

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LGBTQ Perspectives for Older Adult Care*

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33

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Develop a welcoming lesbian, gay, bisexual, transgender, and queer (LGBTQ) practice environment through the use of correct terminology, preferred pronouns, and gender-affirming language.
2. Identify the various barriers to access to care within the LGBTQ community.
3. Identify appropriate screening guidelines for the LGBTQ population for preventive care.
4. Understand hormone therapy (HT) and the risks of HT in the transgender community to best provide comprehensive care.
5. Address psychosocial needs of the aging geriatric LGBTQ population.

OVERVIEW

Members of the lesbian, gay, bisexual, transgender, and queer/questioning (LGBTQ) community will reach over 1.6 million by 2020, according to *Healthy People 2020*. In a more recent survey in 2017, Gallup estimates that 4.5% of Americans identify as LGBTQ and that about a fifth of this population are over the age of 50 (Newport, 2018). With the population aging, there will be a considerable number of LGBT elders who will need to access health services. This community spans all races, socioeconomic classes, ages, and ethnicities in the United States (National LGBT Health Education Center, n.d.). According to the National Academy of Medicine, almost 30% of LGBT adults do not seek health services because of health disparities, marginalization, and socioeconomic determinants that affect access and approach to healthcare.

In particular, the elder LGBT community has lived through the hardships of historical events, including the Stonewall riots, the AIDS epidemic, and, at one point, the view that homosexuality was a mental illness, potentially punishable by law. They have faced direct discrimination that has prevented many from coming "out" because of stigma and fear of breaking the law and being labeled. Those affected have been forced to selectively disclose their personal health to professionals, despite the possibility of not receiving appropriate and much needed care. This contributes to major distrust in the health field, which may carry on as they age. Elder LGBTQ members are less likely to reach out to a provider or utilize community and social services such as meal services and elder care services, even though they have higher rates of depression, anxiety, substance abuse, and physical health needs (Foglia &

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

Fredriksen-Goldsen, 2015). Nurses can be valuable resources to elder LGBT members by creating a welcoming environment and providing culturally sensitive care.

CREATING A CULTURALLY SENSITIVE ENVIRONMENT

Creating a culturally sensitive environment in the healthcare setting is imperative to provide care for any cultural group, especially the LGBT community. Past and present history of public discrimination within the legal, health, and social settings have led a majority of these patients to be untrusting of healthcare providers owing to fear of stigma (Lim, Brown, & Kim, 2014). Developing a perceived safe environment free from judgment and discrimination allows patients to feel comfortable to discuss their medical history, which in turn improves the health outcomes of this population (Fredriksen-Goldsen et al., 2014). To achieve this, one of the first steps would be using welcoming terminology and language, both verbal and nonverbal, allowing the patients to feel confident that the nurse is experienced with their specific population. This can promote a trusting patient–provider relationship (Dean et al., 2000). Appropriate language focuses on the sexual identity, orientation, activity, and aura with which patients associate themselves. Use of such terminology displays awareness and compassion of the LGBT hardships and builds trust (Whitehead, Shaver, & Stephenson, 2016).

Expression of self-identity through sexual orientation and gender identity is very important among the community, and nurses can acknowledge this by utilizing preferred terms. Sexual orientation refers to how a person characterizes his or her sexual, emotional, and physical attraction to others. Common terms that describe sexual orientation include heterosexual, gay, lesbian, and bisexual. However, some persons may describe their sexual orientation on the basis of their sexual behavior such as men who have sex with men (MSM) or women who have sex with women (WSW), or same sex attracted, owing to the fear of negative reaction to more commonly used terms (Ard & Makadon, 2012).

Gender identity is a person's sense of being a woman/female, man/male, both, neither, or another gender. Most people have a gender identity that corresponds to the sex they were born with, an identity known as "cisgender." Transgender is the term used to describe an individual whose gender identity does not correspond to the sex that individual was assigned at birth. A transgender male is someone who was assigned female sex organs at birth but who identifies as a man. Conversely, a transgender woman is someone born with male sex organs but who identifies as a woman. There are others who have a gender identity that falls outside the gender of male or female. Some may identify as both male and female or neither, or it may evolve over time. Other terms to describe such are genderqueer, gender fluid, and gender nonbinary. These more expansive terms are typically more common in younger generations. It is also important to ask the patient if his or her preferred pronoun is he, she, or they, because it should not be assumed given the individual's physical appearance (Gay & Lesbian Medical Association, n.d.). It is also key to recognize the fluidity and diversity of expression when communicating with LGBTQ patients in a community that may not accept these identities and will thus want to use alternative terms (Ard & Makadon, 2012).

OBTAINING A SEXUAL HISTORY

Sexual history is important to understand the social and societal behaviors and risks among the LGBTQ community. Obtaining a thorough sexual history helps nurses to identify these factors, especially when appropriate. It is important to get a sexual history when appropriate as it pertains to the patient's current status—whether the individual is being seen for a routine exam or whether the sexual history may be related to why the individual is seeking healthcare. Older adults are still sexually active and should be questioned as appropriate (Gay & Lesbian Medical Association, n.d.).

Obtaining a thorough sexual history can give a wealth of information that helps to identify risk factors when appropriate. Other than just asking if a patient is sexually active, it is important to learn the sex of the partner(s), noting it may be more than just one sex and what type of intercourse the individual participated in. Inquiring in a nonjudgmental manner further develops a trusting relationship, in which the patient will feel comfortable divulging his or her personal information. Some ways to ask personal questions are by using language that does not assume an answer—are you sexually active with men/women, both, or all genders? What type of sexual activity do you partake in? Do you engage in anoreceptive or anoinsertive intercourse? Any recent oral sex? Have there been any new sexual partners in the last 6 months? Do you use a protective barrier of some sort, or are you or your partner on a contraceptive method? Questions like these allow nurses to obtain more detailed information that can play a part in assessing the patient's medical and social needs.

PREVENTIVE SCREENINGS

Preventive screening for cancer, infectious disease, and sexually transmitted disease follows guidelines from

accredited national organizations recommended for the general population. The LGBTQ population does generally follow these guidelines as they fit; however, there are some conditions that disproportionately affect the LGBTQ community and that do not have explicit recommendations; nurses should be aware of them (Quinn et al., 2015).

Screening should follow the general rule of "screen what you have" for transgender patients because these patients may or may not have had gender-affirming surgical procedures to align with their gender identity. Also, transgender adults may or may not have been on hormone therapy (HT), which is associated with increased health risks as well and will be further discussed later in this chapter. When assessing a transgender patient, getting a thorough surgical and medication history can assist with identifying risks.

Gender reassignment surgery provides transgender patients with physical characteristics of their gender identity, but does not give new physiologic sexual organs. Transgender women who have undergone surgery still have a prostate gland and should be screened for prostate cancer according to recommended guidelines. Transgender males who have had surgery should still be screened for breast cancer per guidelines, although they are not at increased risk for breast cancer (Meads & Moore, 2013). Keep in mind that some patients may still have their ovaries unless they underwent an oophorectomy.

Lesbian women were once considered at a higher risk for breast cancer because of higher prevalence of some risk factors, such as alcohol use, cigarette smoking, obesity, nulliparity, and lower rates of breast cancer screening (Institute of Medicine [IOM], 2011). However, a recent systematic review of breast cancer incidence and prevalence in lesbian and bisexual women found no reliable published data that suggest elevated breast cancer cases among lesbian women (Meads & Moore, 2013). Nurses should always inquire about recent breast cancer screening and educate their patients on the basis of known increased risk factors. It was once thought that lesbian women were at lower risk of cervical cancer because they were less likely to have sexual contact with males. However, lesbian women are at increased risk for cervical cancer and HPV exposure due to history of sexual contact with women and men previously and because they are less likely to be screened regularly (Gorgos & Marrazzo, 2011). Lesbian women should follow the Pap smear schedule according to their history as occurs with their heterosexual peers.

Anal cancers are rare, but MSM are at increased risk for this cancer through exposure to the HPV virus because of anal intercourse (Chin-Hong et al., 2004). Risk factors associated with increased risk of anal cancer include multiple sexual partners, presence of other sexually transmitted infections, cigarette smoking, and MSM. Vaccination against HPV would be instrumental in prevention. Anal Pap smears and anoscopy are good screening tools to detect the presence of HPV. National guidelines are not yet available to suggest a screening schedule for those at risk, keeping in mind that older MSM males may have not had access to or have been offered the HPV vaccine due to current recommendations. Nurses should be aware that screening tools do exist for suspected anal cancers.

Screening for sexually transmitted infections should be done routinely based on the patient's risk factors and recent sexual activity. Screenings should not only be done for traditional routes of intercourse but should also include extragenital sites such as anorectal and oral swabs for gonorrhea and chlamydia. Assessments can be made about the need for frequency and need for screening based on a detailed sexual history.

Members of the LGBT community have higher rates of mental health diagnoses such as depression, anxiety, bipolar disorder, and substance abuse (IOM, 2011). Therefore, all members should be screened at every encounter. Older LGBT adults face higher rates of depression and anxiety due to isolation, and they are less likely to have children and good relationships with family to help care for them. Older LGBT adults tend to seek social networks and social resources as a source of support rather than professional assistance (Foglia & Fredriksen-Goldsen, 2015). They should be screened at least annually and referred to appropriate resources.

HORMONE THERAPY

While it can be difficult to accurately assess how many people in the population are transgender because of multiple barriers to visibility and access to care, current surveys estimate that anywhere from 0.3% to 0.5% of people in the United States are transgender (Unger, 2016). As transgender visibility increases and barriers to care decrease, nurses in all settings will likely see increased numbers of transgender patients. Thus, it is imperative that nurses in hospitals, long-term care facilities, and community settings are familiar with the unique healthcare considerations of this population.

For transgender patients who elect to utilize medical treatments to aid in their transition (while not all transgender patients do), available options include HT, surgical intervention, or both (Webb & Safer, 2019). The prevalence of transgender patients desiring HT is increasing with time (Unger, 2016). However, one study of primary care providers in a large healthcare system in the Midwest

revealed that only about 50% of primary care providers would be willing to continue HT for transgender patients, due to providers' own biases or perceived capability (Shires, Stroumsa, Jaffee, & Woodford, 2018). A familiarity with the current options for hormonal therapies will help nurses in all settings be more prepared to manage potential side effects and comorbidities for transgender patients.

Male-to-Female (Transgender Women) Hormone Therapy

The main goal of HT for male-to-female (MTF)/transgender women is to help develop more feminine-appearing features, including reducing male pattern hair growth, altering the way body fat is distributed, increasing breast size, and reducing characteristically male muscle mass (Shatzel, Connelly, & DeLoughery, 2017). This is typically accomplished by a combination of two hormonal therapies: an exogenous estrogen combined with an antiandrogen (Randolph, 2018).

Multiple formulations of exogenous estrogen are available. As nurses, when taking a detailed health history, it is important to identify the formulation of estrogen used by the patient, because different formulations can cause different degrees of side-effect risks. Exogenous estrogen can come in oral, parenteral (either subcutaneous or intramuscular injections), or transdermal formulations, and are all commonly referred to by the generic name estradiol (Unger, 2016).

The most significant risk associated with exogenous estrogen is a potential increase in venous thromboembolic events (VTE), and various studies have estimated the incidence of VTE to range from as low as 1% to as high as 6% to 8% of populations studied (Weinand & Safer, 2015). One particular oral formulation of estrogen, called ethinyl estradiol, is no longer commonly used because it carries the highest risk for VTE (Arnold, Sarkodie, Coleman, & Goldstein, 2016). VTE is typically more likely to occur during the first year of starting exogenous estrogen, and VTE is generally a higher risk with the oral formulations of estradiol and a lower risk with the transdermal and parental formulations (Shatzel et al., 2017). MTF transgender patients considering estradiol are at even increased risk for VTE if they are current smokers, are obese, have a history of prior VTE, or have a thrombophilia/hypercoagulable disorder, so it is important to ask about these risk factors when taking a health history (Shatzel et al., 2017).

Another potentially common, but less emergent, risk associated with exogenous estrogen is an increase in triglycerides, so it is recommended to monitor serum lipid panels while on any formulation of estradiol (Fernandez & Tannock, 2016). There is also a potential risk of cardiovascular disease and stroke to consider with exogenous estrogen (Defreyne, Van de Bruaene, Rietzschel, Van Schuylenbergh, & T'Sjoen, 2019), so nurses in any setting working with MTF patients on estradiol can help manage these risks by monitoring blood pressure, watching for any signs/symptoms of stroke, and observing for signs of DVT in postoperative patients (Shatzel et al., 2017). Additionally, although there can be increased oncologic risk for certain hormonally influenced cancers in cisgender women who take estradiol, there is no increased oncologic risk for transgender MTF patients who take estradiol (Weinand & Safer, 2015).

The addition of an antiandrogen therapy to treatment with exogenous estrogen helps to both decrease overall testosterone and lower the dose or amount of exogenous estrogen needed to achieve the desired lower testosterone levels and change in secondary sex characteristics (Webb & Safer, 2019). There are several different options for antiandrogen therapy, but the most commonly utilized option is a potassium-sparing diuretic called spironolactone (Randolph, 2018). The most common potential side effect of spironolactone to monitor for in the transgender population is hyperkalemia, which becomes a higher risk as the patient gets older (Randolph, 2018). Other options for antiandrogens include finasteride, which carries the risk of liver toxicity (Unger, 2016), and gonadotropin-releasing hormone agonists like leuprolide, which can be very expensive (Unger, 2016) and carry the risks of decreased bone mass/osteopenia and decreased libido (Weinand & Safer, 2015).

Female-to-Male (Transgender Men) Hormone Therapy

The main goal of HT for female-to-male (FTM)/transgender men is to help develop more masculine-appearing features, including increased male pattern hair growth, increased muscle development, cessation of menstrual bleeding, and enlargement of the clitoris (Webb & Safer, 2019). The main hormonal therapy for FTM transgender men is testosterone supplementation, with the goal of increasing the serum testosterone level to the standard reference range for men (Irwig, 2017). The different available formulations of testosterone are the same options utilized to treat hypogonadism in cisgender men, including transdermal, parenteral (either subcutaneous or intramuscular injections), subcutaneous implant, or an oral formulation that is not currently available in the United States (Unger, 2016).

The most common side effects of testosterone therapy in FTM transgender men, similarly to cisgender men who utilize testosterone therapy, include an increase in serum hemoglobin and hematocrit, a possible decrease in HDL

cholesterol, and a possible increase in serum triglycerides (Irwig, 2017). An increase in body mass index (BMI) is also a likely possibility for FTM transgender men on testosterone therapy (Fernandez & Tannock, 2016). However, there is no increased risk for VTE in FTM patients on testosterone therapy (Shatzel et al., 2017) and no known increased risk of cardiovascular or oncologic events in FTM patients on testosterone therapy (Gooren & T'Sjoen, 2018).

PSYCHOSOCIAL NEEDS OF THE AGING LGBT POPULATION

In addition to the unique clinical needs of older LGBT adults, there are also unique psychosocial needs in this population that have a significant impact on quality of life, health, and survival. Many of today's LGBT older adults lived through decades of discrimination and mistreatment by a society and healthcare system that rejected them, attempted to "cure" them of who they are, and shamed them during the HIV/AIDS epidemic (Marsack & Stephenson, 2018). Although great strides have been made in LGBT visibility and acceptance over the last several decades, not all attitudes have changed, and many older LGBT adults remain fearful of discrimination by their heterosexual peers and the healthcare practitioners they depend on as they age (Jablonski, Vance, & Beattie, 2013).

These fears, stemming from past experiences of rejection and/or abuse, cause many LGBT adults over 55 years old to remain closeted (Zelle & Arms, 2015) or to hide their identity and return to the closet when they enter a long-term care facility or nursing facility (Jablonski et al., 2013). Many LGBT older adults who return to the closet when in a nursing facility are afraid that the nursing/healthcare staff will have their own personal biases that are not accepting of the LGBT identity, and thus the staff may neglect, abuse, or persecute them (Serafin, Smith, & Keltz, 2013). These fears are not present solely in the United States; a survey of LGBT older adults in Ireland revealed that less than half of the respondents felt that healthcare providers, in general, respected them as a person of LGBT identity and that about one third of respondents felt that healthcare providers had an adequate understanding of issues important to LGBT patients (Sharek, McCann, Sheerin, Glacken, & Higgins, 2015).

Patients may also fear mistreatment or bias from their heterosexual peers with whom they cohabitate within a long-term care facility, particularly if they are assigned a roommate (Jablonski et al., 2013). Patients may choose to hide their identity and present as heterosexual, and partners who enter a long-term care facility together may choose to describe themselves just as best friends or close friends, when they previously had lived openly as partners (Serafin et al., 2013). Transgender older adults, especially, may be afraid that they would be assigned a room based on the gender of their birth rather than the gender they identify with, especially if they have not had a surgical transition (Jablonski et al., 2013).

One survey of fears that may cause patients to conceal their true identities and return to the closet found that older LGBT adults worried about being dependent on healthcare practitioners, being mistreated by staff or peers, being isolated and alone, and developing dementia (Putney, Keary, Hebert, Krinsky, & Halmo, 2018). In addition to hiding their true identities, these patients may be so affected by these fears that they could develop psychologic distress and/or suicidal ideation (Putney et al., 2018).

Social Support

Another psychosocial issue facing many older LGBT adults is the nature and size of their social support network. The main support network for many heterosexual older adults is their family; however, for many older LGBT adults, their main support network is their friend group (McParland & Camic, 2016). This idea that the friend group is the patient's "chosen family" became crucial for many LGBT people who were rejected or ostracized by their biologic family—however, caregivers should not assume that all LGBT patients have strained family relations, because many have improved with the improvement in overall LGBT visibility (Cloyes, Hull, & Davis, 2018).

Many older LGBT adults do struggle with the lack of biologic family support and are fearful of social isolation. LGBT adults are more likely not to have children, and a majority live alone and are at risk for self-neglect (McParland & Camic, 2016). One survey found that more than half of LGBT older adults lack companionship and feel isolated and/or excluded (Yang, Chu, & Salmon, 2018). Social isolation can have a significantly negative impact on the physical health of an older adult and has been found to potentially contribute to worsening cognitive function, coronary artery disease, stroke risk, depression, and/or suicidal ideation (Yang et al., 2018).

However, in response to both LGBT-related discrimination and agism, many LGBT older adults have also been noted to have developed a strong sense of resilience that may help them to advocate for their needs, adapt to new situations, and manage crises well as they age (Hash & Rogers, 2013). There still remain significant psychosocial issues to address for older LGBT adults, including for the

partners/spouses of older LGBT patients. During times of health crisis or incapacity, there can be challenges to the idea of a patient's "chosen family" or significant other if this is not documented in medical or legal paperwork or if the documentation has not yet been obtained (Marsack & Stephenson, 2018). There are also concerns that an older LGBT patient's spouse or partner may experience devalued bereavement after a loss if that relationship is not valued or respected in the same manner socially as a heterosexual relationship, even if that marriage or relationship has equal legal standing under the law (Hayman & Wilkes, 2016).

End-of-Life Perspectives

Characteristics of "perceived successful aging" for LGBT older adults includes not only a large network of social support, but also the confidence that healthcare providers will treat them respectfully and with dignity at the end of life (Walker, Powers, & Witten, 2017). End-of-life issues and fears impact LGBT older adults especially significantly, as LGBT patients are more likely to be without children or a partner toward the end of life and have been described to be more likely to have fears of dying in pain or alone (de Vries & Gutman, 2016). Some gay and bisexual men who lived through the HIV/AIDS epidemic and lost friends at a young age have also expressed the fear of reliving the losses of multiple friends again in older age (de Vries & Gutman, 2016).

The difficult hospice experiences that these gay and bisexual men had during the HIV/AIDS epidemic also give rise to a potential fear of recurrent discrimination in palliative and hospice care services in older age, particularly in organizations that are faith-based or religious (Griebling, 2016). Nurses and healthcare workers can help to alleviate these fears in hospice and palliative care settings by providing culturally sensitive and competent care, helping to discuss and formalize the patient's wishes for surrogate decision-making and visitation, and educating other clinicians (Maingi, Bagabag, & O'Mahony, 2018). Education for everyone is crucial, as one survey of LGBT persons revealed that only about one quarter of participants could correctly identify the legal decision-maker in a scenario describing a car accident involving a same-sex couple (Hughes & Cartwright, 2014). It is also important not to make assumptions during palliative care and end-of-life discussions and not to neglect the option that many LGBT older adults may want/request spiritual care and counsel during difficult and emotional times (Cloyes et al., 2018).

CASE STUDY 33.1

Ms. C is a 68-year-old transgender female recently transferred from the PACU to the medical–surgical unit for postoperative monitoring and recovery after a partial nephrectomy for a renal tumor. The surgical course was uncomplicated. The nurse on the medical–surgical unit begins the assessment for the admission. The patient is awake and alert, and her pain is well controlled. She is obese, with a BMI of 32.4 kg/m^2, and smokes five to six cigarettes per day. Aside from her recently diagnosed renal tumor, her medical history is notable only for hypertension. Her medications include an antihypertensive, oral estradiol (17-beta-estradiol), and spironolactone. Her only other surgery, aside from the recent partial nephrectomy, was an appendectomy for appendicitis at age 23.

Nursing considerations for this transgender patient in the postoperative setting include:

- Identifying/asking the patient his or her preferred pronoun(s) at initial assessment
- Confirming the patient's preferences for next of kin and visitors, and ensuring appropriate documentation of those preferences is completed in the patient's chart
- A detailed medication history
- A detailed surgical history
- A detailed social history
- Monitoring blood pressure closely along with other vital signs
- Encouraging ambulation
- Assessing for signs/symptoms of DVT/VTE
- Ensuring DVT/VTE prophylaxis is appropriately ordered by the surgical team and administered
- Encouraging smoking cessation

While performing the assessment, the medical–surgical nurse confirmed that Ms. C's preferred pronouns are "she" and "her" and documented this appropriately in the chart. While confirming the patient's preferences for next of kin and visitors, the nurse learned that Ms. C has a partner of 1 year, whom she designated as her surrogate decision-maker, and is on the way to the unit from the family waiting area. Ms. C mentioned they are talking about marriage, but are not currently married, and the nurse confirmed any documentation regarding surrogate decision-making was signed and in the chart. Ms. C told the nurse

(*continued*)

CASE STUDY 33.1 (*continued*)

she appreciated this, as there has been some strain in her family relationships since coming out as transgender 5 years ago and starting hormonal therapy about 2 years ago. Ms. C mentioned that she is divorced and has two children from her previous marriage who are supportive and will likely come to visit her. Because of the accepting environment that the nurse provided, Ms. C shared that she had been afraid to come out until only a few years ago as she was afraid of the social stigmas and the possibility of rejection from her family and friends.

Later that evening, while giving the handoff to the nurse on the night shift, the nurse made sure she communicated to the oncoming nurse several key points to ensure continuity of optimal care for this patient:

- The patient's preferred pronouns
- The patient's surrogate decision-maker's wishes and documentation
- The patient's multiple risks for DVT/VTE in the postoperative setting, including estrogen therapy, obesity, smoking, and recent surgery
- The plan for ambulation and DVT/VTE prophylaxis

SUMMARY

The LGBTQ population is a diverse community, including people of all ages, ethnicities, and socioeconomic classes. As the overall population ages, the number and visibility of LGBTQ elders will also continue to increase. The healthcare-related needs and disparities of this population are a unique fusion of medical and psychosocial, and are rooted in a history of rejection of their identity and distrust in the healthcare system. Thus, it is essential that nurses understand this unique combination of needs in order to overcome current barriers to care and provide comprehensive care to this growing population.

Nurses can make a valuable impact on the care of LGBT elders by creating a culturally sensitive and welcoming environment. This starts with understanding the difference between gender identity and sexual orientation and being comfortable and consistent in asking patients their preferred pronouns. Creating a comfortable environment will also make it easier to obtain a thorough sexual health history and age-appropriately screen for health conditions. Understanding the options for hormonal treatments for transgender elders will allow nurses to assess for age-specific risks and side effects and more comprehensively manage long-term health for these patients. And familiarity with the history and psychosocial concerns of the aging LGBTQ community will help nurses lead in addressing the unique holistic needs of LGBTQ elders and their caregivers.

NURSING STANDARD OF PRACTICE

Protocol 33.1: LGBTQ-Sensitive Care for Older Adult Patients

I. GOAL

Improve nursing care for older LGBTQ adults.

II. OVERVIEW

Older LGBTQ adults are less likely to seek healthcare owing to distrust but continue to have health needs that require medical attention and intervention.

III. BACKGROUND

Older LGBTQ adults have less access to care owing to fear of stigma of their sexual orientation and therefore often have a lapse in general healthcare needs and are more prone to depression, anxiety, and substance abuse than non-LGBTQ adults. Nurses should assist in creating a welcoming environment free of judgment and stigma to ensure that the LGBTQ adults are comfortable to discuss their needs.

(*continued*)

Protocol 33.1: LGBTQ-Sensitive Care for Older Adult Patients (*continued*)

IV. PRINCIPLES OF CARING FOR OLDER LGBTQ ADULTS

A. Create LGBT-friendly environment by using appropriate language.
   1. Inquire about sexual identity (Gay & Lesbian Medical Association, n.d.)
   2. Discuss sexual orientation (Gay & Lesbian Medical Association, n.d.)
   3. Ask about preferred pronouns (Gay & Lesbian Medical Association, n.d.)

B. Assess risk factors for chronic medical conditions as appropriate.
   1. Obtain a thorough sexual history (Gay & Lesbian Medical Association, n.d.).
      a. Discuss sexual preferences, partner preferences, and routes of intercourse.
      b. Assess barrier methods used.
      c. Discuss addition of new sexual partners.
   2. Assess social behaviors.
      a. Inquire about smoking, alcohol, and recreational drug use.
      b. Discuss current exercise regimen, diet.
   3. Determine if patient is up to date with screening guidelines.
      a. Follow nationally accredited guidelines as recommended according to risk factors (Meads & Moore, 2013; Quinn et al., 2015).
      b. Assess for risk of anal cancer (Quinn et al., 2015).

C. Assess for hormone therapy use in transgender patients and monitor for side effects.
   1. Exogenous estrogen for transgender females
      a. Estrogen formulations include oral, parenteral (either subcutaneous or intramuscular injections), or transdermal formulations (Unger, 2016).
      b. Most significant risk is increase in venous thromboembolic events (VTE), so monitor for symptoms of VTE (Weinand & Safer, 2015).
      c. Avoid ethinyl estradiol formulation, which carries the highest risk for VTE (Arnold et al., 2016).
      d. Further increased risk for VTE exists if on estrogen and smoking, obese, have a history of prior VTE, or have a thrombophilia/hypercoagulable disorder, so ask about these risk factors when taking a health history (Shatzel et al., 2017).
      e. Risk for elevation in triglycerides exists, so monitor serum lipid panels (Fernandez & Tannock, 2016).
      f. Potential risk of cardiovascular disease and stroke exists, so monitor blood pressure and assess for symptoms of stroke (Defreyne et al., 2019).
      g. No increased oncologic risk (Weinand & Safer, 2015).
   2. Antiandrogens for transgender females
      a. Addition of antiandrogen (when also on estrogen) decreases testosterone and lowers the dose of estrogen needed (Webb & Safer, 2019).
      b. Most common option is spironolactone (Randolph, 2018).
      c. Spironolactone is a potassium-sparing diuretic, so monitor for hyperkalemia, which increases in risk with age (Randolph, 2018).
      d. Finasteride is another option; its main risk is liver toxicity (Unger, 2016).
      e. Leuprolide, a gonadotropin-releasing hormone agonist, is another option but can be very expensive (Unger, 2016).
      f. Leuprolide also carries risks of osteopenia and decreased libido (Weinand & Safer, 2015).
   3. Exogenous testosterone for transgender males
      a. Testosterone formulations available in the United States include transdermal, parenteral (either subcutaneous or intramuscular injections), or subcutaneous implant (Unger, 2016).
      b. Risk for increase in serum hemoglobin and hematocrit (Irwig, 2017)
      c. Risk for possible decrease in HDL cholesterol (Irwig, 2017)
      d. Possibility for increase in serum triglycerides (Irwig, 2017)
      e. Likely to increase BMI (Fernandez & Tannock, 2016)

(*continued*)

Protocol 33.1: LGBTQ-Sensitive Care for Older Adult Patients (*continued*)

   f. No increased risk for VTE (Shatzel et al., 2017)
   g. No known increased risk of cardiovascular or oncologic events (Gooren & T'Sjoen, 2018)

D. Assess for psychosocial needs
   1. Fears/history of discrimination
      a. Many older LGBT adults are fearful of discrimination by their heterosexual peers and the healthcare practitioners they depend on as they age (Jablonski et al., 2013).
      b. Past experiences of rejection and/or abuse cause many LGBT adults over 55 years old to remain closeted (Zelle & Arms, 2015).
      c. LGBT older adults may return to the closet in a nursing facility and may be afraid that the nursing/healthcare staff will have their own personal biases that are not accepting of the LGBT identity and thus that the staff may neglect, abuse, or persecute them (Serafin et al., 2013).
      d. Patients may hide their identity and present as heterosexual owing to fears of discrimination by heterosexual roommates or cohabitants in a long-term care facility (Serafin et al., 2013).
      e. Transgender older adults may be afraid that they would be assigned a room based on the gender of their birth rather than the gender they identify with, especially if they have not had a surgical transition (Jablonski et al., 2013).
      f. These fears and isolation are risks for psychologic distress and/or suicidal ideation (Putney et al., 2018).
   2. Social support
      a. For many older LGBT adults, their main support network is their friend group, or "chosen family" (McParland & Camic, 2016).
      b. LGBT adults are more likely not to have children, and a majority live alone and are at risk for self-neglect (McParland & Camic, 2016).
      c. Social isolation can contribute to worsening cognitive function, coronary artery disease, stroke risk, depression, and/or suicidal ideation (Yang et al., 2018).
      d. It is important to ensure documentation of a surrogate decision-maker if that person is "chosen family" or an unmarried partner (Marsack & Stephenson, 2018).
      e. It is important to recognize an older LGBT patient's spouse or partner during a time of loss, to avoid devalued bereavement, which can occur if that relationship is not valued or respected in the same manner socially (Hayman & Wilkes, 2016).
   3. End of life
      a. "Perceived successful aging" for LGBT older adults includes not only a large network of social support, but also the confidence that healthcare providers will treat them respectfully and with dignity at the end of life (Walker et al., 2017).
      b. LGBT patients are more likely to be without children or a partner toward the end of life and have been described to be more likely to have fears of dying in pain or alone (de Vries & Gutman, 2016).
      c. Some gay and bisexual men who lived through the HIV/AIDS epidemic may express the fear of reliving the losses of multiple friends again in older age (de Vries & Gutman, 2016).
      d. Providing culturally sensitive and competent care can help to alleviate fears of recurrent discrimination in the hospice setting, which includes helping to discuss and formalize the patient's wishes for surrogate decision-making and visitation (Maingi et al., 2018).
      e. Avoid assumptions during palliative/end-of-life discussions, as LGBT older adults may want/request spiritual care during difficult times (Cloyes et al., 2018).
      f. Promote team education of LGBT-sensitive care, as it is important to understand the legalities of surrogate decision-making (Hughes & Cartwright, 2014).

E. Access appropriate resources specific to patient needs.

(*continued*)

Protocol 33.1: LGBTQ-Sensitive Care for Older Adult Patients (*continued*)

ABBREVIATIONS

AIDS	Acquired immune deficiency syndrome
BMI	Body mass index
HDL	High density lipoprotein
HIV	Human immunodeficiency virus
LGBT	Lesbian, gay, bisexual, transgender
LGBTQ	Lesbian, gay, bisexual, transgender, and queer/questioning
VTE	Venous thromboembolic events

RESOURCES

CDC: Lesbian, Gay, Bisexual, and Transgender Health
www.cdc.gov/lgbthealth

Gay and Lesbian Medical Association (GLMA)
www.glma.org

LGBT Aging Project
www.lgbtagingproject.org

Services & Advocacy for Gay, Lesbian, Bisexual & Transgender Elders (SAGE)
www.sageusa.org

The National LGBT Health Education Center
www.lgbthealtheducation.org

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Interventions in Specialty Practice

IV

Chapter 34 Substance Misuse and Alcohol Use Disorder in the Older Adult

Chapter 35 Comprehensive Assessment and Management of the Critically Ill Older Adult

Chapter 36 Fluid Overload: Identifying and Managing Heart Failure Patients at Risk for Hospital Readmission

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Substance Misuse and Alcohol Use Disorder in the Older Adult*

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EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:
1. Describe common patterns of substance use in older adults.
2. Recognize common substance use disorders (SUDs) diagnosed in older adults.
3. Outline steps for screening for SUDs in older adults.
4. Discuss the stepwise assessment and rationale for identifying a SUD.
5. Analyze intervention strategies for SUDs in older adults.
6. List potential resources on SUDs for older adults and their families.

OVERVIEW

Evidence of alcohol and drug use by persons aged 50 years and older is increasing as more people live longer, continue community living, and persist in substance use habits established in youth and middle adulthood. Approximately 65 million persons aged 65 years and older now live in the United States, and this number is projected to grow to more than 90 million by 2060 (Mather, Jacobsen, & Pollard, 2015). Population growth and increases in alcohol and drug use predict greater numbers of older adults will experience substance-related problems, perhaps as many as 5.7 million by 2020. Nurses should be prepared to identify and intervene with substance-using behaviors, which place the older adult at risk for health problems (Eden, Maslow, Le, & Blazer, 2012). The estimated one fourth of the older population who are minority group members will also grow. Although drug and alcohol use in minorities have been understudied, new data suggest that the minority women are drinking alcohol at growing rates and that there is a high prevalence of smoking among Asian-Pacific men (Grant et al., 2017). Nursing interventions with these groups of older adults should be culturally competent and tailored to their substance use patterns.

BACKGROUND AND STATEMENT OF PROBLEM

Events of the past decade have highlighted high levels of substance use from adolescence to older adulthood. Substance use disorders (SUDs) have been declared a national public health emergency (Lehmann & Fingerhood, 2018; U.S. Department of Health and Human Services, Office of the Surgeon General, 2018). Deaths from prescription and illicit drug overdoses among all ages reached over 70,000 in 2017, and older adults are especially vulnerable due to chronic illness and associated pain syndromes (Hedegaard, Miniño, & Warner, 2018). Health problems

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

linked to SUDs and excess alcohol consumption are costly to society with direct and indirect economic costs of hundreds of billions of dollars (Gryczynski et al., 2016). The burden of prescription drug misuse alone is estimated to be 78.5 annually (Florence, Luo, Xu, & Zhou, 2016). Older adults use one third of all medications prescribed in the United States (National Institute on Drug Abuse [NIDA], 2015), and it is estimated that 25.4% of all opioid prescriptions extending over 90 days are written for older adults (Mojtabai, 2018). High rates of chronic pain among older adults may account for the high opioid use; however, opioid misuse has increased for those ages 60 to 64 years despite an overall reduction in other populations (Chang & Compton, 2016).

The use of substances by older adults is a health concern. While cigarette smoking has declined in recent years, about 8 out of 100 people, or 9%, aged 65 years or older report smoking (Wang et al., 2018). Marijuana use among older adults is increasing, with a past year prevalence rate of 1.3% to 2.0% among those aged 65 years and older, the highest increase in use across populations (Han & Palamar, 2018).

Patterns of substance use vary in subpopulations, and some differences among groups are noteworthy. For example, the success of antiretroviral therapies has extended life for those living with HIV. In 2015, 47% of those living with HIV were over 50 years of age, 7% were over 65 years of age, and 17% of all new cases were in persons over age 50 (Centers for Disease Control and Prevention [CDC], 2018). This population has disparately high rates of substance use, estimated to be as high as 50%. Older people living with HIV are particularly susceptible to the hazards of substance use and misuse (Deren et al., 2019).

Variations related to race and substance-using patterns differ with age. Although Caucasian adult drinkers outnumber African American adult drinkers, African American males, especially those over 50 years, have the highest risk for alcoholism and related legal and social problems (Zapolski, Pedersen, McCarthy, & Smith, 2014).

Mental health and substance use problems are highly stigmatized in older populations, and this, coupled with a general reluctance to seek medical help, means that access to such care is limited. The dearth of geropsychiatric nurses and physicians and other geriatric behavioral health specialists has been recognized as an increasingly serious problem. Proposed solutions to the lack of specialty providers include incorporating training on screening and basic interventions for SUDs for professionals in all healthcare settings (Eden et al., 2012). Psychiatric disorders often co-occur with alcohol use and misuse in older adults, with prevalence rates ranging from 12% to 30% (Oslin, 2005), and depression can occur independently or accompany excess drinking. Older adults are among those with the highest suicide rates. People entering late middle age, ages 45 to 54, commit suicide at rates of 20.2%, and those over 85 at 20.1% (American Foundation for Suicide Prevention, 2017).

The metabolic and organ changes of aging linked with drug or alcohol use contribute to high morbidity in advancing age. Decreased total body water and lower rates of alcohol metabolism in the gastrointestinal tract increase sensitivity to alcohol, resulting in decreasing tolerance with age (U.S. Department of Health and Human Services [USDHHS], 2004a). With functional and neurological changes, tolerance to alcohol decreases, and behavioral changes are more evident (USDHHS, 2004a). More dramatic behavioral changes occur at lower drug doses, and adverse physical responses result in morbidity or mortality and may curtail intake. Most alcohol consumers drink less with age, and only 4.1% of those 65 to 75 and 1.6% of those 75+ years report a lifetime alcohol use disorder (AUD; Wu & Blazer, 2014). Social and legal problems occur more frequently and are more pronounced than in younger people, especially for older women (Blow & Barry, 2003). Because criteria for the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*; American Psychiatric Association [APA], 2013) may be less applicable to older adults, these must be interpreted and applied in age-appropriate ways. Even when persons older than 65 years do not meet the *DSM-5* criteria for a moderate or severe use disorder, alcohol consumption at levels greater than seven drinks weekly or more than three drinks on any single day warrants teaching about potential consequences for health.

Alcohol

The drug most commonly used by older adults remains alcohol, with approximately 16.2 million adults over age 65 years, nearly 24%, reporting drinking alcohol in the past month (Mattson, Lipari, Hays, & Van Horn, 2017). Research findings have suggested that moderate alcohol use by adults has been associated with the decreased risk for cardiovascular heart disease and improved cognitive function; findings, however, have been inconsistent. Excess alcohol use compromises health by interfering with the absorption and utilization of prescribed drugs and nutrients and may place the older individual at risk for falls, self-neglect, and diminished cognitive capacity. Long-term excess alcohol use is linked to common medical problems such as sleep disorders, restlessness and agitation, abnormalities in liver function, pneumonia, pancreatitis, gastrointestinal

bleeding, and trauma as well as chronic diseases, particularly neuropsychiatric and digestive disorders, diabetes, cardiovascular disease, and pancreatic or head and neck cancer (Kuerbis, Moore, Sacco, & Zanjani, 2017).

The WHO (World Health Organization) Global Burden of Disease study recommends that alcohol intake be zero in order to minimize disease (Griswold et al., 2018). Evidence of association between alcohol use and disease burden, which is highest for cancer, supports experts' advice against health professionals' recommendations of moderate alcohol for cardiovascular disease protection or other health benefit (Mialon & McCambridge, 2018). Older adults treated for AUDs earlier remain at risk if they return to drinking. Harmful or "risky" drinking is use that does not meet criteria for an AUD but that places the individual at risk for health problems including AUD (Kuerbis, Sacco, Blazer, & Moore, 2014). American Geriatric Society and National Institute for Alcohol Abuse and Alcoholism guidelines specify that no more than three standard (two for women) drinks a day, and no more than seven a week, may reduce health risks for older adults. Alcohol use by those using prescribed medications and who have chronic disease should be modified further. It is estimated that 16% of older men and 10% of older women drink at levels potentially harmful to health. Recent data indicate that "binge drinking," defined as more than four standard drinks on one occasion, is on the rise in older adults, with rates of 14.4% of persons over 50 reporting binge drinking in the last month (Han & Palamar, 2018). These patterns can result in high personal and medical costs at all ages, but more so for older adults. Because alcohol-attributable conditions often go unrecognized and, therefore, unreported, rates are underestimated. Alcohol use by older adults is associated with falls and unintentional injury, more frequent hospitalization, more depressive symptoms, and increased adverse medication–alcohol interactions (Lehmann & Fingerhood, 2018).

Tobacco and Nicotine

The global burden of disease linked to tabacco use is heaviest among older individuals. Age at initiation of smoking and time spent smoking are predictors of mortality for people aged 70 years and older (Nash, Liao, Harris, & Freedman, 2017). In 2017, 16.5% of those aged 45 to 64 years and 8.2% of individuals over the age of 65 reported daily cigarette use (Wang et al., 2018). The development and marketing of alternative tobacco and nicotine delivery products has dramatically increased use. Marketed as safer alternatives to combustible cigarettes, these devices deliver nicotine, known to be addictive and have deleterious health effects in any form. E-cigarette use prevalence rates in adults over 18 years of age was 4.5% in 2016. While rates of e-cigarette use are lower among older adults as compared to younger adults, high use by younger adults may predict significant health issues with age (Weaver, Kemp, Heath, Pechacek, & Eriksen, 2017).

Illicit Drugs

People often continue drug use patterns from young adulthood to older age, and recent data suggest that the "baby boomer" generation is continuing greater use of recreational, generally illicit, drugs than previous generations. A Substance Abuse and Mental Health Services Administration (SAMHSA) survey found that adults aged 50 to 64 who used illicit substances increased from 2.7% in 2002 to 6% in 2013. Marijuana has been legalized in 13 states for medical and recreational use but is still considered illicit, and the past year prevalence of marijuana use by those 50 and older increased by 71.4% from 2006 to 2013 (Han & Palamar, 2018). A combination of factors, including recommendations to treat pain more effectively, deception regarding addictive potential of synthetic opioids, and overprescribing by health professionals (Kolodny, Courtwright, Hwang, Clark, & Alexander, 2015), contributed to an epidemic of opioid addiction in the United States, which peaked in 2009. Increases in the use of synthetic opioid analgesics, while less prevalent in older adults, is linked to higher mortality rates for drugs like oxycodone, fentanyl, oxymorphone, and tramadol. The higher rates of opioid use among this population is often the result of high rates of chronic pain, more common in older adults than any other age group. The drugs most commonly used in this group are prescription anxiolytics, sedatives–hypnotics, and opioids (West, Severtson, Green, & Dart, 2015).

ASSESSMENT OF SUBSTANCE USE DISORDERS

SUDs occur on a continuum ranging from mild to severe (*DSM-5*; APA, 2013). Treatment interventions range from harm reduction to techniques that promote abstinence. Many people are ambivalent about changing patterns of alcohol and nicotine use and may opt to "cut back" rather than abstain, a change that has been found ineffective with smoking but more effective with alcohol use. Binge drinking is the most common form of problematic alcohol consumption among young adults and may indicate the continuation of maladaptive use patterns formed at a younger age when people are more likely to develop SUDs. Social use of alcohol may change

to "at-risk" drinking or prescription drug use to drug misuse with stressful life situations like loss of a spouse, partner, or job; estrangement from family; or diagnosis with a serious illness. Risks for excess use rise with these circumstances. Comprehensive assessment, including social and mental status assessments, extracts such patient-specific information that is basic to patient-centered treatment planning.

SUDs are categorized as mild, moderate, or severe for 10 classes of drugs of abuse and are in accord with the number of symptoms described in 11 diagnostic criteria. New-onset SUDs in older adults may be the result of negative, physical, and psychological symptoms. "Late-onset alcoholism" and patterns of prescription drug abuse, marked by increased use and/or overreliance on either, can emerge secondary to losses, chronic illness, and psychological traumas. Misuse of prescription opioids, which are at high rates for all ages, may be related to the increase in opioid prescriptions among older adults and comes with consequences; there was a 35% increase in opioid-related hospital admissions in this population from 2000 to 2015 (Agency for Healthcare Research and Quality, 2018). Pathological patterns of use, including negative social and health consequences, can be linked to the amount and frequency of the substance used, the length of time of use (a 12-month period or more), and the specific substance.

Alcohol Use Disorders

The most common SUDs diagnosed in older adults are AUDs, including interactions of alcohol with prescription and over-the-counter (OTC) drugs (SAMHSA, 2018; Wu & Blazer, 2014). A SUD is diagnosed when a maladaptive pattern of use is evidenced by 11 criteria occurring over a 12-month period (modified from APA, 2013). Behaviors indicate impaired control over use of a substance (Criteria 1–4), with an inability to cut down on use, and persistent failures to control use (Criterion 2), and recovery from use occupying significant periods of time (Criterion 3), with the result that other role obligations are neglected (Criterion 5). Craving or an intense desire to use a drug may occur (Criterion 4), and use persists despite social, health, and interpersonal problems worsened by use (Criterion 6); there is a growing tendency to withdraw from work or recreational activities (Criterion 7).

"At-risk" drinking is a pattern that may not appear to be linked with problems, but, with this continued pattern, can result in harmful consequences. Individuals over the age of 60 are more likely to experience medical complications associated with alcohol use, even when drinking amounts similar to those in prior years (Kuerbis et al., 2014). Women are at an even higher risk for negative consequences related to other psychological and physiological changes (e.g., menopause; Lal & Pattanayak, 2017). Outcomes are determined by the individual's response to alcohol, the use of prescription drugs (alcohol interacts with at least 50% of prescription drugs), and co-occurrence of other chronic medical or psychiatric disorders. Similarly, a decline in visual, auditory, or other perceptual capacities makes alcohol consumption hazardous.

Severe SUDs are chronic, recurring illnesses. Recovery can be achieved with medication, self-help, and psychotherapy. Periods of abstinence or decreased consumption may be interrupted by brief "slips," after which the individual returns to action toward recovery. Severe SUDs have two components—first, physiological dependence induced by certain drugs, such as alcohol, tobacco, benzodiazepines, barbiturates, amphetamines, and opioids, which is evidenced in "tolerance"; the need for increasing amounts of a substance to achieve the desired effect; and "withdrawal," a characteristic pattern of symptoms when use of a substance is suddenly stopped. Second, craving accompanies withdrawal, so there is also psychological dependence, the perceived need to use the drug. Psychological dependence is evidenced in moderate and severe substance disorder and is more difficult to resolve than physiological dependence, requiring ongoing efforts in behavioral change.

Illicit Drug Use

Illicit drug use in older adults has historically been far less prevalent than excess alcohol use until recently (see earlier discussion). Although there have been steady increases in unhealthy alcohol use by older adults, data suggest that the proportion of older adults seeking treatment for illicit substance use is rising, whereas treatment for AUDs is declining (Chhatre, Cook, Mallik, & Jayadevappa, 2017). These data highlight the chronicity of substance use and SUDs. About 90% of adults aged 50 to 59 first used illicit substances before age 30. Of illicit substances used, marijuana use is the highest and is more prevalent among older adults than adolescents (SAMHSA, 2018) are. The growing number of states legalizing marijuana may play a role in the uptake of marijuana use. Medical marijuana laws have been associated with decreased opioid prescriptions for older adults, which could decrease risks associated with opioid use; however, there are long-term complications and medication interactions associated with marijuana use by older adults (Bradford, Bradford, Abraham, & Adams, 2018; Han & Moore, 2018). In addition, marijuana users have higher rates

of AUD, nicotine dependence, cocaine use, and misuse of prescription opioids, without perceived risk (Han & Palamar, 2018). Opioid misuse among older adults is also concerning given the risks associated with the number of prescription drugs that older adults take. There is also a national increase in the use of benzodiazepines by older adults, which can have serious complications (including death and overdose; Maust, Blow, Wiechers, Kales, & Marcus, 2017). The failure to identify substance-related problems in older adults has been linked to the failure to inquire about alcohol and drug use, including misuse of prescribed drugs. Assessment should include questions on the type, amount, and frequency of use of all substances, including food supplements and vitamins.

Recovery From Severe Substance Use Disorders

The term *recovery* has different meanings. The components of recovery have been described by the Betty Ford Institute Consensus Panel (2007). *Recovery* is defined as a lifestyle voluntarily maintained by an individual that includes sobriety, varying levels of personal health, and citizenship. Many older adults are "in recovery" or have established long-term abstinence from the use of alcohol, cocaine, heroin, or other drugs. Those active in Alcoholics Anonymous or NarAnon consider "sobriety" to be about moral character. Other individuals consider reduction of substance use to be recovery. Adverse circumstances and life stressors may contribute to an abstinent individual's relapse to alcohol or drug use. Transitions that come with aging, increasing numbers of losses, and the onset of illness may all be "triggers" to return to prior patterns of problematic substance use, posing threats to recovery and risks for a return to regular, maladaptive patterns of use (relapse). While not widely known, rates of substance use treatment completion, which are important in the recovery process, are higher in persons over 65 than in any other age group (Sahker, Schultz, & Arndt, 2015). Nursing interventions include support of the patient's attendance at self-help group meetings, continued involvement in treatment such as methadone or buprenorphine maintenance, active community and family involvement, and/or group or individual psychotherapy.

In this chapter, the term *drug* applies to herbs, OTC medications, and prescription medications taken as prescribed. *Substance* refers to the 10 types of substances listed by *DSM-5* category (which may also include illicit use of prescribed medications). Please refer to www.drugabuse.gov for a full listing of drugs of abuse and their chemical properties.

Psychoactive Drug Misuse and Abuse

Drug misuse, defined as use of a drug for reasons other than those for which it was intended, is a risk for the older adult. Prescriptions for multiple medications and cognitive changes, including early signs of dementia, can lead to medication misuse. Common outcomes of drug misuse include overdose; synergistic and cumulative effects; adverse reactions to drugs; or drug interactions, especially with alcohol. Older adults account for 30% of national expenditures on all prescription drugs, and nonmedical use of prescription drugs increases in persons older than 60 years (NIDA, 2015). In addition to higher rates of mortality from opioid misuse, the accessibility of heroin and synthetic opioids are increasingly factors in suicide in older adults (West et al., 2015).

Regular use of multiple drugs for more than one medical condition (i.e., polypharmacy) is complicated by the older adult's use of alcohol or illicit drugs (Letizia & Reinbolz, 2005). In persons aged 18 to 70 years treated for falls, 40% of men and 8% of women tested positive for alcohol and/or benzodiazepines (9% and 3%, respectively), or both (A. R. Boyle & Davis, 2006).

Abuse of psychoactive drugs is increasingly a health problem for older adults. Few evidence-based findings on factors contributing to the problem exist, but those identified include isolation, history of substance-related or mental health disorder, bereavement, chronic medical disorders, female gender, and exposure to prescription drugs with abuse potential. Few older adults are lifetime illicit drug users (Wu & Blazer, 2014), other than marijuana users. However, substance abuse by older adults, one in four of whom receives prescriptions for drugs with abuse potential, is becoming more common. The most commonly misused drugs, other than nicotine or tobacco, are benzodiazepines, sedative hypnotics, and opioid analgesics (Wu & Blazer, 2014).

Smoking and Nicotine Dependence

Today's older Americans have smoked at rates among the highest of any U.S. generation (American Lung Association [ALA], 2010), resulting in many health problems and contributing to the estimated 438,000 American deaths annually caused by smoking. Nearly 20 of every 100 American adults aged 45 to 64 years (19.9%) and nearly 9 of every 100 adults aged 65+ years (8.8%) are current smokers (CDC, 2015).

Although these rates in older adults have decreased in recent years, vulnerability to the effects of smoking is evident. The risk of dying of a heart attack for men aged

65 years and older is twice that for women smokers and 60% higher than for nonsmoking men of the same age. Smokers also have significantly higher risks than nonsmokers for Alzheimer's disease and other types of dementia, and smoking plays a role in heart and lung disease, cancer, osteoporosis, diabetes, erectile dysfunction, and visual disorders like macular degeneration and nuclear cataracts (Whitmer, Sidney, Selby, Johnston, & Yaffe, 2005).

Polysubstance Abuse

Polysubstance abuse, the misuse, abuse, or regular use of three or more drugs, is common in older adults and, depending on the class of drug, can induce dependence. Older problem drinkers, as well, report more severe pain, greater disruption of activities caused by pain, and frequent use of alcohol to manage pain (Brennan, Schutte, & Moos, 2005). These findings underscore the importance of monitoring drinking and medication use in patients who present with complaints of pain, especially those with histories of any heavy drug use or SUDs, including alcohol and nicotine.

ASSESSMENT OF SUBSTANCE USE

The nurse should review the most recent nursing and medical histories and the most recent physical examination. The Mental Status Examination (MSE) is of particular relevance to assessing the acuity and chronicity of a SUD. The MSE should include queries on self-harm, history of suicide attempts, and current suicidal ideation. The use of substances is linked with suicide, and older adults are among Americans with the highest suicide rates (SAMHSA, 2018; West et al., 2015).

When patients are using alcohol, there may be deviations in standard liver function tests (LFTs) and elevations in gamma-glutamyl transferase (GGT) and carbohydrate-deficient transferrin (CDT) levels; 50% to 70% of heavy drinkers will have percentages of CDT greater than 2.6 (Miller, Cluver, & Anton, 2009). Physical signs, such as ecchymosis, spider angiomas, flushing, palmar erythema, or sarcopenia, may be evidence of heavy use. The patient may have an altered level of consciousness, changes in mental status or mood, poor coordination, tremor, increased deep tendon reflexes, or a positive Romberg sign. Increased lacrimal secretions, nystagmus, and sluggish pupil reactivity may also be noted on examination (Letizia & Reinbolz, 2005). Patients who report use of marijuana and/or other drugs should have toxicology tests to establish baseline use level. Findings can be effectively used in a motivational interview and brief interventions and/or counseling.

Nurses need to assess and document frequent changes in drug-using habits and record these in substance use histories, dating from first use to current use. It is recommended that the nurse ask whether the individual ever experienced problems related to drug or alcohol use, spontaneously stopped using a drug or alcohol, or is in recovery and participating in self-help programs such as Alcoholics Anonymous or Narcotics Anonymous.

In taking the patient history, the nurse should ask about a history of smoking, alcohol use in the form of number of standard drinks, OTC medications, prescription and recreational drugs, herbal supplements, and food and drink supplements. This information can be recorded using the Quantity Frequency (QF) Index (Khavari & Farber, 1978). Another helpful technique in assessing drug use is the "brown bag" technique. The client is asked to bring in a brown bag containing all the prescribed OTC, food supplements, and other legal or illicit drugs that he or she consumes weekly. These are used to develop the history and to open a discussion about the implications of drug use with the patient. It is important to ask the client about the intended use of the drug (e.g., relief of pain, feelings of loneliness, anxiety, or comfort).

Screening, brief intervention, and referral to treatment (SBIRT) has been found to be effective with adults and older adults for smoking, illicit drug and prescription drug abuse, and alcohol use, and should be part of the nursing evaluation (Schonfeld et al., 2010). Despite federal agency guidelines supporting its use, it is rarely used with older adults. SBIRT has demonstrated efficacy and feasibility in reducing patients' alcohol consumption, decreasing dependence symptoms (Babor et al., 2007; SAMHSA, 2018), and improving general and mental health (Madras et al., 2009) following its use by nurses and nurse practitioners.

Using SBIRT

SBIRT begins with *screening* an individual using a valid and age-appropriate screening tool to identify alcohol use behaviors that may place the individual at risk for health problems. Short, well-tested questionnaires that identify risk include the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST), the Short Michigan Alcohol Screening Test-Geriatric version (SMAST-G), the Alcohol Use Disorders Identification Test (AUDIT), and AUDIT-C (Consumption), and abbreviated AUDIT tool.

Although screening can often be self-administered by paper and pencil, older adults may respond to administration by the nurse or trained personnel. A positive score on the screening tool for excess alcohol use or for smoking can be determined by a brief 3- to 5-minute session, including advice to cut down. SBIRT is not effective with individuals with severe SUDs and physiological dependence on alcohol.

Blow, Bartels, Brockmann, and Van Citters (2005) recommend modifying the *brief intervention* for older adults to include the following points:

1. Help the individual identify future goals for health, activities, and relationships.
2. Give feedback that is customized to the individual's patterns of substance use, health habits, and emotional and cognitive function.
3. Discuss norms of drinking habits. Define drinking patterns (light, moderate, and heavy).
4. Help the client weigh the pros and cons of drinking.
5. Explore the consequences of heavy drinking.
6. Explore the reasons to cut down on or quit drinking.
7. Help the client to set a sensible drinking standard using strategies to cut down or quit.
8. Help the client anticipate and plan for coping in risky situations (Blow et al., 2005).

If the patient declines change at this time, the discussion is dropped. The topic of possible change, however, should be raised at the next visit. When the screening instrument (AUDIT, SMAST-G) score indicates dependence on alcohol or nicotine, *referral* to specialty treatment and information needed to access a provider or a specialty healthcare agency are in order.

Depending on the healthcare setting, between 1% and 10% of patients may need some level of *treatment*—to ensure safe withdrawal and reinforce decreased intake or cessation.

Despite the U.S. Preventive Services Task Force recommendation to screen older adults for excess alcohol use, screening is inconsistently implemented. Health providers, family members, and friends may overlook excess use because the drug use is not linked to the usual disruptions in work or function that are more evident in early life. Other reasons for not taking action are beliefs that indulging in such activity is deserved, and that older people cannot change long-standing behaviors. Evidence suggests that many health professionals continue to view alcohol and other drug use with pessimism and negativity (van Boekel, Brouwers, van Weeghel, & Garretsen, 2013). Some healthcare providers may lack knowledge of the association of drug use, smoking, or excessive alcohol use with health problems like chronic obstructive pulmonary disease (COPD), stroke, or depression.

SUDs are now recognized as chronic conditions, characterized by slips and relapses, and conditions that respond to treatment (McLellan, Lewis, O'Brien, & Kleber, 2000). Interventions and treatment should be matched to stages of the disease (acute phases, exacerbations, and stages of recovery) to improve outcomes.

Screening Tools for Alcohol and Drug Use

Screening for alcohol and other drug use should be implemented in community and hospital settings, and even a few questions can suggest or rule out a disorder. A Q/F Index, such as the Khavari Alcohol Test (KAT), asks (a) usual frequency of alcohol use, (b) usual amount consumed per occasion, (c) maximum amount consumed on any one occasion, and (d) frequency of consumption of the maximum amount (Allen & Wilson, 2003). The KAT consists of the four questions noted previously that are asked for each type of beverage (beer, wine, spirits, and liqueurs) and can be administered in 6 to 8 minutes (Khavari & Farber, 1978). The amounts are then compared with National Institute on Alcohol Abuse and Alcoholism (NIAAA) guidelines for persons older than 65 years. Additional inquiries such as (a) "Did you ever feel you had a problem related to alcohol or other drug use?" and (b) "Have you ever been treated for an alcohol or drug problem?" will yield important additional information.

Short Michigan Alcohol Screening Test-Geriatric Version

The SMAST-G is an effective tool for screening older adults in all settings. The complete drug use history can be obtained in the comprehensive assessment. The original instrument from which this version was derived has a sensitivity of 93.9% and a specificity of 78.1% (Blow et al., 1992). The SMAST-G is composed of 10 questions and is quickly administered. Each positive response counts as 1 point.

Alcohol Use Disorders Identification Test (AUDIT)

This 10-item questionnaire has good validity in ethnically diverse groups, and scores classify alcohol use as hazardous, harmful, or dependent; administration: 2 minutes (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The

AUDIT has been found to have high specificity in adults older than 65 years (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001).

AUDIT-C

The AUDIT-C, a modification of the 10-item AUDIT, is only three questions, making administration simple. It is used to identify people who are risky drinkers or those with frank AUD and has a sensitivity when used with men of 0.95/specificity of 0.60, and when used with women a sensitivity of 0.66/specificity of 0.94 (see AUD-C, WHO).

Fagerström Test for Nicotine Dependence-Revised

This six-question scale provides an indicator of the severity of nicotine use disorder: less than 4 (*low to moderate dependence*), 4 to 6 (*moderate dependence*), and 7 to 10 (*highly dependent on nicotine*). The questions ask about first use early in the day, amount and frequency, inability to refrain, and smoking despite illness. This instrument has good internal consistency and reliability in culturally diverse, mixed-gender samples (Pomerleau, Carton, Lutzke, Flessland, & Pomerleau, 1994).

INTERVENTION AND CARE

Interdisciplinary collaboration is essential to providing the range of treatment modalities for SUDs and related problems because SUDs have physical, mental, spiritual, and emotional components. Primary care providers, psychologists, dentists, nurses, and social workers should be equipped to screen for and refer a problem, and treatment and aftercare should address all dimensions of the disorder. The least intensive treatment approaches should be implemented first and should be flexible, individualized/patient centered, and implemented over time. Older adults are reluctant to seek or continue care with mental health/addictions specialists. Brief interventions and motivational interviewing have been found effective in producing short-term reduction in alcohol consumption for older persons. Some findings suggest that motivational interviewing is more effective with smoking than brief advice (Ballesteros, González-Pinto, Querejeta, & Ariño, 2004; Wutzke, Conigrave, Saunders, & Hall, 2002). Research findings also suggest that once enrolled in treatment for an SUD, older people treated for alcohol or opioid dependence with medications, such as naltrexone, methadone, or buprenorphine, and individualized, supportive, and medically based psychosocial interventions have better outcomes than younger people (Satre, Mertens, Arean, & Weisner, 2004).

Inpatient Hospitalization

All older adults should be screened for alcohol use on admission to any care facility (Nicholas & Hall, 2011). A small but important percentage will be at risk for the development of acute alcohol withdrawal syndrome (AWS) on sudden cessation of drinking. Patients at highest risk have (a) a history of consuming large amounts of alcohol, (b) coexisting acute illness, (c) previous episodes of AWS or seizure activity, (d) a history of detoxification, and (e) intense cravings for alcohol (Letizia & Reinbolz, 2005). Symptoms of withdrawal are intense and of greater duration than in younger persons, with onset of withdrawal as early as 4 to 8 hours after the last drink and persisting up to 72 hours. The clinical symptoms determine the need for detoxification and determine medical and nursing decisions. Two instruments assist in managing symptoms of withdrawal: CIWA (Clinical Institute Withdrawal Assessment for Alcohol) and COWS (Clinical Opiate Withdrawal Scale). The COWS is an 11-item scale that quantifies the severity of opiate withdrawal by rating symptoms from mild to severe. It should be administered and scored by a clinician. Scores range from 5 to 36 (Wesson & Ling, 2003). The CIWA queries 10 symptoms of alcohol withdrawal and rates them numerically. Scores are ranged from 10 to 15 (mild), 16 to 20 (moderate), and 21 to 67 (severe; Stuppaeck et al., 1994).

A 10- to 28-day period of acute care hospitalization in a mental health or alcohol and drug treatment center is indicated for the older person addicted to alcohol, benzodiazepines, heroin, amphetamines, or cocaine when (a) living situations and access to the drug make abstinence unlikely; (b) there is a likelihood of severe withdrawal symptoms; (c) comorbid physical or psychiatric diagnoses, such as depression and accompanying suicidal ideation or a chronic physical illness, are present; (d) daily ingestion of alcohol or a sedative hypnotic has been higher than recommended doses for 4 weeks or more; and (e) there is mixed addiction, that is, alcohol and benzodiazepines or cocaine and alcohol. It is helpful if programs specifically designed to meet the needs of older persons are available (USDHHS, 2004a).

Ambulatory Care

Persons dependent on alcohol, tobacco, and heroin can be successfully withdrawn from high levels of drugs in community-based care through the collaboration of a medical doctor or nurse practitioner and with the support and oversight of family members and friends. Specialists in addiction should oversee the process. Older persons drinking at risky levels or regularly using alcohol or other drugs

are generally treated in the community. Tobacco-cessation protocols are now available directly to consumers as well as to primary care providers and mental health professionals.

Residential Treatment

Residential treatment is available in specialty care centers, therapeutic communities, and some long-term care facilities. Programs designed specifically for the older person are beneficial in their focus on the specific healthcare needs and challenges to abstinence faced by older people. These long-standing habits of use, a diminished social network, risks of social isolation, and health implications of heavy alcohol and prescription drug use make behavioral change particularly challenging.

Therapeutic Communities

Therapeutic communities provide long-term (up to 18 months) treatment and are abstinence-oriented programs. They use the 12-step Alcoholics Anonymous model of individual and group counseling, as well as participation in a social community, to address drug-related problems. For the isolated, older drug user with a history of frequent relapse, these are good treatment options.

Pharmacological Treatment

There are several FDA-approved medications available to treat opioid, alcohol, and tobacco use disorders. Considerations include use patterns, treatment goals, and any contraindications for use that are often related to the metabolic changes associated with aging. The best outcomes of pharmacological interventions are achieved by the combination of medication with individual and/or group counseling. Attendance at structured self-help groups such as 12-step programs or SMART Recovery also supports adherence to treatment regimens.

Severe Alcohol Use Disorder and Medication-Assisted Treatment

There is strong evidence for both naltrexone and acamprosate to help individuals with risky or dangerous alcohol use patterns to decrease alcohol consumption (Kim, Hack, Ahn, & Kim, 2018; Maisel, Blodgett, Wilbourne, Humphreys, & Finney, 2013). Naltrexone is an FDA-approved medication that comes in oral and once-monthly injectable formulations. Although the long-acting injectable (Vivitrol) form lasts 28 days and may improve adherence, both medications have been shown to lengthen periods of abstinence, reduce the number of drinking days, and increase overall treatment retention (Maisel et al., 2013; Rösner et al., 2010). Naltrexone is a Mu opioid antagonist and is an option for an individual who has a concomitant opioid use disorder and wishes to be abstinent from all opioids. Evidence suggests that naltrexone is well tolerated by older people (Caputo et al., 2012). Contraindications for its use include renal problems, acute hepatitis, or liver failure. Psychosocial interventions can help to enhance adherence to pharmacological interventions for AUDs.

Acamprosate calcium (Campral) has been shown to help chronic, heavy alcohol consumers achieve abstinence (Jonas et al., 2014). Disulfiram (Antabuse) is used to deter alcohol consumption and thus is intended for the person who wishes to achieve abstinence. The medication interferes with alcohol metabolism; therefore, an elevation in vital signs and severe gastrointestinal symptoms can occur if alcohol is ingested. This medication is metabolized in the renal system and may be ideal for persons with hepatic disease. Given its side-effect profile and metabolism, the medication may be poorly tolerated by individuals older than 55 years (Caputo et al., 2012). In addition, it should be taken every day to achieve the greatest aversive effects on consumption. The best outcomes with this medication occur when working with the patient's family members and support persons.

Opioid Use Disorder

The proportion of older adults who misuse opioids is low compared to the case of younger adults. There is concern for older adults as opioid misuse rates are growing and as misuse for younger adults has declined (SAMHSA, 2017). Older adults, particular those with chronic health conditions, are more likely to be prescribed opioids than younger adults (CDC, 2017). The number of opioid-related emergency department visits for older adults increased 74.2% between 2010 and 2015 (Fingar et al., 2018). These data highlight older adults as at risk for developing opioid use disorders. There are physiological changes with aging, in addition to an increase in other prescribed and nonprescribed sedative use (benzodiazepines and other sedative hypnotics) in this population, which puts them at high risk for physiological complications, including overdose (Hwang et al., 2016; Maust et al., 2017). The use of opioid-based treatments and abstinence-based approaches that assist the person with an opioid use disorder to focus on psychological and life problems is highly underutilized in the older adult (Chhatre et al., 2017). Methadone is a full opioid agonist that can be obtained from a specialty clinic setting. The drug buprenorphine—both an opioid

antagonist and a partial agonist—also helps a person to stop using opioids and may be of particular benefit for persons who have a high risk of overdose or who have a cocaine and/or heroin use disorder. Buprenorphine can be prescribed from an outpatient setting by a provider with a special waiver obtained after training. Both medications can be used safely and effectively in individuals with moderate to severe opioid use disorder (Mattick, Breen, Kimber, & Davoli, 2014). The long-acting form of naltrexone (a Mu opioid antagonist) also shows success in motivated individuals at 6 months and may have benefit for the older adult who has difficulty with maintaining a complex medication regimen (Lee et al., 2018). Evidence supports added benefit of psychosocial treatment for patient adherence to pharmacological treatment, particularly in the case of methadone treatment (Dugosh et al., 2016).

Smoking

Varenicline (Chantix) is a prescription medication that safely helps individuals achieve nicotine abstinence (Anthenelli et al., 2016). Bupropion is an antidepressant also approved to treat tobacco use disorders. Both medications have been shown to be helpful when started between 1 and 2 weeks before the smoker intends to quit. Nicorette transdermal patches, nicotine gum, and nicotine lozenges are available OTC, and there is research support for their pharmacological contribution to smoking cessation, particularly when combined with bupropion (Stapleton et al., 2013). The dosage of transdermal patches is determined by the number of cigarettes smoked (level of SUD). Overall, smoking cessation shows good efficacy with combination therapies resulting from a combination of individual or group psychosocial support and medication (CDC, 2014; Patnode et al., 2015).

Models of Care

Individualized care plans should be developed for older adults at risk for SUDs in accordance with the classes of drugs used and the mild, moderate, or severe nature of the disorder. Individualizing care allows flexibility for patient and nurse. Evidence is emerging, however, on models of care for older adults with complex health problems, including comorbid other psychiatric diagnoses. In one study, the integration of mental health into primary care increased access to mental health and substance abuse treatment for both Black and White older adult patients who are offered both enhanced specialist services and mental health services at the primary care site (Ayalon, Areán, Linkins, Lynch, & Estes, 2007). Case management has also demonstrated effective outcomes with older adults with multiple social, mental health, and physical needs with problems accessing community services, including substance abuse (Hesse, Vanderplasschen, Rapp, Broekaert, & Fridell, 2007). Guidelines for all interventions should include the following:

- A nonjudgmental, health-oriented approach to substance-related problems. Drug and alcohol use and abuse are highly stigmatized in American society, particularly in minority communities, leading to denial and/or rejection by family members. Understanding addiction as a disease helps nurses and other providers adopt attitudes and approaches similar to care required for other chronic illnesses.
- A supportive, encouraging approach to changing use habits must be fostered. The patient or client is taught that change occurs in stages and that support and assistance are available at each stage.
- Patient and family education on the risks associated with drug misuse. Because older persons use so many medications, the potential health consequences of medication misuse and drug abuse may be minimized in the eyes of family members and caretakers.
- Assessment of substance use in association with lifestyle, existing chronic illnesses, nutritional patterns, sleep, exercise, sexual patterns, and recreation is needed. Also of importance is counseling the patient and/or family about the effects of substances used on these areas of the patient's life.
- Setting the goal of "harm reduction" in the form of decreased use and supervised use if abstinence is not imperative or achievable.
- Monitoring substance use patterns at each encounter; documenting changes and providing reinforcement of positive changes and/or movement toward treatment.
- Enhancing the involvement of members of the patient's support system, including family and friends identified by the patient, community-based groups, support groups, appropriate clergy, or organizational groups such as senior centers.
- Supporting the development of coping mechanisms and supporting modifications in social, housing, and recreational environments, to minimize associations with settings and groups in which substance use and abuse are common (USDHHS, 2004a).

Counseling and Psychotherapy

Older persons tend to seek care from their primary care, medical specialist, or nurse/nurse practitioner provider for mental health and substance-related problems. This

practice derives from long-held beliefs that mental health problems like depression or anxiety indicate weakness or lack of character.

Older persons, more than others, stigmatize the excess use of alcohol or use of an illicit drug and problems with prescription drugs. Counseling done by the nurse using SBIRT is likely to be more readily accepted by older patients than referral to mental health or substance abuse clinics.

Optimal treatment involves short-term psychotherapy by a practitioner with education about abuse and addiction. Following the model of cognitive behavioral therapy, in particular, has demonstrated good outcomes with excessive drinking and marijuana use (Magill & Ray, 2009). These approaches help the older adult to modify behavior and to deal with negative feelings and/or chronic pain that often motivate use.

Treatment Outcomes

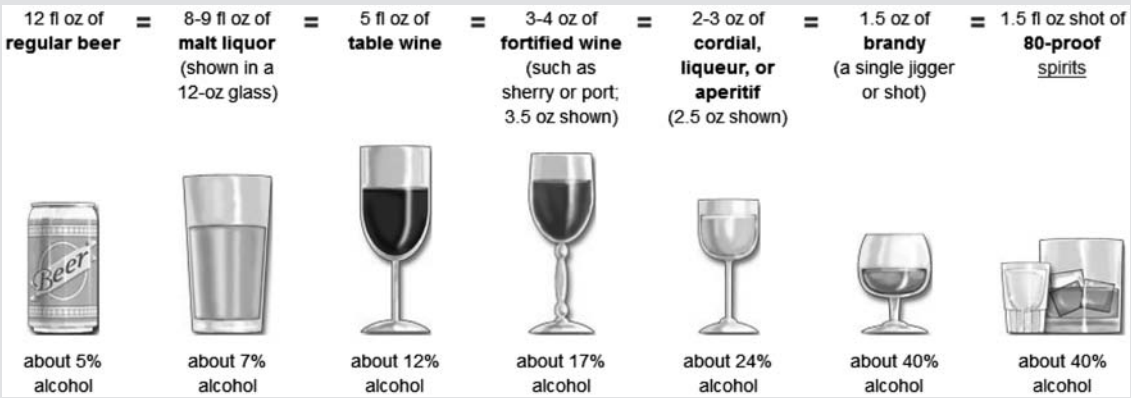
Healthcare providers and older persons may be pessimistic about the possibilities of changing substance use habits. Health providers often do not intervene because they believe that older people do not change. Treatment outcomes for older persons with substance use problems, however, have been shown to be as good as or better than those for younger people (USDHHS, 2004b). Good treatment outcomes, however, can be compromised by inconsistency of follow-up and limited access to aftercare for community-dwelling older adults.

CASE STUDY 34.1

Joseph and Mary P, both 71 years old, reside in a small, rural community, where Mr. P owns the only pharmacy. Retired for 5 years, Mr. P is in good health except for osteoarthritis, and Mrs. P has heart failure, which is usually well managed when she adheres to her diet and medication regimen. She is also being treated for depression and generalized anxiety disorder, for which she has been prescribed paroxetine (Paxil). The couple enjoys a nightly cocktail hour, at which Mr. P consumes two scotch whiskies and Mrs. P has "wine." Recently, the visiting nurse who has been monitoring Mrs. P's recovery from an episode of congestive heart failure received a phone call from the couple's daughter who stated that on her last three evening phone calls to her parents, Mrs. P sounded somewhat confused and her speech was slurred. She also reports that her father had a fall in the evening last week. When the daughter questioned her parents about their drinking, Mr. P became irritable and defensive.

FIGURE 34.1

Standard drink.



The percentage of "pure" alcohol, expressed here as alcohol by volume (alc/vol), varies by beverage.

Source: U.S. Department of Health and Human Services: National Institute on Alcohol Abuse and Alcoholism. (n.d.). *Rethinking drinking: What's a "standard" drink?* Retrieved from https://www.rethinkingdrinking.niaaa.nih.gov/How-much-is-too-much/What-counts-as-a-drink/Whats-A-Standard-Drink.aspx

(*continued*)

CASE STUDY 34.1 (*continued*)

The nurse was concerned that the Ps were at risk related to their alcohol use. She made it a point to visit the Ps in the early evening on her way home. She found them enjoying their cocktails and took the opportunity to conduct a drug and alcohol use screen using the SMAST-G. This indicated a problem with alcohol use and potential for associated negative health outcomes. She conducted a brief intervention, giving them information about their respective chronic diseases, including the benefits of reducing their drinking. The nurse discussed how decreasing alcohol intake can reduce the gastric distress Mr. P experiences and the benefits of improving depression symptoms and effectiveness of paroxetine hydrochloride (Paxil). The nurse taught them (building on autonomy and responsibility) about the relationship between physical changes and the effects of alcohol on their sleep patterns, mood, balance, and fall risk. She also pointed out that both were consuming alcohol more than one daily drink and recommended that they cut down to one standard drink (Figure 34.1) a day (1.5 oz. spirits, 4–5 oz. wine, or 12 oz. of beer). At first, they seemed unhappy about the recommendation, but both committed to attempting to reduce their intake for the sake of their overall health. When the nurse visited 2 weeks later, they had begun to journal their drinking, and both were recording consistent declines in the amount of alcohol consumed. Thus, this is a successful example of the SBIRT intervention.

SUMMARY

Two current trends are predicted to result in an increase in the already significant number of men and women older than 55 years who experience various SUDs: the growing numbers of older persons in America and the continuation of tobacco, drug, and alcohol use patterns established earlier in life. Although most people decrease the amount of alcohol and use of recreational drugs with age, anywhere from 10% to 24% of older persons do not (USDHHS, 2004a). The most common of SUDs is heavy drinking, especially by Caucasian men older than 65 years and living alone (USDHHS, 2004a). The prevalence of heavy drinking is often linked with smoking, which causes the highest number of premature deaths among older people (Han & Palamar, 2018). The high numbers of prescription drugs used by older adults pose serious problems related to misuse and drug interactions. Health professionals are disinclined to query older adults about substance use, but the substance use problems emerge with the diagnosis and treatment of other medical disorders. Nurses in daily contact with institutionalized and community-dwelling older adults must be skilled in screening and counseling on the use of nicotine and alcohol, as well as prescription, illicit, and OTC drugs. Educating the patient and family about health risks and referring patients to specialists and community resources are essential "best practices."

NURSING STANDARD OF PRACTICE

Protocol 34.1: Substance Misuse and Alcohol Use Disorders

I. GOAL

To implement best nursing practices in older persons with drug, alcohol, tobacco, or other drug use disorders

II. OVERVIEW

A. Several factors increase the risks associated with alcohol and drug use for the older individual; continuing drug use patterns that were commonplace earlier in life can be potentially harmful. Constitutional risk factors include changes in body composition such as decreased muscle mass, decreased organ efficiency (especially kidney and liver), and increased vulnerability of the central nervous system (CNS).

B. Alcohol use in combination with other drugs or used excessively may result in falls, impaired cognition, malnourishment, and decreased resistance to disease, as well as interpersonal and legal problems.

(*continued*)

Protocol 34.1: Substance Misuse and Alcohol Use Disorders (*continued*)

C. At-risk drinking (more than one drink per day or more than three drinks on one occasion) by older adults increases the likelihood of negative health consequences.
D. Any smoking is considered drug abuse and places the person at risk for negative health consequences; advancing age increases the likelihood of respiratory and cardiovascular illnesses.

III. BACKGROUND AND STATEMENT OF THE PROBLEM

A. The use of alcohol, tobacco, illicit drugs, and the misuse of prescription drugs can result in SUDs. These are classified on a continuum of mild, moderate, and severe based on the number of symptoms associated with drug use.
   1. Symptoms include mental or physical health problems; impairment in the performance of social, family, work, and civil role relationships because of excessive and frequent use of a substance or multiple substances. For 25% of the U.S. population, *at-risk drinking*—defined as more than one drink per day, 7 days a week, or more than three drinks on any one occasion for persons 65 years and older—is an example of drug use that results in short- and long-term health problems. For older adults, at-risk drinking increases the likelihood of negative health consequences, including depression, falls, impaired motor function, and interactions with prescription drugs.
   2. The frequency and quantity of the drug used generally determines the extent of a SUD. For example, heavy drinking—five or more drinks (four for women) every day for more than 5 days in the past 30 days—can result in health, safety, and social problems. In addition, some drugs, including alcohol, opioids, nicotine, benzodiazepines, and barbiturates, induce *tolerance*, defined as
      a. A need for markedly increased amounts of alcohol to achieve intoxication or desired effect
      b. A markedly diminished effect with continued use of the same amount of the drug
   3. Tolerance drives the need to increase amounts of a drug in an effort to achieve the "high" experienced on early use and is indicative of physiological dependence.
   4. When physiological dependence has developed, sudden cessation of use of the drug precipitates *withdrawal*, characteristic signs and symptoms derived from the chemical properties of the drug. The continuous use of alcohol, opioids, and sedating drugs results in CNS depression, and withdrawal symptoms can be nausea, agitation (mild) to seizure, and fluid and electrolyte disorder (severe).
   5. Untreated withdrawal from depressant drugs can be life threatening. Older adults, especially those with comorbid conditions, must be monitored closely and appropriately medicated.
   6. Decreased metabolic capacity for any drug places older adults at risk for *intoxication* and interaction or potentiation of other prescription or illicit drugs. Intoxication is evidenced in signs such as drowsiness, slurred speech, and uneven gait following consumption of sedative drugs such as opioids, alcohol, or barbiturates or agitation, anxiety, and mania associated with the use of cocaine or other stimulants. The symptoms derive from the effects of the drug properties. Of note, women develop more pathology from lower levels of alcohol consumption than do men of the same age as a function of their physiological vulnerability. Intoxication will have an earlier onset even with tolerance, and withdrawal can be more severe. An aging metabolism complicates these constitutional traits.
   7. *Drug misuse* is a common practice among older adults but is not limited to this population. Drug misuse is defined as taking a drug for purposes other than that for which the drug was prescribed or intended to achieve a desired effect. Because older adults are often prescribed five or more drugs as common practice in the treatment of chronic illness and common health problems, reliance on pharmacotherapy to address pain, sleep disorders, depression, and general malaise is not uncommon. A comprehensive history of drug use (including tobacco and alcohol) is important in identifying this problem as well as *polysubstance-related disorder*, defined as misuse, abuse, or dependence on three or more drugs that have psychotropic effects. For older adults, this is often a combination of illicit and prescription drugs and often includes nicotine and/or alcohol.
   8. Older adults, once engaged in treatment for an SUD, have good rates of recovery. Recovery means learning and maintaining a lifestyle of sobriety at various levels of personal health and the capacity to engage productively with society. Early recovery spans a first year, and, beyond 1 year, recovery is referred to as "sustained." *Relapse*,

(*continued*)



Protocol 34.1: Substance Misuse and Alcohol Use Disorders (*continued*)

or returning to regular use of a substance in a maladaptive pattern, is a lifetime concern, which is why persons often self-refer as "recovering." SUDs are chronic illnesses that require ongoing monitoring and self-care and may include medication.

B. Etiology and/or epidemiology: Of persons older than 50 years, 16.7% reported drinking two or more drinks per day (risky drinking), and 19.6% reported binge drinking on occasion. Among primary care patients older than 60 years, 15% of men and 12% of women regularly drank in excess of the NIAAA-recommended levels (one drink per day and no more than three drinks on any one occasion).
   1. The drugs used and misused most frequently by older adults are nicotine, alcohol, and prescription drugs, particularly analgesics and benzodiazepines.
   2. Excessive drinking by individuals of all ethnic groups ages 65 years and older is approximately 7%, down from 12% in persons aged 55 to 64 years.
   3. Five hundred thousand persons aged 55 years and older reported monthly use of illicit drugs in the National Household Survey on Drug Use, NIDA.
   4. Approximately 11% of women older than 59 years misuse psychoactive drugs.

C. Risk factors (USDHHS, 2004a)
   1. Family history of dependence on alcohol, tobacco, prescription, or illicit drugs
   2. Co-occurring moderate to severe SUD of another substance (i.e., alcohol and tobacco)
   3. Lifelong pattern of substance use, including heavy drinking
   4. Male gender
   5. Social isolation
   6. Recent and multiple losses
   7. Chronic pain
   8. Co-occurrence with depression
   9. Unpartnered and/or living alone

IV. PARAMETERS OF ASSESSMENT

A. Screening for alcohol, tobacco, and other drug use is recommended for all community-dwelling and hospitalized older adults. It is essential that the nurse:
   1. State the purpose of questions about substances used and link them to health and safety.
   2. Be empathic and nonjudgmental; avoid stigmatic terms such as *alcoholic.*
   3. Ask the questions when the patient is alcohol and drug free.
   4. Inquire about the patient's understanding of the question (Aalto, Pekuri, & Seppä, 2003).

B. Assessment and screening tools
   1. The QF Index (Khavari & Farber, 1978): *Review all classes* of drugs, alcohol, nicotine, illicit drugs, prescription drugs, OTC drugs, and vitamin supplements, for each drug used. *Record the types* of drugs, including the kinds of beverages. *Note the frequency*: The number of occasions on which the drug is consumed (daily, weekly, and monthly). *Record the amount of drug consumed* on each occasion over the past 30 days. The psychological function, what the drugs do for the individual, is also important to identify. The QF Index tool should be part of the intake nursing history. The brown bag approach is also useful. Ask the patient to bring all drugs and supplements he or she uses in a brown bag to the interview.
   2. SMAST-G: Highly valid and reliable, this is a 10-item tool that can be used in all settings. Between 2 and 3 minutes are needed for administration. This instrument is derived from the SMAST-G with a sensitivity of 93.6% and a positive predictive value of 87.2% (Blow et al., 1992).
   3. The AUDIT: This 10-item questionnaire has good validity in ethnically mixed groups, and scores classify alcohol use as hazardous, harmful, or dependent; administration: 2 minutes. Sensitivity scores range from 0.74% to 0.84% and specificity around 0.90% in groups of mixed age and ethnicity (Allen, Litten, Fertig, & Babor, 1997). This instrument is highly effective for use with older adults (Roberts, Marshall, & Macdonald, 2005).

(*continued*)

Protocol 34.1: Substance Misuse and Alcohol Use Disorders (*continued*)

Its derivative, the AUDIT-C, is composed of three questions that have proved equally valid in detecting an alcohol-related problem.

4. Fagerström Test for Nicotine Dependence (Pomerleau et al., 1994): This six-question scale provides an indicator of the severity of nicotine dependence: scores of less than 4 (*very low*), 4 to 6 (*moderate*), and 7 to 10 (*very high*). The questions inquire about first use early in the day, amount and frequency, inability to refrain, and smoking despite illness. This instrument has good internal consistency and reliability in culturally diverse, mixed-gender samples (Pomerleau et al., 1994).

C. Atypical presentation
   1. Men and women older than 65 years may have substance-related disorder problems even though the signs and symptoms may be less numerous than those listed in the *DSM-5* (APA, 2013).

D. Signs of CNS intoxication (i.e., slurred speech, drowsiness, unsteady gait, decreased reaction time, impaired judgment, disinhibition, ataxia)
   1. Assess by individual or collateral (speaking with family members) data collection; detail the consumption of amount and type of depressant medications, including alcohol, sedatives, hypnotics, and opioid or synthetic opioid analgesics.
   2. Obtain a blood alcohol level. Marked intoxication occurs at 0.3% to 0.4%, toxic effects occur at 0.4% to 0.5%, and coma and death occur at 0.5% or higher.
   3. Assess vital signs and determine respiratory, cardiac, or neurological depression.
   4. Assess for existing medical conditions, including depression.
   5. Arrange for emergency department or hospitalization treatment as necessary.
   6. Obtain urine for toxicology, if possible.
   7. Assess for delirium, which can be confused with intoxication and withdrawal in the older adult.

E. At-risk drinking is regular consumption of alcohol in excess of one drink per day for 7 days a week or more than three drinks on any one occasion.
   1. Assess for readiness to change behavior using SBIRT.
   2. Is the drinker concerned about the amount or consequences of the drinking? Has he or she contemplated cutting down?
   3. Does he or she have a plan for cutting down or stopping consumption?
   4. Has he or she previously stopped but then resumed risky drinking?
   5. Personalized feedback and education on "at-risk drinking" results in a reduction in at-risk drinking among older primary care patients.

F. Treatment of acute AWS (guidelines are modified for other CNS-depressant drugs such as barbiturates, heroin, sedative hypnotics)
   1. Assess for risk factors: (a) previous episodes of detoxification; (b) recent heavy drinking; (c) medical comorbidities, including liver disease, pneumonia, and anemia; and (d) previous history of seizures or delirium (Wetterling, Weber, Depfenhart, Schneider, & Junghanns, 2006).
   2. Assess for extreme CNS stimulation and a minor withdrawal syndrome evidenced in tremors, disorientation, tachycardia, irritability, anxiety, insomnia, and moderate diaphoresis. When these signs are not detected, life-threatening situations for older adults often result. Withdrawal, occurring 24 to 72 hours after the last drink, can progress to seizures, hallucinosis, withdrawal delirium, extreme hypertension, and profuse diarrhea from 4 to 8 hours and for up to 72 hours following cessation of alcohol intake (DTs).
   3. Assess neurological signs, using the CIWA-Ar. The CIWA-Ar is a 10-item rating scale that delineates symptoms of gastric distress, perceptual distortions, cognitive impairment, anxiety, agitation, and headache (Sullivan, Sykora, Schneiderman, Naranjo, & Sellers, 1989).
   4. Medicate with a short-acting benzodiazepine (lorazepam or oxazepam) in doses titrated to the patient's score on the CIWA-Ar, patient's age, and weight; use one third to one half the recommended dose (Amato, Minozzi, Vecchi, & Davoli, 2010). Continue CIWA-Ar to monitor treatment response.

(*continued*)

Protocol 34.1: Substance Misuse and Alcohol Use Disorders (*continued*)

5. Provide emotional support and frequent reorientation in a cool, low-stimulation setting; monitor hydration and nutritional intake. Give therapeutic dose of thiamine and multivitamins.

G. Report sleep disturbance, anxiety, depression, and problems with attention and concentration (acute care)
   1. Assess for neuropsychiatric conditions using the mental status exam, Geriatric Depression Scale, or Hamilton Anxiety Scale.
   2. Obtain sleep history because drugs disrupt sleep patterns in older persons.
   3. Assess intake of all drugs, including alcohol, OTC, prescription, herbal and food supplements, and nicotine. Use the "brown bag" strategy.
   4. If positive for alcohol use, assess for last time of use and amount used.
   5. Assess for alcohol or sedative drug withdrawal as indicated.

H. Smoking cigarettes, e-cigarettes, hookah, or using smokeless tobacco
   1. Assess for level of dependence using the Fagerström Test (see "Screening Tools for Alcohol and Drug Use" section).

V. NURSING CARE STRATEGIES

A. At-risk drinking (consumption of alcohol in excess of one drink per day for 7 days a week or more than three drinks on any one occasion) or excess alcohol consumption (more than three to four drinks on frequent occasions):
   1. Conduct screening, brief intervention, and, as indicated, referral to treatment: (SAMHSA, 2018)
      a. Screen using the AUDIT-C, AUDIT, or SMAST-G.
      b. Provide feedback information to the client about current health problems or potential problems associated with the level of alcohol or other drug consumption.
      c. Stress client's responsible choice about actions in response to the information provided.
      d. Advice must be clear about reducing his or her amount of drinking or total consumption.
      e. Recommend drinking according to NIAAA levels for older adults.
      f. Provide a menu of choices to the patient or client regarding future drinking behaviors.
      g. Offer information based on scientific evidence, acknowledge the difficulty of change, and avoid confrontation. Empathy is essential to the exchange.

B. Support self-efficacy. Help client explore options for change.
   1. Assist client in identifying options to solve the identified problem.
   2. Review the pros and cons of behavior change options presented.
   3. Help client weigh potential decisions by considering outcomes.

C. Smoking cigars, cigarettes, e-cigarettes, or using smokeless tobacco
   1. Apply the five A's intervention (Agency for Healthcare Research and Quality [formerly the Agency for Healthcare Policy and Research] Guidelines)
      a. Ask: Identify and document all tobacco use.
      b. Advise: Urge the user to quit in a strong personalized manner.
      c. Assess: Is the tobacco user willing to make a quit attempt at this time?
      d. Assist: If user is willing to attempt, refer for individual or group counseling and pharmacotherapy. Refer to telephone "quit lines" in region or state.
      e. Arrange referrals to providers, agencies, and self-help groups. Monitor pharmacotherapy once quit date is established. The U.S. FDA-approved pharmacotherapies for smoking cessation are the following:
         i. Bupropion SR (Zyban) and nicotine replacement products, such as nicotine gum, nicotine inhalers, nicotine nasal spray, and nicotine patch. Nurse-initiated education about these medications is essential.
         ii. Zyban, for example, should not be combined with alcohol. Nurses working with inpatients in a case management model were found to produce outcomes in smoking cessation (Smith, Reilly, Houston Miller, DeBusk, & Taylor, 2002).
         iii. Show caring, concern, and provide ongoing support.

(*continued*)

Protocol 34.1: Substance Misuse and Alcohol Use Disorders (*continued*)

2. Communicate care and concern
   a. Encourage moderate-intensity exercise to reduce cravings for nicotine because 5 minutes of such exercise is associated with short-term reduction in the desire to smoke and in tobacco withdrawal symptoms (Daniel, Cropley, Ussher, & West, 2004).
   b. Schedule follow-up contact in person or by telephone within 1 week after planned quit date. Continue telephone counseling, especially with those using medications and nicotine patches (R. G. Boyle et al., 2005; Cooper et al., 2004).

D. Alcohol dependence
   1. Assess the patient for psychological dependence.
   2. Assess the patient for (a) physiological dependence and (b) "tolerance." Psychological dependence occurs with both abuse and dependence and is more difficult to resolve.
   3. Assess need for medical detoxification (see alcohol withdrawal in "Inpatient Hospitalization" section).
   4. Refer patient and family to addictions or mental health nurse practitioner or physician.
   5. Evaluate patient and family capacity to implement referral.
   6. On successful detoxification, monitor use of medications, interpersonal therapies, and participation in self-help groups.

E. Marijuana dependence: Little research on effective intervention for psychological dependence on marijuana is available. Some guidance can be found for smoking cessation and self-help approaches.
   1. Refer to steps for smoking cessation (see section C of Nursing Care Strategies).
   2. Refer patient to addiction specialist for counseling for psychological dependence and/or treatment with cognitive behavioral therapy.
   3. Refer to community-based self-help groups such as Narcotics Anonymous, Alcoholics Anonymous, or Al-Anon.
   4. Encourage development or expansion of patient's social support system.

F. Heroin or opioid dependence
   1. Older long-term opioid users may continue use, relapse, and seek treatment. Methadone or buprenorphine are current pharmacological treatment options that are effective in conjunction with self-help programs and/or psychosocial interventions.
   2. Treatment with methadone, a synthetic narcotic agonist, suppresses withdrawal symptoms and drug cravings associated with opioid dependence but requires daily dosing of 60 mg, minimum. It is dispensed only in state-licensed clinics.
   3. Treatment with buprenorphine (Subutex or Suboxone): Treatment occurs in office practice by trained physicians, with this opioid partial agonist–antagonist. Alone and in combination with naloxone (Suboxone), it can prevent withdrawal when someone ceases use of an opioid drug and then be used for long-term treatment. Naloxone is an opioid antagonist used to reverse depressant symptoms in opiate overdose and at different dosages to treat dependence (Center for Substance Abuse Treatment [CSAT], 2010).
      a. Close collaboration with the prescriber is required because these drugs should not be abruptly terminated or used with antidepressants, and they interact negatively with many prescription medications.
   4. Naltrexone, a long-acting opioid antagonist, blocks opioid effects and is most effective with those who are no longer opioid dependent but are at high risk for relapse (Srisurapanont & Jarusuraisin, 2005).
   5. Treatment of the older patient who has become addicted to Oxycontin or other opioids should be done in consultation with an addictions specialist nurse or physician.
      a. It is recommended that prescribers avoid opioids and synthetic opioids (Demerol, Dilaudid, and Oxycontin). Opioids have high potential for addiction, and Demerol has been associated with delirium in older adults (CSAT, 2010).
      b. Barbiturates should be avoided as hypnotics, and the use of benzodiazepines for anxiety should be limited to 4 months (USDHHS, 2004a).

(*continued*)

Protocol 34.1: Substance Misuse and Alcohol Use Disorders (*continued*)

G. Treatment and relapse prevention
   1. Monitor pharmacological treatment. The benefits of this treatment are dependent on adherence, and psychosocial treatment should accompany its use (World Health Organization, 2000). Methadone or buprenorphine should be used for long-term treatment of opioid dependence.
   2. In limited studies using a cognitive behavioral approach, group psychotherapy has produced good outcomes with older adults (Payne & Marcus, 2008).
   3. Refer to community-based groups, such as Alcoholics Anonymous, Narcotics Anonymous, Al-Anon groups, and encourage attendance.
   4. Educate family and patient regarding signs of risky use or relapse to heavy drinking or alcohol-dependent behavior.
   5. Counsel patient to reduce drug use (harm reduction), and engage in relationship healing or building, to engage in community or intellectually rewarding activities, spiritual growth, and so on, that increase valued nondrinking rewards.
   6. Counsel in the development of coping skills.
      a. Anticipate and avoid temptation.
      b. Learn cognitive strategies to avoid negative moods.
      c. Make lifestyle changes to reduce stress, improve the quality of life, and increase pleasure.
      d. Learn cognitive and behavioral activities to cope with cravings and urges to use.
      e. Encourage development or expansion of patient's social support system.

VI. EVALUATION AND EXPECTED OUTCOMES

A. Patient will have:
   1. Improved physical health and function
   2. Improved quality of life, sense of well-being, and mental health
   3. More satisfying interpersonal relationships
   4. Enhanced productivity and mental alertness
   5. Decreased likelihood of falls and other accidents
B. Nurses will demonstrate:
   1. Increased accuracy in detecting patient problems related to use or misuse of substances
   2. More evidence-based interventions resulting in better outcomes
C. Institution will have:
   1. Increased number of referrals to ambulatory substance abuse and mental health treatment programs
   2. Improved links with community-based organizations engaged in prevention, education, and treatment of older adults with substance-related disorders

VII. FOLLOW-UP MONITORING OF CONDITION

A. Evaluate for increase in substance use or misuse associated with growing numbers of aging adults.
B. Increase outreach to targeted vulnerable populations.
C. Document chronic care needs of older adults diagnosed with substance-related disorders.
D. Monitor alcohol use among older adults with chronic pain.
E. Communicate findings to all members of the caregiver team.

VIII. GUIDELINES

The National Quality Forum has published *Evidence-Based Practices to Treat Substance Use Disorders*. These guidelines are inclusive of primary care, the settings in which older adults seek treatment (National Quality Forum, 2007).

(*continued*)

Protocol 34.1: Substance Misuse and Alcohol Use Disorders (*continued*)

ABBREVIATIONS

APA	American Psychiatric Association
AUDIT	Alcohol Use Disorders Identification Test
AUDIT-C	Alcohol Use Disorders Identification Test-Condensed
AWS	Alcohol withdrawal syndrome
CIWA-Ar	Clinical Institute Withdrawal Assessment for Alcohol, Revised
CNS	Central nervous system
CSAT	Center for Substance Abuse Treatment
DSM-5	*Diagnostic and Statistical Manual of Mental Disorders, 5th Edition*
DTs	Delirium tremens
FDA	Food and Drug Administration
NIAAA	National Institute on Alcohol Abuse and Alcoholism
NIDA	National Institute on Drug Abuse
NQF	National Quality Forum
OTC	Over the counter
QF	Quantity frequency
SAMHSA	Substance Abuse and Mental Health Services Administration
SBIRT	Screening, brief intervention, and referral to treatment
SMAST-G	Short Michigan Alcohol Screening Test-Geriatric version
USDHHS	U.S. Department of Health and Human Services

RESOURCES

Important Websites

Agency for Healthcare Research and Quality (AHRQ) Guidelines

AHRQ clinical practice guidelines are available to download.
www.ahrq.gov

American Lung Association
www.ffsonline.org

American Nurses Association
www.ana.org

American Psychiatric Association
www.apa.org

American Psychiatric Nursing Association
www.apna.org

Centers for Disease Control and Prevention
www.cdc.gov/tobacco/how2quit.htm

International Nurses Society on Addictions
www.intnsa.org

National Institute of Mental Health

Patient teaching materials are provided for panic disorders, obsessive compulsive disorder, posttraumatic stress, acute stress, and general anxiety disorders.
www.niaaa.nih.gov

National Institute on Aging

National Institute on Alcohol Abuse and Alcoholism (NIAAA)
www.drugabuse.gov

National Institute on Drug Abuse (NIDA)
www.nida.nih.gov

Assessment Tools

American Psychiatric Association. (2002). *Fagerström Test for Nicotine Dependence (FTND).*
https://cde.drugabuse.gov/sites/nida_cde/files/FagerstromTest_2014Mar24.pdf

Comorbidity Alcohol Risk Evaluation Tool CARET
https://www.health.ny.gov/professionals/ems/state_trauma/docs/alcoholmisuse_finalreport.pdf

ConsultGeri: A clinical website of Hartford Institute for Geriatric Nursing Substance Abuse
consultgerirn.org/resources

Dyehouse, J., Howe, S., & Ball, S. (1996). *FRAMES model in the training manual for nursing using brief intervention for alcohol problems*. Rockville, MD: U.S. Department of Health and Human Services.

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SBIRT (Screening, Brief Intervention and Referral to Treatment)

SBIRT Toolkit: A Step-by-Step Guide. Massachusetts Bureau of Substance Abuse Services
www.masbirt.org/sites/www.masbirt.org/files/documents/toolkit.pdf

SMAST-G (Short Michigan Alcoholism Screening Test-Geriatric Version)
https://www.nccdp.org/resources/_PDF_.pdf

Guidelines

Agency for Healthcare Research and Quality. (2011). *Treating tobacco use and dependence: 2008 update*. Retrieved from http://https://www.ahrq.gov/prevention/guidelines/tobacco/index.html

Michigan Quality Improvement Consortium. (2015). *MQIC guidelines for substance use: SAMHSA-HRSA Center for integrated health care solutions/screening tools; tobacco cessation provider resources*. Retrieved from http://www.mqic.org/physician-tools.htm

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Comprehensive Assessment and Management of the Critically Ill Older Adult*

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35

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Identify factors that influence older adults' ability to survive and effectively recover from a serious or life-threatening illness.
2. Choose valid and reliable instruments to measure critically ill older adults' symptom experience and physical, functional, and cognitive ability.
3. Describe evidence-based, nurse-led, interprofessional intensive care unit interventions that decrease critically ill older adults' risk for adverse events and poor short- and long-term outcomes.

OVERVIEW

Fostering effective ICU survivorship for patients experiencing a serious or life-threatening illness is an emerging and significant societal challenge. Over five million patients receive cutting-edge medical and nursing interventions in the U.S. ICUs annually (Barrett, Smith, Elixhauser, Honigman, & Pines, 2014; Wunsch et al., 2011, 2013). On average, Americans are admitted to an ICU twice in their life, and nearly 1 in 5 will die in this high-paced and technologically complex setting (Angus et al., 2004; Angus et al., 2006). This number is expected to rise to unprecedented levels as the number of adults with complex comorbidities grows, our population ages, and the incidence of acute respiratory and heart failure increases (Carson, Cox, Holmes, Howard, & Carey, 2006; Mehta, Syeda, Soylemez Wiener, & Walkey, 2015). Although recent advances in critical care medicine have improved overall ICU survival rates (Iwashyna, Cooke, Wunsch, & Kahn, 2012), for some older adults and their family members, this survival comes with heavy personal and financial costs.

Many ICU survivors experience profound physical, cognitive, and/or mental health impairments that often persist for months or years after hospitalization (D. Elliott et al., 2014; Needham et al., 2012). The constellation of these impairments is now referred to as post-intensive care syndrome (PICS; D. Elliott et al., 2014; Needham et al., 2012). Although the exact etiology of PICS remains unclear, its incidence and severity are likely related to both preexisting risk factors (e.g., senescence, comorbidities, disease pathology) and commonly acquired ICU symptoms/syndromes (e.g., pain, oversedation, delirium) that are initiated or exacerbated by antiquated sedation, mechanical ventilation (MV), and mobility practices (Ely, 2017; Morandi, Brummel, & Ely, 2011; Pandharipande, Banerjee, McGrane, & Ely, 2010; Vasilevskis et al., 2010). Given the substantial burden PICS imposes on older adults, their family caregivers, and society, ICU

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

survivorship will likely remain a key challenge of critical care into the 21st century and beyond (Iwashyna, 2010).

Improving the lives of the growing number of older adults who experience critical illness will require not only the consistent application of timely, evidence-based, interprofessional ICU interventions, but also several modifications to the overall critical care environment. To optimize outcomes and reduce disability in this population, ICU providers need to consider how age-related alterations in homeostatic mechanisms affect disease progression, symptom manifestation, and appropriate medication selection (Brummel et al., 2015). An accurate assessment of the critically ill older adults' preadmission health status, treatment preferences, and social support systems is also essential for care and discharge planning purposes. Finally, it is essential that critically ill older adults and their family members are actively engaged and empowered to participate actively throughout their ICU stay.

BACKGROUND AND STATEMENT OF PROBLEM

Currently, the median age of critically ill patients approaches 65 years globally (Flaatten et al., 2017). The proportion of critically ill patients 80 years of age and older is predicted to increase faster than any other ICU cohort (Flaatten et al., 2017). Although critically ill older adults are an extremely heterogeneous group, they share some age-related characteristics and are susceptible to a variety of geriatric syndromes and complications that may influence both ICU treatments and outcomes. In addition to high ICU, hospital, and long-term mortality rates, the 1.4 million older adults who survive critical illness each year in the United States (Wunsch et al., 2010) are at increased risk for substantial physical, functional, and neurocognitive impairment; psychological distress; sleep disturbances; and postdischarge institutional care (Balas, Happ, Yang, Chelluri, & Richmond, 2009; Balas et al., 2011; Barnato et al., 2011; Boumendil et al., 2004; Broslawski, Elkins, & Algus 1995; Brummel et al., 2014; Chelluri et al., 1993; Daubin et al., 2011; de Rooij et al., 2008; Ehlenbach et al., 2010; Esteban et al., 2004; Ford, Thomas, Cook, Whitley, & Peden, 2007; Guerra, Linde-Zwirble, & Wunsch, 2012; Hennessy, Juzwishin, Yergens, Noseworthy, & Doig, 2005; Hopkins & Jackson, 2006; Ip, Leung, Ip, & Mak, 1999; Kaarlola, Tallgren, & Pettile, 2006; Kass, Castriotta, & Makakoff, 1992; Mahul et al., 1991; Montuclard et al., 2000; Pandharipande et al., 2013; Parno, Teres, Lemeshow, Brown, & Avrunin, 1984; Pavoni et al., 2012; Rockwood et al., 1993; Sacanella et al., 2011; Somme et al., 2010; Udekwu, Gurkin, Oller, Lapio, & Bourbina, 2001; Wunsch et al., 2010). Older age is also one of the factors that may lead to physician bias in refusing ICU admission (Joynt et al., 2001; Mick & Ackerman, 2004); the decision to withhold MV, surgery, or dialysis (Hamel et al., 1999); and an increased frequency of do-not-resuscitate orders (Hakim et al., 1996). Despite these findings, most critically ill older adults demonstrate resiliency, report being satisfied with their quality of life (QOL) after discharge, and, if needed, would reaccept ICU care and MV (Guentner et al., 2006; Hennessy et al., 2005; Kleinpell & Ferrans, 2002). Given their knowledge and expertise, nurses will continue to play a key role in facilitating older adults' ability to survive and successfully rehabilitate from a catastrophic illness.

Decades of research demonstrate that chronological age *alone* is not an acceptable or accurate predictor of poor outcomes after critical illness (Devlin et al., 2018; D. Elliott et al., 2014; Milbrandt, Eldadah, Nayfield, Hadley, & Angus, 2010; Needham et al., 2012; Vasilevskis et al., 2010). Factors influencing an older adult's ability to survive a critical illness are multifactorial and include severity of illness, nature and extent of comorbidities, medical diagnosis, MV use, complications, preexisting frailty, malnutrition, and patient preference (Baldwin et al., 2014; de Rooij, Abu-Hanna, Levi, & de Jonge, 2005; Marik, 2006; Wunsch et al., 2010). Other, less well investigated variables include senescence, vasoactive drug use, ageism, decreased social support, and the critical care environment (Ford et al., 2007; Mick & Ackerman, 2004; Tullmann & Dracup, 2000). The onset of new geriatric syndromes for an older hospitalized adult, such as delirium, urinary incontinence, infection, or falls, is also a harbinger of decline that can often be prevented with appropriate and timely ICU nursing interventions (for more information visit https://consultgeri.org/tools/try-this-series). Finally, there is a much greater appreciation for the role ICU symptoms play in critically ill older adults' recovery (Devlin et al., 2018). This chapter presents strategies and rationale for the comprehensive assessment and management of critically ill older adults.

ASSESSMENT OF PROBLEM AND NURSING CARE STRATEGIES

Baseline Assessments

The performance of a comprehensive assessment of a critically ill older adult's preadmission cognitive and functional ability, medication regimen, and social support systems helps nurses identify the multiple risk factors that make older adults susceptible to a variety of life-threatening conditions, complications, and frequently encountered geriatric syndromes. Nurses can use these initial assessments to develop an evidence-based, holistic, and individualized plan of care that meets both the elder's and her/his family's needs and the goals of care throughout hospitalization. This baseline assessment is also useful to other members of the interdisciplinary ICU team as they develop their own profession-specific plans of care.

Preexisting Cognitive Impairment

Several anatomic and physiological changes occur in the aged central nervous system (Table 35.1). When these age-related changes are combined with the stress of acute pathology, multiple comorbidities, and polypharmacy, critically ill older adults are particularly vulnerable to a number of commonly encountered ICU syndromes such as pain, oversedation, and delirium (Balas et al., 2007; Barr et al., 2013; Devlin et al., 2018; McNicoll et al., 2003; Pisani, Murphy, Van Ness, Araujo, & Inouye, 2007). High rates of preexisting cognitive impairment (31%–42%) have been previously reported in older adults admitted to both medical and surgical ICUs (Balas et al., 2007; Pisani, Redlich, McNicoll, Ely, & Inouye, 2003). Unfortunately, this cognitive impairment is often unrecognized by both the older adults' family and healthcare providers (Balas et al., 2007; Pisani et al., 2003). Dementia, a progressive terminal illness, is commonly seen in the ICU setting, with one study finding that nearly one in 10 nursing home residents with advanced cognitive impairment and severe functional impairment had an ICU stay before death (Fulton, Gozalo, Mitchell, Mor, & Teno, 2014).

A recent review highlighted the frequency and burden of newly acquired cognitive impairment and dementia following critical illness (Brummel et al., 2015). Of the studies included in this review that assessed preillness cognitive

TABLE 35.1

Age-Associated Changes and Atypical Presentations by Body System in the Older ICU Patient

System	Age-Associated Changes
Respiratory	**Decrease in:** chest wall compliance, rib mobility, lung size/elasticity, ventilatory response to hypoxia and hypercapnia, strength of respiratory muscles, PaO_2 level, mucociliary clearance, cilia, total lung capacity (minimal), forced vital capacity, forced inspiratory and expiratory volume, peak and maximal expiratory flow rate, tidal volume (slight), diffusing capacity, maximal inspiratory and expiratory pressure **Increase in:** residual volume, closing volume, ventilation/perfusion (VQ) imbalance, chest wall stiffness **Physical assessment findings:** Possible kyphosis and an increased anteroposterior diameter of the chest; on auscultation, a few bibasilar crackles that clear with deep breathing and coughing **Atypical presentations:** Hallmark symptoms of infection (e.g., fever, chills) and pneumonia (e.g., fever, cough, and sputum production) may be absent or not as dramatic. Older patients with sepsis or pneumonia may present with rather vague symptomatology, including acute confusion, tachypnea, and tachycardia.
Gastrointestinal	**Decrease in:** number of mucus-secreting cells, mucosal prostaglandin concentrations, bicarbonate secretion, transit time of feces, pepsin and acid secretion, gastric emptying and thinning of smooth muscle in gastric mucosa, decrease in the number and velocity of peristaltic contractions in esophagus, enteric nervous system neurons, capacity to repair gastric mucosa, calcium absorption, lean muscle mass and strength, daily energy expenditure, intracellular water, number of hepatocytes and overall weight and size of liver (compensatory increase in cell size and proliferation of bile ducts), hepatic blood flow, metabolism of and sensitivity to drugs **Increase in:** body fat, changes to interstitial tissue (predisposing to soft tissue injury and increasing the time and course for mobilization of extracellular water) Atypical presentations: Age may blunt the manifestations of acute abdominal disease. For example, pain may be less severe, fever less pronounced or absent, and signs of peritoneal inflammation such as muscle guarding and rebound tenderness may be diminished or absent.
Genitourinary	**Increase in:** proportion of sclerotic nephrons/glomeruli, functional unit hypertrophy, afferent and efferent arteriole atrophy, collagen in the bladder, benign prostatic hypertrophy (men), hypertrophy of bladder muscle, thickening of the bladder **Decline in:** number of functioning nephrons; glomerular filtration rate; renal tubular cell function and number; renal blood flow and creatinine clearance; ability to conserve sodium and excrete hydrogen ions; ability to excrete salt and water loads, ammonia, and certain drugs in the activity of the renin–angiotensin system and end-organ responsiveness to antidiuretic hormone; tone of sphincters; alterations in estrogen cause further changes in urethral sphincter of women **Atypical presentations:** Signs of dehydration, such as loss of skin turgor, should be considered an unreliable sign in an older adult related to loss of subcutaneous tissue.
Skin	**Decrease in:** surface area between dermis and epidermis, subcutaneous and connective tissue; number of eccrine and sebaceous glands; sebum amount; vascular supply to dermis; epidermal turnover; skin turgor; moisture content, dermal thickness **Physical assessment findings:** thin, fragile, wrinkled, loose or transparent, dry, flaky, rough, and often itchy skin

(*continued*)

TABLE 35.1

Age-Associated Changes and Atypical Presentations by Body System in the Older ICU Patient (*continued*)

System	Age-Associated Changes
Neurological	**Decrease in:** size of brain/brain weight; number of neurons and dendrites; length of dendrite spines; cerebral blood flow; neurotransmitters or their binding sites in dopaminergic function, visual acuity and depth perception (secondary to anatomic and functional changes to the auditory and vestibular apparatus) and proprioception; balance and postural control and tactile and vibratory sensation **Increase in:** neuritic plaques, neurofibrillary bodies, ventricle size, sulci widening **Physical assessment findings:** decreased papillary response to penlight, decrease in near and peripheral vision, loss of visual acuity to dim light, evidence of muscle wasting and atrophy, presentation of a benign essential tumor, slower and less agile movement as compared to younger adults, diminished peripheral reflexes, a decreased vibratory sense in the feet and ankles **Atypical presentations:** Acute mental status changes in older adults often represent an atypical presentation of an acute illness such as an infection, electrolyte imbalance, or a drug toxicity.
Cardiovascular	**Decrease in:** number of myocytes/pacemaker cells, ventricular compliance, rate of relaxation, baroreceptor sensitivity, vein elasticity, compliance of arteries, response of myocardium to catecholamine stimulation, resting heart rate, heart rate with stress, cardiac reserve **Increase in:** myocardial collagen content, amyloid deposits, myocardial irritability, stiffening of the outflow tract and great vessels (causing resistance to vascular emptying), ventricular hypertrophy (slight), pulse wave velocity, time required to complete the cycle of diastolic filling and systolic emptying, vein dilation, valvular stiffening **Physical assessment findings:** On auscultation, many healthy older adults display a fourth heart sound (S_4), an aortic systolic murmur, higher systolic blood pressure with a widening pulse pressure, and a slower resting heart rate. **Atypical presentations:** Symptoms of myocardial infarction and congestive heart failure may be blunted and require the need to monitor for nonspecific and atypical presentations in older adults, including shortness of breath, acute confusion, and syncope. Worsening of clinical status or difficulty with MV liberation should prompt the ICU team to investigate the possibility of myocardial ischemia in this population
Immune/ hematopoietic	Change in T-cell populations, products, and response to stimuli; defects in B-cell function; change in mix of immunoglobulins (i.e., IgM decreases, IGG and IGA increase), and decline in neutrophil function **Atypical presentations:** Older adults' ability to mount a febrile response to infection diminishes with age. Thus, an older adult may be septic without the warning of a fever and instead may exhibit only a decline in mental status.

ICU, intensive care unit; IGA, immunoglobulin A; IGG, immunoglobulin G; IGM, immunoglobulin M; MV, mechanical ventilation; SATS, spontaneous awakening trials; SBTs, spontaneous breathing trials.

Sources: Bailey, K. L., Bonasera, S. J., Wilderdyke, M., Hanisch, B. W., Pavlik, J. A., DeVasure, J., … Wyatt, T. A. (2014). Aging causes a slowing in ciliary beat frequency mediated by PKCε. *American Journal of Physiology. Lung Cellular and Molecular Physiology, 306*(6), L584–L589. doi:10.1152/ajplung.00175.2013. *Evidence Level IV*; Bellmann-Weiler, R., & Weiss, G. (2009). Pitfalls in the diagnosis and therapy of infections in elderly patients—A mini-review. *Gerontology, 55*(3), 241–249. doi:10.1159/000193996. *Evidence Level V*; Bickley, L. S. (2009). *Bates guide to physical examination and history taking* (10th ed.). Philadelphia, PA: Wolters Kluwer Health/Lippincott Willlams & Wilkins. *Evidence Level VI*; Girard, T. D., & Ely, E. W. (2007). Bacteremia and sepsis in older adults. *Clinics in Geriatric Medicine, 23*(3), 633–647, viii. doi:10.1016/j.cger.2007.05.003. *Evidence Level VI*; Menaker, J., & Scalea, T. M. (2010). Geriatric care in the surgical intensive care unit. *Critical Care Medicine, 38*(Suppl. 9), S452–S459. doi:10.1097/CCM.0b013e3181ec5697. *Evidence Level VI*; Miller, C. A. (2009). *Nursing for wellness in older adults* (5th vol.). Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins. *Evidence Level VI*; Pisani, M. A. (2009). Considerations in caring for the critically ill older patient. *Journal of Intensive Care Medicine, 24*(2), 83–95. doi:10.1177/0885066608329942. *Evidence Level V*; Rosenthal, R. A., & Kavic, S. M. (2004). Assessment and management of the geriatric patient. *Critical Care Medicine, 32*(Suppl. 4), S92–S105. doi:10.1097/01.CCM.0000122069.56161.97. *Evidence Level V*; Sheehy, C. M., Perry, P. A., & Cromwell, S. L. (1999). Dehydration: Biological considerations, age-related changes, and risk factors in older adults. *Biological Research for Nursing, 1*(1), 30–37. doi:10.1177/109980049900100105. *Evidence Level V*; Winterbottom, F., Jenkins, M. (2018). The older adult patient. In L. D. Urden, K. M. Stacy, and M. E. Lough (Eds.), *Critical care nursing: Diagnosis and management* (8th ed., pp. 965–980). Maryland Heights, MO: Elsevier; Marik, P. E. (2006). Management of the critically ill geriatric patient. *Critical Care Medicine*, 34(Suppl. 9), S176–S182. doi:10.1097/01.CCM.0000232624.14883.9A. *Evidence Level V*; Marra, A., Ely, E. W., Pandharipande, P. P., & Patel, M. B. (2017). The ABCDEF bundle in critical care. *Critical Care Clinics, 33*(2), 225–243. doi:10.1016/j.ccc.2016.12.005. *Evidence Level V*.

functioning in older adults, newly developed (incident dementia) was present in 12% to 18% of patients who were assessed between 1 year and 8 years after critical illness (Ehlenbach et al., 2010; Guerra et al., 2012; Herridge et al., 2011). Prevalent dementia (i.e., unknown preillness dementia status) was reported in 15% of patients at hospital discharge and in 10% at 1-year follow-up (Sacanella et al., 2011). This review also reported that newly acquired

mild to moderate cognitive impairment was present in 56% of patients—yielding an overall proportion of cognitive impairment plus dementia of 73% of patients 4 years after critical illness (de Rooij et al., 2008).

Given these collective findings, it is recommended that relatives or other caregivers be asked for baseline information about an older adults' memory, executive function (problem-solving, planning, organization of information), and overall cognitive ability before the critical care admission (Kane, Ouslander, & Abrass, 2004; see Chapter 9, Assessing Cognitive Function in the Older Adult). Because knowledge of an older adult's preadmission cognitive ability may also assist in treatment decisions, ICU clinicians should consider familiarizing themselves with dementia screening tools, such as the Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE), specifically designed for proxy administration (Jorm, 1994), and/or the Mini-Cog (Borson, Scanlan, Brush, Vitaliano, & Dokmak, 2000).

Preexisting Functional Ability and Frailty

Assessing preadmission frailty and functional ability is essential when caring for critically ill older adults because multiple studies report them to be important prognostic indicators in this vulnerable population (Baldwin et al., 2014; Daubin et al., 2011; Ferrante et al., 2018; Fronczek et al., 2018; Hamidi et al., 2019; Magnette et al., 2015; Pietiläinen et al., 2018). Moreover, given the high levels of disability in activities of daily living (ADLs), instrumental activities of daily living (IADLs), and mobility older adults experience after a critical illness (Brummel et al., 2015), knowledge of preadmission frailty and functional ability can, hopefully, enhance the discharge planning process. The Katz Index of Activities of Daily Living (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963), Functional Independence Measure (Kidd et al., 1995), Barthel Index (Mahoney & Barthel, 1965), Lawton Index (Lawton & Brody, 1969), and Fried's Frailty Index (Fried et al., 2001) have been previously used with an older critically ill population (see Chapter 10, Assessment of Physical Function in the Older Adult). On admission to the ICU, we further suggest nurses investigate whether the older adult uses glasses, hearing aids, or assistive devices to perform his or her ADLs. Having these assistive devices available to the older adult while he or she is in the ICU is important to enhance communication, cognition, and rehabilitation efforts.

Preadmission Medication Use

Polypharmacy disproportionally affects the critically ill older adult population (Garpestad & Devlin, 2017). In fact, one study noted that older adults take an average of 12 different prescription medications at the time of ICU admission (Bell et al., 2011). Thus, it is essential that a thorough medication history be performed at the time of ICU admission. In addition to the medical record, family members can often provide important information regarding older adults' medication history. Moreover, because adverse drug events account for more than 30% of all hospital admissions and specific drug-related causes are a common reason for entry to the ICU for older adults, pharmacists are ideally suited to lead an assessment of preadmission medication history and aid in the decision to discontinue medications that may increase risk for morbidity and mortality (Budnitz et al., 2005; Jolivot et al., 2014).

Psychosocial Factors and Social Support Systems

Critical illness often renders older adults physically unable to effectively communicate with the healthcare team. The inability to communicate may stem from multiple factors, including physiological instability, tracheal intubation, and/or sedative and narcotic use (Happ, 2000, 2001). Family members or significant others are therefore a crucial source for obtaining important preadmission information such as the older adult's past medical and surgical history, drug and alcohol use, nutritional status, home environment, infectious disease exposure, religious preference, and social support systems. Further, the lack of presence of family or a significant other threatens the nurse's ability to obtain accurate data about the person, which is often needed to make important care management decisions and conduct end-of-life discussions (see Chapter 7, Healthcare Decision-Making).

Physical Assessment of the Critically Ill Older Adult

Although a full discussion of the physiological changes that accompany normal aging is beyond the scope of this chapter, we believe ICU clinicians should appreciate the role they play during the course of a serious or life-threatening illness. These changes affect nearly every body system and may influence important treatment decisions. Moreover, age-related changes often manifest on physical examination and may be responsible for some of the atypical presentations and complications critically ill older adults experience throughout their hospital stay. Table 35.1 presents readers with a summary of these special considerations.

ICU-Acquired Conditions That Disproportionally Affect Critically Ill Older Adults

In 2013, the Society of Critical Care Medicine updated their "Clinical Practice Guidelines for the Management

of Pain, Agitation, and Delirium in Adult Patients in the ICU" (PAD Guidelines; Barr et al., 2013). Version 3 of the PAD guidelines was released in 2018 and included two additional topics particularly relevant to the care of critically ill older adults—immobility and sleep. Both guideline versions highlight the importance, high incidence, and substantial physical, psychological, and cognitive toll various symptoms play during and after critical illness (Devlin et al., 2018). Pain, occurring in more than 70% of ICU patients (Gélinas, 2007; Puntillo, 1990), is one of the most prevalent, distressing, and undertreated physical symptoms experienced by the critically ill. Pain occurs both at rest and with routine clinical activities, such as wound care, tracheal suctioning, and turning (Puntillo et al., 2001). Air hunger, being dependent on health professionals, and not being able to effectively communicate needs cause many ICU patients to feel anxiety, fear, and loneliness. These feelings seem to depend on the ability of ICU providers and family members to be physically "present" with the patient (Baumgarten & Poulsen, 2015). Delirium, occurring in up to 80% of patients requiring MV (Ely et al., 2001a, 2001b), is recognized as a significant prognostic indicator. A recent meta-analysis found delirious patients were six times more likely to experience nosocomial complications, 2.5 times more likely to be discharged to skilled placement, had longer ICU and hospital length of stay (LOS), and spent an average of 7 days longer on MV (Zhang, Pan, & Ni, 2013). Lastly, the ICU-acquired muscle weakness often caused by ICU medications and prolonged bed rest can be present in 25% to 50% of critically ill patients (Denehy, Lanphere, & Needham, 2017; Fan et al., 2014; Needham et al., 2014). The impact of ICU-acquired pain, anxiety, delirium, and weakness extends well beyond hospitalization. ICU pain and anxiety are associated with insufficient sleep (J. Jones, Hoggart, Withey, Donaghue, & Ellis, 1979), posttraumatic stress disorder (Granja et al., 2008; Schelling et al., 1998), chronic pain (Barr et al., 2013), depression (Castillo, Cooke, Macfarlane, & Aitken, 2016), and lower health-related QOL (Schelling et al., 1998) post hospitalization. Patients with ICU delirium and weakness experience substantial functional decline (Balas et al., 2009; Herridge et al., 2003, 2011), elevated mortality risk (Ely et al., 2004; Pisani, Kong, et al., 2009), and severe long-term neurocognitive impairment (Girard et al., 2010; Jackson, Gordon, Hart, Hopkins, & Ely, 2004; Pandharipande et al., 2013; Wolters et al., 2017). Collectively, these findings suggest that ICU-acquired pain, anxiety, delirium, and weakness are precursors to poor short- and long-term outcomes for critically ill older adults.

Evidence-Based ICU Sedation, Mechanical Ventilation, and Mobility Interventions

The PAD (Barr et al., 2013) and Pain, Agitation/sedation, Delirium, Immobility, and Sleep disruption (PADIS) Guidelines (Devlin et al., 2018) recommend a number of strategies to improve the care and outcomes of critically ill adults. These interventions include: (a) the routine monitoring of pain, agitation/sedation, and delirium using valid and reliable tools; (b) maintaining critically ill patients at "light" levels of sedation; (c) using daily spontaneous awakening trials (SATs) or a light "target level" of sedation; and (d) performing early mobilization whenever feasible. Sedation strategies recommend nonbenzodiazepine sedatives (i.e., propofol or dexmedetomidine) versus benzodiazepines (i.e., midazolam orlorazepam). Additional patient benefit accrues when SATs are coordinated with daily MV discontinuation protocols that include spontaneous breathing trials (SBTs; Girard et al., 2008). In well-designed studies, these symptom-focused interventions were associated with reduced ICU and hospital LOS, time spent on MV, tracheostomy placement rates, delirium and coma, functional decline, and risk of death (Balzer et al., 2015; Ely et al., 1996; Girard et al., 2008; Kollef et al., 1998; Kress, Pohlman, O'Connor, & Hall, 2000; Pandharipande et al., 2006, 2007; Pandharipande, Sanders, et al., 2010; Riker et al., 2009; Schweickert et al., 2009; Shehabi et al., 2012; Tanaka et al., 2014).

Despite their known clinical benefit, widespread adoption of the evidence-based interventions contained in the PAD and PADIS guidelines remains poor. Routine monitoring of pain, delirium, and sedation levels during an ICU stay remains inconsistent (Chawla et al., 2014; R. Elliott, McKinley, & Aitken, 2006; D. Elliott et al., 2013; Payen et al., 2007; Spronk, Riekerk, Hofhuis, & Rommes, 2009; van Eijk et al., 2009). Benzodiazepines and other potentially harmful sedative medications continue to be routinely administered (Chawla et al., 2014), elevating patients' risk for delirium and complicating ICU providers' ability to mobilize patients (Pandharipande et al., 2006; Pisani, Murphy, et al., 2009). Patients remain on sedation and MV longer than needed, and resistance remains high on the part of clinicians to maintain patients at a light level of sedation, use a protocolized MV discontinuation approach, and get patients out of bed during their ICU stay (Baggs et al., 1999; Bakhru, McWilliams, Wiebe, Spuhler & Schweickert, 2016; Balas et al., 2013; Berney et al., 2013; Carrothers et al., 2013; Chawla et al., 2014; Connolly, O'Neill, Salisbury & Blackwood, 2016; Dubb et al., 2016; Jolley et al., 2017; Kahn, Brake, & Steinberg, 2007; Luetz et al.,

2014; M. A. Miller, Govindan, Watson, Hyzy, & Iwashyna, 2015; Nydahl et al., 2014). Furthermore, despite the broad consensus that liberalization of visiting hours in the ICU improves the care and experience of patients and families (Davidson et al., 2017), few critical care units are open for family visits 24 hours per day (Garrouste-Orgeas, Vinatier, Tabah, Misset, & Timsit, 2016; Morandi et al., 2017; Ramos, Fumis, de Azevedo, & Schettino, 2014). Clearly, there remains an important and significant gap between the discovery of and the consistent use of proven-effective ICU interventions that can equip ICU providers with the knowledge, skills, and tools necessary to adopt and sustain these interventions in everyday practice.

The ABCDEF Bundle

To facilitate adoption of the PAD and PADIS guidelines into everyday ICU care, an evidence-based, multicomponent, and interprofessional team-management framework, known at the ABCDEF bundle, was developed (Balas et al., 2012, 2013, 2016; Barnes-Daly et al., 2018; Ely, 2017; Marra, 2017; Morandi et al., 2011; Pandharipande, Banerjee, et al., 2010; Vasilevskis et al., 2010). The ABCDEF bundle is described in Table 35.2. Based on dozens of research studies published in high-impact journals (Barr et al., 2013), the ABCDEF bundle elements are intentionally interdependent and specifically designed to improve collaboration among ICU team members, standardize care processes, and break the cycle of oversedation, prolonged MV, and immobility (Vasilevskis et al., 2010). These changes in care come about through daily use of: (a) the assessment tools recommended in the PAD guidelines, (b) both SATs and SBTs, (c) select sedative medications, (d) standardized exercise/mobility activities, and (e) engaging and empowering family members as active participants in ICU care.

The bundle differs from other evidence-based, multicomponent ICU interventions in a number of important ways. First, it is applicable to every ICU patient every day, regardless of MV status or admitting diagnosis (i.e., the patient receives every evidence-based intervention for which she/he is eligible). Second, because it focuses on "symptom" versus "disease" assessment, prevention, and management, it is particularly relevant early in the course of critical illness and is suitable for use in conjunction with other life-sustaining therapies. Finally, the ultimate goal is to produce patients who are more awake, cognitively engaged, and

TABLE 35.2

ABCDEF Bundle Components and Suggested Measurement Tools

Component	Tools
A—Assess, prevent, and manage pain	Numeric Pain Scale, Critical Care Pain Observation Tool (CPOT), Behavioral Pain Scale (BPS)
B—Both spontaneous awakening trials and spontaneous breathing trials	
C—Choice of analgesic and sedative medications	Richmond Agitation and Sedation Scale (RASS), Sedation-Agitation Scale (SAS)
D—Delirium-assess, prevent, and manage	Confusion Assessment Method Intensive Care Unit (CAM-ICU), Intensive Care Delirium Screening Checklist (ICDSC)
E—Early mobility and exercise	
F—Family engagement and empowerment	

Sources: Data from Bergeron, N., Dubois, M. J., Dumont, M., Dial, S., & Skrobik, Y. (2001). Intensive Care Delirium Screening Checklist: Evaluation of a new screening tool. *Intensive Care Medicine, 27*(5), 859–864. doi:10.1007/s001340100909. *Evidence Level IV*; Ely, E. W., Inouye, S. K., Bernard, G. R., Gordon, S., Francis, J., May, L., … Dittus, R. (2001a). Delirium in mechanically ventilated patients: Validity and reliability of the confusion assessment method for the intensive care unit (CAM-ICU). *Journal of the American Medical Association, 286*(21), 2703–2746. doi:10.1001/jama.286.21.2703. *Evidence Level IV*; Ely, E. W., Margolin, R., Francis, J., May, L., Truman, B., Dittus, R., … Inouye S. K. (2001b). Evaluation of delirium in critically ill patients: Validation of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU). *Critical Care Medicine, 29*(7), 1370–1379. doi:10.1097/00003246-200107000-00012. *Evidence Level IV*; Gélinas, C., Fillion, L., Puntillo, K. A., Viens, C., & Fortier, M. (2006). Validation of the critical-care pain observation tool in adult patients. *American Journal of Critical Care, 15*(4), 420–427. doi:10.1037/t33641-000. *Evidence Level IV*; Payen, J., Bru, O., Bosson, J., Lagrasta, A., Novel, E., Deschaux, I., … Jacquot, C. (2001). Assessing pain in critically ill sedated patients by using a behavioral pain scale. *Critical Care Medicine, 29*(12), 2258–2263. doi:10.1097/00003246-200112000-00004. *Evidence Level IV*; Riker, R. R., Picard, J. T., & Fraser, G. L. (1999). Prospective evaluation of the Sedation-Agitation Scale for adult critically ill patients. *Critical Care Medicine, 27*(7), 1325–1329. doi:10.1097/00003246-199907000-00022. *Evidence Level IV*; Sessler, C. N., Gosnell, M. S., Grap, M. J., Brophy, G. M., O'Neal, P. V., Keane, K. A., … Elswick, R. K. (2002). The Richmond Agitation-Sedation Scale: Validity and reliability in adult intensive care unit patients. *American Journal of Respiratory and Critical Care Medicine, 166*(10), 1338–1344. doi:10.1164/rccm.2107138. *Evidence Level IV.*

physically active. This ultimately serves to facilitate patient autonomy; improve the ability to express unmet physical, emotional, and spiritual needs; and empower ICU patients and their families to be active participants in care.

A number of studies and quality improvement (QI) projects have demonstrated the benefits of incorporating earlier versions of the ABCDEF bundle into everyday clinical care. In a single-center, before/after study (Balas et al., 2014), bundle implementation was associated with a 3-day improvement in ventilator-free days. After adjusting for age, sex, severity of illness, comorbidity, and MV status, patients managed with the bundle experienced a near halving of the odds of delirium and increased odds of mobilizing out of bed at least once during an ICU stay. Both ICU and hospital mortality rates were lower in the group treated with the bundle. In a study sponsored by the Centers for Disease Control and Prevention (Klompas et al., 2015), which included 20 ICUs and 5,164 consecutive ventilator days, coordinated use of SATs and SBTs resulted in 37% fewer ventilator-associated events and 65% fewer infection-related ventilator-associated complications. Another single-system, multisite QI project, which included over 6,000 patient days, found a "dose–response" relationship to bundle implementation. After adjusting for age, severity of illness, and MV status, multivariable analysis showed that, for every 10% increase in bundle compliance, patients had 15% higher odds of hospital survival (Barnes-Daly, Phillips, & Ely, 2017). Patients also experienced more days alive and free of delirium and coma with increased bundle compliance. Finally, in a more recent prospective, multicenter, cohort study from a national QI collaborative, involving 68 academic, community, and federal ICUs and over 15,000 patients, complete ABCDEF bundle performance was associated with a lower likelihood of seven outcomes (Pun et al., 2019). These outcomes included hospital death within 7 days, next-day MV, coma, delirium, physical restraint use, ICU readmission, and discharge to a facility other than home. Importantly, there was a consistent dose–response relationship between higher proportional bundle performance and improvements in each of the aforementioned clinical outcomes. In other words, the more components of the ABCDEF bundle patients receive, the more clinical benefit obtained. Given these improvements, the ABCDEF bundle is now considered an ICU best practice.

Other Evidence-Based ICU Interventions and Considerations

Impaired Communication. In addition to the physical barriers to speech imposed by MV, older adults are at greater risk for impaired communication than their younger counterparts because of preexisting vision and hearing impairments and cognitive or language impairments (Bartlett, Blais, Tamblyn, Clermont, & MacGibbon, 2008; Happ et al., 2015; Happ, Tate, & Garrett, 2006; Patak et al., 2009). Accurate interpretation of patient messages, including pain and symptom descriptions, may be difficult and frustrating for patients and care providers. Partnering with speech–language pathologists on tools and techniques to facilitate patient comprehension and communication can improve this process (Altschuler & Happ, 2019; Happ et al., 2006, 2010; Radtke, Baumann, Garrett, & Happ, 2011).

A multilevel communication intervention, composed of nurse training, algorithm-guided assessment and communication tool selection, and the provision of communication tools to the ICU, demonstrated improved frequency of communication, successful communication about pain and other symptoms, and less patient-reported difficulty with communication (Happ et al., 2014). Age and delirium status affected communication performance and content. When patients tested positive for delirium, communication exchanges with their nurses were less successful. Delirium was also associated with the identification of fewer patient symptoms and more complaints of dry mouth (Tate et al., 2013). Older age was associated with more symptom complaints of pain, drowsiness, and feeling cold.

Family Engagement. Interactions with family members can be therapeutic for critically ill patients (Black, Boore, & Parahoo, 2011) and help them to make sense of the experience (Davidson, Daly, Agan, Brady, & Higgins, 2010). They may also ameliorate the stress and trauma experienced by patients and family during and after ICU hospitalization (Bergbom & Askwall, 2000; C. Jones et al., 2010). Family members support patients' psychological well-being by providing reassurance, hope, information, a sense of normality, and distraction from the ICU environment and illness experience (Black et al., 2011; Happ, Swigart, Tate, Hoffman, & Arnold, 2007b; Karlsson, Forsberg, & Bergbom, 2010; Morse & Pooler, 2002; Riggio, Singer, Hartman, & Sneider, 1982; Williams, 2005). They also provide reorientation, detect signs of delirium, and serve as proxy or shared decision-makers (Black et al., 2011; Happ, 2000; Happ et al., 2007a, 2007b; White, Braddock, Bereknyei, & Curtis, 2007; White et al., 2012; Williams, 2005). Family presence has also been associated with significantly greater tolerance of MV weaning trials (Happ et al., 2007a). Family interventions in the ICU have focused on providing basic information about the environment, patient condition and treatment (Azoulay et al., 2002; Black et al., 2011; Medland & Ferrans, 1998), advice and coaching on family presence or caregiving (Black et al., 2011; Daly et al., 2010; Davidson et al., 2010), and decision-making support (Curtis et al., 2011; Daly et al., 2010; Lautrette, Ciroldi,

Ksibi, & Azoulay, 2006; White et al., 2007) with mixed results on patient–family anxiety, depression, and posttraumatic stress disorder (PTSD). For example, an information leaflet improved family members' comprehension of the ICU patient's diagnosis and prognosis but did not affect anxiety or depression (Azoulay et al., 2002).

Black et al. (2011) tested the effect of a family psychological support intervention facilitated by nurses on patient delirium and psychological recovery. Intervention group patients showed less delirium than usual care (29%–77%) and had significantly lower Sickness Impact Profile scores at 4, 8, and 12 weeks after the intervention (*p* lower than .001). The use of diaries written by health providers and family visitors to help patients to make sense of the memories and ICU experience following discharge were associated with a decrease in new onset of PTSD in patients (C. Jones et al., 2010); however, the impact on family caregivers' anxiety has been equivocal (Kloos & Daly, 2008; Ullman et al., 2015). To date, there is insufficient evidence from randomized controlled trials of the benefits or harms of patient diaries for patients and their caregivers (Ullman et al., 2015). Davidson tested the feasibility and acceptability of a family visiting kit and supportive coaching intervention with family members of mechanically ventilated patients in an ICU (Davidson et al., 2010). Families found the kit materials (workbook, cognitive recovery tools, personal care items, and information on available services) helpful. The toolkit did not, however, meet their communication needs; the effect on patient or family outcomes was not tested.

Family members are commonly required to act as decisional surrogates for older adult patients in the ICU. This role is known to confer emotional stress, burden, and psychological sequelae (depression, anxiety, PTSD) for some family caregivers, particularly for those family members involved in decisions to limit or withdraw life-sustaining treatments (Gries et al., 2010; McAdam, Fontaine, White, Dracup, & Puntillo, 2012). Nurses play a crucial role in integrating palliative care in the ICU and improving end-of-life care, communication, and support for critically ill older adults and their family members (Krimshtein et al., 2011; Nelson et al., 2010; Seaman, Arnold, Scheunemann, & White, 2017; Seaman, Barnato, Sereika, Happ, & Erlen, 2017; White et al., 2012). In a study of 1,440 adult ICU patients with 2 or more days of MV, only 9.7% of patients at high risk for dying received palliative care consultations in ICU (Seaman, Barnato, et al., 2017). Older age and longer ICU stay were associated with higher likelihood of palliative care consultation services. Skills-training programs and resources for nurses include the End-of-Life Nursing Education Consortium (ELNEC-Critical Care and ELNEC Geriatric), Improving Palliative Care in the ICU (IPAL-ICU), and the American Association of Critical-Care Nurses E-learning program on Palliative and End-of-Life Care.

Given the increasing evidence of the significant impact that critical illness has on family members of the critically ill, guidelines for family-centered care in the ICU have been recently published (Davidson et al., 2017). These guidelines are particularly relevant for family members of critically ill older adults who are often left caring for a loved one with substantial physical and cognitive impairment and are aging themselves, given the level of post-ICU impairment (Serrano et al., 2019). These guidelines offer a number of important recommendations, including the need for open or flexible family presence at the ICU bedside and family education programs, offering family members the option of participating in interdisciplinary team rounds and being present during resuscitation efforts, and the use of specific consultations (e.g., palliative care, ethics) and ICU team members (e.g., social workers, psychologists).

Other Interprofessional Interventions. There are a number of other important evidence-based ICU interventions nurses should consider using when caring for the critically ill older adult (Box 35.1). It is important to note that successful implementation of these interventions requires

BOX 35.1

Evidence-Based Intensive Care Unit Interventions to Consider When Caring for Critically Ill Older Adults

Use of noninvasive positive pressure ventilation whenever feasible
Ventilator-Associated Pneumonia protocols
Aspiration precautions
Elevation of head of bed (30°–45°)
Daily sedation interruption and assessment of readiness to extubate
Use of subglottic secretion drainage
Avoidance of scheduled ventilator circuit changes
Deep breathing and coughing to aid movement and expand lungs
Oral care protocols
Careful monitoring of hemodynamic and fluid status (e.g., maintain adequate stroke volume; avoid overhydration)
Avoid physical restraint use
Mobilize early and often
Diagnostic tests to identify infectious agent
Timely and appropriate antibiotic administration
Eliminate infectious sources, remove invasive lines and tubes as early as possible

(*continued*)

BOX 35.1 (*continued*)

Early fluid resuscitation and vasopressor support as needed in patients with sepsis
Glycemic control and enteral feedings
Deep vein thromboses prophylaxis
Stress ulcer prevention with low-molecular-weight heparin and proton pump inhibitors or H2 blockers if indicated
Careful monitoring for transition from sepsis to severe sepsis to septic shock
Daily medication profile review
Discontinue redundant drugs
Administer all drugs at their lowest effective dose
Avoid polypharmacy and ensure that all medications are dosed appropriately
Consider medication withdrawal effects (particularly benzodiazepines)
Avoid anticholinergic and benzodiazepine medications
Avoid use of nonbenzodiazepine sleep aids when possible
Avoid metoclopramide when possible
Reassess need for continued antibiotic therapy
Monitor diuretic therapy for signs of dehydration and/or electrolyte abnormalities
Every time it is possible, ask the patient and his or her family about his/her care wishes
Assess communication function and apply assistive communication techniques
Mobilize geriatric expertise, if possible, especially during the discharge process
Provide vaccinations on recovery

Sources: Data from Barr, J., Fraser, G. L., Puntillo, K., Ely, E. W., Gélinas, C., Dasta, J. F., … Jaeschke, R.; American College of Critical Care Medicine. (2013). Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit. *Critical Care Medicine, 41*(1), 263–306. doi:10.1097/CCM.0b013e3182783b72. *Evidence Level 1*; Devlin, J. W., Skrobik, Y., Gélinas, C., Needham, D. M., Slooter, A. J. C., Pandharipande, P. P., … Joffe, A. M. (2018). Clinical practice guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU. *Critical Care Medicine, 46*(9), e825–e873. doi:10.1097/CCM.0000000000003259. *Evidence Level I*; Garpestad, E., & Devlin, J. W. (2017). Polypharmacy and delirium in critically ill older adults: Recognition and prevention. *Clinics in Geriatric Medicine, 33*(2), 189–203. doi:10.1016/j.cger.2017.01.002. *Evidence Level V*; Guidet, B., Vallet, H., Boddaert, J., de Lange, D. W., Morandi, A., Leblanc, G., … Flaatten, H. (2018). Caring for the critically ill patients over 80: A narrative review. *Annals of Intensive Care, 8*(1), 114. doi:10.1186/s13613-018-0458-7. *Evidence Level V*; Kirksey, K. M., McGlory, G., & Sefcik, E. F. (2015). Pain assessment and management in critically ill older adults. *Critical Care Nursing Quarterly, 38*(3), 234–244. doi:10.1097/CNQ.0000000000000071. *Evidence Level V*; Manning, J., & Cefalu, J. E. (2017). Infection in the critically ill older adult. *Critical Care Nursing Clinics of North America, 29*(1), 25–35. doi:10:1016/j.cnc.2016.09.008. *Evidence Level VI*; Happ, M. B., Garrett, K. L., Tate, J. A., DiVirgilio, D., Houze, M. P., Demirci, J. R., ... Sereika, S. M. (2014). *Effect of a multi-level intervention on nurse–patient communication in the intensive care unit: Results of the SPEACS trial. Heart & Lung: Journal of Critical Care, 43*(2), 89–98. doi:10.1016/j.hrtlng.2013.11.010. *Evidence Level III.* Hellyer, T. P., Ewan, V., Wilson, P., & Simpson, A. J. (2016). The Intensive Care Society recommended bundle of interventions for the prevention of ventilator-associated pneumonia. *Journal of the Intensive Care Society, 17*(3), 238–243.

CASE STUDY 35.1

Jack Robbins was a 69-year-old man with a previous medical history of chronic obstructive pulmonary disease, hypertension, hearing impairment, and tobacco abuse (40 pack-year history, current smoker). He presents to the emergency department with complaints of dyspnea, productive sputum, and persistent cough that had worsened over the last several days. He reported taking his short-acting bronchodilator and antihypertensive medications as prescribed and denied any recent travel or sick contacts. On exam, Mr. Robbins was found to be tachypneic, tachycardic, and hypertensive, as well as hypoxic and hypercapnic. A CT angiography of the chest was performed and showed no evidence of pneumonia or pulmonary embolism. Mr. Robbins was diagnosed with acute respiratory failure secondary to chronic obstructive pulmonary disorder (COPD) exacerbation and admitted to the ICU for evaluation and treatment.

Several hours after his admission to the ICU, Mr. Robbins' respiratory status declined, and he developed altered mental status and somnolence. He was intubated, placed on MV, and started on midazolam and fentanyl for sedation and pain control, respectively. On day 3 of hospitalization, Mr. Robbins was noted to be delirious, as evidenced by positive CAM-ICU testing as well as agitation despite sedation.

To address Mr. Robbins' delirium, a treatment plan was developed using the ABCDEF bundle and included the following interventions:

Assess, Prevent, and Manage Pain (A):

Given his agitation, Mr. Robbins' nurse determined that an assessment of his current pain level was warranted. The nurse decided to use a 0 to 10 visually enlarged horizontal Numeric Rating Scale (NRS) to perform this assessment. After his wrist restraints were released, Mr. Robbins was able to indicate (via pointing) that his current pain level was a three. Because he

(*continued*)

CASE STUDY 35.1 (*continued*)

was now physical restraint free, he was also able to communicate to his nurse by pointing to message icons on a communication board that the pain was mainly in his throat (likely from the endotracheal tube) and back. Importantly, he also wrote that he felt as though he was "laying on something". Mr. Robbins' nurse assisted him with turning to his side and discovered he was lying on blood pressure cuff tubing and that this was causing an indentation and redness. She removed the blood pressure cuff tubing and assisted him in finding a comfortable position. The nurse instructed Mr. Robbins that he still needed the ventilator to help him breathe and that it was very important for him not to remove the endotracheal tube by himself because this could cause significant problems for him. She asked him if he understood this, and he nodded his head in agreement. She then asked him if he would like his physical restraints removed, and he again indicated yes. The nurse provided Mr. Robbins his call bell, pen, pencil, and a set of picture-message communication boards and asked him if he would like more pain medicine. Mr. Robbins, who now had a Richmond Agitation and Sedation Scale (RASS) score of 0, said he was "OK" for now and did not need the additional medicine. Frequent pain assessments continued throughout his ICU stay.

Both Spontaneous Awakening Trials (SATs) and Spontaneous Breathing Trials (SBTs) (B):

Each morning, nurses performed a SAT safety screen to determine whether Mr. Robbins was able to have his continuous sedation interrupted. Mr. Robbins failed the SAT on days 2, 3, and 4 of his hospital course owing to respirations lower than 35/min for over 5 minutes. On day 5, he passed the SAT and immediately had an SBT safety screen performed by the respiratory therapist. On day 6 of hospitalization, Mr. Robbins passed the SBT safety screen but failed his SBT because of signs of respiratory distress. Mr. Robbins passed his SBT on day 7 and was extubated that day.

Choice of Analgesia/Sedation (C):

On day 2 of hospitalization, the nursing staff advocated a change from the use of midazolam to that of a nonbenzodiazepine for sedation. Mr. Robbins was therefore transitioned to a continuous infusion of propofol, and his fentanyl infusion was changed to as needed bolus dosing.

Assess, Prevent, and Manage Delirium (D):

Throughout Mr. Robbins' hospitalization, the nursing staff routinely assessed him for signs of delirium using the CAM-ICU assessment. The RASS score was documented every 4 hours along with vital signs, and sedation was titrated to maintain a RASS score of –1 to +1. The nursing staff reported the CAM-ICU and RASS score findings to the treatment team during daily rounds to aid in the formulation of Mr. Robbins' treatment plan. As described earlier, Mr. Robbins was also transitioned off all benzodiazepines owing to their effect of the development of delirium. The nurses also provided frequent reorientation to Mr. Robbins and ensured his hearing aids were worn and functioning properly during his hospitalization. Lastly, the nursing staff advocated the prescription of a nicotine patch to prevent agitation due to nicotine withdrawal. ICU pharmacists ensured all medications Mr. Robbins received were appropriate and dosed with geriatric considerations in mind.

Early Mobility (E):

Nurses caring for Mr. Robbins were responsible for ensuring that he was physiologically stable enough to engage in mobility activities by performing daily early mobility safety screens. Once these screens were passed (Day 3), physical therapy and nursing staff collaborated and assisted Mr. Robbins with progressive activities that included sitting on the edge of the bed, to transferring to chair, and then ultimately walking him. The nurses also ensured that Mr. Robbins assisted with frequent turning to prevent skin breakdown.

Family Engagement and Empowerment (F):

Throughout Mr. Robbins' admission to the ICU, his wife and two daughters were frequently at the bedside. On admission, they provided the care team with information regarding the patient's cognitive and functional status prior to his illness, as well as his medical and surgical history, including medications. The patient's family was encouraged to participate in Mr. Robbins' care, including joining daily bedside interdisciplinary rounds and helping provide reorientation and calming measures whenever Mr. Robbins became agitated. The nurses called Mr. Robbins' wife at mutually agreed upon times whenever she was unable to be at the bedside to provide her with updates on her husband's progress. On day 9 of hospitalization, Mr. Robbins had clinically improved enough for transfer to the medical–surgical floor. The ICU nurse

(*continued*)

CASE STUDY 35.1 (*continued*)

ensured that family information was communicated to the floor nurse so that Mr. Robbins' family could remain involved in his care after transfer from the ICU.

Once Mr. Robbins was transferred to the medical–surgical floor, the nurses continued to implement the ABCDEF bundle as applicable, including minimizing sedating medications and promoting mobility. The patient and his family were highly encouraged to participate in the discharge planning process, including working with the social work team to choose a homecare agency to provide postdischarge care for Mr. Robbins. The team ensured that Mr. Robbins' family understood the discharge plan fully, including the patient's medication schedule and when to call his provider or return to the emergency department. Mr. Robbins was discharged to home on day 12 of hospitalization and showed no signs of PICS at 6-month follow-up with his primary care provider.

effective interdisciplinary communication, collaboration, and teamwork. Evidence implementation will also require significant leadership buy-in and support.

SUMMARY

Nurses in the acute care setting must recognize and respond to the many factors that influence a critically ill older adult's ability to survive and rehabilitate from a catastrophic illness. In order to identify some of these risk factors, it is essential that the nurse perform a comprehensive assessment of each older adult's preadmission health status, functional and cognitive ability, and social support systems. It is equally important that the nurse understand the implications of common aging changes, comorbidities, and acute pathology that interacts with and heightens the risk for adverse and often preventable medical outcomes. The application of evidence-based interventions like the ABCDEF bundle aimed at restoring physiological stability, preventing complications, maintaining comfort and safety, preserving preillness functional and cognitive ability, and enhancing overall QOL are crucial components of caring for this extremely vulnerable population.

NURSING STANDARD OF PRACTICE

Protocol 35.1: Comprehensive Assessment and Management of the Critically Ill

I. GOAL

To restore physiological stability, prevent complications, maintain comfort and safety, and preserve preillness functional ability, cognitive ability, and quality of life (QOL) in older adults admitted to critical care units

II. OVERVIEW

Caring for an older adult who is experiencing a serious or life-threatening illness often poses significant challenges for critical care nurses. Although older adults are an extremely heterogeneous group, they share some age-related characteristics that leave them susceptible to a variety of geriatric syndromes and diseases. This vulnerability may influence both their ICU utilization rates and outcomes. Critical care nurses caring for this population must not only recognize the importance of performing ongoing, comprehensive physical, functional, and psychosocial assessments tailored to the older ICU patient, but also must be able to identify and implement evidence-based interventions designed to improve the care of this extremely vulnerable population.

III. BACKGROUND

A. Definition

A critically ill older adult is a person, aged 65 years or older, who is currently experiencing, or at risk for, some form of physiological instability or alteration warranting urgent or emergent, advanced, nursing/medical interventions and monitoring.

B. Etiology/epidemiology

1. More than one half (55.8%) of all ICU days are incurred by patients older than 65 years (Angus et al., 2006).

(*continued*)

Protocol 35.1: Comprehensive Assessment and Management of the Critically Ill (*continued*)

2. Older adults are living longer, are more racially and ethnically diverse, often have multiple chronic conditions, and more than one quarter report difficulty performing one or more ADL. These factors may affect both the course and outcome of critical illness.
3. Once hospitalized for a life-threatening illness, older adults often:
   a. Experience high ICU, hospital, and long-term crude mortality rates and are at risk for deterioration in functional ability and postdischarge institutional care (Balas et al., 2009, 2011; Brummel et al., 2014; de Rooij et al., 2008; Esteban et al., 2004; Ford et al., 2007; Hennessy et al., 2005; Hopkins & Jackson, 2006; Kaarlola et al., 2006; Pandharipande et al., 2013; Wunsch et al., 2010)
   b. Older age is also a factor that may lead to:
      i. Physician bias in refusing ICU admission (Joynt et al., 2001; Mick & Ackerman, 2004)
      ii. The decision to withhold MV, surgery, or dialysis (Hamel et al., 1999)
      iii. An increased likelihood of an established resuscitation directive (Hakim et al., 1996)
   c. Most critically ill older adults:
      i. Demonstrate resiliency
      ii. Report being satisfied with their postdischarge QOL
      iii. Would reaccept ICU care and MV if needed (Guentner et al., 2006; Hennessy et al., 2005; Kleinpell & Ferrans, 2002)
   d. Chronological age *alone* is not an acceptable, or accurate, predictor of poor outcomes after critical illness (D. Elliott et al., 2014; Milbrandt et al., 2010; Nagappan & Parkin, 2003).
   e. Factors that may influence an older adult's ability to survive a catastrophic illness include (de Rooij et al., 2005; Ford et al., 2007; Marik, 2006; Mick & Ackerman, 2004; Wunsch et al., 2010):
      i. Severity of illness
      ii. Nature and extent of comorbidities
      iii. Diagnosis, reason for/duration of mechanical ventilation
      iv. Complications
      v. Others
         a. Prehospitalization functional ability
         b. Vasoactive drug use
         c. Preexisting cognitive impairment
         d. Senescence
         e. Ageism
         f. Decreased social support
         g. The critical care environment
         h. Patient preference
   f. Dementia is a common development in older adults after admission to ICU for critical illness.
      i. Newly developed (incident) dementia is present in 12% to 18% of patients at 1 year to 8 years post critical illness (Brummel et al., 2014; Ehlenbach et al., 2010; Guerra et al., 2012; Herridge et al., 2011).
      ii. Prevalent (unknown preillness status) dementia is reported in 15% of patients post discharge, and in 10% of patients at 1 year follow-up (Sacanella et al., 2011).
      iii. Newly acquired mild or moderate cognitive impairment is reported in 56% of patients at 4 years post critical illness (de Rooji et al., 2008).

IV. PARAMETERS OF ASSESSMENT

A. On admission to the ICU, the nurse should ask relatives or other caregivers for baseline information about the older adults'
   1. Memory, executive function (e.g., fine motor coordination, planning, organization of information, etc.), and overall cognitive ability (Kane et al., 2004)
      a. Behavior on a typical day, how the patient interacts with others; his or her responsiveness to stimuli, how able he or she is to communicate (reading level, writing, and speech); and his or her memory, orientation, and perceptual patterns before the illness (Milisen & DeGeest, 2001).

(*continued*)

Protocol 35.1: Comprehensive Assessment and Management of the Critically Ill (*continued*)

2. Medication history to assess for potential withdrawal syndromes and adverse drug events (Broyles, Colbert, Tate, Swigart, & Happ, 2008; Bunditz et al., 2006).
3. Preadmission functional ability, frailty, and nutritional status—limited preadmission functional ability, frailty, and poor nutritional status are associated with many negative outcomes for critically ill older adults (Fronczek et al., 2018; Hamidi et al., 2019). Therefore, the nurse should assess the following:
   a. Did the elder suffer any limitations in the ability to perform his or her ADL preadmission? If so, what were these limitations?
   b. Does the elder use any assistive devices to perform ADL? If so, what type?
   c. Where did the patient live before admission? Did he or she live alone or with others? What was the elder's physical environment like (i.e., house, apartment, stairs, multiple levels, etc.)?
   d. What was the older adult's nutritional status like before admission? Does he or she have enough money to buy food? Does he or she need assistance with making meals/obtaining food? Does he or she have any particular food restrictions/preferences? Was he or she using supplements/vitamins on a regular basis? Does he or she have any signs of malnutrition, including recent weight loss/gain, muscle wasting, hair loss, skin breakdown?
4. Psychosocial factors—Critical illness can render older adults unable to communicate effectively with the healthcare team, often related to physiological instability, technology that leaves them voiceless, and sedative and narcotic use (Happ, 2000, 2001). Family members are therefore often a crucial source for obtaining important preadmission information.
   a. What is the elder's past medical, surgical, and psychiatric history? How did the elder communicate prior to the critical illness? What medication was the older adult taking before coming to the ICU? Does the elder use illicit drugs, tobacco, or alcohol regularly? Does he or she have a history of falls, physical abuse, or confusion?
   b. What is the older adult's marital status? Who is the patient's significant other? Will this person be the one responsible for making decisions for the elder if he or she is unable to do so? Does the elder have an advance directive for healthcare? Is the elder a primary caregiver to an aging spouse, child, grandchild, or other person?
   c. How would the elder describe his or her ethnicity? Does he or she practice a particular religion or have spiritual needs that should be addressed? What was his or her QOL like before becoming ill?

B. During ICU stay—There are many anatomic/physiological changes that occur with aging (see Table 35.1). The interaction of these changes with the acute pathology of a critical illness, comorbidities, and the ICU environment not only leads to atypical presentation of some of the most commonly encountered ICU diagnoses, but may also elevate the older adults' risk for complications. The older adult must be systematically assessed for the following:
   1. ICU/Environmental factors—Deconditioning, poor oral hygiene, sleep deprivation, pain, immobility, nutritional status, MV, hemodynamic monitoring devices, polypharmacy, high-risk medications (e.g., narcotics, sedatives, hypnotics, nephrotoxins, vasopressors), lack of assistive devices (e.g., glasses, hearing aids, dentures), noise, tubes that bypass the oropharyngeal airway, poorly regulated glucose control, Foley catheter use, stress, invasive procedures, shear/friction, intravenous catheters
   2. Atypical presentations of illness are commonly seen in older adults experiencing the following:
      a. Myocardial infarction
      b. Acute abdomen
      c. Systemic infection
      d. Hypoxia

V. NURSING CARE STRATEGIES

A. Preadmission: Based on the individual's preadmission assessment findings, the nurse should consider:
   1. Obtaining appropriate consults (i.e., dietitian, physical/occupational/speech therapist)
   2. Implementing safety precautions
   3. Using pressure-relieving devices

(*continued*)

Protocol 35.1: Comprehensive Assessment and Management of the Critically Ill (*continued*)

4. Organizing family meetings
5. Providing the older adult with a consistent primary nurse
6. Screening for risk factors placing the patient at increased likelihood of developing PICS
   a. Preexisting risk factors: Senescence, comorbid illnesses, disease pathology
   b. ICU syndromes/conditions: Pain, delirium, and oversedation

B. During ICU admission, the nurse should attempt to:
1. Continue to screen for ICU conditions using appropriate tools such as the RASS, CAM-ICU, and Intensive Care Delirium Screening Checklist (ICDSC; Bergeron, Dubois, Dumont, Dial, & Skrobik, 2001; Ely et al., 2001a, 2001b; Riker, Picard, & Frasier, 1999; Sessler et al., 2002).
2. Prevent development of ICU conditions by implementing ABCDEF bundle (see Table 35.2).
   a. Assess, prevent, and manage pain using verified pain scale such as Critical Care Pain Observation Tool (CPOT) or Behavioral Pain Scale (BPS; Gélinas, Fillion, Puntillo, Viens, & Fortier, 2006; Payen et al., 2001).
   b. Coordinate SAT and SBT to assess need for sedation and ventilation concurrently.
   c. Ensure choices of analgesic and sedative medications are appropriate for the patient condition.
   d. Assess, prevent, and manage delirium.
   e. Encourage early mobility and exercise.
   f. Increase family engagement and empowerment.
3. Foster patient communication strategies
   a. Consider use of algorithm-guided assessment and communication tool selection (Happ et al., 2014)
   b. Consider consulting speech therapist to facilitate communication (Happ et al., 2010; Altschuler & Happ, 2019)
4. Consider other appropriate interventions (see Box 35.1)

VI. EVALUATION/EXPECTED OUTCOMES

A. Patient
1. Preadmission functional ability will be maintained/optimized.
2. ICU syndromes such as pain, anxiety, immobility, and delirium will be minimized.
3. Communication between the patient, family, and the healthcare team will be improved.

B. Provider
1. Employ consistent and accurate documentation of assessment relevant to the older ICU patient.
2. Provide consistent, accurate, and timely care in response to deviations identified through ongoing monitoring and assessment of the older ICU patient.
3. Provide patient/caregiver with information and teaching related to his or her illness as well as news of transfer of care and/or discharge.

C. Institution—include QA/QI
1. Evaluate staff competence in the assessment of older critically ill patients.
2. Use unit-specific, hospital-specific, and national standards of care to evaluate existing practice.
3. Identify areas for improvement, and work collaboratively across disciplines to develop strategies for improving critical care to older adults.

VII. RELEVANT PRACTICE GUIDELINES

Barr, J., Fraser, G. L., Puntillo, K., Ely, E. W., Gélinas, C., Dasta, J. F., … Jaeschke, R.; American College of Critical Care Medicine. (2013). Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit. *Critical Care Medicine, 41*(1), 263–306. doi:10.1097/CCM.0b013e3182783b72. *Evidence Level VI.*
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(*continued*)

Protocol 35.1: Comprehensive Assessment and Management of the Critically Ill (*continued*)

ABBREVIATIONS

ADL	Activities of daily living
ICU	Intensive care unit
MV	Mechanical ventilation
PICS	Post-intensive care syndrome
QA	Quality assurance
QI	Quality improvement
QOL	Quality of life
SAT	Spontaneous awakening trial
SBT	Spontaneous breathing trial

NOTE

This chapter was adapted from the American Association of Colleges of Nursing "Preparing Nursing Students to Care for Older Adults: Enhancing Gerontology in Senior-Level Undergraduate Courses" curriculum module, Assessment and Management of Older Adults With Complex Illness in the Critical Care Unit, prepared by Michele C. Balas, Colleen M. Casey, and Mary Beth Happ.

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RESOURCES

American Association of Critical Care Nurses E-learning Program on Palliative and End of Life Care.
https://www.aacn.org/clinical-resources/palliative-end-of-life

End of Life Nursing Education Consortium (ELNEC-Critical Care and ELNEC Geriatric)
http://www.aacn.nche.edu/elnec/about/critical-care and
http://www.aacn.nche.edu/elnec/about/geriatric

GeroNurseOnline.org
http://www.geronurse-online.org/

Hartford Institute for Geriatric Nursing
https://consultgeri.org/

Improving Palliative Care in the ICU (IPAL-ICU)
https://www.capc.org/ipal/ipal-icu

The Richmond Agitation and Sedation Scale (RASS) and the Confusion Assessment Method-ICU (CAM-ICU) training manual includes information for administering both the RASS and the CAM-ICU.
http://www.icudelirium.org/docs/CAM_ICU_training.pdf

The SPEACS-2 communication training and toolkit
http://nucleus.con.ohio-state.edu/media/speacs2/speacs.htm

Topics relevant to this chapter include:

Falls
Urinary incontinence
Abrupt change in mental status
Atypical presentation
Delirium
Pain
Medications
Other topics relevant to the care of the older adult are also available through this website.

Topics relevant to this chapter include:

Brief Evaluation of Executive Dysfunction: An Essential Refinement in the Assessment of Cognitive Impairment
Decision-Making and Dementia
Recognition of Dementia in the Hospitalized Older Adult
Beers' Criteria for Potentially Inappropriate Medication Use in the Elderly
Assessing Pain in Older Adults
Katz Index of Independence in Activities of Daily Living

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Fluid Overload: Identifying and Managing Heart Failure Patients at Risk for Hospital Readmission*

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36

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe the older adult with heart failure (HF) who is at risk for hospital readmission.
2. Conduct a comprehensive cardiac history.
3. Identify three physical findings that may be associated with fluid overload in the older adult patient with HF.
4. Name three key symptoms associated with fluid overload in the older adult patient with HF.
5. Define cardiovascular stability in relation to the five key indicators.
6. Plan monitoring strategies to reduce fluid overload in the older adult with HF.

OVERVIEW

Heart failure (HF) is the most common cause of hospital admission in the older adult, increasing substantially after age 60 and accounting for 1 million hospitalizations annually in the United States (Benjamin et al., 2017; Centers for Disease Control and Prevention [CDC], 2019; Schocken et al., 2008; Yancy et al., 2013). Older adults with HF are at high risk for readmission with 30-day readmission rates of approximately 25%, 50% by 6 months, and 67.4% in 12 months (Benjamin et al., 2017; Dharmarajan et al., 2015). The evidence-based literature demonstrates that as many as half of these admissions are readmissions and are preventable (Feltner et al., 2014; Ziaeian & Fonarow, 2016; Zsilinszka et al., 2017). The epidemic in HF prevalence is commensurate with an aging population and has stimulated a focus of research to identify those patients at high risk for hospitalization and readmission. Early identification of patients at risk for rehospitalization during the hospital stay provides opportunity for interventions to impact the readmission rate. Symptoms of HF compel patients to seek medical aid; however, evidence to date has shown that HF patients postpone seeking medical assistance 2 hours to 14 days before recognition of these changes as harmful to bodily functioning (Evangelista, Dracup, & Doering, 2000; Jurgens, Hoke, Byrnes, & Riegel, 2009; Sethares, Chin, & Jurgens, 2015; Sethares, Sosa, Fisher, & Riegel, 2014). The delay causes further deterioration in cardiac status, requiring acute hospitalization. This chapter presents the complex nature and pathophysiology of HF symptoms, along with nursing management strategies to reduce hospital readmission rates. A detailed protocol for nursing practice of the aging population is presented, highlighting the nursing assessment and management of HF.

BACKGROUND AND STATEMENT OF PROBLEM

HF is a public health problem affecting an estimated 5.8 million Americans yearly (CDC, 2019). Cardiovascular disease (CVD), which includes hypertension (HTN),

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

HF, valvular heart disease, and arrhythmias, along with the atherosclerotic disease that causes coronary heart disease (CHD), stroke, and peripheral vascular disease (PVD), is the major contributor to mortality and comorbidity in older adults. CVD accounted for 840,678 deaths in the United States in 2016, approximately one of every three deaths. In adults aged 75 to 85 years, it accounts for 40% of all deaths, and 48% of all deaths in those 85 years and older (Benjamin et al., 2017; Lloyd-Jones et al., 2010). Acute or chronic HF is the leading cause of hospital admission in patients older than 65 years, and readmission rates to acute care facilities, which averaged 17.2% nationally in 1996, increased to 23.6% in 2010, and are currently at 25% (Dharmarajan et al., 2013; Fleg, 2018; Gupta et al., 2018). Risk of readmission has been shown to be four times higher in older adults aged 80 years and older, higher in ethnicities other than Whites, and higher with lower economic status (Mirkin, Enomoto, Caputo, & Hollenbeak, 2017). In addition, there is evidence to show that risk factors such as noncardiovascular comorbidities, poor physical condition, history of admission, and failure to use evidence-based medication are more strongly associated with 90-day readmission or death than standard risks in patients with HF (Saito, Negishi, & Marwick, 2016).

The prevalence of HF increases with age, and more than 75% of those affected are older than 65 years old. Development of HF is higher with the male sex, lower level of education, low levels of physical activity, cigarette smoking, overweight, diabetes mellitus (DM), HTN, valvular heart disease, left ventricular hypertrophy (LVH), and atherosclerosis of the coronary arteries (CHD). HTN is a precursor in 75% of individuals diagnosed with HF (Messerli, Rimoldi, & Bangalore, 2017). Both the incidence and the prevalence of HF continue to increase as the population ages.

Risk Factors for Developing HF in Older Adults

The primary clinical risk factors for developing HF are advancing age, male sex, HTN, myocardial infarction (MI), DM, valvular heart disease, and obesity (Bui, Horwich, & Fonarow, 2011). HTN is the most common cause of HF in patients without CHD, accounting for 24% of the cases of HF (Ahmad et al., 2016; Messerli et al., 2017). HTN is also extremely common in type 2 DM, as it occurs in more than 50% of older adults with type 2 DM (Lastra, Syed, Kurukulasuriya, Manrique, & Sowers, 2014). Women with DM are at extremely high risk for developing HTN and HF (Lastra et al., 2014). Individuals with HTN and DM often develop HF with preserved left ventricular (LV) systolic function (heart failure with a preserved ejection fraction [HFpEF]) or so-called diastolic HF, rather than LV systolic dysfunction (Bell & Goncalves, 2019). Having DM is associated with an adjusted two-fold increase in cardiovascular death or hospitalization for HF and an 80% increase in the hazard of all-cause mortality (MacDonald et al., 2008). HFpEF is a clinical syndrome in which LV filling pressures are elevated, the LV ejection fraction (LVEF) is normal, and yet the heart is unable to satisfy the systemic oxygen needs of an individual.

Other related clinical risk factors of HF include smoking, dyslipidemia of genetic and dietary etiology, sleep-disordered breathing or obstructive sleep apnea (OSA), chronic kidney disease, albuminuria, sedentary lifestyle, low socioeconomic status, and psychological stress. Toxic substances, such as chemotherapeutic agents (anthracyclines, cyclophosphamide, 5-FU, trastuzumab), illicit drugs (amphetamines, cocaine), and medications (nonsteroidal anti-inflammatory drugs [NSAIDs], thiazolidinediones [TZDs], alcohol), can precipitate HF (Schocken et al., 2008).

DM is a CVD equivalent and, as such, is an important contributor to HF (Bell & Goncalves, 2019; Tousoulis, Oikonomou, Siasos, & Stefanadis, 2014). Women and those individuals treated with insulin are at the greatest risk for ischemic etiology of both reduced ejection fraction (HFrEf) and HFpEF. In a sample of older Medicare patients with type 2 DM, 22% had a diagnosis of HF, and this prevalence increased with advancing age (Bertoni et al., 2004). In addition, the presence of type 2 DM is associated with higher HF-related morbidity and mortality. After MI or coronary revascularization procedures, individuals with type 2 DM also have a high morbidity and mortality, which is largely caused by the development of HF (von Bibra & St John Sutton, 2011). An earlier analysis of outcomes in Medicare patients 1 year after an MI revealed that 11% of patients without DM had HF, whereas 17% of patients with DM on oral agents and 25% of those treated with insulin were admitted for HF exacerbation (Chyun, Vaccarino, Murillo, Young, & Krumholz, 2002).

The initial diagnosis of HF is most often an acute index event requiring hospitalization. Patients at risk of readmission after initial diagnosis of HF include the following (Bertoni et al., 2004; Chyun et al., 2002):

- Age 65 years and older, and even more so for age 80 years and older
- Male gender, black race (Mirkin et al., 2017)
- Newly diagnosed HF with hospitalization (Arora et al., 2017)
- Hypotension or low output states
- Obstructive sleep apnea and/or chronic obstructive pulmonary disease (COPD; Arora et al., 2017)

- Renal failure or electrolyte imbalance (Arora et al., 2017; Mirkin et al., 2017)
- Rheumatoid arthritis (Davis et al., 2008; Nicola et al., 2005)
- Cardiovascular and vascular comorbid conditions such as MI, PVD, cerebrovascular disease, HTN, hyperlipidemia, and arrhythmias (Manemann et al., 2016; Mirkin et al., 2017)
- Hospitalizations for any reason in the past 5 years (Kossovsky et al., 2000)
- Social isolation (Cené et al., 2012)
- HF related to acute MI
- History of alcohol or illicit drug abuse (Marin et al., 2017; Whitman et al., 2017)
- HF with acute infection
- Anemia with hemoglobin of less than 12 (Young et al., 2008)
- History of depression or anxiety (Rustad, Stern, Hebert, & Musselman, 2013)
- Nonadherence to diet, fluid intake, respiratory treatments or medications

Pathophysiology of HF

Understanding the pathophysiology of HF provides insight into the rationale for treatment. HF is defined as the inability of the heart to pump blood sufficient to meet the metabolic needs of the body or the inability to do so without significantly elevated filling pressures (Harjola et al., 2017). The inability of the left ventricle to eject blood sufficiently represents LV systolic HF or HFrEF and is diagnosed with a measurement of EF less than 50%. Diastolic dysfunction and failure result in high LV filling pressures, yet inadequate ability of LV to deliver oxygenated blood to fulfill the body's needs. Diastolic HF is also more descriptively named HF with preserved systolic function or HFpEF because the EF is essentially normal: approximately 60%. The symptoms of HF are directly related to impairment in the filling and ejecting of the blood in the left ventricle.

All of the risk factors and disease entities listed previously can cause direct damage to the myocardium, as in MI and toxic exposure, or subject it to an increased level of wall stress, as in HTN or valvular lesions. Such an insult initiates compensatory actions by the heart that are mediated by the neurohormones of the sympathetic nervous system (SNS) and the renin–angiotensin–aldosterone system (RAAS), which are active, both systemically and directly, in the myocardium. Rather than offering benefit, the SNS (epinephrine and norepinephrine) and RAAS (angiotensin II, vasopressin, aldosterone) hormones promote cardiac remodeling and hypertrophy, causing dilatation of the ventricle and buildup of fibrous tissue that weakens the cardiomyocytes. These changes occur during compensated (asymptomatic) as well as decompensated (symptomatic) failure. The overexpression of neurohormones causes salt and water retention and vasoconstriction, which in turn produces increased hemodynamic stress on the left ventricle. These factors are cyclical unless treated. Untreated, there is further disruption of left ventricle architecture and performance (Kemp & Conte, 2012).

Because this process begins without symptoms, for patients at risk, it is essential to identify factors that are a hazard to cardiovascular health and initiate treatment before significant damage to the myocardium occurs. The American College of Cardiology Foundation/American Heart Association Task Force (ACCF/AHA) developed guidelines to classify HF in four stages (Yancy et al., 2013, 2017) based on the structural changes and damage to the heart:

Stage A is considered a pre-HF stage or an "at-risk" stage without structural heart disease or symptoms of HF. It includes patients with HTN, atherosclerotic disease, DM, obesity, metabolic syndrome, those using cardiotoxic substances, or those with a family history of cardiomyopathy.

Stage B includes asymptomatic individuals with structural heart disease but without signs or symptoms of HF, for example those with previous MI, LVH, decreased EF, and asymptomatic valvular disease.

Stage C includes individuals with known structural heart disease and symptoms of HF—shortness of breath, fatigue, and reduced exercise tolerance—or those who, after treatment, are now asymptomatic for their heart disease.

Stage D includes individuals with refractory HF requiring the use of specialized interventions and includes patients with marked symptoms at rest despite maximal medical therapy.

Atherosclerosis and ischemia in CHD are the most common etiology of HF in the United States, followed closely by HTN alone and valvular disease. Thyroid dysfunction and excessive alcohol intake may also lead to HF. In the absence of known CVD, systolic function of the heart remains relatively unchanged in older adults, as does exercise tolerance. Diastolic dysfunction, however, is predominantly a disease of older adults and may be present even in the absence of HTN or cardiomyopathy, which are also known to contribute to diastolic failure (A. Shah, Gandhi, Srivastava, Shah, & Mansukhani, 2017). The prevalence of HFpEF is increasing as the population of those older than 65 years grows along with the burden of

lifestyle risk factors of diabetes and obesity (Chrysant & Chrysant, 2019; Kristensen et al., 2017; Vasan & Levy, 2000). The archetypical patient presenting with diastolic HF is 70 to 80 years of age, female, obese, diabetic, and often has atrial fibrillation (Coats, 2001). Diastolic dysfunction is characterized by an exaggerated HR with activity, which is often one of the first clinical findings. The severity of symptoms varies among patients and may not correlate with LVEF as exercise capacity and quality of life are similarly reduced in HFrEF and HFpEF (Aziz, Tk, Enweluzo, Dutta, & Zaeem, 2013).

HTN, CHD, and hypertrophic cardiomyopathy are all abnormalities that are exacerbated by tachycardia, underscoring the importance of avoiding a high HR in all older individuals. Diastolic abnormalities caused by HTN, aortic stenosis, hypertrophic cardiomyopathy, or CHD may precipitate HF. Patients with either systolic or diastolic HF are at risk of fluid overload. Although discussed as two separate entities, many older adults have components of both systolic and diastolic dysfunction in addition to geriatric syndromes such as frailty, delirium, and falls (Iyngkaran et al., 2018).

TABLE 36.1

New York Heart Association Functional Capacity Classification

Class I	No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea, or angina.
Class II	Slight limitation of physical activity. Ordinary physical activity results in fatigue, palpitation, dyspnea, or angina.
Class III	Marked limitation of physical activity. Comfortable at rest, but less than ordinary physical activity results in fatigue, palpitation, dyspnea, or angina.
Class IV	Unable to carry on any physical activity without discomfort. Symptoms present at rest. With any physical activity, symptoms increase.

Source: Adapted from American Heart Association. (1994). *Classification of functional capacity and objective assessment*. Retrieved from https://professional.heart.org/pr ofessional/General/UCM_423811_Classification-of-Functional-Capacity-and-Objective-Assessment.jsp.

ASSESSMENT OF THE PROBLEM

For older adults diagnosed with HF, the health history and physical assessment are directed at monitoring symptoms and assessing cardiovascular function. For the nurse assessing and managing the patient with HF, it is important to note that the recognition of fluid overload is not always straightforward. The assessment of symptoms of fluid overload for acute and chronic HF can be a challenge for the nurse to assess. There are multiple factors that account for the accumulation and redistribution of body fluid. This fluid increases over time, ultimately leading to refractory volume overload and organ congestion. Monitoring parameters must be established, in which the patient and nurse actively identify subtle changes and seek intervention as early as possible (Miller, 2017; Tuy & Than, 2013).

The Health History

HF has both symptomatic and nonsymptomatic phases. When symptoms occur, they are related to intravascular and interstitial fluid overload and inadequate tissue perfusion. Symptoms become evident with exertion, and in severe HF, even at rest. The New York Heart Association (NYHA) functional capacity is an important standardized classification of the HF patient according to how much activity patients are able to accomplish without symptoms (Table 36.1). Classifying patients according to their physical symptoms offers evidence of the extent of volume overload and limitation caused by symptoms, which then leads the nurse to recognize the severity of the disease. Patients, with proper treatment, can improve their functional status and classification as their symptoms improve from a NYHA class III to class II or even class I; however, once identified at an advanced stage, C or D, earlier stages are not reclaimed. For example, a stage C patient does not return to stage B. Although current therapies are shown in studies to improve mortality, success in returning diseased myocardium to health has not yet been achieved.

Both patients and providers frequently attribute symptoms of fluid overload to aging. When symptoms occur during exertion, senior patients may simply decrease their activities to prevent symptoms, yet when asked, they report activity from a memory of months earlier. Because of inaccurate reporting of activity, HF in older adults is often difficult to recognize and, therefore, goes untreated. Thus, the nurse should routinely ask questions related to activity-limiting dyspnea. A key indicator in establishing a baseline for functional capacity is to ask the patient what his or her maximal asymptomatic activity is now, what it was 6 months ago, and what it was 1 year ago. Other important questions include "How far can you walk without getting short of breath?" The answer to a question, such as "How far is the bathroom from your bed?", can elicit information about symptoms in walking, sleep habits, and nocturia. "What is the activity that commonly produces shortness of breath?" Try to avoid questions that can be

answered "Yes" or "No" (e.g., "Do you experience shortness of breath when simply sitting?" "Do you wake at night feeling short of breath?"). Rather, say, "Tell me about what you do during a typical day." Repeating these questions in subsequent interviews will help monitor changes in activity associated with treatment or with suspected fluid gain. The goal is to identify whether the patient is physically capable of performing activities of daily living (ADL).

HFrEF is a pathophysiological process in which LV dysfunction occurs independent of symptom development (Tromp et al., 2018). Symptom expression is dependent on compensatory mechanisms and the length of time HF has been present. Patients with acute HF, as seen with MI, may be more symptomatic because their compensatory mechanisms have not fully developed. In comparison, the patient with long-standing HF may have severe dysfunction but may not become symptomatic until consuming a high-sodium meal or experiencing physical stress. Fluid overload can then occur rapidly, oftentimes overnight. In this case, compensatory mechanisms are now exhausted and, as a result, fail. The window of opportunity to successfully intervene is narrow, as is the margin of error. Treatment for fluid overload in this case must be swift and brisk but gentle enough to maintain BP (Yancy et al., 2018). Nurses need to be aware of the importance of both early recognition and early intervention in the patient with fluid overload. A few hours' delay in providing treatment can mean the difference between successful management at home or need for hospital admission with variable outcomes.

Knowledge of past medical history will help to anticipate problems related to other conditions because their presence may complicate assessment and management of HF. Cardiac risk factors; levels of physical activity; and control of lipids, HTN, obesity, DM, and smoking need to be determined. Additionally, it is important to consider that older adult responses to HF medications and treatment are variable. Other drugs commonly used in this age group, such as over-the-counter NSAIDs, can actually exacerbate fluid overload by increasing sodium retention. Previous questions related to cardiovascular functional capacity may have already provided some information, but additional information on musculoskeletal and neurological function can add needed insight.

Assessment for additional symptoms will assist in identifying the patient with HF. *Orthopnea* is the most sensitive and specific symptom of elevated filling pressures, and it tends to reliably parallel filling pressures in patients with this symptom (Anker et al., 2003; Stevenson & Perloff, 1989). Nocturnal or exertional cough is often a dyspnea equivalent and should not be confused with the cough from an angiotensin-converting enzyme (ACE) inhibitor, which is not associated with activity or position. Individual patients generally exhibit patterns of fluid overload that reoccur in subsequent exacerbations. These should be documented, made available to all on the care team, and used in patient education for self-monitoring and for early recognition by the healthcare team. Questions related to symptoms and function should be part not only of the initial assessment, but also of subsequent visits as a means of surveillance (Miller, 2017; Stevenson & Perloff, 1989).

The clinical presentation of HF may include a variety of symptoms reflective of pulmonary congestion and decreased cardiac output. The questions related to health history are important to include and/or observe during the health encounter. Although the presence of any one major symptom is sufficient to warrant consideration of HF, symptoms occurring with other physical findings of orthopnea, paroxysmal nocturnal dyspnea, and progressive dyspnea on exertion are virtually diagnostic of fluid overload. The Framingham criteria (Margolis, Gillum, Feinleib, Brasch, & Fabsitz, 1974) are validated and are most often used to identify congestive HF or HF exacerbation. If two major criteria or one major with two minor criteria are present, the professional can have reasonable certainty that the patient has HF. These criteria are listed as follows.

Major:

- Paroxysmal nocturnal dyspnea
- Neck vein distention
- Rales
- Enlarged heart on chest x-ray
- Acute pulmonary edema
- S3 gallop
- Increased central venous pressure
- Hepatojugular reflux
- Weight loss greater than or equal to 4.5 kg (10 pounds) in response to treatment

Minor:

- Bilateral ankle edema
- Nocturnal cough
- Dyspnea on ordinary exertion
- Hepatomegaly
- Pleural effusion
- Tachycardia greater than or equal to 120 beats/min

The presence of other comorbidities, such as DM, renal dysfunction, and liver disease, along with systemic physiological changes associated with aging, further

complicates the assessment and management of HF in the older adult. Comorbidities should also be carefully assessed by reviewing laboratory data. DM may necessitate monitoring of blood glucose because wide variations in glucose can affect the ischemic threshold. Renal dysfunction and liver disease may affect the pharmacodynamics of drugs used to treat HF. Inclusion of the pharmacist on the healthcare team or at least a consultation with the pharmacist will assist in ensuring the efficacy and safety of medications in the aging population. Anemia, a common medical condition in older adults, affects oxygenation, activity tolerance, and subsequent fluid balance (Lanier, Park, & Callahan, 2018). The presence of COPD, as well as other comorbidities, may necessitate special precautions when assessing and managing oxygen therapy and beta-blockers (Arora et al., 2017).

As overuse of salt in the diet may precipitate fluid overload, a comprehensive dietary history is absolutely essential. The nurse should include specific questions about what the patient eats for meals and who prepares those meals, recognizing that it may be more important to discuss food preparation and sodium restriction with the patient's primary caregiver. Additionally, does the patient use the salt-shaker or salt substitutes at the table or in cooking? How often does the patient eat out at a restaurant or order in food? A review of foods high in sodium on a printed list often reveals foods the patient is eating that he or she previously did not admit to. For instance, important dietary questions related to use of canned products or deli meats, which contain higher amounts of sodium, should be included. A list of the sodium and the potassium content of a variety of foods, including fruits and vegetables, can be helpful in providing the information necessary for the patient to make appropriate daily choices. Because assessment of nutritional status is critical to elicit accurate fluid and sodium intake, it is prudent in the acute care setting for the older adult to have a dietician consultation. Additionally, as cachexia is a harbinger of a downward spiral in patients with HF, questions need to be included on the health history related to appetite and weight loss (Abshire et al., 2015; Colin-Ramirez, Arcand, & Ezekowitz, 2015; Colin-Ramirez, McAlister, Zheng, Sharma, & Ezekowitz, 2016).

Current prescription and over-the-counter medication use should be assessed, along with any alternative or herbal therapies. Many older adults who are eligible for aspirin, beta-blockers, and ACE inhibitors (ACEIs) do not receive these medications despite the important role that these agents have in reducing CHD-related morbidity and mortality (Ruppar, Cooper, Mehr, Delgado, & Dunbar-Jacob, 2016; Schocken et al., 2008; Yancy et al., 2018).

Included in the health history should be questions related to medication adherence and the patient's decision to either take or not take medications (Ferdinand et al., 2017; Unverzagt et al., 2016). Understanding a patient's rationale to selectively not take certain medications at certain times will help reveal ways for the nurse to intervene. Patients may wish to adjust their diuretic dose so that they can function socially during the day. This is not an adherence issue but a sound decision based on the patient's rationale as to how to fit the medication regimen into his or her lifestyle. The interview can reveal whether "non-adherence" has such a rationale. If a cause is not found, other issues need to be explored, such as cost, number of medications, and/or the frequency of the doses. Ways to simplify the drug regimen should be explored as the older adult can become overwhelmed because of cognitive impairment, lack of health literacy with poor understanding of medication importance, and when symptomatic, for example, simply unable to do more than breathe.

Psychosocial factors and personal beliefs and behaviors, along with cultural and environmental influences, all contribute to management of chronic disease. The importance of depression and social support has been well documented in the older adult; therefore, all of these factors need to be assessed (Cené et al., 2012; Rustad et al., 2013). The nursing assessment in individuals with HF should identify the individual's response to treatment, which can then be used to assist the individual in subsequent management of symptoms and the underlying condition, health-promotion and disease prevention activities, and chronic disease management. Awareness of the patient's own perception of why he or she sought medical care and a detailed analysis of the symptoms will help in assessing the individual's or caregiver's ability to identify symptoms, his or her knowledge regarding the condition, its prognosis, and general health beliefs, along with the prior ability to manage this or other medical conditions.

Physical Assessment of the Older Adult With Fluid Overload

Physical assessment of the patient with suspected fluid overload includes inspection; palpation; and auscultation of the peripheral vasculature, heart, lungs, abdomen, and extremities. Orientation, functional limitations, and mental clarity are observed during examination of vital signs, which include height, weight, and waist circumference.

A patient's height and baseline weight are important indicators of both nutritional and fluid status. Patients may know their ideal weight or "dry weight." Ascertain this when obtaining the health history to establish initial

goals in diuretic treatment. Hospitalized patients with HF should have a weight measurement each day. The importance of daily weights should be emphasized with each weight in the hospital setting to reinforce the need to continue this practice at home. At home, family involvement is important, and weights should be taken daily, typically the first thing in the morning on arising, before breakfast, and with no clothes or wearing light clothing to avoid false fluctuations (Clark et al., 2014; Grady et al., 2000; Riegel et al., 2009; Riegel, Naylor, Stewart, McMurray, & Rich, 2004). This provides the best baseline for consistency. A 2-pounds weight gain overnight or a 3-pounds weight gain in a week is an indication that medical management must change. Measurement of a senior's waist circumference is also important to determine at baseline, because often, this is the location for fluid accumulation (Grady et al., 2000). Once height and weight are measured, a body mass index (BMI) should be calculated. Research has shown that higher BMIs indicating mild to moderate obesity (30–39.9 kg/m^2) are associated with longer survival, known as the obesity paradox in HF (Horwich, Fonarow, & Clark, 2018; Oga & Eseyin, 2016).

A thorough and accurate evaluation of the BP should be performed. A variety of environmental factors can influence BP determination; therefore, the room should be at a comfortable temperature, the patient as relaxed as possible, and a 5-minute rest allowed before taking the first reading. Clothing that covers the area where the cuff will be placed should be removed, the stethoscope bell placed over the brachial artery and not under the cuff, and the individual seated comfortably, with legs uncrossed, with the back and arm supported; the middle of the cuff on the upper arm should be at the level of the right atrium (Pickering et al., 2005; Rabbia et al., 2013). The initial BP reading should be taken in both arms. Proper cuff size is critical to obtaining an accurate measurement. Obese individuals with large arm circumference need to have the appropriate cuff size for accuracy. Conversely, thin, cachectic patients will also have inaccurate readings with a standard cuff. The bladder length should be 80% of the arm circumference, and width at least 40%. The midline of the bladder should be placed above the brachial artery, 2 to 3 cm above the antecubital fossa, where the artery should have first been palpated. When using the auscultatory method, which remains the "gold standard" for BP measurement, palpating the radial pulse first while inflating the cuff will identify the point at which the pulse disappears. For the subsequent auscultatory measurement, the cuff should then be inflated to at least 30 mmHg above this point. The rate of deflation is also extremely important, with a rate of 2 to 3 mmHg/sec recommended. The first and last audible sounds are the systolic blood pressure (SBP) and diastolic blood pressure (DBP), respectively. Two readings, taken 5 minutes apart, should be averaged, and if there is greater than 5 mmHg difference, additional readings should be obtained (Pickering et al., 2005).

Pseudohypertension is a rare phenomenon, resulting from noncompressibility of thickened arteries and will result in the recording of falsely high BP when indirect methods are used (Spence, Sibbald, & Cape, 1978). A high BP over time without any indication of end-organ damage and treatment of the BP creating symptoms of hypotension, such as dizziness, confusion, and decreased urine output, point to a diagnosis of pseudohypertension. This tendency for peripheral arteries to become rigid with aging may result in a need to increase cuff pressure in order to compress the artery. If suspected, an intra-arterial reading has been suggested to avoid overmedication with antihypertensives; however, this is an extreme measure and is rarely done (Dai, Wang, & Fang, 2017). Most providers who treat HTN in older adults consider 160/90 mmHg as a hypertensive BP and will treat gently with appropriate antihypertensives and pull back on treatment if symptoms of hypotension or orthostasis occur. Isolated systolic HTN is also common in the older adult and is defined by an SBP greater than 140 mmHg and a DBP less than 90 mmHg. Care must be taken not to overtreat in this population, especially if aortic stenosis or other valvular disease is present. Older adults are also more likely to exhibit white-coat HTN, in which the BP may be elevated more than 140/90 mmHg in the presence of a healthcare worker and an actual reading at home is usually 135/85 mmHg or less. Therefore, assessment of the BP requires not only careful attention to technique but also consideration of the physiological abnormalities associated with aging. Home BP monitoring has been suggested as a means for patients to partner with their providers to provide care. For those patients who are unable, for whatever reason, 24-hour ambulatory BP monitoring is available to more accurately assess BP fluctuations during the day (Tseng, 2006; Turner, Viera, & Shimbo, 2015).

In addition, the standing BP should be assessed because older adults have a tendency for postural hypotension. Orthostatic hypotension is diagnosed when the SBP falls by at least 20 mmHg or the DBP by 10 mmHg within 3 minutes. The presence of orthostatic hypotension may also reveal early dehydration in a patient who is usually otherwise stable (Ricci, De Caterina, & Fedorowski, 2015). Because dehydration is the second most common admission for the older adult with HF, with falls following closely behind, standing BPs should be part of the routine assessment. In addition, patients should be assessed for

dehydration during diuresis and whenever a condition exists in which fluid loss could occur. This includes not only with vomiting or diarrhea but also with diaphoresis caused by extremes in temperature and humidity.

Inspection is the first step of the physical assessment. General inspection of the periphery includes the following:

- Observing color of the skin and mucous membranes
- Inspecting the patient's nails, including nail beds, and the angle between the base of the nail and the skin of the cuticle (normally less than 160°). An angle of 180° is called *clubbing*; the distal phalanx appears rounded. Clubbing is associated with chronic hemoglobin desaturation.
- If cachexic, check dependent areas for decubiti.
- Evaluate hair on distal extremities (indication of adequate arterial perfusion)

Palpation of the extremities occurs following inspection of the skin color for temperature and turgor as well as the color of the nail beds. Capillary refill of the nail should be assessed by compressing the nail for 2 to 3 seconds and then releasing. Note the time elapsed until the original color returns. Normally, the nail bed is pink; capillary refill occurs within 2 to 3 seconds. A pale or cyanotic nail with delayed capillary refill may indicate decreased peripheral perfusion. The peripheral pulses should be palpated bilaterally, including radial, femoral, pedal, and posterior tibial pulse. Note pulse rate, rhythm, and symmetry.

Respiratory rate and effort should be assessed before auscultation of the lungs. If possible, oxygen saturation during rest and activity should be recorded. Patients whose oxygen level desaturates during activity to 86% or lower may require oxygen support at home. In addition, surveillance of oxygen saturation during sleep may be required if the patient or family reports difficulty with sleep at night. Sleep apnea can be the etiology of HF in patients with HF and, if untreated or treated ineffectively, can be the cause of exacerbation and decompensation in HF (Kasai & Bradley, 2011; Khattak et al., 2018). Use the diaphragm of the stethoscope to assess the lungs. Listen in all the lobes for diminished sounds, crackles, wheezes, or rhonchi. Lung sounds are an important part of the assessment, particularly in patients with a history of HF.

The cardiovascular assessment begins by locating the apex and apical pulse by feeling for the point of maximal impulse (PMI). In systolic HF, the PMI is displaced laterally and indicates the heart is dilated. Assessment of apical pulse rate and regularity, with attention to fullness and amplitude, are also important. Heart sounds should be ascertained with both the diaphragm and the bell of the stethoscope. Note the presence of S1 and S2 and of extra sounds, S3 gallop, S4 murmurs, clicks, or rubs. If extra heart sounds are present, also examine the carotid arteries by listening on both sides of the neck with the bell. Bruits sound like murmurs, so it is important to differentiate between the two. Some aortic murmurs will radiate into the neck and may even be audible when auscultating the lungs posteriorly. Always listen to the heart before listening for extra sounds in the neck. Carotids should be palpated unilaterally, never simultaneous bilaterally, to avoid occlusion of blood flow to the brain.

Jugular veins are assessed best with the patient in semi-Fowler's position, but, if the patient is severely dyspneic, Fowler's position may be necessary. With the patient's head in straight alignment, observe the jugular neck veins for the presence of jugular venous distention (JVD). Turning the head slightly to the left and shining a penlight angularly on the vein allows for easier visualization of JVD and "a" and "v" waves, particularly in obese patients with thick necks. The jugular venous pulse waves will vary with respiration and decrease during inspiration. The jugular vein is compressible and varies with the angle of the neck. In the absence of pathology, venous distention is not present. JVD is the most sensitive sign of elevated filling pressures and is present with fluid overload, cor pulmonale, or high venous pressure (Chiaco, Parikh, & Fergusson, 2013; Stevenson & Perloff, 1989).

The abdomen should then be examined. First, auscultate for bowel sounds in a distended abdomen to assess for other pathology-causing distention. Next, palpate to determine whether the abdomen is soft and nontender. A protuberant abdomen with bulging flanks suggests the possibility of ascites. Because ascitic fluid characteristically sinks with gravity, whereas gas-filled loops of bowel float to the top, percussion gives a dull note in dependent areas of the abdomen. Look for such a pattern by percussing outward in several directions from the central area of tympany. Map the area between tympany and dullness. To palpate the liver, place your hand behind the patient, parallel to and supporting the right 11th and 12th ribs and adjacent soft tissues below. Remind the patient to relax. By pressing your left hand forward, the patient's liver may be felt more easily by the other hand. Patients who are sensitive to palpation can rest their hand on your palpating hand. Note any tenderness. If at all palpable, the edge of the liver is soft, sharp, and regular. The liver can be enlarged in HF because of congestion. To further assess for volume excess, place the patient in semi-Fowler's position at the highest level at which the jugular neck pulsations remain visible. Firmly apply pressure with the palmar surface of the hand over the right upper quadrant of the patient's abdomen for 1 minute. A 1-cm rise in the jugular distention, called

hepatojugular reflux, confirms the presence of fluid overload. Hepatojugular reflux may be associated with or without tenderness. Patients may also complain of a feeling of fullness.

The presence of *peripheral edema*, a symptom that can be related to fluid overload from cardiac renal disease or PVD, should be evaluated. Edema can also occur in response to medications such as calcium channel blockers. Dependent parts of the body, such as the feet, the ankles, and the sacrum, are the most likely locations to find edema. The presence and location of edema, and whether it is pitting or nonpitting, should be assessed. Depress an edematous area over a bony prominence for 5 to 15 seconds, then release. The grading scale for edema is as follows:

0 = *No pitting*
1+ = *Trace or mild, 2 mm depression that disappears rapidly*
2+ = *Moderate, 4 mm depression that disappears in 10 to 15 seconds*
3+ = *Moderate severe pitting, 6 mm depression that may last more than 1 minute*
4+ = *Severe pitting, 8 mm depression that can last more than 2 minutes*

The neurological assessment cannot be overlooked because changes in HR and rhythm, a decrease in cardiac output, and side effects of cardiac medications may cause significant changes in mental status. The nurse can observe and assess the patient's mood, thought processes, thought content, abnormal perceptions, insight, judgment, memory, and retention throughout the examination from intake of history and throughout treatment. Because depression is common among both the older adult and the chronically ill, signs of depression should be assessed (Cené et al., 2012; Rustad et al., 2013). Examples of signs of depression include feelings of hopelessness and sadness (also see Chapter 19, Late-Life Depression). The time, the day, and the year, as well as orientation to place, should be included. Memory of hospitalization, teaching that occurred while hospitalized, and subsequent events post discharge can be addressed depending on whether the patient is hospitalized or is being seen as an outpatient (Clark et al., 2014; Grady et al., 2000).

To summarize, the physical examination findings consistent with HF include the following:

- JVD
- Basilar crackles, bronchospasm, and wheezing
- Displaced apical impulse
- Presence of S3 or S4; heart murmur
- Elevated HR and BP
- Hepatomegaly/splenomegaly
- Hepatojugular reflux
- Elevated HR and BP
- Temperature of extremities, warm versus cool

Laboratory and Diagnostic Studies

The initial laboratory evaluation of patients presenting with symptoms of HF should include complete blood count; serum electrolytes, including calcium and magnesium; blood urea nitrogen (BUN); serum creatinine; fasting blood glucose; glycosylated hemoglobin A1c (HbA1c); lipid profile; liver function tests; thyroid-stimulating hormone; and urinalysis.

B-type natriuretic peptide (BNP) is useful in the evaluation of symptomatic patients presenting in the urgent care setting in whom the clinical diagnosis of HF is uncertain (Yancy et al., 2017). A baseline BNP in the patient with a confirmed diagnosis of HF in the compensated state can provide a comparison measurement when the presence of fluid overload is suspected. A BNP level below 100 indicates a very low probability of HFrEF; however, a symptomatic patient may have diastolic HF or HFpEF. A level between 100 and 400 pg/mL should begin to raise suspicion of either HFrEf or HFpEF or right ventricular systolic dysfunction. Levels greater than 400 pg/mL have a 95% probability of HF and congestion caused by volume overload. Admission BNP values for acute HF decompensation with BNP levels 1,730 pg/mL or greater were associated with a 2.23-fold increase in in-hospital mortality compared with BNP levels under 430 pg/mL (Balion et al., 2013; Fonarow, Peacock, Phillips, Givertz, & Lopatin, 2007; Hunt et al., 2005; Yancy et al., 2017).

Electrolyte abnormalities are common in the older adult, particularly in individuals on chronic diuretic therapy. The serum potassium level should be monitored and supplemented so that it does not drop below 3.8 mmol/L. Renal function, as well as electrolyte levels, should remain current and test repeated whenever a patient has to increase diuretic therapy for longer than 3 days because of fluid overload. Anemia is frequently observed, especially in renal insufficiency and poor nutritional status and may contribute to hypoxia, myocardial ischemia, and fluid overload.

The index episode or first acute HF is most often ischemic in etiology. Cardiac enzymes assist in determining the presence of acute MI when an acute fluid overload event occurs (Manemann et al., 2016; Mirkin et al., 2017). Older adults may have an MI in the total absence of symptoms or with atypical symptoms. It is also

important to know that patients who are congested may leak troponin at low levels and not be acutely ischemic. All of these factors make a review of diagnostic test results very important.

A 12-lead electrocardiogram (EKG) and chest x-ray (posterioranterior [PA] and lateral) should be performed initially in all patients presenting with symptoms of HF. A baseline EKG is vital so that ST and T waves; axis changes; and prolongation in PR, QRS, and QT intervals can be assessed for indication of ongoing ischemia and response to medications. A new-onset arrhythmia heralded by an episode of fluid overload is not uncommon. The excess volume in HF can cause a stretch of the atrium, which, in turn, can precipitate atrial fibrillation, a common arrhythmia in patients with chronic HF. Two-dimensional echocardiography with Doppler should be performed during the initial evaluation to assess LVEF, LV size, wall thickness, and valve function. Radionucleotide ventriculography (multigated acquisition [MUGA] scan) can be performed to assess ventricular volumes, LVEF, and myocardial perfusion abnormalities although the current advanced technology of echocardiography makes the radionucleotide method of MUGA unnecessary. Cardiac catheterization should be performed on patients presenting with symptoms of HF who have angina or significant ischemia or who have known, suspected, or are at high risk for CHD, unless the patient is not eligible for revascularization of any kind.

Holter monitoring may be considered in patients presenting with HF who have a history of MI and/or syncope and are being considered for an electrophysiology study to document an inducible ventricular tachycardia. In addition, other candidates for electrophysiology referral include those with an LVEF of 30% or less with a QRS complex duration that exceeds 130 msec. Patients who meet this criteria should receive a biventricular pacemaker in combination with an automatic implantable defibrillator in order to prevent sudden death from ventricular arrhythmia and delay disease progression through ventricular remodeling, as well as improve cardiac output (Bardy et al., 2005; Breithardt, 2009).

INTERVENTIONS AND CARE STRATEGIES

Initial goals in the acute management of HF are to alleviate symptoms and improve oxygenation, improve circulation, and correct the underlying causes of the HF. Longer-term goals are to improve exercise tolerance and functional capacity, and through treatment improve ventricular function. Guideline-directed medical therapies (GDMT) are evidence-based therapies (EBT) that demonstrate reductions in the morbidity and mortality in HF and, as such, are recommended in the guidelines for managing HF. Effective treatment with EBT can also assist in reducing admission and readmission rates. The management of HF follows standard ACC/AHA Task Force expert consensus recommendations, including intensive treatment of coexistent HTN, CHD, and renal disease (Miller, 2017). It is important to note that optimal treatment of HTN is critical to both the prevention and treatment of HF. Although the level at which medication should be started is often still debated, the treatment goal in HTN for those older than 60 years, according to the Eighth Joint National Committee (JNC-8), is 150/90 mmHg (Baruch et al., 2004; James et al., 2014). There is compelling evidence for patients with coronary disease to continue to treat to the lower targets recommended in the previous commission, JNC-7 (Bangalore, Gong, Cooper-DeHoff, Pepine, & Messerli, 2014; Dinicolantonio et al., 2013).

Key prognostic indicators of 4-year mortality for older adults diagnosed with HF include renal dysfunction, pulmonary disease, a BMI of less than 25 kg/m^2, diabetes, HTN, and cancer. Patients who continue to smoke have a greater risk of mortality. Those individuals with a functional deficit in ADL, such as difficulty bathing, managing finances, walking several blocks, or pushing or pulling heavy objects, combined with one or more of the earlier mentioned factors are at greater risk not only for mortality but, additionally, the need for hospitalization (Collamati et al., 2016; Saitoh, Ebner, von Haehling, Anker, & Springer, 2018; Springer, Springer, & Anker, 2017). A chart review and history during hospitalization should include the standard accepted cardiac risk factors and the key indicators as listed previously. Detecting these additional prognostic indicators can aid in developing interventions that can affect quality of life and survival. Goals for therapy should include reaching goals for fasting blood sugar and HbA1c, BP, cholesterol, and HF therapy through the use of evidence-based standards of care.

In *stage A*, HF, HTN, and lipid disorders are treated with lifestyle modification and medication as indicated to achieve guideline-recommended goals for BP and cholesterol. Smoking-cessation assistance, in the form of counseling and medication, is offered at every interaction with a patient who smokes. A goal of increasing activity or exercise should be mutually established with patients. For some, this may be as little as standing and sitting during television commercials, whereas for others, it may mean a walk before or after dinner. The control of metabolic syndrome is achieved through lifestyle modification. Alcohol is a simple sugar, and in excess it contributes to the development of insulin resistance and diabetes, increasing

cardiovascular risk. Illicit drug use must be identified, with treatment offered and encouraged. Both ACEIs and angiotensin-receptor blockers (ARBs; A. Shah et al., 2017) treat HTN and HFrEF, but it is important to note that they have been shown to prevent cardiovascular events, cerebrovascular events, and progression of renal disease in stage A. Their use is especially important in patients with vascular disease or in those with DM.

In *stage B*, these same cited measures are used with ACEIs, ARBs, and beta-blockers in certain patients. All ACEIs are indicated in HFrEF; however, there are only two ARBs with evidence strong enough to be GDMT in HFrEF. Valsartan and candesartan, both ARBs, obtained recognition for benefit in HFrEF in their respective studies (Cohn, 1999; Cohn & Tognoni, 2001; Ostergren, 2006; Packer, 1998; Packer, Bristow, et al., 1996; Packer, Colucci, et al., 1996; R. V. Shah, Desai, & Givertz, 2010).

In *stage C*, dietary sodium restriction is added to this regimen, and at a symptomatic stage, diuretics need to be added to treat the fluid retention that causes symptoms, along with ACEIs or ARBs and beta-blockers. Carvedilol and metoprolol, in the extended-release form of metoprolol succinate, are the two drugs in the beta-blocker category that are evidence based and guideline recommended in the treatment of HFrEF (Colucci et al., 1996, 2007; Goldstein & Hjalmarson, 1999; Hjalmarson & Fagerberg, 2000; Hjalmarson et al., 2000). Aldosterone antagonists are also GDMT in HFrEF, with some evidence of benefit in HFpEF as well. In certain patients, digitalis can also be effective (Ambrosy et al., 2014; Baruch et al., 2004; Gheorghiade, van Veldhuisen, & Colucci, 2006; Nagarajan, Chamsi-Pasha, & Tang, 2012). Hydralazine in combination with isordil or other nitrates is beneficial and GDMT in the African American population (Yancy & Feldman, 2009). Many of the *stage C* patients qualify for a biventricular pacemaker and/or implantable defibrillators to treat life-threatening arrhythmias.

In *stage D*, patients younger than 70 years without significant comorbidities may be offered advanced therapy options, such as cardiac transplant or LV assist device (LVAD; ventricular assist device [VAD]). A trial of inotropic therapy, such as milrinone or dobutamine, may serve as a temporary boost to end-stage patients but also may be treatment as palliative therapy, offering patients at end of life an improved quality and ability to be with their family. Palliative care offers the end-stage patient comfort that affords the patient a quality of life in an environment where the patient can be at ease rather than enduring the frequent and recurrent hospital visits on an emergent basis. Although the LVAD first was designed as a bridge to transplant, VADs are now offered as a bridge to decision about transplant. Additionally, the LVAD as destination therapy is a palliative measure, again offering the patients a quality of life their heart is unable to give. Hospice care is also offered to the end-stage HF patient who is not a candidate for any further therapy. The nurse has an important role in assisting the individual and his or her caregivers in understanding the disease process and treatment options, including end-of-life care (Chmielinski & Koons, 2017; O'Connor, Moyer, & Kirkpatrick, 2016).

Open and honest discussion regarding the chronic, progressive nature of HF must begin early in the disease process as the natural history of HF involves declining physical as well as psychological functioning. Although depression is commonly seen in the older adult, as well as individuals with CVD, there are few studies that have addressed this important problem (Mbakwem, Aina, & Amadi, 2016). One in five patients with HF have depression, and among these adults, 48% will have significant depression with a higher prevalence compared with the general population (Celano, Villegas, Albanese, Gaggin, & Huffman, 2018; Mbakwem et al., 2016; Rutledge, Reis, Linke, Greenberg, & Mills, 2006). Because pharmacotherapy and behavioral interventions have demonstrated effectiveness, all older individuals should be screened for depression and treated appropriately. Early discussions related to the goals of care and advance directives with frequent revisiting of patient understanding of the disease course and patient preferences as the illness progresses ensure patient and care partner participation in decision-making. A multidisciplinary team, including a spiritual and/or a psychological representative, should be developed to offer support for all involved: the patient, family, and all caregivers.

The benefits of the multidisciplinary team providing care to HF patients have been discussed for the past several years. In most cases, this has been related to the use of the team approach to help keep patients stable in order to prevent hospital readmissions (Naylor, 2006; Naylor & Keating, 2008; Naylor et al., 2004). Comprehensive multidisciplinary transitional care interventions have been shown not only to reduce costs and cardiac outcomes, but also to have a beneficial effect on hospitalization for comorbid conditions (Chan, Lin, & Wong, 2016; Chriss, Sheposh, Carlson, & Riegel, 2004; Coviello, Hricz-Borges, & Masulli, 2002; Riegel et al., 2004). A scientific statement made by the AHA on recommendations to improve the effectiveness of transitional care interventions for HF included routine assessment of high-risk characteristics associated with poor postdischarge outcomes, assessment of nurse knowledge, and comfort in delivering patient education and using health informatics to assist with program

sustainability (Albert et al., 2015). In the case of the patient in end-stage HF, a multidisciplinary team—either for inpatient or outpatient management—can provide cost-effective service for patients with care in the environment of choice (Grady et al., 2000; Naylor & Keating, 2008; Riegel et al., 2016).

Once the initial history and physical assessment have been completed, an individualized care plan to monitor and treat fluid overload should be implemented. The care plan should include teaching that begins early in the hospital stay while the patient's memory of a decompensated state is fresh. The teaching of principles of HF self-care relies on the patient's ability to learn to recognize the beginnings of decompensation. It is crucial to begin techniques to prevent a congested state and manage self-care to maintain euvolemia as early as possible, with increased caution given to depressed patients to apply self-management strategies (Jonkman et al., 2016). A 3-pound weight gain in 1 to 2 days or a 5-pound weight gain in the course of the week is a reason to alter diuretic dosage for up to 3 days. If the patient returns to baseline weight before the 3-day period, he or she may reduce the dose back to the standard daily dose (Grady et al., 2000; Riegel et al., 2009; Toukhsati, Driscoll, & Hare, 2015). Patients can be taught how to regulate their diuretic doses based on their symptoms and weight. The nurse and the patient can construct a self-care algorithm that gives them a sound "recipe" to follow if fluid overload occurs. The important factor here is early recognition and swift, brief action. Clear guidelines as to when to contact caregivers, if they are not living with the patient, should also be provided. Consideration should be given to the patient's baseline functional capacity, as well as renal function. Diuretics are used in both systolic and diastolic HF to relieve congestive symptoms by promoting the excretion of sodium and water and by decreasing cardiac filling pressures, thereby decreasing preload. They should be used effectively but cautiously in the older adult with diastolic dysfunction, when maintaining an adequate cardiac output is required in order to avoid syncope, falls, or confusion.

A doubled dose of oral diuretics for up to 3 days is usually well tolerated in congested patients with systolic or diastolic HF. When diuretics are used, serum potassium levels should be monitored because of an increased risk of hypokalemia with loop diuretics and of hyperkalemia with potassium-sparing agents, especially if renal impairment exists. Patients should be forewarned about signs of hypokalemia such as profound weakness. Loop diuretics may be useful for patients who are volume sensitive or who have a tendency to retain fluid because of renal impairment. Aldosterone antagonists are potassium-sparing diuretics, which abate some degree of hypokalemia seen with loop diuretics; however, serum potassium levels should be monitored. In some patients, ACEIs can cause hyperkalemia; in combination with aldosterone inhibitors, this may be exacerbated. Recent evidence suggests that many individuals, particularly African Americans, may still require potassium supplementation (Chen et al., 2017; Gonseth, Guallar-Castillón, Banegas, & Rodríguez-Artalejo, 2004; Suh et al., 2004). In addition, dehydration is an important problem in older adults taking diuretics and appears to be an even greater concern in African Americans (Lancaster, Smiciklas-Wright, Heller, Ahern, & Jensen, 2003), making assessment of hydration status an important nursing concern.

Use of diuretic agents increases the risk of sudden loss of urinary control (urinary incontinence) in older adults. This is a very common, potentially reversible geriatric syndrome (see Chapter 25 Urinary Incontinence in the Older Adult). The older adult population requires frequent monitoring and detection of symptoms related to the onset of urinary incontinence, which is often signaled by symptoms of urinary frequency, urgency, or nocturia. These symptoms may actually be present in the older adult from other coexisting comorbidities. Nocturia is particularly evident in patients with heart disease because the supine position increases vascular return and precipitates frequent rising at night to urinate. Nighttime falls in the older adult often occur when the patient wakes to advance to the bathroom. Preexisting comorbidities, such as visual impairment or osteoarthritis of the hip and/or knees, as well as prostate hypertrophy in men, make safety strategies a priority in urgent bathroom requirements. Overall, management considerations for the older adult with heart disease and a new development of urinary incontinence or falls include reevaluation of medication regimen, activity considerations, and the use of additional adaptive aids to assist in avoidance of preventable events. Use of a nighttime bedpan, urinal, or commode with frequent toileting rounds and reduction of nighttime fluids are all possible and worthwhile solutions. Furosemide, as the most commonly used diuretic, has a half-life of 6 hours. In patients who are at a falling risk, timing the completion of diuresis before bedtime can decrease nocturia.

Beta-blockers are useful in the management of diastolic HF because of their inhibition of the SNS and resultant negative chronotropic effect, which decreases HR and increases time for diastolic filling. Beta-blockers are beneficial in the treatment of systolic HFrEF and are initiated in a euvolemic state after symptoms have resolved (Cohn, 1999; Colucci et al., 1996, 2007; Goldstein & Hjalmarson, 1999; Hjalmarson & Fagerberg, 2000; Ostergren, 2006; Packer, 1998; Packer, Bristow, et al., 1996; Packer,

Colucci, et al., 1996; A. Shah et al., 2017; R. V. Shah et al., 2010). These agents should be initiated at low doses and titrated up to an optimal tolerated dose. Use of beta-blockers in combination with ACEIs has demonstrated an improvement in both LVEF and functional capacity once optimized. Although beta-blockers may potentially worsen insulin resistance, mask hypoglycemia, or aggravate orthostatic hypotension in older individuals with DM, these agents have been shown to contribute to improved outcomes. Therefore, careful monitoring for adverse effects is required with beta-blocker treatment to realize the beneficial effects of this important medication.

Digoxin increases contractility and decreases HR. It is not routinely indicated; however, it may be useful in those patients with persistent symptoms despite diuretic and ACEI therapy and in those patients who also have atrial fibrillation. Blood levels of digoxin should be monitored for toxicity and interactions with other medications such as amiodarone, verapamil, and vasodilators. Quinidine is no longer indicated or used therapeutically. It is extremely important to monitor the narrow therapeutic range for potassium in order to prevent hypokalemia, which can precipitate arrhythmias in older adult patients with HF who are predisposed to both atrial and ventricular arrhythmias. Other medications that have a positive inotropic effect are dopamine and dobutamine. Both of these drugs can improve contractility and subsequent cardiac output; however, they also increase myocardial oxygen demand. *Milrinone* is a phosphodiesterase inhibitor that has been shown to be beneficial in the management of the hospitalized patient with HF, providing a positive inotropic effect, as well as a vasodilation (see Chapter 24, Reducing Adverse Drug Events in the Older Adult, for potential sequelae to several CV medications).

Vasodilators are also useful in the treatment of systolic and diastolic failure through reduction in preload. As with diuretics, they should be used cautiously in those with diastolic HF. Hydralazine and isosorbide reduce both preload and afterload, relieving symptoms and improving exercise tolerance. This combination is commonly used when patients do not tolerate ACE therapy. African Americans, in particular, had reduction in morbidity and mortality with a hydralazine/nitrate combination (Yancy & Feldman, 2009). Morphine sulfate, often used in an emergent situation, also has a peripheral vasodilating effect and is useful with pulmonary edema or in patients with breathlessness at end of life.

With appropriate titration of these medications, an improvement in both LV function and functional capacity can be achieved. Medications to treat HTN and lipid abnormalities may not be well tolerated, and the potential for side effects and drug interactions is increased in the setting of polypharmacy. An antihypertensive agent should be used in the lowest dose to bring about the desired goal for BP treatment. Lipid-lowering agents should be offered as they were found to be effective in studies; however, patients may not be able to tolerate high doses. Use the highest dose that the patient can tolerate to achieve cholesterol lowering.

Patients and caregivers need to understand the warning signs of HF decompensation and recurrent MI such as chest pain, pressure, shortness of breath, indigestion, nausea, dizziness, palpitations, confusion, weakness, and weight gain. A clear plan for obtaining immediate medical attention should be developed. This is especially important if the older person lives alone; some type of "medical alert" system may be needed. Telemonitoring may be an option for some patients to consider. Understanding and ability to follow the medication regimen is paramount. A thorough assessment of the patient and his or her caregivers is therefore vital. The older individual may be on multiple medications, and the schedule may be confusing. The need to maintain cardiac medications must be stressed, and the risk of the patient abruptly discontinuing beta-blocker, nitrates, and antiarrhythmics must be assessed. All medications should be reviewed with the patient and caregivers, stressing desired effects, common side effects, and possible interactions with over-the-counter medications. The nurse should also review what to do if medications are accidentally omitted or become too costly to maintain.

Long-term management of HF requires a multidisciplinary team approach, and disease management programs have been effective in reducing readmission rates (Riegel et al., 2016). Furthermore, even though many of these individuals are debilitated, exercise training has been shown to improve muscle mass, strength, and functional ability (Collamati et al., 2016; Saitoh et al., 2018; Springer et al., 2017). Referral to inpatient cardiac rehabilitation is an important stepping stone to reconditioning patients so they can better function at home when discharged.

Optimization of the medication for HF, coupled with activity progression, can enhance the patient's capacity for ADL and quality of life. An active patient may notice early signs of fluid overload when unable to accomplish standard activities done the previous week. Therefore, questions related to activity tolerance can provide insight for the nurse who monitors the patient. The patient with gradual fluid gain will first notice a change in his or her level of fatigue, which will translate into a change in daily routine. Previous experience with fluid overload will also reveal to the nurse the patient's own unique signs and symptoms because not every patient has the same indicators. It is important to not only assess these factors directly

with the patient during the interview but to also reinforce that these symptoms are important for the patient to monitor as well (Grady et al., 2000; Riegel et al., 2009). In addition to changes in weight, deviation from the baseline functional ability is an early clue, even before peripheral edema or lung congestion is present.

The prevention and treatment of HF in patients with DM requires optimal management of coexistent HTN, CHD, and LV dysfunction. Additionally, control of hyperglycemia is an important issue because the presence of HF affects the choice of medications used to treat type 2 DM. Although insulin and insulin secretagogues are considered safe for use in individuals with HF, TZDs are contraindicated, and metformin should be used only cautiously with careful monitoring of renal function (Tousoulis et al., 2014). Decreased clearance of metformin in individuals with HF caused by hypoperfusion or renal insufficiency can lead to potentially dangerous lactic acidosis. TZDs are associated with fluid retention, pedal edema, and weight gain, particularly when used in conjunction with insulin, and contribute to HF (Rosano, Vitale, & Seferovic, 2017). Careful clinical assessment and ongoing monitoring should be implemented in the presence of known structural heart disease or a prior history of HF.

Adequate control of BP is also essential in the management of HF. Treatment of older persons with HTN has been shown to reduce CVD morbidity and mortality (Ahmad et al., 2016; James et al., 2014). An important nursing consideration is to monitor for adverse effects of medications used to manage HF, as well as HTN, along with patient and caregiver education. ACEIs are important in the management of systolic HF and may also be helpful in diastolic failure. In the Heart Outcomes Prevention Evaluation Study (Wing et al., 2003), ACEIs prevented cardiac events in high-risk patients without HF or known low EFs (Collamati et al., 2016). In addition, ACEIs have a renal protective benefit that is extremely important in preventing the development or worsening of HF, especially in patients with DM. Recent evidence suggests that use of ACEIs is associated with a larger lower extremity muscle mass, which may have benefit in wasting syndromes (e.g., sarcopenia) and prevention of disability and that they are particularly efficacious in older adults. ARBs are also used widely for the prevention and treatment of HFrEF, particularly when patients are unable to use ACEIs because of the development of cough (James et al., 2014; A. Shah et al., 2017; Yancy et al., 2017, 2018). Renal function and hyperkalemia should be assessed when using both classes of agents, especially in the presence of underlying renal dysfunction.

CASE STUDY 36.1

CTG is a 72-year-old woman with a history of diet-controlled glucose intolerance and HFrEF of 38% with normal renal function. She is seen in the geriatric clinic with a 3-day history of poor appetite, nausea, and occasional vomiting. She complains of a constant feeling of fullness. She was last hospitalized 3 months ago because of fluid overload related to newly diagnosed HF. Her diuretic was increased 6 weeks ago for mild ankle swelling. She denies recent lower extremity swelling, orthopnea, or paroxysmal nocturnal dyspnea. Her blood sugars have been well controlled in the 90-to-130 range without hypoglycemic episodes. She denies fever, chills, cough, or urinary symptoms. She says she never misses her medications. Until 5 days ago, she was able to walk 30 minutes a day without difficulty. She has noticed a gradual increase in fatigue over the last 10 days and has found herself too tired to attend several social and church events in the evening. When asked what her daily weights have been, she confessed that since she had been feeling so good she had abandoned this as a daily practice. Concerned, however, about her recent symptoms, she weighed herself this morning and found that she had gained 6 pounds since she last weighed herself 2 weeks ago despite being compliant with her medications for HF, which include the following:

Coreg 6.25 mg twice a day
Altace 5 mg daily
Aldactone 12.5 mg daily
Lasix 20 mg daily
Imdur 15 mg daily

She has not taken a double dose of Lasix with the additional weight gain, as shown in her self-care action plan. She had been unaware of that weight gain because she had not been weighing herself. In addition, she had attended two social events two weekends ago that included eating out. Her self-care action plan had shown that she should increase her diuretic for 1 day following eating out the day before.

On physical examination, her BP is 132/86 mmHg with an HR of 88 beats/min. She is afebrile. She has fine crackles in the lower bases bilaterally. There is 1+ lower extremity edema. Heart sounds demonstrate S1, S2, and S3. Her apical impulse is displaced to the left. There is jugular neck vein distention. Her abdominal girth has increased 2 inches since her last visit.

(*continued*)

CASE STUDY 36.1 (*continued*)

Lasix was increased to 40 mg for a maximum of 3 days. If at any point during the 3 days her weight returned to baseline, she was instructed to return to her usual dose of Lasix. She was advised of the importance of daily weights in order to maintain her baseline weight. She was referred back to her self-care action plan for changes in diuretic, depending on her daily weight and the maintenance of her low-sodium diet in light of her social schedule. She will return to the clinic in 1 week.

Discussion

This patient exemplifies the need for educational reinforcement in a newly diagnosed patient with HF, who is just learning how to incorporate a self-care action plan. Like many patients who have had to take antibiotics in the past, compliance can wane when the patient feels well. Assessment of self-care knowledge and ability should be ongoing throughout the hospital stay but is critical at the time of discharge in order to provide appropriate focus in outpatient care and support.

The use of a tool to quantify knowledge and ability of self-care, such as the Self-Care in Heart Failure Index, is useful to identify patients who have a continued need for assistance after discharge (Riegel et al., 2009). It is important to make contact with a newly diagnosed patient with HF fairly frequently in order to address questions that might influence the self-care decision-making of the patient.

SUMMARY

Hospital admissions can be reduced in older adults with HF:

1. When care is taken in identifying the patients' own unique signs and symptoms of fluid overload
2. By creating monitoring parameters for the nurse in the form of history and physical assessment
3. By creating monitoring parameters for the patient in the form of a self-care algorithm with clear guidelines for self-care action
4. By achieving goals for clinical stability



NURSING STANDARD OF PRACTICE

Protocol 36.1: Heart Failure: Early Recognition and Treatment of the Patient at Risk of Hospital Readmission

I. GOAL

To reduce the incidence of hospital readmission of older adult patients with HF

II. OVERVIEW

A. HF is the most common cause of hospitalization of adults older than 65 years (Schocken et al., 2008) and is the cause of functional impairment and ultimate morbidity and mortality as well as significant hospital costs (Messerli et al., 2017).
B. Hospitalization can be prevented by identifying the high-risk HF patient, early recognition of signs and symptoms of decompensation, and timely initiation or regulation of medical therapy (Evangelista et al., 2000; Jurgens et al., 2009; Sethares et al., 2015).
C. Recognition of risk factors and routine monitoring for potential HF decompensation should be part of the comprehensive nursing care of older adults (Ahmad et al., 2016; Bui et al., 2011; Messerli et al., 2017).

(*continued*)

Protocol 36.1: Heart Failure: Early Recognition and Treatment of the Patient at Risk of Hospital Readmission (*continued*)

III. BACKGROUND AND STATEMENT OF PROBLEM

A. Definition

HF is the inability of the heart to pump blood sufficient to meet the metabolic needs of the body or it cannot do so without significantly elevated filling pressures (Miller & Piña, 2009). Acute HF can develop swiftly or over the preceding weeks as the primary initial event. Acute decompensated HF is the result of chronic HF (Harjola et al., 2017).

B. Etiology and epidemiology

1. *Prevalence and incidence:* There are more than 5.8 million individuals with HF in the United States, and approximately half a million new cases develop every year ("Heart Failure Fact Sheet|Data & Statistics|DHDSP|CDC," 2019).
2. *Etiology:* Deficiency in myocardial pump function as a result of nonischemic progressive cardiomyopathy or more prevalent ischemic causes, such as coronary heart disease and MI with a resulting development of signs and symptoms, such as edema, dyspnea, and orthopnea (Harjola et al., 2017; Kemp & Conte, 2012).
3. *Risk factors*
   a. *Predisposing* age (65 years and older); severity of illness; comorbidities, such as HTN, coronary artery disease, diabetes, valvular heart disease, and obesity. Additionally, cognitive impairment, depression, sensory impairment, fluid and electrolyte disturbances, and polypharmacy also impose an increased risk (Ahmad et al., 2016; Bell & Goncalves, 2019; Bui et al., 2011; Lastra et al., 2014; Messerli et al., 2017)
   b. *Precipitating:* High-sodium diet; excess fluid intake; sleep-disordered breathing; chronic kidney disease; anemia; cardiotoxins, such as chemotherapeutic agents, NSAIDs, illicit drugs, or alcohol (Schocken et al., 2008)
   c. *Environmental factors:* Low socioeconomic status, psychological stress, and inadequate social support (Schocken et al., 2008)
4. *Outcomes:* HF has a downward trajectory that through preventative measures can be delayed; however, not without considerable impact on quality of life (Grady et al., 2000).

IV. PARAMETERS OF ASSESSMENT

A. Assess at initial encounter and every shift

1. *Baseline:* Health history NYHA classification of functional status and stage of HF, cognitive and psychosocial support systems (Miller, 2017; Tuy & Than, 2013)
2. *Symptoms:* Dyspnea, orthopnea, cough, edema; vital signs: BP, HR, and RR (Pickering et al., 2005); physical assessment with signs: rales or "crackles"; peripheral edema, ascites, or pulmonary vascular congestion of chest x-ray (Stevenson & Perloff, 1989)
3. *Medications review:* Optimal medical regimen according to ACC/AHA/HFSA guideline unless contraindicated (Riegel et al., 2009; Wing et al., 2003)
4. *Electrocardiogram/telemetry review:* HR, rhythm, QRS duration, QT interval (Bertoni et al., 2004; Chyun et al., 2002)
5. Review echocardiography, cardiac angiogram, MUGA scan, cardiac CT or MRI for left ventricle and valve function: LVEF (Bertoni et al., 2004; Chyun et al., 2002; Lewis et al., 2003)
6. Laboratory value review (Yancy et al., 2018)

   Metabolic evaluation: Electrolytes (hyponatremia, hypokalemia), thyroid function, liver function, kidney function

   Hematology: Evaluation for anemia: Hemoglobin, hematocrit, iron, iron-binding capacity, and B12 folic acid

Evaluation for infection (fever, WBCs with differential, cultures)

7. *Impaired mobility/deconditioned status:* Physical therapy or structured cardiac rehabilitation inpatient or outpatient

(*continued*)

Protocol 36.1: Heart Failure: Early Recognition and Treatment of the Patient at Risk of Hospital Readmission (*continued*)

B. Sensory impairment—vision, hearing—limitations in ability for self-care (Ferdinand et al., 2017; Jonkman et al., 2016)
C. Signs and symptoms—assess for changes in mental status every shift (Ferdinand et al., 2017; Jonkman et al., 2016)

V. NURSING CARE STRATEGIES

A. Obtain HF/cardiology and geriatric consultation (Naylor, 2006; Naylor et al., 2004; Naylor & Keating, 2008; Rich & Kitzman, 2005).
B. Eliminate or minimize risk factors.
   1. Administer medications according to guidelines and patient assessment (Brenner et al., 2001; Riegel et al., 2009; Wing et al., 2003).
   2. Avoid continuous intravenous infusion, especially of saline (Lancaster et al., 2003; Riegel et al., 2009).
   3. Maintain euvolemia once fluid overload is treated. Prevent/promptly treat fluid overload, dehydration, and electrolyte disturbances. Maximize oxygen delivery supplemental oxygen, blood, and BP support as needed (Lancaster et al., 2003; Riegel et al., 2009).
   4. Ensure daily weights accurately charted (Grady et al., 2000; Riegel et al., 2004, 2009).
   5. Provide adequate nutrition with a 2-g/d sodium diet (see Chapter 13, Nutrition in the Older Adult).
   6. Provide adequate pain control (see Chapter 22, Pain Management in the Older Adult).
   7. Use sensory aids as appropriate.
   8. Regulate bowel/bladder function.
C. Provide self-care education with maintenance and management strategies (Ferdinand et al., 2017; Jonkman et al., 2016; Naylor, 2006; Pickering et al., 2005).
   1. Encourage activity recommendation as appropriate to functional status. Assess for safety in ambulation hourly rounds with encouragement to toilet.
   2. Facilitate rest with schedule of diuretic medications for limited nocturia.
   3. Maximize mobility: involve occupational therapy and physical therapy and limit use of urinary catheters.
   4. Communicate clearly; provide explanations.
   5. Emphasize purpose and importance of daily weights.
   6. Arrange dietician referral for educational needs regarding sodium.
D. Identify primary care partner. Reassure and educate.
   1. Foster care support of family/friends.
   2. Assess willingness and ability of care partner to assist with self-care: Dietary needs of sodium restriction, daily weight logging, symptom recognition, and medical follow-up.

VI. EVALUATION/EXPECTED OUTCOMES

A. Patient
   1. Absence of symptoms of congestion
   2. Hemodynamic status remains stable
   3. Functional status returned to baseline (before acute decompensation)
   4. Improved adherence to medical and self-care regimen
   5. Discharged to same destination as prehospitalization
B. Healthcare provider
   1. Regular use of self-care HF index screening tool
   2. Increased detection of symptoms of acute decompensation
   3. Implementation of appropriate interventions to prevent/treat volume overload
   4. Improved nurse awareness of patient/caregiver self-care confidence and ability
   5. Increased management using guideline-directed therapy

(*continued*)

Protocol 36.1: Heart Failure: Early Recognition and Treatment of the Patient at Risk of Hospital Readmission (*continued*)

C. Institution
   1. Staff education and interprofessional care planning
   2. Implementation of HF specific treatments
   3. Decreased overall cost
   4. Decreased preventable readmission and length of hospital stay
   5. Decreased morbidity and mortality
   6. Increased referrals and consultation to previously specified specialists
   7. Improved satisfaction of patients, families, and nursing staff

VII. FOLLOW-UP MONITORING OF CONDITION

A. Decreased frequency of readmission as a measure of quality care
B. Incidence of decompensated HF to decrease
C. Patient days with symptoms of congestion to decrease
D. Staff competence in prevention, recognition, and treatment of HF
E. Documentation of a variety of interventions for HF

ABBREVIATIONS

ACC/AHA/HFSA	American College of Cardiology/American Heart Association Task Force/Heart Failure Society of America
BP	Blood pressure
BUN/Cr	Blood urea nitrogen/creatinine ratio
HF	Heart failure
Hgb/Hct	Hemoglobin and hematocrit
HR	Heart rate
HTN	Hypertension
LVEF	Left ventricular ejection fraction
Na+	Sodium
NSAIDs	Nonsteroidal anti-inflammatory drugs
NYHA	New York Heart Association
ROM	Range of motion
RR	Respiratory rate
SpO_2	Pulse oxygen saturation
URI	Upper respiratory infection
UTI	Urinary tract infection
WBCs	White blood cells

NOTE

This chapter was adapted from the American Association of Colleges of Nursing, Preparing Nursing Students to Care for Older Adults: Enhancing Gerontology in Senior-Level Undergraduate Courses curriculum module, *Assessment and Management of Hypertension and Heart Failure,* prepared by Deborah A. Chyun and Jessica Coviello.

RESOURCES

American Association of Heart Failure Nurses
http://aahfn.org

Heart Failure Society of America
http://www.hfsa.org

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Cancer Assessment and Intervention Strategies in the Older Adult*

Janine Overcash

37

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Recognize the incidence and prevalence of U.S. statistics of malignancy in the older adult.
2. Identify three common malignancies in the older adult.
3. Recognize three common comorbidities in the older adult with cancer.
4. Identify three common cancer-related emergencies in the older adult.
5. Identify three assessment instruments useful in the assessment of the older person.
6. Identify three important elements of a health history specific to the older cancer patient.
7. Identify three important elements of a physical examination specific to the older cancer patient.
8. Define clinical parameters of frailty of an older adult with cancer.

OVERVIEW

The probability of developing a malignancy increases with age. In the years between 2012 and 2016, the National Cancer Institute Surveillance, Epidemiology, and End Results Program (SEER, 2014) found that the mean age of a cancer diagnosis is 66 years (Howlader et al., 2018). Cancer of any site is most often diagnosed among people aged 65 to 74 years (Howlader et al., 2018). Rates of cardiovascular and heart disease have declined since 2011; however, the rates of cancer mortality have remained stable (Sidney et al., 2016). Based on data from the years 2011 to 2016, 39% of men and women living in the United States will be diagnosed with cancer (Howlader et al., 2018).

Older people diagnosed with cancer are often resilient; however, problems associated with comorbid conditions and poor general health status can result in less aggressive cancer treatment options (Inwald, Kowalski, Wesselmann, Ferencz, & Ortmann, 2019; Williams et al., 2015). Treatment decisions of older cancer patients depend on life expectancy, comorbidity, and health status and not on chronological age (Bhatt, 2019; Droz, Boyle, Albrand, Mottet, & Puts, 2017; Hurria, 2013; K. H. Kim et al., 2019). Many older people tolerate chemotherapy as compared with younger people, depending on their level of fitness and general health status (K. W. Lee et al., 2017; Sastre, Puente, García-Saenz, & Díaz-Rubio, 2008). The same is true for surgery (S. H. Kim et al., 2018; Volkel et al., 2019; Wildiers et al., 2007) and radiation therapy (Gomez-Millan, 2009).

Acute care nurses must appreciate that cancer is common in older adult patients and be aware of management

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

strategies and potential emergencies associated with the diagnosis and treatment of a malignancy. This chapter presents aspects of health that should be considered when caring for a hospitalized older cancer patient. Geriatric assessment instruments that can be used in an acute care setting and potential medical emergencies associated with the cancer disease process are addressed.

ASSESSMENT OF THE OLDER HOSPITALIZED PATIENT

Comorbid Conditions

A diagnosis of cancer may be one of several diagnoses, and it is important to understand how the malignant and nonmalignant conditions affect the health of the older person. Often, nonmalignant conditions can present more risk of mortality as compared with a cancer diagnosis. Breast cancer patients undergoing treatment with chemotherapy or radiation are likely to die of nonmalignant diagnoses (Ording et al., 2015). In early-stage breast cancer, rates of non–cancer-related disease death in patients aged 80 years and over are higher compared with those in people aged 65 to 69 years (Sakurai et al., 2015). In patients with lung cancer, cardiovascular comorbidities have a considerable impact on survival (Kravchenko et al., 2015).

For every chronic comorbid condition, life expectancy decreases 1.8 years (DuGoff, Canudas-Romo, Buttorff, Leff, & Anderson, 2014). The timing of a nonmalignant diagnosis between 18 and 6 months before a diagnosis of colorectal cancer has been associated with lower 1-year survival (Shack, Rachet, Williams, Northover, & Coleman, 2010). The more severe the degree of comorbidity, the lower the probability of survival at 1 year and 5 years after a diagnosis of cancer (Iversen, Nørgaard, Jacobsen, Laurberg, & Sørensen, 2009). For patients who are diagnosed with diabetes, the risk of recurrence or development of a new breast cancer is twofold compared with that in the case of people who do not have diabetes (Patterson et al., 2010). Recognition, management, and severity of comorbid conditions are the principal aspects of the acute nursing assessment. Unmanaged or uncontrolled comorbid conditions have the potential to modify cancer treatment and outcomes. For patients who have managed comorbidity, nonmetastatic prostate cancer patients receiving treatment, 10-year life expectancy was not impacted by comorbid conditions or age (Boehm et al., 2017).

Comprehensive Geriatric Assessment

The Society for International Oncology in Geriatrics (SIOG) recommends a comprehensive geriatric assessment (CGA) be administered to older patients who are receiving cancer care (Mohile et al., 2015). The CGA has been used to identify people who may not benefit from cancer treatment (Lundqvist et al., 2018), risk of postoperative complications (Fukuse, Satoda, Hijiya, & Fujinaga, 2005; Kristjansson et al., 2010), and toxicity to cancer chemotherapy treatment (Aaldriks et al., 2011; Freyer et al., 2005; Hurria & Lichtman, 2007; Soto-Perez-de-Celis, Li, Yuan, Lau, & Hurria, 2018) and also provides information to avoid over- and undertreatment of cancer (Schiphorst et al., 2016). The CGA is also helpful in identifying older cancer patients who are most likely to benefit from more aggressive chemotherapy (Tucci et al., 2009) and from various surgical oncology procedures (Xue, Cheng, Wu, & Zhang, 2018). Postsurgical cognitive changes can be predicted using CGA (Liang et al., 2015).

CGA used in oncology has been found to influence cancer treatment decisions in terms of dosing and delaying treatments (Chaïbi et al., 2011; Schiphorst et al., 2016; Wildiers et al., 2014). Presurgical CGA can identify greater risk for mortality, postdischarge long-term care placement, inpatient adverse events, and increased length of hospital stay (K. I. Kim, Park, Koo, Han, & Kim, 2013).

The CGA can be a predictor of mortality (Avelino-Silva et al., 2014; Pilotto et al., 2007) and a 3-year predictor of survival (Stotter, Reed, Gray, Moore, & Robinson, 2015) in older patients. Impairment on various components of the CGA, such as nutrition, functional status, and cognition, is predictive of in-hospital mortality (Avelino-Silva et al., 2014). Older patients receiving acute care can benefit from the CGA by revealing health concerns and potential readmissions to an acute care setting (W. J. Lee, Chou, et al., 2014).

No single definition of a CGA exists. A CGA can be developed to include screening instruments necessary to meet the needs of a particular older patient population (American Geriatrics Society [AGS] and the British Geriatrics Society, 2010; Wildiers et al., 2014). The instruments that commonly make up the CGA and that guide screening practices in many healthcare domains are all found on www.consultgerirn.org and chapters in this text. Although a CGA may be relevant to primary care settings, understanding such issues as medication history and polypharmacy, caregiver situation, and emotional condition is also important to an acute assessment.

A CGA can include various laboratory tests in addition to self-report and performance evaluations. Laboratory data, such as C-reactive protein, are able to predict morbidity or mortality and help identify individual risk factors (Chundadze et al., 2010; Pal, Katheria, & Hurria, 2010). Serum 25-hydroxyvitamin D (25OHD) will assess vitamin D levels to determine whether falls or muscle

weakness can be a risk factor. People with lower concentrations of 25OHD have a high probability of falling (Annweiler & Beauchet, 2015). In patients with colorectal cancer, higher levels of 25OHD are related to better survival (Wesa et al., 2015). Serum albumin levels at 3.3 mg/dL on admission, serum creatinine levels at 1.3 mg/dL or higher, history of heart failure, immobility, and advanced age are all predictors of inpatient mortality (T. J. Silva, Jerussalmy, Farfel, Curiati, & Jacob-Filho, 2009). Other mortality risk factors in older hospitalized patients are red blood cell and platelet transfusions, which increase the opportunity for venous and arterial thrombotic events (Khorana et al., 2008).

Determining caregiver availability in the home following hospital discharge is another important element of the CGA. For many older cancer patients, lack of a caregiver can be a problem and can impact health and medical treatment. Breast cancer patients who live alone or are unmarried have an increased risk of mortality (Osborne, Ostir, Du, Peek, & Goodwin, 2005). Conversely, older cancer patients who are married tend to live longer than those who are not married (Franke & Kulu, 2018; Patel et al., 2010). In general, people who are married report higher perceived health status (Joutsenniemi et al., 2006). It is important for the nurse to determine whether the patient lives with someone and the extent to which that person is able to assist. Of note, often the patient is the caregiver to the spouse or others (Overcash, 2004), and it is important to discuss the caregiver situation before discharge.

Assessment of the older patient should occur on admission to the hospital and before discharge to understand trends in health, as well as in functional and behavioral ability. Discharge planning should include interventions based on the CGA findings, and communication is vital with outpatient providers to continue to address the limitations that may affect the health, quality of life, and independence of the older person with cancer.

DEVELOPING A COMPREHENSIVE GERIATRIC ASSESSMENT FOR HOSPITALIZED PATIENTS

The following are instruments that can identify functional, physical, emotional, and medication history and cognitive impairment in the acute care patient and are generally included in a CGA.

A. Assess for depression and/or emotional distress
    1. The Geriatric Depression Scale (Yesavage et al., 1982)
    2. The SF-12 Tool (Ware, Kosinski, & Keller, 1996): The SF-12 is a general health-related quality-of-life instrument that is widely used in research and clinical assessment. Two summary scores are the culmination of the measures from the mental health aspect and the physical health domain. The SF-12 is simple to administer and provides the clinician with a measure of emotional health and physical health.
B. Assessment for cognitive limitations. The Mini-Cog is used in the assessment of cognition (Borson, Scanlan, Brush, Vitaliano, & Dokmak, 2000; Borson, Scanlan, Chen, & Ganguli, 2003). The instrument comprises the Clock Draw test and recall. For more information on cognitive assessment, see Chapter 9, Assessing Cognitive Function in the Older Adult.
C. Assess the number and indications of medications. Look for medications with the same indications and potential harmful interactions, and consider any difficulty with cancer treatment agents. For more information on polypharmacy see Chapter 24, Reducing Adverse Drug Events in the Older Adult.
D. Assess for geriatric syndromes (such as depression, falls, urinary incontinence). For more information, see Chapter 19, Late-Life Depression; Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care; and Chapter 25, Urinary Incontinence in the Older Adult.
E. Assess functional status and potential for falls
    1. Ask the patient whether a fall had been experienced within the past year.
    2. The Physical Performance Test battery (Simmonds, 2002) has age-related norms and is a valid and reliable tool used with cancer patients.
    3. The 6-minute walk assesses the speed and ability to ambulate for the entire time (Enright et al., 2003).
    4. The Timed Get Up and Go test considers rising from a chair, walking 3 m, and returning to the chair in a sitting position (Podsiadlo & Richardson, 1991).
    5. Assessment of physical status can take place on observation of gait using the Gait Assessment Scale (Tinetti, 1986; Tinetti, Mendes de Leon, Doucette, & Baker, 1994).
    6. Berg Balance Scale (BBS) is a 14-item scale developed for use in a clinical setting (Berg, Wood-Dauphinee, Williams, & Maki, 1992). The BBS can be helpful in predicting falls and functional-status problems.
F. Assess the ability to perform self-care activities
    1. Activities of Daily Living Scale (Katz, Downs, Cash, & Grotz, 1970)
    2. Instrumental Activities of Daily Living Scale (Lawton & Brody, 1969)

Health History

The subjective information obtained from the older adult is a critical factor in the development of the plan of care. Respect and confidence are not only prudent, but also standard practice for the acute care nurse and can set the stage for a productive health-centered dialogue. The nurse should assess the reason(s) for seeking care (chief complaint) and include the family and support person(s). The following are issues that should be considered when conducting a health history of the older adult with cancer:

A. Assess history of present illness in regard to cancer diagnosis, cancer stage at diagnosis, current cancer stage, and cancer treatment (surgical, chemotherapy, radiation therapy, and hormonal therapy).
B. Assess past medical history as related to a diagnosis of cancer (include dates of diagnosis and treatments and regular oncological assessment continued).
C. Assess family medical history of malignancy and ages on diagnosis (some families have strong familial histories of malignancy, and perhaps younger generations should consider genetic counseling).
D. Assess regular cancer screening examinations.
E. Assess for common geriatric syndromes (issues, such as incontinence or falls, that have many predisposing factors).

Physical Examination

Conducting a physical examination of an older adult must incorporate an understanding of normative aging changes and knowledge of pathology. The physical examination is also an opportunity to teach about the importance of self-examination (breast and skin exams) and provide relevant health information. The physical exam is not only an empirical evaluation, but also an opportunity to determine current health status and trends over time.

Evaluation of functional status should be performed with the physical examination of the older patient. Understanding level of fitness (healthy, vulnerable, frail, or terminally ill; Balducci, 2013) can help identify appropriate cancer treatment options (Droz et al., 2014). Physical examination and functional-status assessment can help reveal a clinical presentation of frailty. According to a classic study by Fried et al. (2001), frailty is characterized in part, as:

1. Age greater than 85 years
2. Dependence in one or more activities of daily living (ADL)
3. The presence of one or more geriatric syndromes

Determining whether a person is "frail" in the primary care setting can help guide important decisions before a patient is admitted to an acute care unit (L. Lee, Heckman, & Molnar, 2015). When frailty is considered in the physical examination, discussions concerning advance directives, palliative versus curative treatment, and many other critical conversations can occur before an acute situation is realized (Sanchis et al., 2014).

MEDICAL EMERGENCIES ASSOCIATED WITH CANCER AND CANCER TREATMENT

A diagnosis of cancer can lead to medical emergencies, such as electrolyte imbalances, unstable fractures, and neutropenia leading to infection. It is important to obtain cancer-related history and physical information concerning the type of treatment and the exact diagnosis with metastasis (spread of the malignancy from the original site). It is also important for the acute care nurse to know the chemotherapy administration schedule, the dosage, and when it was last administered. Often, chemotherapy, such as doxorubicin and cyclophosphamide, is administered four times, 3 weeks apart. As the chemotherapy proceeds, various issues, such as nausea and vomiting, low white cell counts (neutropenia), and mouth sores, may occur and be present on acute evaluation. The following are considered oncological emergencies and require acute care.

Hypercalcemia

A common cause of hypercalcemia is malignancy (Reagan, Pani, & Rosner, 2014), and it is generally found in 3% to 5% of emergency admission patients (C. T. Lee et al., 2006). Hypercalcemia is a reasonably common complication associated with multiple myeloma, as well as breast and lung cancers. In primary hypercalcemia, hyperparathyroidism is the most common cause (Ahmad, Kuraganti, & Steenkamp, 2015). Survival can be markedly improved with early recognition in the emergency department (Royer, Maclellan, Stanley, Willingham, & Giles, 2014).

Hypercalcemia is defined as calcium concentration greater than 10.2 mg/dL (C. T. Lee et al., 2006). Signs and symptoms of hypercalcemia are often not evident in patients with mild or moderate hypercalcemia (calcium levels of 10.3–14.0 mg/dL). Gastrointestinal discomfort, changes in level of consciousness, and general nonspecific discomfort can be experienced in cases of moderate hypercalcemia (Reagan et al., 2014). Other signs and symptoms are lethargy, confusion, anorexia, nausea, constipation, polyuria, and polydipsia (Halfdanarson, Hogan, & Moynihan, 2006).

Treatment of hypercalcemia depends on the severity. Thiazide diuretics should be discontinued. Hydration must be maintained to diminish the risk of exacerbation of hypercalcemia. Severe hypercalcemia should be considered a medical emergency. Intravenous normal saline and loop diuretics should be implemented but will last only as long as the treatments are infusing. Bisphosphonates can help reduce bone reabsorption resulting in low serum calcium levels (Fallah-Rad & Morton, 2013). Calcitonin can also be administered subcutaneously or intramuscularly and can also reduce calcium levels (Halfdanarson et al., 2006). 25OHD levels and vitamin D supplementation may also reduce the risk of hypercalcemia (Fallah-Rad & Morton, 2013).

Tumor Lysis Syndrome

Tumor lysis syndrome (TLS) is caused when a tumor breaks down rapidly as a result of treatment or decompensation, leading to massive cell death (Dubbs, 2018; Wagner & Arora, 2014). TLS is often detected in hematological malignancies (Rasool et al., 2014) and can be associated with high proliferation rate, bulky tumor (Mughal, Ejaz, Foringer, & Coiffier, 2010), high tumor burden, and sensitivity to chemotherapy (Rasool et al., 2014). TLS causes hyperkalemia, hyperuricemia, and hyperphosphatemia, which can enhance the risk of renal failure, reduced cardiac function, and mortality (Cantril & Haylock, 2004; Dubbs, 2018; Mughal et al., 2010; Shah, 2014). As chemotherapy agents become more effective, the risks increase for TLS.

Hyperphosphatemia and hypocalcemia can occur about 24 to 48 hours following the first chemotherapy administration. Signs and symptoms, such as muscle cramps, anxiety, depression, confusion, hallucinations, cardiac arrhythmia, and seizures, can result (Cantril & Haylock, 2004; Strauss, Hamlin, & Dang, 2017). The use of biomarkers (superoxide dismutase, malondialdehyde, glutathione, and catalase) may help one to recognize TLS so that treatment can be started (Rasool et al., 2014).

Other issues associated with TLS include hyperkalemia, which is created by a release of potassium from the debilitation of the tumor cells. High serum potassium levels can cause severe arrhythmias and sudden death (Cairo & Bishop, 2004; Criscuolo, Fianchi, Dragonetti, & Pagano, 2016). Hyperuricemia (uric acid greater than 10 mg/dL) can result in acute obstruction uropathy and cause hematuria, flank pain, hypertension, edema, lethargy, and restlessness (Cairo & Bishop, 2004; Cantril & Haylock, 2004) and is caused by underexcretion (Oka et al., 2014). Hydration, administration of allopurinol, and diuresis are generally the first-line treatment (Ahmad et al., 2015; Cantril & Haylock, 2004). Treatment with rasburicase has been found to be effective in the treatment by lowering plasma uric acid levels (Dinnel, Moore, Skiver, & Bose, 2015). The signs and symptoms associated with TLS include decreased urine output, seizures, and arrhythmias. Electrolytes must be assessed to determine the presence of hyperkalemia, hyperuricemia, and hyperphosphatemia. Electrocardiograms should be obtained to assess for arrhythmia.

Spinal Cord Compression

Spinal cord compression (SCC) is not uncommon and can occur when metastasis spreads to the vertebral bodies and invades the spinal cord. Spinal metastasis of three or more vertebra are more likely to develop SCC (G. T. Silva, Bergmann, & Thuler, 2015). Malignant SCC is related to a poor prognosis and a mean survival of less than 3 months following diagnosis (Campillo-Recio et al., 2019). The spinal column in the thoracic area is the most common location for this and must be recognized immediately to prevent critical, irreversible damage (Halfdanarson et al., 2006). SCC can lead to long-term neurological deficits and is often detected in solid tumors such as prostate, lung, breast, and kidney cancers (Savage et al., 2014).

Signs and symptoms are numbness, tingling and weakness in the extremities, sensory changes, and upper thorax and back pain (Bowers, 2015; Lowey, 2006; Tsukada et al., 2015). Pain can radiate or localize and may seem chronic, which may disguise the emergent SCC and delay critical treatment. Bowel and bladder dysfunction can also occur. For patients who are experiencing SCC, the inability to walk into the clinic or emergency department often results in a delay of care (Tsukada et al., 2015), and it is important to recognize that the ability to ambulate does not exclude the existence of SCC.

Diagnosis is often made with MRI and CT and sometimes plain radiographic films of the affected area. Treatment is often initiated with glucocorticoids, followed by either radiation therapy or surgery, and in some cases both. For people who are ambulatory, radiation therapy can be considered. Patients with paraplegia, nonradiosensitive tumors, and a predicted survival of more than 3 months may benefit from surgery to decompress the spine (George et al., 2008). In some cases, combination therapy of surgery and radiation therapy can be beneficial to preserving ambulatory status and survival (C. H. Lee, Kwon, et al., 2014).

Neutropenic Fever

Neutropenic fever is an oncological medical emergency, which is caused by the diminishment of neutrophils by

chemotherapeutic agents. Neutropenia is defined by an oral temperature of 101°F and an absolute neutrophil count (ANC) of less than 1,500 cells/μL. An ANC of less than 500 cells/μL is considered severe (Freifeld et al., 2011). Neutropenia can be the motivator for a severe infection, and timely treatment is essential (Villafuerte-Gutierrez, Villalon, Losa, & Henriquez-Camacho, 2014). Generally, fever is the presenting sign; however, skin rashes and mucositis may also be present. For some patients, neutropenic fever can occur after the first cycle of chemotherapy, and patients who have undergone aggressive surgery with bowel resections are at enhanced risk (Sharma, Rezai, Driscoll, Odunsi, & Lele, 2006).

Myelosuppression is associated with many chemotherapies, and growth factors, such as granulocyte-colony stimulating factor (G-CSF), work to elevate white blood cell counts necessary in fighting infection (Miller & Steinbach, 2014). A great amount of nursing literature exists on the definition, prevention, and management of neutropenic fever. Prevention of neutropenia and neutropenic fever should be proactive in the administration of G-CSFs in patients who are considered to be at high risk (Aapro et al., 2011; Dale, 2016). An older cancer patient receiving myelotoxic chemotherapy (cyclophosphamide, doxorubicin, vincristine, and prednisolone) is considered high risk and should receive prophylactic G-CSF administration (Aapro et al., 2011; Repetto et al., 2003), yet many patients are not treated with growth factors despite the potential positive outcomes (Lugtenburg et al., 2012).

CASE STUDY 37.1

A 76-year-old woman presents to the emergency department with delirium and trauma to her left hip. The patient's daughter reports that the patient fell in the bathroom several hours earlier. She has a diagnosis of breast cancer and is currently undergoing chemotherapy and has received four cycles of Adriamycin and cyclophosphamide. She also has a history of osteoarthritis, hypertension, and gastric reflux disease. Presenting signs and symptoms are delirium, cracked mucous membranes, low blood pressure, at 88/42 mmHg, and tachycardia.

Situations such as dehydration are not uncommon in an older person undergoing chemotherapy. Patients may have vomiting or diarrhea and become dehydrated as a result. Seniors have less functional reserve and are therefore more likely to suffer from complications of cancer treatment (Balducci, 2006). Older adults require careful examination and intervention in order to maintain and enhance health and independence.

1. In this clinical scenario, which geriatric syndromes are present?
   Answer: Falls, delirium, pain associated with trauma, functional-status limitations, and ambulatory difficulty.
   Rationale: This patient has multiple geriatric syndromes and is at risk for further deconditioning. It is important to recognize the geriatric syndromes present and anticipate any additional injuries. Ensure caregiver support and help facilitate a plan for care while at home.
2. In this clinical scenario, which oncological emergency is this patient at greatest risk to develop?
   Answer: This clinical scenario is not written for an oncological emergency. Let us give the patient bone metastasis in her thoracic spine. Then she can be at risk for SCC.
   Rationale: Based on the signs and symptoms of dehydration, hypercalcemia is of concern. Hydrate to prevent hypercalcemia and to reduce signs and symptoms of dementia. Falls are also of concern because the risk of future falls is associated with prior falls. Dehydration in an older adult cancer patient can be associated with many problematic health and functional limitations.

(*continued*)

SUMMARY

Acute care of the older patient requires nurses' health assessment skills to be proactive in detecting and addressing limitations that can result from a cancer diagnosis and treatment. Nonmalignant comorbidities and geriatric syndromes play a role in the diagnosis and treatment of cancer and should be assimilated into the critical thinking involved in developing the nursing plan of care. Careful health assessment and evaluation are critical to the acute care nurse in understanding the disease progress, treatment tolerance, and the presence of oncological emergencies. Nurses working in acute settings must be acquainted with the principles of geriatric care, which should be applied to patients with any type of diagnosis and not limited to malignancy. Understanding normative aging changes versus pathology can help facilitate a specialized plan of care with enhanced health and independence as the intended patient outcomes.

NURSING STANDARD OF PRACTICE

Protocol 37.1: Cancer Assessment and Interventions

I. GOAL

Improve the care of the older person diagnosed with cancer

II. OVERVIEW

Older adults have an increased risk of malignancy (Howlader et al., 2018). Seniors often tolerate cancer treatment as well as younger people, depending on functional and general health status (Droz et al., 2017; Gomez-Millan, 2009; Sastre et al. 2008, Wildiers et al., 2007).

III. BACKGROUND

Cancer is most often diagnosed in people aged 65 years and over (Howlader et al., 2018). Nurses must be aware of management options and some potential emergencies associated with the diagnosis and treatment of a malignancy.

IV. PRINCIPLES OF CANCER CARE IN THE OLDER PERSON

A. Assessment of comorbid conditions
   1. Cancer may be one of several chronic conditions.
   2. The more severe the comorbidity, the lower the probability of survival after a diagnosis of cancer (Iversen et al., 2009). The absence of severe comorbidity and good general health allows older people to be considered for more aggressive types of cancer treatments (Banysch et al., 2018; Vitale et al., 2019).

B. Assess the patient using a comprehensive geriatric assessment.
   1. The CGA is a battery of clinical measures used to assess functional, emotional, and cognitive status; falls; medications; and general health status (Overcash, 2018; Wildiers et al., 2014).
   2. Functional status can be measured using an Activity of Daily Living Scale (Katz et al., 1970), Instrumental Activities of Daily Living Scale (Lawton & Brody, 1969), Gait Assessment Scale (Tinetti, 1986), or Berg Balance Scale (Berg et al., 1992).
   3. Risk of falls can be assessed using the Timed Up and Go Test (Podsiadlo & Richardson, 1991).
   4. Emotional status is often assessed using the Geriatric Depression Scale (Yesavage et al., 1982).
   5. Cognitive status is assessed using the Mini-Cog (Borson et al., 2000).
   6. General health status is assessed with a complete history and physical exam.
   7. Medication is evaluated using the Beers Medication Screen (AGS, 2019).

C. Assessment of medical emergencies associated with cancer
   1. Hypercalcemia
      a. Defined as calcium concentrations greater than 10.2 mg/mL (C. T. Lee et al., 2006)
      b. Signs and symptoms are not often noticeable.
      c. Gastrointestinal discomfort, lethargy, confusion, anorexia, nausea, constipation, polyuria, and polydipsia are symptoms (Halfdanarson et al., 2006).
      d. Treatment depends on severity.
      e. Thiazide diuretics should be discontinued.
      f. Hydration with intravenous normal saline is recommended.
      g. Bisphosphonates are an option (Fallah-Rad & Morton, 2013).
   2. Tumor lysis syndrome (TLS)
      a. Caused when a tumor breaks down rapidly (Wagner & Arora, 2014).
      b. Causes hyperkalemia, hyperuricemia, and hyperphosphatemia, which can cause renal failure and reduced cardiac function.

(*continued*)

Protocol 37.1: Cancer Assessment and Interventions (*continued*)

c. Signs and symptoms are muscle cramps, anxiety, depression, confusion, hallucinations, cardiac arrhythmia, and seizures (Cantril & Haylock, 2004; Dubbs, 2018).
d. Treatment with hydration, administration of allopurinol, and diuresis are generally the first line of treatment (Cantril & Haylock, 2004).
e. Treatment with rasburicase has been found to be effective in the treatment and prevention of hyperuricemia and TLS (Dinnel et al., 2015).

3. Spinal cord compression
   a. Occurs when metastasis spreads to the vertebral bodies and invades the spinal cord (Campillo-Recio et al., 2019; Halfdanarson et al., 2006).
   b. Signs and symptoms are numbness, tingling, and weakness in the extremities; sensory changes; upper thorax and back pain (Lowey, 2006; Tsukada et al., 2015).
   c. Pain can radiate or localize and may seem chronic, which may disguise the emergent spinal cord compression and delay critical treatment.
   d. Bowel and bladder dysfunction can also occur (Tsukada et al., 2015).
   e. Treatment is often initiated with glucocorticoids, followed by radiation therapy and/or surgery (George et al., 2008).
4. Neutropenia fever
   a. Caused by the diminishment of neutrophils by chemotherapeutic agents
   b. Neutropenia is defined by an oral temperature of 101°F and an ANC of less than1,500 cells/μL. An ANC of less than 500 cells/μL is considered severe (Freifeld et al., 2011).
   c. Generally, fever is the presenting sign; however, skin rashes and mucositis may also be present.
   d. Prevention of neutropenia and neutropenic fever should be proactive in the administration of G-CSFs in patients who are considered to be at high risk (Aapro et al., 2011; Dale, 2016).
   e. Treatment of neutropenia is to stop chemotherapy until white counts elevate.

V. PARAMETERS OF ASSESSMENT

A. Older patients with cancer require comprehensive geriatric assessment and monitoring during diagnosis and treatment of malignancy.

ABBREVIATIONS

ANC	Absolute neutrophil count
CGA	Comprehensive geriatric assessment
G-CSF	Granulocyte-colony stimulating factor

RESOURCES

The American Geriatrics Society offers clinical guidelines in using the CGA in older persons. Retrieved from https://www.americangeriatrics.org/publications-tools

The National Comprehensive Cancer Network offers clinical practice guidelines, including senior adult oncology. Retrieved from https://www.nccn.org/professionals/physician_gls/default.aspx

The Oncology Nursing Society offers recommendations for practice of the oncology patient. Retrieved from https://www.ons.org/explore-entrance

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Perioperative Care of the Older Adult*

Fidelindo Lim and Larry Z. Slater

38

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Identify unique multifactorial challenges affecting the older adult perioperative patient.
2. Synthesize current best practices from related geriatric themes in the assessment and management of the older adult perioperative patient.
3. Describe geriatric-specific, evidence-based, and interprofessional interventions to improve outcomes among older adult perioperative patients.

OVERVIEW

The confluence of advancing age, geriatric syndromes, regulatory changes, and advances in medical technology has made perioperative care scenarios of older adults more complex. Surgical procedures performed on older adults are expected to rise. About 27% of adults aged 65 and older had two or more hospital stays in 2016 (Centers for Disease Control and Prevention [CDC], 2018). In 2015, the 10 most commonly performed operative procedures among persons between 65 and 74 years old were (Agency for Healthcare Research and Quality [AHRQ], 2019):

1. Knee arthroplasty
2. Hip replacement (total and partial)
3. Percutaneous transluminal coronary angioplasty (PTCA)
4. Spinal fusion
5. Laminectomy and excision intervertebral disc
6. Other procedures on vessels other than head and neck
7. Partial excision of bone
8. Other therapeutic procedures (hemic and lymphatic system)
9. Colorectal resection
10. Coronary artery bypass graft (CABG)

A 9% decrease in the rate of hospitalizations for adults aged 85 and over was noted from 2000 to 2010. The same age group comprised 2% of the U.S. population, but accounted for 9% of hospital discharges (Levant, Chari, & DeFrances, 2015). Factors such as polypharmacy, diabetes mellitus, presurgical cognitive status, use of general anesthesia, and an increasing number of procedures done in ambulatory care settings will continue to impact perioperative outcomes, particularly the development of postoperative delirium, a significant determinant of poor outcomes (American Geriatrics Society [AGS], 2012).

Perioperative nursing is defined as the "delivery of comprehensive care within preoperative, intraoperative

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

and postoperative periods of the patient's experience during operative and other invasive procedures" (Steelman, 2015, p. 1). The high-stake demands of perioperative patient care, the increasing number of older adults undergoing surgery, and the unique vulnerabilities of this population require the translation of science-based interprofessional collaboration. The use of the nursing process, critical thinking, and evidence-based practice models will ensure patient safety and quality for older adult patients and their families.

The discussion about perioperative care of older adults comes at an opportune time, when there is growing recognition that the educational background of nursing staff directly impacts the mortality of surgical patients. Aiken et al. (2014) found that a 10% increase in the proportion of staff nurses holding a bachelor's degree is associated with a 7% decrease in the risk of death among patients following common surgeries in an acute care setting. This finding supports earlier evidence of lower mortality among surgical patients when there is a higher proportion of bachelor's-prepared nurses on staff (Aiken, Clarke, Cheung, Sloane, & Silber, 2003). Lower rates of postoperative deep vein thrombosis (DVT) or pulmonary embolism (PE) and shorter length of stay have also been found in hospitals with a higher percentage of registered nurses (RNs) with baccalaureate or higher degrees (Blegen, Goode, Park, Vaughn, & Spetz, 2013).

The improvement of care outcomes in older adult perioperative patients will draw from an array of evidence not only from clinical studies but also from research in nursing policy, management, and health professions education. Specific safety and quality benchmarks for the general surgical care of older adults are described in Chapter 39, General Surgical Care of the Older Adult. The inevitable aging of the population will result in greater demand for surgical care. Comprehensive geriatric assessment that takes into account patient's participation is an established clinical approach in optimizing positive outcomes for the perioperative older adult patient (Partridge, Harari, Martin, & Dhesi, 2014).

BACKGROUND AND STATEMENT OF PROBLEM

The number and type of surgical procedures performed in the past decade vary according to the body systems involved. In 2014, 10.1 million inpatient hospital stays involved operating room (OR) procedures (a total of 14.2 million OR procedures) with an aggregate hospital cost of $187.1 billion (McDermont, Elixhauser, & Sun, 2017). Of these, adults older than 65 comprised 32.6% (3,292,300 patients) of hospital stays involving one or more surgeries (McDermont et al., 2017). Of the 1.8 million Medicare beneficiaries 65 years of age and older who died in 2008, 31.9% had undergone an inpatient surgical procedure during the year before death, 18.3% had undergone a procedure in their last month of life, and 8% had undergone a procedure during their last week of life. For those between the ages of 80 and 90 years, the percentage of surgical procedures in the last year of life decreased by 33% (Kwok et al., 2011). A 2017 report on OR procedures requiring inpatient stays in 2014 included the following data:

- Although just over one quarter (28.6%) of all stays involved OR procedures, these stays accounted for nearly half (48.4%) of aggregate hospital costs.
- Compared with stays without OR procedures, hospital stays involving OR procedures were longer on average (5.1 vs. 4.4 days) and had higher average costs ($18,500 vs. $7,900).
- 36.7% of stays that were privately insured involved OR procedures compared with 23% to 25% of stays among other types of payers.
- Three musculoskeletal procedures (hip replacement, knee arthroplasty, and spinal fusion) accounted for 12.2% of all OR procedures and 19.6% of aggregate costs for all inpatient stays with a first-listed OR procedure.

Ambulatory surgeries continue to increase because of medical and technological advancements and the development and expansion of minimally invasive and noninvasive surgeries. Estimates of surgical and nonsurgical ambulatory procedures performed in hospitals and ambulatory surgery centers (ASCs) in the United States in 2010 include these highlights (Hall, Schwartzman, Zhang, & Liu, 2017):

- 28.6 million ambulatory surgery visits to hospitals and ASCs occurred.
- 48.3 million surgical and nonsurgical procedures were performed.
- 25.7 million (53%) ambulatory surgery procedures were performed in hospitals, and 22.5 million (47%) were performed in ASCs.
- 51% of the visits for ambulatory surgery were paid for by private insurance. Medicare payment was expected for 31%, and Medicaid for 8%; only 4% were self-pay; 4% were listed as other and 2% listed as unknown in their source of payment.
- 95% of the visits with a specified discharge disposition had a routine discharge to the patient's home. Patients who were admitted to the hospital as inpatients accounted for 2% of these visits.
- 19% of procedures were performed on those aged 65 to 74, with about 14% performed on those aged 75 and over.

Going for surgery, whether an outpatient or inpatient procedure, emergent or elective, marks an important healthcare transition, particularly among vulnerable older adults, because of the increased morbidity and mortality risks. A study involving 24,216 patients reported that failures-to-rescue were more than two times higher in patients older than 75 years compared with those younger than 75 years (26.0% vs. 10.3% at high-mortality hospitals, *p* less than .001; Sheetz et al., 2014). It is interesting to note that a higher nurse–patient ratio (odds ratio [OR]: 0.99, 95% confidence interval [CI; 0.98–1.00]) did not influence failure-to-rescue (Sheetz et al., 2014).

Overall mortality among older adults presenting with trauma is higher among those older than 74 years than in younger geriatric cohorts (Hashmi et al., 2014). Furthermore, severe and extremely severe injuries and systolic hypotension at presentation are associated with significant mortality risks (Hashmi et al., 2014). Higher mortality trends have also been noted among older adults who had cardiac surgery (Sepehri et al., 2014), kidney transplant (Knoll, 2013), hip-fracture surgery (Carpintero et al., 2014), and colectomy (Visser, Keegan, Martin, & Wren, 2009), as well as among surgical oncology patients (Korc-Grodzicki et al., 2014). Among cardiac surgical patients, age more than 75 years is an independent risk factor for intensive care unit (ICU) mortality, and these patients have a higher risk of multiorgan dysfunction syndrome (MODS; Curiel-Balsera et al., 2013).

In general, high surgical mortality among older adults is closely linked with increased risk of falls, prolonged hospitalization, and frailty (Green et al., 2012; Sepehri et al., 2014). However, advanced age alone does not correlate or predict higher mortality postsurgery (Green et al., 2012). Similar findings have been noted among patients in critical care settings (Balas et al., 2012). This is important for nurses to consider in their assessment, and they should be aware of personal or professional biases (e.g., ageism) that might impact the overall quality of care provided among older adult perioperative patients. Consideration of the overall health scenario, including the typical age-related physiologic changes, baseline health status, severity of present illness, and potential risks of perioperative complications, rather than age alone, should guide the realistic care decisions for perioperative older adult patients (Oresanya, Lyons, & Finlayson, 2014).

The Surgery Standing Committee of the National Quality Forum (NQF) endorses measures for surgical procedures. As a result, there have been numerous collaborative safety initiatives, from both governmental and nonregulatory agencies, in the past decade to meet these measures. The 15 measures endorsed by NQF are (NQF, 2017):

1. Beta Blockade at Discharge
2. Preoperative Beta Blockade
3. Use of Internal Mammary Artery (IMA) in Coronary Artery Bypass Graft (CABG)
4. Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure
5. Risk Adjusted Colon Surgery Outcome Measure
6. Statin Therapy at Discharge After Lower Extremity Bypass (LEB)
7. Rate of Open Repair of Abdominal Aortic Aneurysms (AAA) Where Patients Are Discharged Alive
8. In-Hospital Mortality Following Elective Endovascular Aneurysm Repair (EVAR) of AAAs
9. Postoperative Stroke or Death in Asymptomatic Patients Undergoing Carotid Endarterectomy
10. Postoperative Stroke or Death in Asymptomatic Patients Undergoing Carotid Artery Stenting (CAS)
11. Hospital-Level Risk-Standardized Complication Rate (RSCR) Following Elective Primary Total Hip Arthroplasty (THA) and/or Total Knee Arthroplasty (TKA)
12. Hospital-Level 30-Day, All-Cause Risk-Standardized Readmission Rate (RSRR) Following Elective Primary Total Hip Arthroplasty (THA) and/or Total Knee Arthroplasty (TKA)
13. The Society of Thoracic Surgeons (STS) Individual Surgeon Composite Measure for Adult Cardiac Surgery
14. STS Mitral Valve Repair/Replacement (MVRR) Composite Score
15. STS Mitral Valve Repair/Replacement (MVRR) and Coronary Artery Bypass Graft (CABG) Composite Score

It is expected that these measures inform and align with the nurse-sensitive outcomes set forth by the National Database of Nursing Quality Indicators (NDNQI). Examples of NDNQI indicators that may particularly impact older adult perioperative patients include falls, pressure injury, restraint prevalence, and hospital-acquired infections such as urinary tract infections and central line–associated bloodstream infections (Montalvo, 2007).

ASSESSMENT OF PROBLEM AND NURSING CARE STRATEGIES

Preoperative Considerations

Successful perioperative care of the older adult begins at the time surgery has been determined to be a safe option. What distinguishes older adults from their younger

counterparts is the former's loss of functional reserve and a general decline in organ function (Khan, Singer, & Vaughan, 2017). Older patients may present with a host of comorbidities involving any organ system, and these must be evaluated and optimized before surgery to improve the postoperative outcome. This highlights the crucial roles played by anesthetists, geriatricians, and nurses in the preoperative management of this challenging patient population. Functional and cognitive impairment, malnutrition, facility residence, and frailty have been associated with adverse surgical outcomes (Oresanya et al., 2014).

As part of the comprehensive preoperative assessment of older patients, "it is useful to determine whether a patient is physiologically 'young' (i.e., exhibiting only changes associated with normal aging) or 'old' (i.e., exhibiting aging effects due to comorbidities in addition to normal aging)" (White et al., 2012, p. 1191). Throughout the perioperative period, the team should reinforce the patient's psychological preparation. This intervention has been shown to be beneficial for the outcomes related to postoperative pain, behavioral recovery, negative affect, and length of stay (Powell et al., 2016).

Consent for Surgery

Determining the patient's capacity to consent for surgery is another challenge for the provider. Age alone does not predict incapacity to consent for surgery (Oresanya et al., 2014). It is important to view capacity within a continuum. It can be evanescent and can be optimized with careful consideration of situational, psychosocial, medical, psychiatric, and neurologic factors (Sessums, Zembrzuska, & Jackson, 2011). Patients with cognitive impairment will have limited participation in the informed consent process. Reliable capacity assessment can also be influenced by problematic relationships between patients and providers, as well as cultural, linguistic, and educational barriers (Ivashkov & Van Norman, 2009). From a legal and medical standpoint, competence to consent to treatment may require the following criteria (Appelbaum & Grisso, 1995; Welie & Welie, 2001):

- Ability to appreciate the nature of one's situation and the consequences of one's choices
- Ability to understand the relevant information
- Ability to reason about the risks and benefits of potential options
- Ability to communicate a choice

The use of validated tools, such as the Standardized Mini-Mental State Examination (SMMSE) or the Mini-Cog, must be used to evaluate the medical decision-making capacity of the patient (see Chapter 7, Healthcare Decision-Making, and Chapter 9, Assessing Cognitive Function in the Older Adult). A review of 43 prospective studies to determine the prevalence of incapacity and assessment accuracy in adult medical patients without severe mental illnesses found that only 2.8% of healthy older adult control subjects lacked decision-making capacity, compared with 20% in those with mild cognitive impairment and 54% among persons with Alzheimer's disease (Sessums et al., 2011). The authors also noted that SMMSE scores of less than 20 are associated with increased likelihood of incapacity. Other validated tools that can be used to assess capacity are the Aid to Capacity Evaluation (ACE) tool, the Hopkins Competency Assessment Test, and the Understanding Treatment Disclosure (Sessums et al., 2011). Competency to use any assessment tools is paramount. Therefore, clinicians must have sufficient training and ongoing validation on how to use these tools. An algorithm can be used to assess decision-making capacity using a stepwise series of questions (Jones & Holden, 2004).

Preoperative Optimization

It is ideal if the process of obtaining an informed consent includes a discussion of treatment goals, risks, and benefits, with full participation of the patient, family, and other caregivers. If surgery is unlikely to satisfy the patient's goals and preferences, nonoperative treatments may be pursued (Oresanya et al., 2014). A comprehensive geriatric assessment is called for not only for its benefits in reducing adverse postoperative outcomes, but also to aid clinicians in optimizing function before surgery (Kumar, Salzman, & Colburn, 2018; Partridge et al., 2014). Experts recommend the following four domains as the focus of preoperative optimization: cognition, functional status, nutrition, and frailty (Oresanya et al., 2014). Evidence suggests that poor functional status (e.g., inability to climb two flights of stairs or walk four blocks) is associated with an increased risk of postoperative cardiopulmonary complications after major noncardiac surgery (Girish, Trayner, Dammann, Pinto-Plata, & Celli, 2001).

For older adults with hip fractures, optimization requires estimating perioperative risks and performing the surgery early, as well as focusing on intravascular volume restoration, pain management, and prevention of perioperative hypotension (Nicholas, 2014b). Advanced preoperative cardiac testing (e.g., echocardiography and stress testing) does not seem to improve outcomes and may inappropriately delay surgical repair (Nicholas, 2014a). Regardless of the surgery needed, older adults with active cardiac

conditions, such as unstable coronary syndromes, decompensated heart failure, significant arrhythmia, and severe valvular disease, require evaluation and treatment before nonurgent or noncardiac surgery (Fleisher et al., 2014).

The Perioperative Optimization of Senior Health (POSH) Initiative

The POSH program is an innovative care redesign that utilized geriatrics experts throughout the perioperative period for the care of patients older than 65 who underwent elective surgeries. Interventions were focused on management of comorbidities, reduction of polypharmacy, enhancement of mobility and nutrition, and delirium risk mitigation. Primary outcomes were length of stay (LOS), readmission rates (7-day and 30-day, all-cause inpatient readmission), and discharge disposition (home with self-care vs. need for ongoing health services, including home health, skilled nursing facility, or hospice). Despite higher mean age and morbidity burden, older adults in the intervention group had fewer complications, shorter hospitalizations, more frequent discharge to home, and fewer readmissions than a comparison group (McDonald et al., 2018).

Admission

Unless the patient is coming in for an elective or ambulatory surgery, inpatient surgeries usually necessitate a visit to the emergency department (ED), partly because of the nature of clinical scenarios requiring surgical interventions (e.g., hip fracture, gastrointestinal bleeding, subdural hematoma, etc.). The time spent in the ED, particularly among vulnerable older adults, is an important consideration because of its positive correlation with negative patient-oriented outcomes, from worse patient satisfaction to higher inpatient mortality rates (Singer, Thode, Viccellio, & Pines, 2011).

A retrospective cohort study (N = 41,256, with 37% of subjects older than 65 years) reported higher mortality correlates with increased ED boarding time (2.5% inpatients boarded less than 2 hours; 4.5% inpatients boarded 12 hours or more [p less than .001; Singer et al., 2011]). The authors also noted longer hospital stay correlates with longer boarding time in the ED. On average, those who stayed in the ED for less than 2 hours had 5.6 days of hospitalization (SD ±11.4) compared with 8.7 days (SD ± 16.3 days) for those who boarded for more than 24 hours (Singer et al., 2011). Similar negative findings have been reported in ED nursing case studies of older adult patients (Donatelli, Gregorowicz, & Somes, 2013). Among orthopedic patients, surgical delay is associated with a significant increase in the risk of death and pressure injuries (Moja et al., 2012)—both are nursing-sensitive indicators. Clinical and administrative nursing personnel play a pivotal role in expediting patient transfer from the ED to the surgical unit or the OR and in facilitating timely performance of diagnostic procedures and other inpatient preoperative screening to minimize unwanted delays.

Assessment of Surgical Risk

Comprehensive preoperative assessment of older adults needs to consider calculating surgical risks in order for the patient and his or her family and the provider to come up with an informed decision to operate. Although there are currently no validated tools specific to the older adult population, various available surgical-risk calculators may be applied, particularly in evaluating cardiac risk before noncardiac surgery (Bilimoria et al., 2013). The *Assessment of an Older Patient With a Condition Potentially Amenable to Surgery* is an algorithm intended to guide the surgeon and the patient in determining the appropriateness of surgery (Oresanya et al., 2014). Table 38.1 shows examples of surgical-risk assessment tools and their descriptions.

Based on the synthesis of existing evidence, the following clinical factors have been associated with increased perioperative risk of a cardiovascular event (Fleisher et al., 2014): history of ischemic heart disease, heart failure, cerebrovascular disease, insulin-dependent diabetes mellitus, preoperative serum creatinine greater than 1.5 mg/dL, increasing age, American Society of Anesthesiologists (ASA) physical status classification, and preoperative functional status. Emergency surgery is associated with higher risk, as cardiac complications are two to five times more likely than with elective procedures (Fleisher et al., 2014). Frailty and resiliency are two vital concepts to consider in the comprehensive assessment of older surgical patients. Use of a validated frailty scoring tool can be used in preoperative assessment where applicable (Chow, Rosenthal, Merkow, Ko, & Esnaola, 2012).

Intraoperative Considerations

Anesthesia

The physiologic changes that accompany aging may put the older adult surgical patient at risk for adverse effects of anesthetics. Loss of skeletal muscle mass, decrease in total body water, and increased adipose tissue, especially in women, can lead to an expansion of the lipid reservoir for centrally active anesthetic drugs (e.g., benzodiazepines, volatile agents, opioid analgesics, and sedative-hypnotics), contributing to delayed elimination and increased duration of action of these drugs (White et al., 2012). Among

TABLE 38.1

Examples of Surgical-Risk Assessment Tools

Surgical-Risk Assessment Tool	Description
Revised Goldman Cardiac Risk Index (RCRI; Devereaux et al., 2005; Lee et al., 1999)	Referred to as the Lee Index, the tool offers significant predictive value for cardiac complications and mortality after major noncardiac surgery in various populations and settings, except for abdominal aortic aneurysm surgery.
Vascular Study Group of New England (VSGNE; Bertges et al., 2010)	The risk index predicts in-hospital cardiac events after vascular surgeries such as nonemergent carotid endarterectomy, lower extremity bypass, endovascular abdominal aortic aneurysm repair, and open infrarenal abdominal aortic aneurysm repair.
American College of Surgeons—National Surgery Quality Improvement Program (ACS-NSQIP) Universal Surgical Risk Calculator (Bilimoria et al., 2013)	A universal decision-support tool based on 21 preoperative factors. It is used as a morbidity and mortality risk calculator for patients undergoing surgery and includes several geriatric variables, such as age, functional health status, albumin level, type of procedure, demographics, and comorbidities. The tool can be used to estimate risks for postoperative complications.
Gupta MICA (myocardial infarction or cardiac arrest) NSQIP Database Risk Model (Gupta et al., 2011)	This cardiac risk calculator provides a risk estimate of intraoperative or postoperative MICA. Five factors identified as predictors of MICA are type of surgery, dependent functional status, abnormal creatinine, American Society of Anesthesiologists class, and increased age.

malnourished older adults with hypoalbuminemia, there is a higher risk of toxicity for albumin-bound anesthetic agents, such as propofol and diazepam, because of increased free-drug concentrations, contributing to increased sensitivity to these drugs (Aymanns, Keller, Maus, Hartmann, & Czock, 2010). Anesthetic agents are also known to decrease cardiac output, arterial pressure, and microvascular perfusion (Bentov & Reed, 2014), which can further strain the patient's limited physiologic reserve.

To assess postoperative risks, the ASA Classification of Physical Health remains the most common tool used in appraising preoperative health of surgical patients. The patient's preoperative health is categorized into five classes (I–V). An "E" for emergency surgery is placed after the Roman numeral (Dripps, 1963):

I. Patient is a completely healthy, fit patient.
II. Patient has mild systemic disease.
III. Patient has severe systemic disease that is not incapacitating.
IV. Patient has incapacitating disease that is a constant threat to life.
V. A moribund patient who is not expected to live 24 hours with or without surgery.

An ASA score of VI is designated for patients who are declared brain dead and coming to the OR for organ procurement. An ASA score of III or higher is a predictor of greater blood loss and need for transfusion in total hip replacement patients (Grosflam, Wright, Cleary, & Katz, 1995). The ASA score has been shown to have a predictive value in long-term mortality after a hip fracture (Bjorgul, Novicoff, & Saleh, 2010). In a prospective study of 1,635 patients with hip fracture, survival for those rated with ASA I was 8.5 years versus only 1.6 years for those rated as ASA IV (Bjorgul et al., 2010). A prospective study of 168 hip-fracture patients (age range: 50–98 years) reported that an ASA score of III or higher is a predictive factor of postoperative delirium (Zakriya et al., 2002).

Although this grading system is widely used, there has been notable criticism of its value. Variations of the classification systems are available. Perioperative nurses need to inform themselves of what system is used in their facility. Use of the ASA classification to predict postoperative mortality risk can be further enhanced by complementing it with the Short Potable Mental Status Questionnaire (SPMSQ) for assessing cognitive function. Söderqvist et al. (2009), in a prospective cohort study of 1,944 patients aged 66 years or older, reported that the combination of ASA score and SPMSQ provides greater information about survival times compared with the ASA score alone. Nurses are encouraged to be active participants in evaluating the patient's surgical risk and in communicating with the provider any changes in the patient's condition that may impact the use of anesthetics. In order to safely monitor patients, nurses need to have an up-to-date knowledge of pharmacokinetics and pharmacodynamics of the common anesthetic agents used and the unique precautions related to older adults.

Oxygen Supplementation

A systematic review indicated that use fraction of inspired oxygen (FiO_2) of 60% or higher is associated with a greater risk of adverse events, including mortality. Evidence is

insufficient to support the routine use of FiO_2 of 60% or higher during anesthesia and surgery (Wetterslev et al., 2015). Clinicians must rely on objective proof of the patient's need for higher FiO_2 such as arterial blood gas (ABG) results.

Intraoperative Medication Safety

Although the exact number of medication errors taking place throughout the perioperative continuum cannot be fully known, medication safety continues to be a challenge (Treiber & Jones, 2012). A prospective observational study to assess the rates of perioperative medication errors (MEs) and adverse drug events (ADEs) found that 1 in 20 perioperative medication administrations included an ME and/or ADE. More than one third of the MEs led to observed ADEs, and the remaining two thirds had the potential for harm (Nanji, Patel, Shaikh, Seger, & Bates, 2016). A Pennsylvania Patient Safety Authority study found 1,137 medication error events associated with the perioperative settings in 1 year. More than half (54.6%) of the reported events reached the patient. Nearly three quarters (74.9%) of events were attributed to a breakdown in communication during transitions of care or handoff procedures (Cierniak, Gaunt, & Grissinger, 2018). Perioperative medication prescribing and administration often bypasses standard safety checks, such as electronic provider order entry with decision support, pharmacy verification, and multiple nursing checks at the time of medication administration. Other potential factors for MEs include medications in unlabeled containers or removed from their original containers and placed into unlabeled containers (The Joint Commission [TJC], 2019b). In one qualitative study, preoperative MEs were the most frequently reported perioperative medication error (Treiber & Jones, 2012).

Antibiotic Prophylaxis

In 2013, 19% fewer surgical site infections (SSI) were observed than predicted on the basis of 2006 to 2008 baseline data (NQF, 2017). Among the many strategies to prevent SSI is the use of antibiotic prophylaxis. The current guidelines are an interprofessional collaboration supported by the American Society of Health-System Pharmacists (ASHP), the Infectious Diseases Society of America (IDSA), the Surgical Infection Society (SIS), and the Society for Healthcare Epidemiology of America (SHEA). The guidelines include specific recommendations for various surgeries (e.g., neurosurgery, cardiac, thoracic, gastroduodenal, bowel, and biliary) that disproportionately affect older adults. The key recommendation is to administer intraoperative antibiotic within 60 minutes before surgical incision. Antibiotics requiring longer infusion times, such as fluoroquinolones and vancomycin, should begin within 120 minutes before surgical incision (Bratzler et al., 2013).

Time Out/Universal Protocol

From 2005 to 2018, the TJC reported 1,501 sentinel events related to wrong-patient, wrong-site, wrong-procedure events (TJC, 2019a). Seen within the overall number of surgeries done annually (14.2 million OR procedures performed in 2014; McDermont et al., 2017), these incidences are considered rare, although they have very serious consequences. Older adults can be seen as having high vulnerability for such events because of a higher prevalence of cognitive or memory impairment, which might affect their full participation in the Time Out procedure.

A Cochrane Review that evaluated the effectiveness of organizational and professional interventions for reducing wrong-site surgery reported that preoperative verification using Universal Protocol, site marking, Time Out, and targeted educational interventions has been demonstrated to reduce the incidence of wrong-site surgery events (Algie et al., 2015). Recognizing the complexities of the work processes involved in Universal Protocol, TJC offers some guidelines for its implementation (see Protocol 38.1 for details). Patients with cognitive decline have an impaired ability to participate in the surgical site identification and verification processes; therefore, this requires an added layer of safety checks.

POSTANESTHESIA CARE UNIT CONSIDERATIONS

Perioperative Delirium

Delirium is a high-impact, high-volume complication of surgery among older adults that is associated with a host of negative outcomes (Pallaria, Panebianco, & Kamienski, 2018). Underlying cognitive impairment predisposes the patient to postoperative delirium, which cascades to a host of adverse care trajectories such as longer hospitalization and ICU stay, higher costs, increased mortality, greater use of continuous sedation and physical restraints, increased unintended removal of catheters and self-extubation, functional decline, new institutionalization, and new onset of cognitive impairment (Balas et al., 2012). A narrative review of 54 studies of surgical patients older than 60 years reported an adjusted OR of 17 (CI [1.2–239.8]; *p* less than .05), associating preoperative cognitive impairment with postoperative delirium (Oresanya et al., 2014).

Current best practice guidelines recommend the use of validated clinical protocols to assist in preventing episodes of delirium. Because of its significant impact, preoperative discussions among patients, their families, and providers may include the use of preoperative delirium prophylaxis. Findings from a meta-analysis suggest that perioperative use of prophylactic antipsychotics may effectively reduce the overall risk of postoperative delirium in the elderly (Teslyar et al., 2013). See Chapter 20, Delirium: Prevention, Early Recognition, and Treatment, for more detailed discussion and current guidelines.

Pain Management

There is evidence that pain management of older adults is inadequate, particularly among the cognitively impaired and those with altered mental states, in spite of the availability of validated tools for pain assessment and management (Schofield, 2014). High compliance with implementation of assessment tools will result in increased identification of postoperative pain as well as delirium (Pallaria et al., 2018). The American Society of PeriAnesthesia Nurses (ASPAN) has issued guidelines on how to manage pain and promote comfort (ASPAN, 2003). Please refer to Chapter 22, Pain Management in the Older Adult, for a detailed discussion of pain in older adults.

Medication Reconciliation and Perioperative Beta-Blocker

Medication reconciliation of perioperative older adults should pay close attention to making sure that beta-blockers are part of the patient's ongoing medications. The Beers Criteria for Potentially Inappropriate Medication Use in Older Adults (AGS, 2015) should be used as a guide in reviewing medications during medication reconciliation and bedside rounds. The continuation of beta-blocker therapy perioperatively decreases the risk of in-hospital death among high-risk, but not low-risk, patients undergoing major noncardiac surgery (Fleisher et al., 2014). A systematic review has shown that use of perioperative beta-blockers prevents postop supraventricular and ventricular arrhythmias among cardiac surgery patients. In noncardiac surgery, evidence shows an association of beta-blockers with increased all-cause mortality (Blessberger et al., 2018). For patients who cannot take oral beta-blockers, the intravenous equivalent needs to be given. Beta-blockers' effect on mortality, acute myocardial infarction (MI), stroke, heart failure, hypotension, and bradycardia in the cardiac surgery setting remains unclear (Blessberger et al., 2018).

Postoperative and Postdischarge Nausea and Vomiting

The ASPAN published practice guidelines on how to manage the common perioperative complication of nausea and vomiting. Potential trajectories of postoperative nausea and vomiting (PONV) and postdischarge nausea and vomiting (PDNV) include aspiration, wound dehiscence, prolonged postoperative hospital stays, unanticipated hospital admission after outpatient surgery, delayed return of a patient's functional ability in the 24-hour period after surgery, and lost time from work for patients and care providers at home (ASPAN, 2006). A weblink to the ASPAN guidelines is provided in Protocol 38.1 practice guideline section.

GENERAL PERIOPERATIVE CONSIDERATIONS

A Culture of Safety

Maintaining safety and quality patient care in a high-stress environment, such as the perioperative unit, enables the unit to flourish in a culture of safety based on nonpunitive principles. The use of an evidence-based teamwork system to improve communication and collaborative skills (e.g., TeamSTEPPS) will empower staff to self-advocate for safety (AHRQ, n.d.). Nurse-led initiatives, such as unit practice councils and appointing "champions" for specific perioperative core measures, are essential in this process (Institute for Healthcare Improvement [IHI], n.d.). Hardwiring a culture of safety would require a concerted systematic approach across all levels of care.

Handoff Communication

The transition between preoperative (preop) to postoperative (postop) is a high-stake event that might require multiple location changes (from the admitting area to the holding area, from the OR to the postanesthesia care unit [PACU], from the PACU to the surgical ward or specialty care units, from the surgical inpatient unit to a rehabilitation unit and other transitions). Essential to safe transition is high-quality handoff. This is defined as "the process of transferring primary authority and responsibility for providing clinical care to a patient from one departing caregiver to one oncoming caregiver" (Patterson & Wears, 2010, p. 53). Handoff communication has now become a proxy measure of the overall communication quality among providers (Riesenberg, Leisch, & Cunningham, 2010).

The Joint Commission accreditation evaluates the effectiveness of communication among caregivers as part of its National Patient Safety Goals (TJC, 2019b). Root-cause analysis of perioperative sentinel event (e.g., resulting in

death or permanent loss of function) data from 2005 to 2018 reveals communication failure and human factors are among the leading causes of errors in wrong-patient, wrong-site, and wrong-procedure; patient falls, delays in treatment, and unintended retention of foreign object events (TJC, 2019a). Communication skills have been measured as the worst aspect of teamwork behavior in the OR (Wahr et al., 2013).

Although handoff varies according to unique institution process (e.g., use of electronic health record), it is imperative to use a standardized form or checklist coupled with preoperative and postoperative debriefings (Wahr et al., 2013). The Association of periOperative Registered Nurses (AORN) website has extensive resources and tools to guide design and implementation of quality handoff (AORN, 2012). For guidance on how to implement quality-improvement projects in handoff, the Handoff Communications Targeted Solutions Tool by TJC is an excellent starting point (see the "Resources" section for the website).

SSI Prevention

Patients' risk of having a healthcare-associated infection was 16% lower in 2015 than in 2011. A 2015 study found that SSI is the third most common healthcare-associated infection (HAI) in U.S. hospitals (Magill et al., 2018). HAI is estimated to affect 2% to 5% of inpatient surgery, with 3% mortality, while increasing the risk of death 2 to 11 times compared to those who did not acquire an SSI (Anderson et al., 2014). *Staphylococcus aureus* is the most common pathogen causing SSIs, accounting for 30% of SSIs in the United States (Bratzler et al., 2013). Standards and guidelines to prevent SSI have been recommended by the Surgical Care Improvement Project (SCIP) supported by key stakeholders. Comprehensive SSI prevention strategies include well-established measures, such as surgical hand asepsis, and other collaborative measures, such as antibiotic prophylaxis, glycemic control, maintaining normothermia, and skin and bowel prep (Fry, 2008). A comprehensive policy on SSI prevention includes environmental and engineering policies such as keeping the OR doors closed during surgery except as needed for passage of equipment, personnel, and the patient (Berríos-Torres, 2009). The CDC standard and transmission-based precautions should be followed where applicable. See Protocol 38.1 for SSI practice guidelines.

Deep Vein Thrombosis Prophylaxis

Venous thromboembolism (VTE) is defined as having either a DVT and/or a PE (He et al., 2014). The rate of postoperative VTE after hip-fracture surgery is low, estimated at 1.34%, 95% (CI [1.04–1.64]), with PE actuarial rate of 0.25% at 3 months; however, the overall mortality is 14.7% (Rosencher, Vielpeau, Emmerich, Fagnani, & Samama, 2005). Indeed, hip-fracture patients belong to a vulnerable group of old people with comorbid diseases that put them at high risk for postoperative VTE morbidity and mortality. Residents in long-term care (LTC) facilities and hospitals account for about 60% of diagnosed VTE events (Heit et al., 2002).

Well-known risk factors for VTE include advanced age; obesity; trauma; hypertension; those with a diagnosis of cancer, congestive heart failure, chronic obstructive pulmonary disease, or chronic kidney disease, especially nephrotic syndrome; trauma; and those undergoing major surgery, including laparoscopic surgery (Buesing, Mullapudi, & Flowers, 2015). Appropriate screening using evidence-based clinical decision rules (CDRs) is warranted among perioperative older adults (Siccama et al., 2011) in the light of the 2008 Surgeon General's office call to action to prevent the estimated 350,000 to 600,000 annual VTE cases in the United States (Leavitt, 2008). To maintain the safety and reduce harm, nurses need to observe TJC's guidelines related to the use of anticoagulants (TJC, 2019b). VTE prophylaxis should be initiated 24 hours before surgery and continued thereafter as clinically indicated (Cataife, Weinberg, Wong, & Kahn, 2014; TJC, 2019b).

Special Population: Bariatric Surgery

Current U.S. estimates indicate approximately one third of persons older than 65 years are obese (Fakhouri et al., 2012). As a result, there is a consequent rise of bariatric surgery among this age group. Although there has been some debate on the safety of bariatric surgery among older adults, a systematic review and meta-analysis declared the procedure to be safe for those aged 55 years and older (Giordano & Viktorzon, 2015). Implementation of early mobility protocol, VTE prophylaxis, use of incentive spirometer, and optimized pain management will enhance positive outcomes for this high-risk procedure.

Preoperative Fasting Guidelines

The traditional practice of not letting patients eat or drink after midnight ("NPO after midnight") before general anesthesia aims to reduce the volume and acidity of stomach contents during surgery, thus reducing the risk of regurgitation or aspiration. Prolonged fasting has been associated with adverse physical and psychological perioperative complications such as irritability, headache, dehydration, emesis, hypotension, hypovolemia, and hypoglycemia (Brady, Kinn, & Stuart, 2003).

Current guidelines recommend fasting of 2 hours for clear liquid and 6 hours for a light meal (ASA, 2011). Nurses should be familiar with institutional fasting procedures and be proactive in evaluating outdated policies that might impact the well-being of older adult patients. Another important consideration is determining which medications (e.g., beta-blockers) the patient should continue taking in spite of fasting requirements. The administration of oral carbohydrate drinks 2 hours before surgery (also known as carbohydrate loading) is shown to attenuate insulin resistance, minimize protein losses, reduce hospital stays, and improve patient comfort without adversely affecting gastric emptying (Bilku, Dennison, Hall, Metcalfe, & Garcea, 2014).

Surgery and Do-Not-Resuscitate Orders

Although information on advance directives, such as a healthcare proxy, is now routinely collected during patient interviews, the discussion on do-not-resuscitate (DNR) orders remains a sensitive topic. This highlights the importance of clear communication among the patient or designated surrogate and the provider. The suspension of DNR orders during the perioperative period is determined by hospital policy.

The nursing staff provides high-quality care regardless of the patient's DNR status. Nurses need to communicate advance directive information during handoff and care transitions. In patient teaching, nurses may interpret for the patient and designated surrogate unfamiliar language of advance directives and related institutional policies. It is important to uphold the patient's autonomy and right to self-determination.

CASE STUDY 38.1

Mr. P is an 85-year-old male patient who was brought in by ambulance after falling in his apartment, where he lives alone. He reported to have slipped while getting out of bed. He remained conscious but felt pain on his right hip. He denied headache, loss of consciousness, chest pain, palpitation, and dizziness. After he managed to get up from the floor, he called his son on the phone, who, in turn, called the emergency medical service (EMS). Mr. P's past medical history includes coronary artery disease (CAD), coronary artery bypass graft in 2005, atrial fibrillation (on warfarin), permanent pacemaker, peripheral vascular disease, end-stage renal disease (ESRD; on hemodialysis on Mondays, Wednesdays, and Fridays), and anemia of chronic disease. He has an allergy to sulfa drugs (rash). Mr. P is a resident of an assisted living facility.

On arrival in the ED, he was awake, alert, and oriented to self and place, but not to time. His right arm and forehead have multiple bruises and abrasions. Up until very recently, he has been mostly independent in performing his activities of daily living (ADL) and can ambulate using a walker. He gets physical therapy at home five times a week, and his last hospitalization was 6 months ago for pneumonia.

In the ED, his vital signs were as follows: blood pressure (BP): 124/76 mmHg, heart rate (HR): 60/min (paced rhythm), respiratory rate (RR): 17 regular, temperature: 36.9°C, and his oxygen saturation was 97% on room air. His current body mass index (BMI) is 25. His physical examination was unremarkable other than an external rotation and abduction of his right leg and exertional pain on the right hip area (6/10) as well as bruising on the hip area. An x-ray of the right hip revealed a comminuted intertrochanteric fracture with mild displacement of bone fragments. The head CT scan showed no evidence of acute intracranial trauma. Mr. P has a right brachial arteriovenous fistula for dialysis. His baseline lab values are shown in Exhibit 38.1.

EXHIBIT 38.1
Mr. P's Current Lab Results

Na: 139 mEq/L	WBC: 6.9 × 10^3/μL	Albumin: 3.6 g/dL
K: 4.6 mEq/L	Hemoglobin: 11.1 g/dL	Calcium: 10 mg/dL
Cl: 98 mEq/L	Hematocrit: 34.1%	Magnesium: 2.0 mEq/L
CO_2: 25 mEq/L	Platelets: 140 × 10^9/L	Phosphorus: 4.0 mg/dL
BUN: 40 mg/dL	Prothrombin time: 25.4 seconds	Troponin: 0.2 μg/L
Creatinine: 4.0 mg/dL	INR: 2.2	

BUN, blood urea nitrogen; Cl, chlorine; CO_2, carbon dioxide; INR, international normalized ratio; K, potassium; Na, sodium; WBC, white blood cells.

(*continued*)

CASE STUDY 38.1 (*continued*)

Mr. P's current home medications include warfarin, sevelamer carbonate, cetirizine, baby aspirin, docusate sodium, senna, and multivitamins. He denied alcohol or other chemical dependency issues. His son, who is named in the patient's healthcare proxy, lives nearby and is actively involved in his care.

Discussion

1. What are the priority assessments and interventions for Mr. P in the ED?

Given that Mr. P was not in acute distress and his vital signs were stable when he arrived in the ED, the care team would conduct a comprehensive geriatric assessment and request consult with an orthopedic surgeon as soon as possible. If available within the facility, a call for a geriatric consult (MD or APRN [advanced practice registered nurse]) should also be arranged. Assessment and evaluation of his right hip pain should be performed. The choice of pain medication needs to take into consideration his ESRD. For mild to moderate pain, acetaminophen may be prescribed. Drugs, such as meperidine and ketorolac, are best avoided in treating pain in older adult patients. Nonpharmacologic interventions for pain should also be explored. Because of Mr. P's elevated international normalized ratio (INR), his warfarin should be stopped, and he should be monitored for bleeding and changes in neurologic status. In anticipation of surgery, his aspirin should also be held.

Preoperative Optimization

2. Describe the best practices for preoperative optimization for Mr. P.

Maintaining patient safety is a priority for Mr. P. Once a hospital bed has been assigned, he should be transferred as soon as possible. Stabilizing his fracture might require the use of an abduction pillow. A bedside discussion with his son and the orthopedic surgeon determined that a closed reduction and intramedullary nailing will be performed once the INR is less than 1.5 and a cardiology clearance is obtained. Mr. P expressed optimism and understanding of the operative procedure, and he signed the consent himself.

A comprehensive preoperative workup should include assessment of Mr. P's cognitive status (using the Mini-Cog tool), depression screening, and identifying risk factors for developing postoperative delirium. The cardiology consult would entail obtaining a 12-lead EKG, serial Troponin, an echocardiogram, and a chest x-ray. Mr. P's telemetry reading shows a paced rhythm. Routine blood tests would include a complete blood count, renal profile, and coagulation profile. In anticipation of possible fresh frozen plasma (FFP) transfusion, a blood type and screen would be needed. A urinalysis is not recommended because Mr. P is anuric and has no risk of urinary tract infection. Mr. P's current lab values are consistent with his ESRD diagnosis, with no critical levels requiring immediate intervention.

Initial medication reconciliation revealed Mr. P takes metoprolol 25 mg twice a day, though this was not reflected in his original list of medications. Metoprolol is added to his current medication orders. A physical therapy consult determined a plan for postop bedside therapy. As a result of increased risk of VTE, pneumatic sequential compression sleeves were applied. Because of his ESRD, heparin 5,000 units every 12 hours, instead of low-molecular-weight heparin, was ordered for VTE prophylaxis.

Bedside hemodialysis was scheduled and a renal/cardiac diet was ordered. To optimize and to prevent further reduction of physiologic reserve, it is essential that Mr. P consumes enough calories and adequate hydration within the context of his ESRD. A nutrition consultation recommended two cans per day of high-calorie supplemental drink for renal patients and multivitamins. It is important that the nursing staff assist and encourage Mr. P to eat. Nursing handoff should include findings on how well Mr. P is meeting caloric requirements as well as intake and output balance. Taking all the relevant clinical data, a frailty score can be calculated for Mr. P, and this information should be shared during interprofessional rounds.

Intraoperative Considerations

Five days after admission, Mr. P was scheduled for a 9 a.m. closed reduction and intramedullary nailing under general anesthesia. Hemodialysis was done in the late afternoon before surgery. His latest INR was 1.4. He did not require any FFP transfusion, and his vital signs reflected baseline patterns. He remained alert and

(*continued*)

CASE STUDY 38.1 (*continued*)

oriented to self, place, and time. Morphine 2 mg intravenous (IV) push every 4 hours as needed was ordered for pain, although Mr. P hardly requested medication for pain. The nursing staff continued to perform turning every 2 hours to prevent pressure injuries.

3. Describe safety and quality benchmarks for the care of older adults within the intraoperative continuum.

A standardized electronic preoperative checklist was used to ensure that key assessment parameters were met. A copy of the consent was kept in the chart. The nursing staff verified that Mr. P had the correct name and allergy bands. On the evening before the surgery, patient education using teach-back was reinforced to verify Mr. P's comprehension of the procedure. This is also an opportunity to reinforce postoperative teaching topics, such as using the incentive spirometer, and to provide reassurance to the patient and family. Mr. P was informed that he could continue to drink and eat a light meal after midnight if desired. He was notified that in the morning he could take his metoprolol with a sip of water. Parameters for withholding the metoprolol dose have been included in the medication order.

The nursing care focus was to allow Mr. P a restful night, continue VTE prophylaxis using the pneumatic sleeves, discontinue heparin the day before surgery, and continue delirium surveillance. The nurse anesthetist and orthopedic surgeon examined Mr. P and reviewed his latest lab values. Based on the nature of the procedure, hair removal was not indicated. A gauge-22 IV needle was placed on his left arm for intermittent or emergency use. The patient care technician assisted Mr. P with his bedbath.

An RN-to-RN handoff report using a standardized form took place before Mr. P was picked up for the OR. His son and grandson accompanied him to the OR entrance and were notified where to wait until Mr. P's return from the PACU. During the bedside handoff, the plan of care was communicated using the electronic health record.

Within 60 minutes before the surgical incision, Mr. P received an IV infusion of cefazolin (adjusted renal dose based on his latest glomerular filtration rate [GFR]) with no untoward reactions. Throughout his stay in the OR, his temperature was kept within normal limits through the use of warm blankets and a head covering. The circulating nurse made sure that the SCIP core measures were followed at all times.

Immediate Postoperative Considerations

4. Discuss key parameters of assessment and intervention of older adults in PACU.

When the surgery was completed, an RN-to-RN handoff report took place using a standardized form. On arrival in the PACU, the priority focus was to maintain a patent airway and adequate oxygenation because Mr. P had just been extubated. Mr. P's vital signs, telemetry rhythm, and pain were assessed, followed by a comprehensive head-to-toe examination, focusing on the surgical site and signs of delirium. A warming blanket was used to maintain Mr. P's temperature at greater than or equal to 96.8°F. Pneumatic sequential compression devices for both legs were continued. The RN reviewed Mr. P's current medication orders, particularly focusing on starting the patient-controlled analgesia (PCA) morphine and continuation of beta-blockers. Cefazolin 1 g IV piggyback once daily was to be continued for another 24 hours. During his stay in the PACU, Mr. P was monitored for signs of pain, agitation, and delirium using validated tools such as the confusion assessment method for the ICU (CAM-ICU). The PACU nurse notified Mr. P's family of his current status and his expected return to his surgical room.

SUMMARY

The perioperative period is a highly vulnerable time for older adults. Safe, quality patient care requires meaningful implementation of various evidence-based guidelines discussed in this chapter. The benefits of high-quality interprofessional team collaboration cannot be overemphasized. Regardless of the type of surgery, a comprehensive plan of care that takes into account the patient's values and preferences is desirable. Meeting the various perioperative core measures unique to the older adult population will rely on a seamless, albeit challenging, synthesis of various specialty practice recommendations, models of care, and understanding of geriatric syndromes, as well as clinical judgment and provider expertise.

NURSING STANDARD OF PRACTICE

Protocol 38.1: Perioperative Care of the Older Adult

I. GOAL

To restore physiologic stability, prevent complications, maintain comfort and safety, and preserve pre-illness functional ability and QOL in older adults throughout the perioperative continuum

II. OVERVIEW

A. From 2003 to 2012, the most frequently performed OR procedures for persons over 65 were knee arthroplasty, percutaneous coronary angioplasty (PTCA), hip replacement, laminectomy, spinal fusion, and colorectal resection (Fingar, Stocks, Weiss, & Steiner, 2014).
B. A 10% increase in the proportion of staff nurses holding a bachelor's degree is associated with a 7% decrease in the risk of death among patients following common surgeries in an acute care setting (Aiken et al., 2014).
C. Lower rates of postoperative VTE and shorter length of stay have also been found in hospitals with a higher percentage of RNs with baccalaureate or higher degrees (Blegen et al., 2013).
D. Comprehensive preoperative geriatric assessment correlates with positive postoperative outcomes in older patients (Partridge et al., 2014).

III. BACKGROUND

A. Definition
   1. *Perioperative nursing* is defined as the "delivery of comprehensive care within preoperative, intraoperative and postoperative periods of the patient's experience during operative and other invasive procedure" (Steelman, 2015, p. 1). The high-stake demands of perioperative patient care, the increasing number of older adults undergoing surgery, and the unique vulnerabilities of this population require the translation of science-based interprofessional collaboration. The use of the nursing process, critical thinking, and evidence-based practice models will ensure patient safety and quality for older adult patients and their families.
B. Etiology/epidemiology
   1. The demand for surgical procedures is expected to rise with the aging population.
   2. In 2014, 10.1 million inpatient hospital stays involved operating room (OR) procedures, with a total of 14.2 million OR procedures (McDermont et al., 2017).
   3. Procedures that place the patient at the most risk include those that involve general anesthesia or deep sedation (TJC, 2019b).
   4. Failure-to-rescue was more than two times higher in patients older than 75 years compared with those younger than 75 years (26.0% vs. 10.3% at high-mortality hospitals, *p* less than 001; Sheetz et al., 2014).
   5. Death (failure-to-rescue) among surgical inpatients with treatable serious complications and the percentage of major surgical inpatients who experience hospital-acquired complications (e.g., sepsis, pneumonia, gastrointestinal bleeding, shock/cardiac arrest, VTE) are nursing-sensitive measures and publicly reportable events (NQF, 2017).
   6. A 10% increase in the proportion of staff nurses with a bachelor's degree is associated with a 7% decrease in the risk of death among patients following common surgeries in an acute care setting (Aiken et al., 2014).
   7. Lower postoperative VTE and shorter length of stay are associated with higher percentage of RNs with baccalaureate or higher degrees (Blegen et al., 2013).
   8. Perioperative beta-blocker therapy is associated with a reduced risk of in-hospital death among high-risk, but not low-risk, patients undergoing major noncardiac surgery. Patient safety may be enhanced by increasing the use of beta-blockers in high-risk patients (Lindenauer et al., 2005).

(*continued*)

Protocol 38.1: Perioperative Care of the Older Adult (*continued*)

IV. PARAMETERS OF ASSESSMENT

A. The ACS-NSQIP and the AGS's *Best Practices Guidelines for Optimal Preoperative Assessment of the Geriatric Surgical Patient* recommend the following preoperative assessment parameters (Chow et al., 2012):
   1. Assess the patient's cognitive ability and capacity to understand the anticipated surgery.
   2. Screen the patient for depression.
   3. Identify the patient's risk factors for developing postoperative delirium.
   4. Screen for alcohol and other substance abuse/dependence.
   5. Perform a preoperative cardiac evaluation according to the ACC/AHA algorithm for patients undergoing noncardiac surgery.
   6. Identify the patient's risk factors for postoperative pulmonary complications and implement appropriate strategies for prevention.
   7. Document functional status and history of falls.
   8. Determine baseline frailty score.
   9. Assess the patient's nutritional status and consider preoperative interventions if the patient is at severe nutritional risk.
   10. Take an accurate and detailed medication history, and consider appropriate perioperative adjustments. Monitor for polypharmacy.
   11. Determine the patient's treatment goals and expectations in the context of the possible treatment outcomes.
   12. Determine the patient's family and social support system.
   13. Order appropriate preoperative diagnostic tests based on unique clinical scenarios of elderly patients.

B. For comprehensive preoperative evaluation, the provider should inquire about symptoms, such as angina, dyspnea, syncope, and palpitations, as well as history of heart disease, including ischemic, valvular, or myopathic disease; and history of hypertension, diabetes, chronic kidney disease, and cerebrovascular or peripheral artery disease (Bilimoria et al., 2013).

C. For geriatric fracture patients, recommended preoperative optimization focus includes (Nicholas, 2014b):
   1. Assurance of adequate intravascular volume
   2. Medication adjustment in anticipation of intraoperative hypotension
   3. Judicious continuation of beta-blockers and other antiarrhythmic chronotropic drugs for selected patients
   4. Pain management
   5. Prevention of polypharmacy and excessive laboratory testing

D. Orthopedic surgery services should ensure that patients are operated on within 1 or 2 days of admission when cleared for surgery (Moja et al., 2012).

E. In patients assessed to be at intermediate or high cardiovascular risk, a referral to a cardiologist for further evaluation is recommended (Fleisher et al., 2014).

F. Adjust dose of medications according to renal function using GFR parameters.

G. Implement the 2014 SCIP Core Measure Set (TJC, 2014).
   1. Prophylactic antibiotic received within 1 hour before surgical incision
   2. Prophylactic antibiotics discontinued within 24 hours after surgery end time
   3. Cardiac surgery patients with controlled postoperative blood glucose
   4. Surgery patients with appropriate hair removal
   5. Urinary catheter removed on POD 1 or 2 with day of surgery being day 0
   6. Perioperative temperature management
   7. Those who were under beta-blocker therapy before arrival received a beta-blocker during the perioperative period.
   8. Received appropriate VTE prophylaxis within 24 hours before surgery to 24 hours after surgery

(*continued*)

Protocol 38.1: Perioperative Care of the Older Adult (*continued*)

H. Improve medication safety within the perioperative settings through the following measures: (TJC, 2019b)
   1. Label all medications, medication containers, and other solutions on and off the sterile field in perioperative and other procedural settings.
   2. Label medications and solutions that are not immediately administered. This applies even if there is only one medication being used.
   3. Label any medication or solution transferred from the original packaging to another container.
   4. Verify all medication or solution labels both verbally and visually.
   5. Label each medication or solution as soon as it is prepared, unless it is immediately administered.
   6. Discard immediately any medication found unlabeled.
   7. Remove all labeled containers on the sterile field, and discard their contents at the conclusion of the procedure.
   8. Review all medications and solutions both on and off the sterile field.

I. Implement SSI prevention guidelines (TJC, 2019b)
   1. Educate staff and licensed independent practitioners involved in surgical procedures about SSIs and the importance of prevention.
   2. Educate patients who are undergoing a surgical procedure and their families about SSI prevention as needed.
   3. Implement policies and practices aimed at reducing the risk of SSI.
   4. Conduct periodic risk assessments for SSI.
   5. Select SSI measures using best practices or evidence-based guidelines.
   6. Monitor compliance with best practices or evidence-based guidelines.
   7. Evaluate the effectiveness of prevention efforts.

J. Consistently implement TJC's Time Out and Universal Protocol guidelines that include the following (TJC, 2019b):
   1. Implement a preprocedure process to verify the correct procedure, for the correct patient, at the correct site. Involve the patient in the verification process when possible.
   2. Identify the items that must be available for the procedure, and use a standardized list to verify their availability.
   3. Match the items that are to be available in the procedure area to the patient.
   4. Identify those procedures that require marking of the incision or insertion site. At a minimum, sites are marked when there is more than one possible location for the procedure and when performing the procedure in a different location would negatively affect quality or safety.
   5. Mark the procedure site before the procedure is performed and, if possible, with the patient involved.

V. NURSING CARE STRATEGIES

Synthesis of perioperative best practices guidelines (AORN, 2006; Bratzler et al., 2013; Chow et al., 2012; Fleisher et al., 2014; TJC, 2019b) provides collaborative nursing opportunities across the perioperative continuum.

A. Preoperative
   1. Perform a comprehensive assessment: History and physical examination, cognitive and functional assessment, medication reconciliation, nutrition, advance directives, and so on, using validated tools and checklists (Chow et al., 2012).
   2. Collect nursing-sensitive data during interview with patient and family.
   3. Review, document, and interpret pertinent laboratory and diagnostic findings, specific to patient's clinical scenario.
   4. Assess, review, and document vital signs, including glucose finger stick (e.g., blood sugar goal) and other disease-specific lab values as appropriate.
   5. Educate patient and family using teach-back method on routine (e.g., consent, fasting requirement [2 hours for clear liquid and 6 hours for light meal], patient escort) and special topics (e.g., bowel preparation or withholding specific drugs, such as metformin, after an angiogram).

(*continued*)

Protocol 38.1: Perioperative Care of the Older Adult (*continued*)

6. Conduct medication reconciliation (TJC, 2019b), focusing on Beers Criteria for potentially inappropriate medication use in older adults (AGS, 2015).
7. Evaluate use of cardiac drugs throughout perioperative continuum. In particular, the guidelines for perioperative use of beta-blockers recommend to (Fleisher et al., 2014):
   a. Continue beta-blockers, particularly those with independent cardiac indications such as arrhythmia or history of myocardial infarction.
   b. Continue beta-blockers in patients undergoing intermediate risk or vascular surgery with known coronary artery disease or with multiple clinical risk factors for ischemic heart disease.
   c. Titrate to a heart rate of 60 to 80 beats/min in the absence of hypotension.
   d. Titrated rate control with beta-blockers should continue during the intraoperative and postoperative periods.
   e. Beta-blockers should be tapered off slowly to minimize risk of withdrawal.
8. Inform patient or caregiver to bring all home medications on the day of procedure, especially for outpatient same-day surgery.
9. Reinforce appropriate VTE prophylaxis within 24 hours before surgery (Cataife et al., 2014; TJC, 2019b).
10. Facilitate appropriate hair removal before surgery (TJC, 2019b).
11. Implement POSH interventions for elective surgery patients (McDonald et al., 2018).
12. Provide carbohydrate loading as per hospital protocol (Bilku et al., 2014).
13. Calculate risk using the Surgical-Risk Calculator (http://riskcalculator.facs.org/RiskCalculator/PatientInfo.jsp; Bilimoria et al., 2013).

B. Intraoperative
1. Participate in high-quality interprofessional Time Out and handoff procedure (TJC, 2019b).
2. Safely administer antibiotics within 60 minutes before surgical incision. For some agents that require longer administration time, such as fluoroquinolones and vancomycin, infusion can begin 120 minutes before incision. Redosing of antibiotic is recommended if the procedure exceeds two half-lives of the drug or if there is excessive blood loss during surgery (Bratzler et al., 2013).
3. Safely administer beta-blocker during the perioperative period if applicable (Blessberger et al., 2018).
4. Assess and manage patient temperature intraoperatively (e.g., active warming to maintain greater than or equal to 96.8°F 30 minutes before anesthesia or 15 minutes post anesthesia end time).
5. Maintain asepsis and sterility of the operative field.
6. Keep OR doors closed during surgery except as needed for passage of equipment, personnel, and the patient (Berríos-Torres, 2009).
7. Monitor intraoperative systems processes throughout the procedure.
8. Follow procedure and policy related to prevention on unintended retention of foreign objects intraoperatively.
9. Follow CDC infection control guidelines in handling infectious materials (e.g., specimen, equipment).
10. Use supplemental oxygen judiciously during the perioperative period (Wetterslev et al., 2015).
11. Implement pressure injury prevention measures (Spruce, 2017).

C. Postoperative
1. Perform high-quality handoff during care transitions (e.g., between the OR and PACU using standardized forms or checklists; TJC, 2019b).
2. Maintain patient safety during transfer and handoff.
3. Monitor vital signs per institution protocol, including hemodynamic profile and glucose finger stick, if applicable.
4. Assess and document pain, including pharmacologic and nonpharmacologic interventions.
5. Maintain patient temperature at greater than or equal to 96.8°F.
6. Monitor blood sugar as clinically applicable (e.g., SCIP measure for cardiac surgery patients is to keep serum glucose greater than or equal to 200 mg/dL 18 to 24 hours postoperation; Fry, 2008).

(*continued*)

Protocol 38.1: Perioperative Care of the Older Adult (*continued*)

7. Monitor patient's GFR, assess patient's urine output and weight, and follow protocol/procedures in administering nephrotoxic medications.
8. Coordinate medication reconciliation, with special attention to beta-blockers (TJC, 2019b) and antidiabetic medications.
9. Implement safe VTE prophylaxis within 24 hours before surgery or 24 hours postoperation (e.g., compression stockings or pneumatic compression devices, heparin, low-dose heparin; Buesing et al., 2015; TJC, 2019b).
10. Protect primary closure incisions with sterile dressing for 24 to 48 hours post operation (Fry, 2008).
11. Discontinue antibiotics within 24 hours after surgery end time (48 hours for cardiac surgery; Fry, 2008).
12. Provide timely and accurate information to patient and family members.
13. Resume diet as clinically appropriate.
14. Avoid medications that induce delirium postoperatively (e.g., anticholinergics, sedative-hypnotics, diphenhydramine; American Geriatrics Society [AGS], 2012).
15. Use validated delirium screening instruments (AGS, 2014).
16. Implement early mobility protocol (Goldfarb, Afilalo, Chan, Herscovici, & Cercek, 2018).
17. Implement nonpharmacologic interventions to improve sleep (Tamrat, Huynh-Le, & Goyal, 2014).
18. Coach patient to use incentive spirometer.

VI. EVALUATION/EXPECTED OUTCOMES

A. Patient outcomes
   1. Maintain patient safety across the perioperative continuum.
   2. Assess patient decision-making capacity, and honor patient and family care decision choices.
   3. Receive a comprehensive preoperative screening, including, but not limited to, the following domains: Cognitive and behavioral, cardiopulmonary, functional status, nutrition, medication, and frailty.
   4. Undergo clinically relevant preoperative testing (e.g., blood, urine, radiologic, EKG, etc.) based on best practice evidence (see ACS-NSQIP/AGS Best Practice Guidelines Optimal Preoperative Assessment of the Geriatric Surgical Patient).
   5. Optimize function across the perioperative continuum.
   6. Receive timely and accurate information related to plan of care, including transitional care and long-term follow-up.
   7. Patient will not develop postoperative complications such as SSI, DVT, cardiopulmonary adverse events, falls, and pressure injuries.
   8. Patient will be free from adverse events such as medication errors, wrong site-procedure events, anesthesia-related events, and issues.

B. Provider outcomes
   1. Receive education and ongoing training on best practices in the care of the geriatric surgical patient.
   2. Assess patient's decision-making capacity and obtain informed consent.
   3. Implement latest guidelines for antimicrobial prophylaxis in surgery (e.g., receive antibiotics within 60 minutes before surgical incision).
   4. Participate in high-quality interprofessional collaboration across the perioperative continuum, including rounding, handoff, Time Out/Universal Protocol, pain management, SSI prevention, early mobility, nutrition, medication reconciliation, and transitional care.
   5. Use an evidence-based teamwork system to improve communication and teamwork skills (e.g., TeamSTEPPS) for patient safety (AHRQ, n.d.).
   6. Apply teach-back method in all patient education encounters that are culturally competent and patient-centered.
   7. Employ consistent and accurate documentation of care throughout the perioperative continuum.
   8. Provide patient and caregivers with timely and accurate information of patient's condition and plan of care, including care transitions.

(*continued*)

Protocol 38.1: Perioperative Care of the Older Adult (*continued*)

9. Perioperative nurses achieve a minimum of bachelor's degree and obtain practice-specific certification (e.g., gerontological nursing, CNOR).
10. Organize and participate in unit-based practice and quality-improvement councils.

C. Systems outcomes
1. Uphold patient safety and quality in the care of older adults through policy and social statements (e.g., safety language in hospital's mission).
2. Review and align existing institutional policies and procedures with latest national standards (see "Practice Guidelines" section).
3. Facilitate and sustain interprofessional geriatrics care teams.
4. Monitor, evaluate, and disseminate hospital performance in perioperative benchmarks such as Time Out/Universal Protocol, antibiotic prophylaxis, DVT prophylaxis, and other site-specific parameters.
5. Establish a system of reporting patient safety issues (e.g., falls, medication errors, unintended retention of foreign object, wrong-patient, wrong-site, wrong-procedure, etc.) across the perioperative continuum to identify opportunities for improvement.
6. Adopt specific patient safety initiatives for older adults that include use of informatics, algorithms, checklists, and personnel oversight.
7. Develop ongoing quality-improvement initiatives consistent with SCIP core measures and other practice guidelines.
8. Facilitate clinical rotation for nursing students across the perioperative units to promote experiential learning for prelicensure students.
9. Enforce SSI prevention policies and conduct SSI surveillance based on CDC and TJC guidelines.
10. Organize and support interprofessional unit-based practice and quality-improvement councils (IHI, n.d.).
11. Demonstrate a commitment to culture of safety based on openness and mutual trust (e.g., patient safety leadership walk rounds; IHI, n.d.).
12. Monitor hospital-acquired perioperative pressure injuries.

VII. RELEVANT PRACTICE GUIDELINES

A. AORN Guidance Statement (2006). Safe Medication Practices in Perioperative Settings Across the Life Span: https://aornjournal.onlinelibrary.wiley.com/doi/full/10.1016/S0001-2092%2806%2960495-X?sid=nlm%3Apubmed
B. Fleisher, L. A., Fleischmann, K. E., Auerbach, A. D., Barnason, S. A., Beckman, J. A., Bozkurt, B., … Wijeysundera, D. N. (2014). *2014 ACC/AHA Guideline on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery*. Retrieved from http://www.onlinejacc.org/content/64/22/e77
C. ACS-NSQIP and the AGS (2012). Best Practices Guidelines for Optimal Preoperative Assessment of the Geriatric Surgical Patient: https://www.facs.org/~/media/files/quality%20programs/nsqip/acsnsqipagsgeriatric2012guidelines.ashx
D. ASHP (2013). Antimicrobial Prophylaxis in Surgery: https://www.ashp.org/-/media/assets/policy-guidelines/docs/therapeutic-guidelines/therapeutic-guidelines-antimicrobial-prophylaxis-surgery.ashx
E. The Joint Commission (2019b). National Patient Safety Goals: https://www.jointcommission.org/assets/1/6/NPSG_Chapter_HAP_Jan2019.pdf
F. PeriAnesthesia Pain and Comfort Clinical Guidelines (ASPAN): www.aspan.org/Clinical-Practice/Clinical-Guidelines/Pain-and-Comfort
G. PONV/PDNV Guidelines: www.aspan.org/Portals/6/docs/ClinicalPractice/Guidelines/PONV-PDNV_Clinical_Guideline_Aug_2006_JoPAN.pdf
H. 2014 SCIP Core Measure Set: www.jointcommission.org/assets/1/6/SCIP-Measures-012014.pdf
I. AORN (2015). Guidelines for Perioperative Practice: www.aorn.org/guidelines/#NewIn2015

(*continued*)

Protocol 38.1: Perioperative Care of the Older Adult (*continued*)

J. American Society of Anesthesiologists Committee on Standards and Practice Parameters. (2011). Practice guidelines for preoperative fasting and the use of pharmacologic agents to reduce the risk of pulmonary aspiration: application to healthy patients undergoing elective procedures: an updated report by the American Society of Anesthesiologists Committee on Standards and Practice Parameters, *Anesthesiology, 114*(3) 495–511. doi:10.1097/ALN.0b013e3181fcbfd9.
K. VTE Prophylaxis Guidelines for Surgical Patients: www.clinicalkey.com/#!/content/playContent/1-s2.0-S00396 10914002126

ABBREVIATIONS

ACC/AHA	American College of Cardiology/American Heart Association
ACS-NSQIP	American College of Surgeons—National Surgical Quality Improvement Program
ADE	Adverse drug event
AGS	American Geriatrics Society
AORN	Association of periOperative Registered Nurses
ASA	American Society of Anesthesiologists
ASHP	American Society of Health-System Pharmacists
ASPAN	American Society of PeriAnesthesia Nurses
CDC	Centers for Disease Control and Prevention
CNOR	Operative Nursing Certification
DVT	Deep vein thrombosis
GFR	Glomerular filtration rate
HAI	Hospital-acquired infection
ME	Medication error
OR	Odds ratio
PACU	Postanesthesia care unit
POD	Postoperative day
PONV/PDNV	Postoperative and postdischarge nausea and vomiting
QOL	Quality of life
SCIP	Surgical Care Improvement Project
SSI	Surgical site infection
TJC	The Joint Commission
VTE	Venous thromboembolism

RESOURCES

ACS NSQIP Surgical Risk Calculator
http://riskcalculator.facs.org

Advancing Effective Communication, Cultural Competence, and Patient- and Family-Centered Care (Joint Commission)
http://www.jointcommission.org/assets/1/6/ARoadmapforHospitalsfinalversion727.pdf

American Geriatrics Society (AGS) Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults
https://www.guidelinecentral.com/summaries/american-geriatrics-society-2015-updated-beers-criteria-for-potentially-inappropriate-medication-use-in-older-adults/

American Society of PeriAnesthesia Nurses (ASPAN)
http://www.aspan.org

Association of periOperative Registered Nurses (AORN)

Care of the Older Adult in Perioperative Setting—Position Statement
https://www.aorn.org/guidelines/clinical-resources/position-statements

Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, 2017

https://jamanetwork.com/journals/jamasurgery/fullarticle/2623725

NQF-Endorsed Measures for Surgical Procedures
https://www.qualityforum.org/Publications/2015/02/NQF-Endorsed_Measures_for_Surgical_Procedures.aspx

Online Vascular Surgery Clinical Calculators
http://www.qxmd.com/calculate-online/vascular-surgery

Perioperative Assessment of the Older Adult
https://consultgeri.org/try-this/specialty-practice/issue-sp6

Perioperative Cardiac Risk Calculator
http://www.surgicalriskcalculator.com/miorcardiacarrest

Targeted Solutions Tool for Hand Hygiene, Hand-Off Communications and Safe Surgery by The Joint Commission
http://www.centerfortransforminghealthcare.org/tst.aspx

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General Surgical Care of the Older Adult*

Fidelindo Lim and Larry Z. Slater

39

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Identify the unique challenges associated with the care of older adults following surgery.
2. Integrate preoperative and perioperative assessment and plans into the postoperative care plan for older adults following surgery.
3. Synthesize current best practices in the assessment and interdisciplinary management of the older adult surgical patient.
4. Describe evidence-based nursing and interprofessional interventions to improve outcomes among older adult surgical patients.

OVERVIEW

Older adult surgical patients offer unique challenges for the multidisciplinary team from the postoperative period to discharge. Physiological changes of aging (e.g., decreased cardiac and respiratory reserve, impaired kidney and liver function, and loss of muscle mass) can significantly affect the recovery time of older adult surgical patients and put them at greater risk for postoperative complications (Lixie, Edgeworth, & Shamir, 2015; Makary et al., 2010). In addition, older adults often present for elective and nonelective or emergent surgeries with a number of medical comorbidities that place them at further risk of postoperative morbidity and mortality (Dasgupta, Rolfson, Stolee, Borrie, & Speechley, 2009). The risk of complications and mortality continues to increase with advancing age, with those aged 90 years and older experiencing twice the rate of mortality at less than 48 hours post surgery as compared to those younger than 65 years (Deiner, Westlake, & Dutton, 2014).

As the number of surgeries for older adults continues to rise, with adults aged 65 years and older currently accounting for 34% of all surgeries (Deiner et al., 2014), it is imperative that nurses in intensive care, step-down, and medical–surgical units develop competencies in working with a multidisciplinary team to provide patient-centered care for older adult surgical patients. Such care can help maximize recovery, facilitate a return to baseline functioning, and decrease the time to discharge. Longer lengths of stay have been consistently linked to increased postoperative adverse outcomes (Makary et al., 2010). Blegen, Goode, Park, Vaughn, and Spetz (2013) found that surgical patients at hospitals with a higher percentage of

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

nurses with a baccalaureate or higher degree experienced shorter lengths of stay and less postoperative complications. Similarly, Aiken et al. (2014) demonstrated that a higher education level for nursing staff decreased mortality risk among surgical patients. These studies underscore the importance of nurses receiving initial and ongoing education and training in providing evidence-based care to older adult surgical patients.

BACKGROUND AND STATEMENT OF PROBLEM

In spite of its common use as a descriptor of a population subset, there is no universal criterion for what defines older adults. The use of 65 years as a cutoff age is being questioned based on the notion that physiological age is more clinically relevant than chronological age (White et al., 2012). In the developed world, the syndromes most relevant to geriatricians (e.g., dementia, frailty) are most common after age 80. In other areas, such as sub-Saharan Africa, older people may be defined as over age 50 (Shenkin, Harrison, Wilkinson, Dodds, & Ioannidis, 2017). By 2030, all baby boomers will be older than age 65, and older adults are projected to outnumber children for the first time in history (United States Census Bureau, 2018).

In 2010, older adults (aged 65 years and older) had a total of 19.2 million operative procedures performed in acute care settings (Centers for Disease Control and Prevention [CDC], 2010). In addition, they accounted for more than 37% of all procedures and 45% of total hospital days of care (CDC, 2010). As the population continues to age, the number of operative procedures and hospital stays for older adults will only increase. Hospital stays that involve surgical procedures have been shown to be more costly, require longer lengths of stay, and result in higher morbidity and mortality (Weiss & Elixhauser, 2014), so it is imperative that nurses address the specific needs of older adult surgical patients.

The American Geriatrics Society (AGS, 2007) developed quality indicators related to care of vulnerable elders (Assessing Care of Vulnerable Elders [ACOVE]), which include sections on hospital care, surgery, and perioperative care. The indicators address several key areas that fall under the purview of nurses providing general surgical care of the older adult: Venous thromboembolism (VTE) prophylaxis, infection prevention, delirium screening and prevention, mobilization, fall prevention, and discharge assessment (AGS, 2007). An expert panel, with funding from the National Institute on Aging (NIA), also developed a list of process-based quality indicators for older adult surgical patients, applicable across disciplines, to improve surgical care and outcomes (McGory et al., 2009). The panel rated 91 indicators as valid for surgical management of the older adult, which direct the assessment and management of critical areas in order to prevent postoperative complications, decrease lengths of stay, and facilitate discharge transitions (McGory et al., 2009). The report highlighted the need for comprehensive baseline status assessment and the use of an interdisciplinary team with surgical and geriatric expertise to follow the patient from preop to discharge, facilitating as quick a return as possible to presurgery functioning (McGory et al., 2009). The indicators were similar to the ACOVE indicators: Nutrition, hydration, pain management, delirium, respiratory function, infection prevention, mobility/ambulation, functional status, fall prevention, skin integrity, and restraint use (McGory et al., 2009).

This chapter provides the latest evidence and guidelines for the management of the stable older surgical patient in each of these key areas outlined by the ACOVE (AGS, 2007) and NIA Expert Panel (McGory et al., 2009) quality indicators. In addition, the nurse's responsibilities related to discharge planning will be highlighted. The discussion also provides, where applicable, the identification of applicable Joint Commission (TJC) National Patient Safety Goals (TJC, 2019) and National Quality Forum (NQF) National Database of Nursing Quality Indicators (NDNQI; Montalvo, 2007). For a discussion on the comprehensive management of critically ill, older patients, please refer to Chapter 35, Comprehensive Assessment and Management of the Critically Ill Older Adult.

ASSESSMENT OF THE PROBLEM AND NURSING CARE STRATEGIES

Enhanced Recovery After Surgery

Enhanced recovery after surgery (ERAS) is an evidence-based, multidisciplinary approach to the care of the surgical patient that has been shown to improve patient outcomes while decreasing length of stay and overall cost (Ljungqvist, Scott, & Fearon, 2017). ERAS programs address care from preadmission through the perioperative phase and into postdischarge. ERAS guidelines currently exist for a number of surgeries, including hip and knee replacement, the most common operative procedures for older adults, as well as for anesthesia protocols. For those undergoing hip and knee arthroplasty, a systematic review and meta-analysis by Zhu, Qian, Jiang, Ye, and Chen (2017) showed that ERAS significantly reduced length of stay and better pain management and led to fewer complications; however, there was no significant reduction in 30-day readmission rates.

Patient Safety Indicators

The Patient Safety Indicators (PSIs) recommended by the Agency for Healthcare Research and Quality (AHRQ) guide assessment and screening for adverse events that patients experience as a result of exposure to the healthcare system (AHRQ, 2014). PSIs that are directly related to postsurgical care include (Weiss & Elixhauser, 2014):

- Death among surgical inpatients
- Central venous catheter (CVC)–related bloodstream infection
- Postoperative hemorrhage or hematoma rate, physiological and metabolic derangements, respiratory failure, pulmonary embolism or deep vein thrombosis (DVT), sepsis, and wound dehiscence
- Transfusion reaction

These high-risk and high-impact events are deemed amenable to prevention by changes at the system or provider level (AHRQ, 2014). Nurses play a pivotal role in the prevention and management of these events. In the next section, specific care topics directly or indirectly related to the PSIs are explored.

Postoperative Delirium and Cognitive and Sensory Function

Postoperative delirium can occur in up to 50% of high-risk older adult surgical patients, leading to prolonged and more costly hospitalizations, functional decline, and death (AGS, 2014). Older adult surgical patients are at a high risk for delirium for a number of causes, including medication side effects; immobility; infection; inadequate pain management; and cardiac, renal, and respiratory complications (Hughes, Leary, Zweizig, & Cain, 2013). In addition, routine hospital care may contribute to delirium resulting from effects on the patient's sleep–wake cycle and sleep deprivation, often related to routine procedures and hospital noise, and inattention to visual and hearing deficits, including lack of appropriate corrective lenses and hearing aids (Hughes et al., 2013).

The management of postoperative delirium begins before surgery. The ACOVE and NIA Expert Panel recommend that this assessment be performed 8 weeks before surgery (AGS, 2007; McGory et al., 2009). The AGS Expert Panel on Postoperative Delirium in Older Adults (2014) emphasizes the assessment of risk factors for postoperative delirium, with the presence of two or more factors placing the patient at greater risk for delirium after surgery. Moreover, patients should receive a comprehensive evaluation of cognitive and sensory (vision/hearing) function 8 weeks before surgery (McGory et al., 2009). Chapter 9, Assessing Cognitive Function in the Older Adult, discusses the assessment of cognitive function and Chapter 8, Sensory Changes in the Older Adult, outlines sensory changes in older adults. For more on preoperative (as well as intraoperative) management of delirium in surgical patients, see Chapter 38, Perioperative Care of the Older Adult.

Postoperatively, healthcare professionals with adequate training in the assessment and diagnosis of delirium should screen patients using validated screening instruments, at least daily or as clinically indicated, to diagnose postoperative delirium and institute early interventions (AGS, 2014). ACOVE recommends screening to occur for at least the first 3 days after surgery (AGS, 2007). Table 39.1 provides more specific medical evaluations,

TABLE 39.1

Evaluation of Precipitating Factors for Postoperative Delirium

Precipitating Factors	Evaluation
Environmental factors	
■ Inadequate pain control	Physical examination Pain assessment
■ Sleep deprivation ■ Use of restraints ■ Urinary catheterization ■ Poor vision/hearing	Review of records, nursing notes
Infection	
■ Urinary tract infection	Physical examination Urinalysis with white blood cell count
■ Pneumonia	Chest x-ray
■ Central-line and bloodstream infections	Blood, sputum, and urine cultures
■ Surgical site infection	Surgical site imaging, as needed Medication reconciliation
Delirium-inducing medications	Medication reconciliation
Metabolic derangement	
■ Hypoxia and acidosis	Vital signs and pulse oximetry
■ Electrolyte imbalances ■ Hypoglycemia ■ Dehydration ■ Anemia ■ Hypotension and shock	Laboratory evaluation, including electrolytes, creatinine, blood urea nitrogen, glucose, hematocrit, and blood gas analysis

(*continued*)

TABLE 39.1

Evaluation of Precipitating Factors for Postoperative Delirium (*continued*)

Precipitating Factors	Evaluation
Substance withdrawal	
■ Alcohol	Physical examination
■ Benzodiazepines	Social history
■ Illicit drugs	Preadmission medication reconciliation

Source: Data from the American Geriatrics Society. (2014). Clinical practice guideline for postoperative delirium in older adults. Retrieved from http://geriatricscareonline.org/ProductAbstract/american-geriatrics-society-clinical-practice-guideline-for-postoperative-delirium-in-older-adults/CL018. *Evidence Level I*.

which include both nursing and collaborative assessments, as listed by the AGS Expert Panel on Postoperative Delirium. These evaluations are also highlighted in the National Institute for Health and Care Excellence (2019) and the NIA Expert Panel quality indicators (McGory et al., 2009) for older surgical patients. Lagoo-Deenadayalan, Newell, and Pofahl (2011) also provide a useful mnemonic, *I'm Confused*, to summarize etiologies of delirium in surgical older adult patients. A variation of this mnemonic is shown in Box 39.1.

Chapter 20, Delirium: Prevention, Early Recognition, and Treatment, outlines in greater detail the prevention, recognition, and treatment of delirium in the older adult population. For the older surgical patient, however, there are some specific management dos and don'ts that need to be highlighted here. Given the breadth of factors that may lead to postoperative delirium, adequate nursing care, as emphasized in the rest of this chapter, that addresses the general surgical care of the older adult may help prevent delirium; it will also be essential in the management of delirium, should it occur. Although evidence has not demonstrated that specific units designed for older adult surgical patients or those with delirium improve patient outcomes, environmental adjustments remain an important component of care (AGS, 2014). These may include continuity of care (familiar residents, nurses, and care technicians), continuous environmental and personal orientation, availability of working hearing and vision aids, minimization of noise and interruptions to promote adequate sleep, and involvement of family and caregivers (BGS, 2006). In addition, the AGS (2014) and BGS (2006) emphasize the following pharmacological and nonpharmacological interventions.

BOX 39.1

Mnemonic for Potential Causes of Postoperative Delirium in Older Adult Surgical Patients

C	Cognitive impairment and dementia
O	Older (more than 70 years), overmedication (polypharmacy)
N	Nutritional deficiency
S	Stress, sleep deprivation
I	Infection, immobility, impaired vision and hearing
D	Depression, dehydration
E	Electrolyte abnormalities
R	Renal insufficiency
A	Acid–base disturbances
T	Toxins (alcohol withdrawal)
I	Inappropriate medications (anticholinergics, benzodiazepines, psychotropic meds)
O	Oxygen (hypoxia)
N	Noxious stimuli (pain, inflammation)

Pharmacological

- Adequate pain management, preferably with nonopioid pain medications
- Avoidance of delirium-inducing medications such as benzodiazepines, anticholinergics, diphenhydramine, histamine2-receptor antagonists, sedative–hypnotics, and meperidine (see also the AGS Beers Criteria; AGS, 2012)
- Avoidance of routine sedation or prophylactic antipsychotics

Nonpharmacological

- Use of nonpharmacological pain management strategies
- Adequate fluid and nutrition intake
- Promotion of early ambulation/mobility, physical, and occupational therapy
- Initiation of plans to prevent pressure injury, falls, and infection
- Prevention of complications (respiratory, cardiac, gastrointestinal [GI], and renal)
- Avoidance of unnecessary catheterization and restraint use

Pain Management

A large majority of hospitalized older adults experience pain or discomfort, but they are consistently less likely to receive adequate pain management than their younger counterparts (Schofield, 2014). Pain may be postoperative, but could also include the patient's chronic pain issues, which may be exacerbated as a result of the stress of surgery and/or hospitalization. A study in the United Kingdom found that although 81% of older adults were being treated in a hospital that had an acute pain service, only a small minority of them actually had a pain assessment chart (National Confidential Enquiry into Perioperative Deaths [NCEPOD], 1999). One reason may be the misconception that older adults have a higher pain threshold (Doerflinger, 2009). This may be compounded by the fact that older adults may be more hesitant to report pain, feeling that it is just a fact of life or possibly not wanting to be a bother to the nursing staff (Panprese & Johnson, 2014), or they may be concerned about becoming dependent on pain medications (Hughes et al., 2013). Pain management is further complicated if the older adult has cognitive or communication issues.

Adequate assessment and management of pain are the nurse's imperative for the older surgical patient, because a lack of pain control can lead to a host of complications, including delirium, depression, fluid imbalances, atelectasis, and fatigue (AGS, 2014; Bashaw & Scott, 2012). Pain assessments should be performed with each set of vital signs, at a minimum (McGory et al., 2009; Schofield, 2014), but are most effective when performed as part of hourly rounding. Assessments should include a rating of intensity (using numeric, verbal, or visual scales), a pain description (to address sensory and affective dimensions as well as the impact of pain on function), and observations of signs of pain, which are especially important for patients with cognitive or communication issues (Royal College of Physicians, British Geriatrics Society, & British Pain Society, 2007). For patients with dementia, a rating scale, such as Patient Assessment in Advanced Dementia (PAINAD), may be used to systematically gather pain data (Warden, Hurley, & Volicer, 2003). In addition, a family member or caregiver may be able to assist in identifying signs of pain in the person with dementia because he or she is often more experienced in recognizing subtle clues (Hughes et al., 2013).

Although pain assessment is an ongoing critical component of TJC Hospital Accreditation Standards (TJC, 2019), and pain has been assessed as the fifth vital sign since the Veterans Health Administration launched its initiative in 1999, there has been little improvement in the overall quality of pain management (Mularski et al., 2006). The NIA Expert Panel recommends that a comprehensive pain management plan should be offered to any patient with a pain score greater than 5 (McGory et al., 2009). However, it is best to set pain management plans and goals according to the individualized needs of the patient, and the plans must take into account any chronic pain-related conditions that already exist. ACOVE states that for complaints of moderate to severe pain, an intervention should be performed, reassessment of pain should occur within 4 hours, and documentation of the intervention and reassessment should be placed in the medical chart (AGS, 2007). In practice, pain reassessment often occurs within 15 minutes for intravenous (IV) medications and 1 hour for oral (PO) medications.

Chapter 22, Pain Management in the Older Adult, provides specific protocols for management of pain in older adult populations. When applying these protocols to the surgical patient, the nurse must also take into account medication side effects that can contribute to postoperative complications (e.g., morphine and constipation). ACOVE specifically recommends interventions to address constipation when the older adult surgical patient is on opioid therapy (AGS, 2007). These are described in greater detail in the following section on Nutrition and Gastrointestinal Complications. TJC (2014) provided a clarification to their pain management standard to express the many nonpharmacological strategies, such as massage, acupuncture, and cognitive behavioral therapy, which may be used as part of the pain management arsenal. These methods may be preferred over the use of nonsteroidal anti-inflammatory drugs (NSAIDs) because of the potential GI and renal complications associated with these medications (Griffiths et al., 2014).

Nutrition and Gastrointestinal Complications

Poor preoperative nutritional status can put the older adult surgical client at risk of serious postoperative complications, including impaired skin integrity, delayed wound healing, wound or other infections, sepsis, and death (Lagoo-Deenadayalan et al., 2011; Scandrett, Zuckerbraun, & Peitzman, 2015). As older adults may have several factors that put them at risk for malnutrition, such as financial constraints, social isolation, poor oral health, depression, alcohol use, or difficulties with meal preparation (Volkert, 2002), nutritional screening before surgery is of vital importance. In the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) and AGS *Best Practice Guidelines* on preoperative assessment, Chow, Rosenthal, Merkow, Ko, and Esnaola (2012)

list a body mass index (BMI) less than 18.5 kg/m^2, a serum albumin less than 3.0 g/dL, and unintentional weight loss greater than 10% to 15% within 6 months as placing the surgical patient at severe nutritional risk; they advise that a comprehensive nutritional plan be developed to address deficits through the postoperative period. As approximately 86% of older hospitalized adults are malnourished or are at risk of malnutrition (Kaiser et al., 2010), early nutritional intervention is imperative in preventing complications, decreasing length of stay, and promoting a quick return to baseline functioning.

Chapter 13, Nutrition in the Older Adult, provides a detailed discussion of nutrition assessment and nursing care strategies for older adults, and Chapter 29, Optimizing Mealtimes for Persons Living With Dementia, discusses mealtime difficulties. Nutritional care requires collaboration with the multidisciplinary healthcare team, including the nurse, surgical resident, and dietitian, as well as the speech therapist and occupational therapist. The goal is to provide early and adequate nutritional intake, preferably by mouth, which may be enhanced through the use of nutritional supplements (e.g., Ensure®). If oral intake is not possible, the team may consider the use of other forms of enteral nutrition (e.g., percutaneous endoscopic gastrostomy [PEG] tube and Dobhoff tube) or parenteral nutrition. Although parenteral nutrition may temporarily be the only option for some postsurgical older adults, especially those with a prolonged postoperative ileus (POI), it is important to note that enteral nutrition offers better outcomes than parenteral, as the former is associated with shorter hospital stays, lower incidence of infection, and lower severity of complications (Wheble, Knight, & Khan, 2012).

Several issues could possibly prevent early postsurgical nutrition intake, including postoperative nausea and vomiting (PONV) and dysphagia. PONV affects about one third of surgical patients (Apfel, Kranke, & Eberhart, 2004). Not only does PONV affect nutritional status, but it can also lead to further complications for the older surgical patient, including aspiration, wound dehiscence, and prolonged length of stay (American Society of PeriAnesthesia Nurses [ASPAN], 2006). The risk of PONV increases with age and duration of surgery (ASPAN, 2006). PONV should be continually monitored, especially within the first 24 hours of arrival in the unit. If PONV is present, it should be quantified using a descriptive or visual scale, and then rescue interventions should be implemented, including the administration of antiemetic agents, verification of adequate hydration, and use of aromatherapy (ASPAN, 2006). For older adults, however, it is important to steer clear of metoclopramide, which can lead to extrapyramidal effects (AGS, 2012).

Older adults may experience age-related decreases in swallowing function (Scandrett et al., 2015). Additionally, swallowing difficulties take longer to resolve following extubation for older adults, particularly after long surgeries (El Solh, Okada, Bhat, & Peitrantoni, 2003), predisposing the older adult patient to postoperative dysphagia. Hence, swallowing ability should be assessed early to address the need for fluid and caloric intake and to lower the risk of aspiration and debilitating aspiration pneumonia (Lagoo-Deenadayalan et al., 2011). If the swallowing assessment shows signs of aspiration, modification of the diet, including alterations in food consistency, upright positioning during and up to 1 hour after feeding, speech therapy, and aggressive oral care should be implemented to improve intake (Marik & Kaplan, 2003; McGory et al., 2009). For patients who may need to receive tube feedings because of swallowing difficulties or other postoperative complications, a documented plan to reduce the risk of aspiration should be incorporated into the medical record (AGS, 2007).

Constipation or diarrhea can also complicate postsurgical nutritional interventions and may signify more serious complications. Constipation can occur postoperatively as a result of immobility, altered (or lack of) diet, and excessive use of opioid pain medications (Doerflinger, 2009). In addition, the use of anticholinergics, particularly first-generation antihistamines (e.g., diphenhydramine), may initiate or exacerbate constipation and should be avoided in the older postsurgical patient (AGS, 2012). Preventive methods for constipation should be instituted for older adult surgical patients on opioid pain management regimens. This typically includes the use of bowel stimulants (senna and bisacodyl) and osmotic agents (polyethylene glycol); however, bulk-forming agents (psyllium) should be avoided because they are ineffective and may worsen symptoms, especially in a patient without adequate fluid intake (AGS, 2007; Malec & Shega, 2015). Quick transitioning from opioid medications to acetaminophen for mild to moderate pain may help reduce the risk of constipation.

The presence of diarrhea might trigger assessment for fecal impaction (following unaddressed constipation) or a more serious complication, such as *Clostridium difficile* infection (Doerflinger, 2009). A study by Zerey et al. (2007) showed that *C. difficile* infection occurs in about 1% of older adults undergoing a general surgical procedure. The occurrence of *C. difficile* infection can increase length of stay by 16 days and triple the mortality risk (Zerey et al., 2007). Universal precautions and proper handwashing are essential in reducing the risk of *C. difficile* infection. If *C. difficile* infection is suspected, then stool samples should

be taken and prompt treatment initiated if samples test positive (Doerflinger, 2009).

Special Consideration: POI Following Gastrointestinal Surgery

Older adult surgical patients have a higher incidence of POI following surgeries involving manipulation of the bowel (Hamel, Henderson, Khuri, & Daley, 2005). Prolonged POI (lasting more than 5 days) occurs in 40% of patients and leads to prolonged hospital stays and increased medical costs (Delaney, 2004; Schuster, Grewal, Greaney, & Waxman, 2006). Management for POI has routinely included bowel rest and bowel decompression (through placement of a nasogastric [NG] tube; Lagoo-Deenadayalan et al., 2011). However, evidence has shown that early enteral feeding is often well tolerated and may decrease POI, whereas NG decompression has not been shown to reduce incidence of POI and may actually place the patient at risk of aspiration and other postoperative pulmonary complications (Lubawski & Saclarides, 2008). In addition to early return to feeding, early mobilization and avoidance of unnecessary use of opioids can reduce the incidence of prolonged POI (Lagoo-Deenadayalan et al., 2011, Lubawski & Saclarides, 2008).

Hydration and Renal Complications

Older adults are at greater risk for fluid and electrolyte imbalances caused by physiological changes that lead to decreased total body water and poorer kidney function (lower glomerular filtration rate [GFR] and decreased ability to concentrate urine; Luckey & Parsa, 2003). Older adults are more susceptible to experiencing dehydration resulting from changes in thirst response, functional disability leading to decreased intake, and polypharmacy, including the overuse of diuretics (El-Sharkaway, Sahota, Maughan, & Lobo, 2014). However, surgical stress and excessive fluid resuscitation during the perioperative period could have the opposite effect, leading to water, sodium, and chloride excess, all of which have been shown to be independent risk factors for mortality, postoperative renal injury, and increased lengths of stay (El-Sharkaway et al., 2014).

Given this dichotomy, fluid management during the perioperative period is of vital importance. However, fluid orders are often delegated to the most junior member of the medical team who may lack an understanding of the importance of maintaining fluid balance for the older adult surgical patient (El-Sharkaway et al., 2014). In a report by the NCEPOD in the United Kingdom (1999), the authors noted that fluid management in older adult surgical patients was poor and contributed to serious postoperative morbidity and mortality. After conducting chart reviews, the report cited both doctors and nurses as being remiss in providing accurate documentation in fluid balance charts and recommended that working practices be developed, including elevating fluid management to the same importance as drug prescribing, to address the problem (NCEPOD, 1999).

During the postoperative period, the older adult is most at risk for dehydration and acute renal failure. Gajdos et al. (2013) reported that approximately 1.5% of adults older than 60 years undergoing nonemergent surgery developed postoperative renal insufficiency and that, of those, the mortality rate was more than 31%. The nurse plays a vital role in the assessment of fluid status, monitoring for signs and symptoms of fluid volume deficit and providing accurate documentation of fluid balance. The NIA Expert Panel recommends that fluid status be monitored for at least the first 5 days after surgery using daily weights and/or daily intake and output (McGory et al., 2009). However, Sullivan (2011) notes that because fluid volume shifts may take up to twice as long to resolve in the older surgical patient, urine output alone may not be enough to determine whether the patient has low blood volume leading to poor perfusion. The nurse should also be on the lookout for drops in blood pressure, changes in mental status, and new-onset atrial fibrillation, all of which could signify poor perfusion (Sullivan, 2011). Hughes et al. (2013) stress the importance of routine screening of serum electrolytes, urea nitrogen, and creatinine, although in older adults creatinine levels may not change even with significant drops in GFR.

As with nutrition, oral hydration should begin as soon as feasibly possible. Similarly, PONV and dysphagia must be addressed in order for the postoperative older adult to maintain adequate fluid balance. Chapter 12, Managing Oral Hydration in the Older Adult, addresses the management of oral hydration in the older adult, much of which is applicable to the older postsurgical patient. However, if the patient is unable to maintain adequate oral intake, IV fluids or adequate hydration through tube feeding may be required (with appropriate aspiration precautions instituted).

Respiratory Complications

Age-related changes in respiratory function include weakened swallowing and cough responses, chest wall stiffness, a weakened diaphragm, and decreased vital capacity and forced expiratory volume in 1 second (Bashaw & Scott, 2012; Hughes et al., 2013). These changes predispose the older adult surgical patient to respiratory complications.

For patients with preexisting respiratory conditions, such as chronic obstructive pulmonary disease or asthma, or for those who are smokers, the risk of complications is even greater (Lagoo-Deenadayalan et al., 2011). Preoperative assessment of pulmonary function is vital to delineating postoperative risk, and the promotion of preoperative smoking cessation, even just 24 to 48 hours before surgery, may help lessen postoperative sequelae (AGS, 2007; Hughes et al., 2013).

Pulmonary complications occur in approximately 10% of older adult surgical patients and account for up to 40% of postoperative complications and nearly 20% of preventable deaths (Lagoo-Deenadayalan et al., 2011). Magill et al. (2014) estimated that there were approximately 157,500 cases of hospital-acquired pneumonia (HAP) in the United States in 2011, of which 39% were ventilator-associated pneumonia (VAP). Gajdos et al. (2013) found that pulmonary complications, including pneumonia, failure to wean from a ventilator, and unplanned intubation, occurred in 7% of patients aged 60 years and older undergoing nonemergent surgery, with a mortality rate of 23% among those that had such complications.

Nursing interventions are essential in the prevention of respiratory complications through implementation of an aggressive pulmonary toilet regimen (Lagoo-Deenadayalan et al., 2011). In order to promote lung expansion and prevent postoperative atelectasis, the nurse should promote the use of an incentive spirometer (with adequate education and reinforcement on use) at least 10 times/hr; turning, coughing, and deep breathing every 2 hours; and chest percussion or other chest physiotherapy as needed (Doerflinger, 2009; McGory et al., 2009). Early ambulation should also be encouraged, as should proper positioning when in bed with the head of the bed elevated (Bashaw & Scott, 2012; Doerflinger, 2009). Adequate pain control is imperative because pain may reduce respiratory effort and may limit coughing to clear secretions (Lagoo-Deenadayalan et al., 2011). The healthcare team should also avoid the excessive use of narcotics and sedatives that could lead to respiratory depression (Lagoo-Deenadayalan et al., 2011).

VAP is a key nursing-sensitive indicator listed by the NDQNI and also endorsed by the NQF because the nurse plays a pivotal role in its prevention (Montalvo, 2007). For patients who are mechanically ventilated, evidence-based strategies to prevent VAP in acute care hospitals include selective oral or digestive decontamination, interrupt sedation daily, assess readiness to extubate daily, perform spontaneous breathing trials with sedatives turned off, facilitate early mobility, and change the ventilator circuit only if visibly soiled or malfunctioning (Klompas et al., 2014).

Despite the evidence, Munaco, Dumas, and Edlund (2014) noted that lack of staff education and limitations of the electronic medical record (EMR) affected overall compliance with a VAP bundle. AGS (2007) emphasizes the need for a documented care plan to reduce VAP. Therefore, facilities must address EMR limitations and provide ongoing education and training of nurses and nursing assistants to adequately implement VAP prevention.

Infection Prevention

Older adults are at increased infection risk post surgery because of immune system changes and delayed wound healing (Panprese & Johnson, 2014). In 2011, it was estimated that approximately 4% of hospitalized patients had at least one hospital-acquired infection (HAI; Magill et al., 2014). In addition to pneumonia (22% of HAI) and GI infection (17%), the remaining common HAI included surgical site infection (SSI; 22%), urinary tract infection (UTI; 13%), and primary bloodstream infection (10%; Magill et al., 2014). Older age and increased length of stay were related to increased risk of HAI (Magill et al., 2014). One of the most consistently cited ways to reduce HAI is through improving hand hygiene in the hospital setting.

A localized infection could potentially become systemic, putting the patient at risk for increased morbidity/mortality resulting from sepsis, which can occur in up to 2% of postoperative older adults (Lagoo-Deenadayalan et al., 2011). The NIA Expert Panel on quality indicators for older adult surgical patients recommends the following for any patient who has a fever greater than 38.0°C after postoperative (postop) day 2: Urinalysis and urine culture, examination of wound, blood culture from central venous line (if one is in place), peripheral vein blood culture, and chest radiograph (McGory et al., 2009). Older adults, however, may not necessarily mount a febrile response to systemic infection (Norman, 2000). Therefore, it is also important to monitor for other manifestations of sepsis, including altered mental status, agitation, respiratory distress, tachycardia, and hypotension (Lee, Chen, Chang, Chen, & Wu, 2007). If the older adult does have a significant febrile response, it often indicates severe infection with increased morbidity and mortality (Norman, 2000).

The Centers for Medicare & Medicaid Services (CMS) list several HAI as hospital-acquired conditions for which hospitals will receive no reimbursement (CMS, 2014). The HAI include SSIs following coronary artery bypass graft, bariatric surgery, and orthopedic procedures; catheter-associated urinary tract infections (CAUTI); and vascular catheter–associated infections (CMS, 2014). Because reimbursement will not be provided for HAI, it is

imperative that the multidisciplinary healthcare team works to prevent HAI from occurring in the hospital.

Zingg et al. (2015) performed a comprehensive systematic literature review and identified 10 key components that can impact HAI prevention. Some of the components addressed system issues, such as availability and ease of access to equipment (poorer access is related to higher risk); bed occupancy, staffing, and workload (high occupancy, low staffing levels, and high workload correlated with increased risk); and modeling a culture of infection control at the organizational level (Zingg et al., 2015). The study group also noted that adequate education and training on the appropriate use of guidelines, as well as proper auditing, surveillance, and feedback, reduced HAI risk (Zingg et al., 2015). In reviewing HAI programs from a national collaborative, Welsh, Flanagan, Hoke, Doebbeling, and Herwaldt (2012) had similar findings. They highlighted the importance of engaging frontline staff by involving them in projects and enlisting champions to further complement the education, surveillance, and feedback required to succeed in reducing HAI (Welsh et al., 2012). In sum, a system-wide, multidisciplinary, collaborative effort is required to reduce HAI and thus reduce morbidity and mortality in older adult surgical patients.

Surgical Site Infection

Approximately 2% to 5% of surgical patients develop an SSI (Anderson et al., 2014). Among older surgical patients (aged 60 years and older), SSI occurred in 8%, with a 7% mortality rate for those developing an SSI (Gajdos et al., 2013). The occurrence of an SSI, of which approximately 60% are preventable, can lead to an additional 11 days of postoperative hospital days and two to 11 times the mortality rate of those who do not acquire an SSI (Anderson et al., 2014). SSI, which are typically defined as those that occur within 30 days of surgery but may occur up to 90 days after, are classified into three categories: superficial incisional SSI, which affects only the skin or subcutaneous tissue; deep incisional SSI, which involves deep soft tissues such as fascia or muscle; and organ/space SSI, which involves any other part of the body that was manipulated during surgery (Anderson et al., 2014).

The Surgical Care Improvement Project (SCIP) was developed to decrease SSI and develop performance measures to improve outcomes (Fry, 2008). SCIP built on previous work by the Surgical Infection Prevention Project (SIP) that identified three quality-performance measures, which related to use of prophylactic antibiotics (Fry, 2008). SCIP added three additional measures: Glucose control in cardiac patients, proper hair removal before incision, and maintenance of normothermia in colorectal surgery patients (Fry, 2008). The ACOVE quality indicators also identified prophylactic antibiotics for the prevention of SSI (AGS, 2007). These measures relate more specifically to the perioperative phase, which is discussed in Chapter 32, HIV Prevention and Care for the Older Adult.

Although there is insufficient evidence to support strict glycemic control versus conventional management (maintenance of glucose less than 200 mg/dL) for the prevention of SSIs in the perioperative setting (Kao, Meeks, Moyer, & Lally, 2009), institutions implement specific protocols for target serum glucose in the immediate postop period. No trials were found that evaluated strict glycemic control in the immediate preoperative period or outside the setting of an intensive care unit. Additionally, compliance with appropriate antibiotic selection and administration within 60 minutes of time of incision has been associated with a lower SSI rate (Cataife, Weinberg, Wong, & Kahn, 2014).

A majority of TJC (2019) National Patient Safety Goals for SSI, as well as the TJC (2013) Implementation Guide for SSI, relate to implementation of education and training of healthcare providers and patients/families on SSI and how to prevent them, as well as ongoing monitoring and reporting of SSI occurrences. However, other than hand hygiene, TJC provides no clear postoperative procedures for prevention of SSI. For hand hygiene, the World Health Organization (WHO) identified five key moments that require adequate hand hygiene: (a) before touching a patient, (b) before clean and aseptic procedures (which would include clean and sterile dressing changes), (c) after contact with bodily fluids, (d) after touching a patient, and (e) after touching a patient's surroundings (Tsai & Caterson, 2014). Hand hygiene should include hand rubbing with alcohol-based products or, if hands are visibly soiled, then scrubbing with soap and water (Tsai & Caterson, 2014).

For incisional care, the CDC recommends that closed incisions, those with approximated edges after surgery, be covered with a sterile dressing for 24 to 48 hours and that dressing changes be done using a sterile technique (Mangram, Horan, Pearson, Silver, & Jarvis, 1999). Beyond 48 hours, the CDC did not provide any guidance on continued use of sterile dressings or the effects of bathing/showering (Mangram et al., 1999). For open surgical incisions, the CDC recommended that the wound should be packed with sterile moist gauze and covered with a sterile dressing (Mangram et al., 1999). Some conventional wound care regimens have specified dressing changes up to 7 days postoperatively, which could also require patient

education if the patient were discharged before that time (Akagi et al., 2012). In a study by Akagi et al. (2012), the authors found that the CDC recommendation of dressing changes up to 48 hours showed no increased risk of SSI compared with a standard 7-day regimen. A Cochrane Review also found no difference in SSI risk for early dressing removal (48 hours) when compared with delayed removal (after 48 hours; Toon, Ramamoorthy, Davidson, & Gurusamy, 2013). Furthermore, early removal could result in shorter hospital stays and decreased costs (Akagi et al., 2012; Toon et al., 2013).

In addition to wound care and dressing changes, the nurse must be vigilant in assessing for signs of infection, including redness around the wound edges, warmth, tenderness to palpation, and purulent drainage from the site (Lagoo-Deenadayalan et al., 2011). If an SSI occurs, treatment may include reopening of the incision to allow for drainage and frequent monitoring for signs of systemic infection; antibiotic use is typically discouraged unless the infection becomes systemic (Lagoo-Deenadayalan et al., 2011). A wound culture will identify any infection with multidrug-resistant organisms (MDRO). If an MDRO is the infectious agent, contact isolation precautions will be instituted along with adequate cleaning and disinfecting of equipment and the patient's environment (TJC, 2019).

Catheter-Associated Urinary Tract Infections

Up to 25% of all hospitalized patients receive urinary catheterization (Institute for Healthcare Improvement [IHI], 2011a). However, studies have shown that approximately 21% of patients with urinary catheters lacked a proper indication for insertion and up to 58% of catheters that were in place were subsequently found to be unnecessary (IHI, 2011a). The risk of developing a CAUTI increases as the length of catheterization increases, with a daily UTI risk of 5% (Bhardwaj, Pickard, Carrick-Sen, & Brittain, 2012; IHI, 2011a). Magill et al. (2014) noted that 68% of all UTIs in 2011 were CAUTI. In a survey of postoperative complications following nonemergent surgery, Gajdos et al. (2013) found that UTI occurred in 4% of adults aged 60 years and older, with a 5% mortality rate for those experiencing a UTI. The occurrence of a postoperative CAUTI can result in longer lengths of stay, increased hospital costs, and increased morbidity/mortality for the older adult surgical patient (Gajdos et al., 2013; Lagoo-Deenadayalan et al., 2011). CAUTI is listed as a nursing-sensitive indicator by NDNQI (Montalvo, 2007) and is a target for TJC National Patient Safety Goals (2019).

The IHI (2011a) provides four components of care to prevent or reduce the risk of CAUTI. They are (a) avoidance of unnecessary catheterizations, (b) insertion of catheters using an aseptic technique, (c) maintenance of catheters based on recommended guidelines, and (d) daily review of catheter necessity and prompt removal. TJC's National Patient Safety Goals (2019) address these same components. Hospitals should have specific protocols outlining the criteria for appropriate catheter insertion. For the older adult surgical client, catheterization will most likely occur in the perioperative period. However, catheters should be removed as soon as possible post surgery to prevent infection risk. IHI (2011a) recommends developing protocols that allow nurses to remove catheters if criteria for necessity are no longer met and if there are no contraindications to removal. Additionally, automatic stop orders can be used in the EMR to promote removal within 48 to 72 hours after surgery (IHI, 2011a). The NIA Expert Panel also specified that the catheter should be removed by postop day 3 (McGory et al., 2009). If the catheter remains in place, documentation should be provided to indicate the need for continued catheterization (IHI, 2011a). ACOVE quality indicators recommend documentation at least every 3 days, indicating the continued need for use until the catheter is removed (AGS, 2007).

Involving the patient in catheter-related decision-making could also lead to decreased length of catheterization. Bhardwaj et al. (2012) found that patients who underwent short-term catheterization for surgery lacked knowledge about the reason for catheterization, often did not provide consent, and were not included in the decision to remove the catheter. Patients also felt that their catheter remained in longer than was necessary because of a lack of easily accessible toileting options, even though they would have preferred to use a bedpan or bedside commode over continued catheterization (Bhardwaj et al., 2012). Therefore, the nurse should advocate for patient participation in the decision-making process for catheter removal as part of CAUTI-prevention practices.

Chapter 26, Prevention of Catheter-Associated Urinary Tract Infection, provides further protocols on the prevention of CAUTI in older adults. The chapter discusses proper insertion using an aseptic technique as well as evidence-based maintenance of catheters that are in place. Guidelines for proper insertion include adequate hand hygiene, use of sterile equipment and an aseptic technique, and use of as small a catheter as possible that still allows for proper drainage (IHI, 2011a). Routine maintenance should include, at a minimum, maintaining a closed, sterile drainage system; properly securing the catheter and collection bag, which should be below the level of the bladder at all times; maintaining unobstructed urine flow; and emptying the collection bag regularly, using a separate

container for each patient and not allowing the nozzle to touch the collection device (IHI, 2011a).

Central Line–Associated Bloodstream Infections

Approximately 84% of the estimated 72,000 primary bloodstream infections in the United States in 2011 were central line–associated bloodstream infections (CLABSI; Magill et al., 2014). For older adults, CLABSI is associated with more than twice the mortality risk, longer lengths of stay (up to 10 additional hospital days), and increased healthcare costs (Kaye et al., 2014). Most CVC days, approximately 15 million in the United States, occur in the intensive care setting (CDC, 2011). However, some older adult surgical patients on step-down or medical–surgical floors may have peripherally inserted central catheters (PICC) or other tunneled lines that can also place them at risk for CLABSI. As with other HAI, nurses play an integral role in the prevention of CLABSI, which is listed as an NDNQI nursing-sensitive indicator (Montalvo, 2007) and specified as a National Patient Safety Goal by TJC (2019).

The IHI (2012a) describes five key components of its central line bundle aimed at preventing CLABSI. The components are: (a) hand hygiene; (b) maximal barrier precautions, which include sterile operator procedures and equipment and sterile patient draping from head to toe; (c) chlorhexidine skin antisepsis before insertion; (d) optimal catheter site selection, avoiding the use of the femoral vein; and (e) daily review of line necessity and prompt removal when indicated. The CDC, in its 2011 guidelines, also recommended implementing bundle strategies, which incorporate hand hygiene and aseptic, appropriate catheter and site selection, and maximum barrier precautions. The guidelines also highlight the need for adequate education, training, and staffing in the prevention of CLABSI. The ACOVE quality indicators for vulnerable elders include documentation in the EMR of the use of maximal barrier protection.

For nursing care, the CDC (2011) specifies dressing-change regimens, which include the following:

- Use sterile gauze (if patient is diaphoretic or the site is bleeding or oozing) and a transparent, semipermeable dressing to cover the site.
- Replace dressing if it becomes damp, loosened, or visibly soiled.
- Replace gauze dressings every 2 days and transparent dressings every 7 days for short-term sites.
- Use chlorhexidine-impregnated sponge dressing for temporary catheters if basic prevention measures are not working.

The nurse should also replace IV administration sets at the appropriate intervals: no less than 96-hour intervals but at least every 7 days for continuous or secondary infusion tubing; within 24 hours for tubing involving blood, blood products, or fat emulsions; or every 6 to 12 hours for propofol infusion tubing (CDC, 2011). When accessing catheter hubs, needleless injectors, and injection ports, the nurse should disinfect (scrub) using an appropriate antiseptic and access the site using only sterile devices/equipment (CDC, 2011).

Other important nursing functions are to ensure that the patient is not showering or submerging the CVC site in water (adequate patient education and monitoring) and to palpate the site through an intact dressing regularly to assess for tenderness (CDC, 2011). If tenderness is noted, the dressing should be removed for full visual inspection and, if indicated, provider notification made to address possible CLABSI (CDC, 2011). ACOVE indicators specify daily documentation of examination of the site for signs of infection as well as documentation of the continued need for use (AGS, 2007). The NIA Expert Panel offers the same quality indicators as ACOVE, but also adds daily examination for swelling in the extremity on the side of line placement (McGory et al., 2009).

Mobility, Function, and Frailty

Older adults experience loss of muscle mass, muscle strength, and bone mass as they age (Bashaw & Scott, 2012). Further deconditioning can occur following periods of inactivity, such as prolonged immobility during surgical procedures and bed rest during the immediate postoperative period (Lagoo-Deenadayalan et al., 2011). Postsurgical deconditioning can slow recovery in older adults, including restoration of activities of daily living (ADLs), and put the patient at increased risk for DVT, delirium, incontinence, constipation, pressure injury, and falls (Lagoo-Deenadayalan et al., 2011). Early mobilization has been shown to combat deconditioning, decrease length of stay, and increase discharges to home (Engel, Tatebe, Alonzo, Mustille, & Rivera, 2013).

Frailty is defined as having decreased physiological and functional reserve (Scandrett et al., 2015). Frailty has been shown to be an independent risk factor for postoperative complications, increased length of hospital stay, and discharge to a skilled or assisted-living facility after previously living at home (Dasgupta et al., 2009; Makary et al., 2010). Chapter 31, The Frail Hospitalized Older Adult, provides a more thorough discussion of frailty in older adult populations.

To address postoperative risks for issues with mobility and functional decline, it is imperative to develop a preoperative baseline assessment. The ACS NSQIP/AGS *Best Practice Guidelines* specifically address assessment of functional/performance status and frailty risk (Chow et al., 2012). If the patient is unable to perform any ADL, a full screening of ADL and instrumental ADL (IADL) should be performed (Chow et al., 2012). Performance is assessed using the Timed Up and Go Test (TUGT) and also includes inquiring about a history of falls (see the following section on Fall Prevention; Chow et al., 2012). The TUGT is performed by the patient using normal walking aids and without any assistance in the following manner (Chow et al., 2012). The patient:

1. Rises from a chair, if possible without using armrests
2. Walks 10 feet down a line on the floor
3. Turns
4. Returns to the chair and
5. Sits down again

If the patient takes longer than 15 seconds to complete the exercise, the patient is considered to have a high risk of falls, and a more detailed gait assessment should be completed (Chow et al., 2012).

Frailty can be measured using a number of validated tools. ACS NSQIP/AGS (Chow et al., 2012) recommend the use of the Frailty Phenotype, which assesses five domains: weight loss, weakness, exhaustion, low physical activity, and slowness (Makary et al., 2010). Each domain is scored 0 to 1, and then scores are totaled; scores of 2 to 3 indicate prefrailty and 4 to 5 indicate frailty (Chow et al., 2012). Panprese and Johnson (2014) recommend using the Braden Scale because, although it is typically used for pressure injury risk, its six domains of sensory perception, moisture, mobility, nutrition, activity, and skin friction and shearing characterize frailty vulnerabilities. Another reason for its use is that nurses are familiar with the tool, and it is already incorporated into many EMR systems (Panprese & Johnson, 2014).

The NAI Expert Panel recommends that function and mobility screening be performed 8 weeks before surgery (McGory et al., 2009). The assessment should include the TUGT with a comprehensive assessment of mobility if it is abnormal, and assessment of hearing/visual impairment, ADL, and IADL (McGory et al., 2009). For any abnormalities, including with the TUGT, the panel recommends that a written plan be developed for postoperative care before surgery (McGory et al., 2009). Chapter 10, Assessment of Physical Function in the Older Adult, provides further discussion about the assessment of physical function in older adults.

Re-enablement after surgery describes the process of returning the patient to presurgery functioning (Griffiths et al., 2014). During the postoperative period, the nurse participates with a multidisciplinary team to prevent functional decline and the development of frailty and allow for re-enablement before discharge. The team includes the nurse, nursing assistant, physician resident, physical therapist, and occupational therapist. It is imperative that each member of the team understand his or her role in patient re-enablement, as confusion has been shown to be a significant barrier to mobility and activity program implementation (Markey & Brown, 2002). Other potential caregiver and patient barriers must also be addressed. Some patient barriers include dependent behavior and daytime sleepiness; the nurse and nursing assistant as well as family members should encourage independence and discourage daytime sleeping (Markey & Brown, 2002). For further information on excessive sleepiness in older adults, refer to Chapter 30, Disorders of Sleep in the Older Adult. Caregiver barriers include scheduling conflicts and the use of equipment (i.e., IV poles and tubing, urinary catheters, and sequential compression devices [SCDs]) that make ambulation and mobility activities more complex (Markey & Brown, 2002).

A physical therapy consult should provide an early assessment of the patient to develop a mobility and strengthening plan, including the potential need for assistive devices (Hughes et al., 2013). ACOVE and the NIA Expert Panel stress that ambulation should occur by postop day 2 and, if not, documentation should be provided in the EMR about why ambulation could not occur (AGS, 2007; McGory et al., 2009). The NIA Expert Panel further specifies that if the patient cannot ambulate, mobilization (e.g., range-of-motion [ROM] exercises) should be performed by postop day 2 and, if not, documentation should be provided about why it could not be done (McGory et al., 2009).

The nurse, nursing assistant, and occupational therapist will address the patient's ADL and IADL. Independent performance of ADL should be encouraged, but if the patient needs assistance, the level of assistance should be documented, relayed to the occupational therapist, and communicated during handoff (Markey & Brown, 2002). If the level of assistance indicates a change from baseline functioning, a plan should be developed and documented in the EMR to facilitate re-enablement (McGory et al., 2009). A final assessment of ambulation, mobility, ADL, and IADL should also be completed and documented at discharge, with appropriate documentation provided to the skilled or assisted-living facility, home health agency, or family/caregivers, depending on the discharge destination

(McGory et al., 2009). Chapter 18, Preventing Functional Decline in the Acute Care Setting, provides further information on preventing functional decline in the acute care setting.

Fall Prevention

In the acute care setting, up to 20% of patients fall at least once over the course of their hospitalization (IHI, 2012b). Falls are the most frequently reported adverse event in hospitals, reaching approximately 1 million per year, with 90,000 serious injuries and 11,000 deaths occurring as a result (Currie, 2008). Falls can lead to head injuries, hip fracture, reduced mobility (caused by pain or added fear of falling), longer length of stay, unplanned discharge to assisted-living facilities, and increased medical costs (IHI, 201b). Studies have consistently identified unsteady gait, confusion, increased need for toileting, use of sedative–hypnotics, and history of falling as key risk factors for falling in an acute care setting (Currie, 2008). Although it is inconclusive whether older age is a risk factor for falls, it does place the surgical patient at greater risk of injury from a fall (Currie, 2008). NQF (2011) placed falls resulting in serious injury on its list of serious reportable events (SRE). NDNQI lists falls and falls with injury as key nursing-sensitive indicators (Montalvo, 2007). CMS (2014) lists trauma related to falls as a nonreimbursable hospital-acquired condition.

Similar to mobility and function, preoperative fall-risk assessment is critical to identifying those who may be at risk for falls and developing a multidisciplinary plan to prevent falls postoperatively. The NIA Expert Panel specifies that an assessment should be performed 8 weeks before surgery on an older adult and that if the patient has reported two or more falls in the past year or one fall with injury, referral should be made for a comprehensive preoperative fall evaluation as well as inpatient physical therapy (McGory et al., 2009). There are a number of tools that have been developed to assess fall risk, including the Morse Falls Risk Assessment Tool, the Hendrich Falls Risk Model II, or the STRATIFY instrument (Currie, 2008). Although research has demonstrated that the Hendrich Falls Risk Model II may be more robust, it is more important that assessment remain consistent from preoperative screening through discharge (Currie, 2008).

Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care, provides a comprehensive discussion on preventing falls in acute care settings. A number of intervention strategies have been examined, including staff education, armband identification, bed alarms, exercise and toileting regimens, and vitamin D supplementation (Cameron et al., 2012). Although some have shown to be effective, multifaceted prevention strategies have been shown to be more effective (Cameron et al., 2012). IHI (2012b) highlights six key areas to address in its guide on preventing falls: fall risk screening on admission, injury and injury risk factors screening on admission, in-depth admission screening for any positive findings, communication and education about the patient's fall risk, standardized interventions for those at risk for falls, and customized interventions for those at highest risk. The final three areas address postoperative care and may incorporate such interventions as signage to identify those at risk; teach-back education to patients and family members about fall risk; and rounding every hour or 2 to address the patient's need for pain relief, toileting, and positioning (IHI, 2012b). TJC and the AHRQ have similar guidelines and also provide educational and training materials for preventing falls on their websites. If a fall does occur, ACOVE recommends that an inpatient fall evaluation should occur within 24 hours to include the presence or absence of any signs/symptoms of injury and a review of medications that could potentially contribute to a fall.

Skin Integrity

With advancing age, older adults experience thinning of the dermis, loss of collagen and adipose tissue, and decreased skin elasticity (Bashaw & Scott, 2012). As the skin becomes more friable, older adults are at increased risk for bruising, tearing, shearing, and infection, especially over bony prominences (Panprese & Johnson, 2014). If the older adult is malnourished or dehydrated, the risk of skin breakdown and pressure injury development increases (Bashaw & Scott, 2012). Because of the nurse's specific role in assessing and maintaining skin integrity, pressure injuries are listed by NDQNI as a nursing-sensitive quality indicator (Montalvo, 2007). Additionally, CMS (2014) lists stages 3 and 4 pressure injuries as nonreimbursable hospital-acquired conditions.

The IHI (2011b) identifies six essential elements for pressure injury prevention: (a) pressure injury admission assessment, (b) daily reassessment of pressure injury risk, (c) daily skin inspection, (d) moisture management, (e) adequate nutrition and hydration, and (f) minimization of pressure. The NIA Expert Panel dictates admission screening for pressure injury risk using the Braden or Norton Scales (McGory et al., 2009). This is in line with admission assessments as recommended by TJC and NQF (IHI, 2011b). The remaining five elements fall under the nurse's purview during postoperative care. Chapter 28, Preventing Pressure Ulcers and Skin Tears, outlines nursing protocols for preventing pressure injuries and skin

tears in older adults. Daily risk assessment should be completed using the same tool as was used on admission and should be documented in the EMR along with the visual skin inspection (IHI, 2011b). Some other key interventions include the following (IHI, 2011b):

- *Management of moisture:* (a) skin cleaning routinely and at times of soiling with mild cleansing agents; (b) use of skin moisturizes for dry skin; (c) use of absorbent underpads for excessive incontinence, perspiration, or wound drainage
- *Pressure relief:* (a) turn/reposition the patient every 2 hours; (b) use mattresses and cushions to redistribute pressure

Additional care should be focused on pressure caused by medical devices as well as caution when removing dressings, pads, tape, or leads in order to prevent skin tears (Bashaw & Scott, 2012).

The NIA Expert Panel recommends daily screening and repositioning/pressure reduction at least until the patient is ambulatory (McGory et al., 2009). Additionally, if the surgical patient has an existing stage 2, stage 3, or stage 4 pressure injury, a treatment plan should be outlined and documented before surgery (McGory et al., 2009). For patients undergoing cardiac surgery, it is recommended to continue skin assessment and interventions up until the postop day 5 (Pokorny, Koldjeski, & Swanson, 2003).

Prevention of VTE

Older adult surgical patients may have many factors, including age, that place them at risk for VTE, including obesity, prolonged immobility, lengthy surgery (longer than 2 hours), presence of varicose veins, and smoking history (Bashaw & Scott, 2012). VTE occurs in approximately 1 million patients each year (Dobesh, 2009). In a study of nonemergent surgeries, Gajdos et al. (2013) found that 2% of adults aged 60 years and older experienced VTE and that 10% of those with VTE died. The occurrence of VTE leads to increased length and cost of stay and also puts the patient at risk for other potentially life-threatening complications (Dobesh, 2009). In addition, there may be significant long-term complications and related costs, often caused by recurrent VTE, postthrombotic syndrome, or pulmonary hypertension (Dobesh, 2009). According to the CMS (2014), the occurrence of VTE following certain orthopedic surgeries (e.g., total knee replacement and hip replacement) is a nonreimbursable hospital-acquired condition.

The AHRQ (2012) guidelines for VTE prophylaxis list four interventions and practices to consider: (a) assessment of VTE risk factors, (b) patient education and early ambulation, (c) mechanical prophylaxis, and (d) pharmacological prophylaxis (AHRQ, 2012). The guidelines also address special situations, such as prophylaxis for patients with hip/knee arthroplasty and hip fracture (see Chapter 40, Care of the Older Adult With Fragility Hip Fracture). For VTE screening of surgical patients, AHRQ (2012) recommends the use of the Caprini Risk Assessment Model. The Caprini Model uses a checklist of factors scored as 1 point (e.g., swollen legs and acute myocardial infarction), 2 points (e.g., age 61–74 years and central venous access), 3 points (e.g., age 75 years or more and history of DVT), or 5 points (e.g., stroke within the past month); the scores for the checked boxes are then summed for an overall Caprini score (Caprini, 2010).

Mechanical prophylaxis measures include early ambulation and the use of SCDs (AHRQ, 2012). Compression stockings have been shown to reduce VTE risk when used effectively, but are not necessarily recommended because tight fit can impair circulation and lead to additional complications (Bashaw & Scott, 2012). The BGS cautions against the use of compression stockings in older adults, but if they are used, skin integrity needs to be regularly and carefully monitored (Donald, 2019). ROM exercises can also be effective if the patient is unable to ambulate (Bashaw & Scott, 2012). Inferior vena cava (IVC) filters may be placed in critically ill adults to prevent pulmonary embolism related to DVT; however, AHRQ (2012) does not recommend their use. Pharmacological prophylaxis measures include the use of low-molecular-weight heparin (LMWH) or low-dose unfractionated heparin (LDUH). However, the BGS purports that major bleeding risk may outweigh VTE risk in older adults, and thus use of LMWH or LDUH may not be the best choice for prophylaxis (Donald, 2019).

The AHRQ (2012) stratifies mechanical and pharmacological prophylaxis based on the Caprini Risk score and a comprehensive assessment of bleeding risk. Table 39.2 provides the measures based on score and bleeding risk for patients undergoing nonorthopedic surgery. The ACOVE quality indicators also emphasize the use of SCDs and pharmacological prophylaxis in vulnerable elders at high risk for VTE (AGS, 2007).

Restraint Use

Restraints are often used in an acute care setting to prevent falls and patient interference with therapy (Minnick, Mion, Johnson, Catrambone, & Leipzig, 2007).

TABLE 39.2
VTE Prophylaxis

VTE Risk Category	Low Bleeding Risk	High Risk for Major Bleeding
Very low risk		
(Caprini score 0)	Early ambulation	Early ambulation
Low risk		
(Caprini score 1–2)	SCDs	SCDs
Moderate risk		
(Caprini score 3–4)	LMWH/LDUH or SCDs	SCDs
High risk		
(Caprini score greater than or equal to 5)	LMWH/LUDH *and* SCDs	SCDs until bleeding risk diminishes, then addition of LMWH/LUDH

LDUH, low-dose unfractionated heparin; LMWH, low-molecular-weight heparin; SCD, sequential compression device; VTE, venous thromboembolism.

Source: Agency for Healthcare Research and Quality. (2012). Venous thromboembolism prophylaxis (Guideline NGC-9541). Bloomington, MN: Institute for Clinical Systems Improvement. *Evidence Level I*.

Restraints may also be used on patients who are confused or agitated, wander, or are perceived to have behavioral problems (Evans & Fitzgerald, 2002). Use may also be a result of inadequate staffing (Evans & Fitzgerald, 2002). Although rates of restraint use among older and younger adults in intensive care settings are similar, older adults represent much higher rates on medical units than their younger counterparts (Minnick et al., 2007). The use of restraints has been shown to increase the risk of falls, pressure injuries, and delirium in older adult surgical patients, which could lead to increased morbidity, mortality, and length of stay (Baumgarten et al., 2008; Inouye et al., 2007; Shorr et al., 2002). Restraint use is a key NDNQI nursing-sensitive indicator endorsed by the NQF (Montalvo, 2007).

If restraints are used, the NIA Expert Panel quality indicators specify that the target behavioral or safety issue must be addressed with the patient or legal guardian and documented in the chart, along with methods other than restraints implemented as part of the plan of care (McGory et al., 2009). In order to prevent or lessen restraint use, the healthcare provider should certify the continued need for invasive lines because removal of unnecessary lines may eliminate the need for restraints. In addition, the NIA Expert Panel advises implementation of the following care measures (McGory et al., 2009):

- Release from restraints and repositioning at least every 2 hours
- Face-to-face reassessment by the nurse at least every 4 hours and by the physician before renewal of the restraint order
- 15-minute observations; more if the patient's condition warrants more frequent assessment
- Nurse-related interventions every 2 hours to address nutrition, hydration, toileting, personal hygiene, and ROM

Additional information on the use of restraints in the acute care setting is provided in Chapter 27, Physical Restraints and Side Rails in Acute and Critical Care Settings.

Discharge Planning

Adequate discharge planning begins before surgery, including assessment of the need for social support or home health expected after discharge (McGory et al., 2009). Comprehensive discharge planning involves the multidisciplinary team to address patient status before discharge as well as follow-up care after discharge (Palmer, 2009). ACOVE quality indicators specify that an assessment of cognition and function should be performed and compared with preoperative levels and that the level of independence, along with the need for home health services, be documented in the EMR (AGS, 2007). The NIA Expert Panel includes assessment of nutrition, cognition, ambulation, and ADL in its discharge planning criteria (McGory et al., 2009).

A comprehensive medication reconciliation addressing chronic medications as well as new prescriptions will help facilitate discharge and, along with adequate care transition planning and communication with outpatient providers, can help reduce rehospitalizations and emergency department visits (Legrain et al., 2011). For new medications, the nurse will facilitate patient education with regard to the purpose of the drug, how to take it, and expected side effects, as well as possible adverse effects (McGory et al., 2009). Medication education is just one of many patient and family education tasks of the nurse. Others include a detailed explanation of the plan of care, which may include home health visits, physical or occupational therapy appointments, follow-up appointments, education on the use of new equipment or devices, or demonstration on the performance of activities such as dressing changes and wound care. Effective nursing education using teach-back and return demonstration has been

shown to increase patient and family confidence and decrease nonscheduled healthcare visits post discharge (Henderson & Zernike, 2001; Williams, 2008). For further information on discharge planning, refer to Chapter 42 Transitional Care.

CASE STUDY 39.1

ADMISSION AND PREOPERATIVE COURSE

KL is a 72-year-old Asian woman admitted from home because of intermittent vomiting and poor oral intake. No other associated symptoms were reported. The history was obtained from the patient's daughter via an interpreter. KL has no known drug allergies and is full-code status. The remainder of her admission history includes:

- *Home medications:* Aspirin, ascorbic acid, docusate sodium, folic acid, multivitamins, ferrous sulfate, pantoprazole, senna, metoprolol, and lisinopril
- *Past medical history:* Anemia, constipation, hypertension, chronic kidney disease (CKD), non-ST-segment elevation myocardial infarction (NSTEMI)
- *Past surgical history:* "Bowel surgery many years ago" (unknown date)
- *Psychosocial history:* KL is widowed. She lives with her daughter in a single-family house. She has no history of tobacco or alcohol use and was independent with ADL until this admission.

General overview revealed a frail-looking, non–English-speaking female who looks her stated age. Her general physical examination is mostly unremarkable except for a distended and tympanic abdomen with hypoactive bowel sounds. An episode of vomiting of bilious liquid was noted in the emergency department (ED), for which she was given metoclopramide 10-mg IV push. A Salem sump tube attached to low continuous intermittent suction (LCS) was draining yellow-greenish liquid. Normal saline at 100 mL/hr was started via a left peripheral IV line, and an indwelling urinary catheter was inserted.

KL was oriented to self and place but not to time. She denied any abdominal pain but referred to feeling bloated and nauseated. Her vital signs were blood pressure = 141/71 mmHg, heart rate = 7,090/min, respiratory rate = 18–20/min, temperature = 98.2°F, and a 96% oxygen saturation on room air. Her latest lab results are shown in Exhibit 39.1.

A 12-lead EKG revealed sinus rhythm. KL's chest x-ray showed an enlarged cardiac silhouette but no signs of consolidation or infiltrates. The abdominal CT scan findings reported marked gaseous distention of stomach; small and large bowels without definite transition point identified; and mild colonic stool retention within the rectosigmoid up to 4.2 cm in transverse diameter. After a 6-hour stay in the ED, KL was moved to the surgical ward. She was kept at nothing-by-mouth status, continued on normal saline at 100 mL/hr, and the Salem sump to LCS. VTE prophylaxis with pneumatic compressions was initiated. Routine lab work, including urinalysis, blood type, and screening, were ordered for the following morning. Once cleared by cardiology, KL was scheduled for exploratory laparotomy.

EXHIBIT 39.1
KL's Latest Lab Results

Na = 145 mEq/L	WBC = 16,100 × 10^3/μL	Albumin = 3.9 g/dL
K = 4.4 mEq/L	Hemoglobin = 9.6 g/dL	Calcium = 9.0 mg/dL
Cl = 103 mEq/L	Hematocrit = 31.3%	Magnesium = 2.5 mEq/L
CO_2 = 24 mEq/L	Platelets = 360 × 10^9/L	Phosphorus = 4.2 mg/dL
BUN = 33 mg/dL	Prothrombin time = 16.1 seconds	Troponin = 0.0 μg/L
Creatinine = 2.0 mg/dL	International normalized ratio (INR) = 1.2	Creatinine clearance (CrCl) = 23.2

BUN, blood urea nitrogen; Cl, chlorine; CO_2, carbon dioxide; K, potassium; Na, sodium; WBC, white blood cells.

Intraoperative Course

After routine universal protocol procedure, KL had an uneventful induction and administration of general anesthesia. No adverse events were noted intraoperatively. The surgery performed was small bowel resection with anastomosis and lysis of adhesion. After extubation, she was transported to the postanesthesia care unit (PACU) for 4 hours and subsequently transferred to the surgical step-down unit.

Postoperative Course

KL's postop orders include oxygen 4 L via nasal cannula; lactated Ringer's at 100 mL/hr for 24 hours; Salem sump to LCS; SCD to both legs; bedside telemetry; Foley to side drainage; patient-controlled

(*continued*)

CASE STUDY 39.1 (*continued*)

analgesia (PCA) morphine 1-mg continuous dose, 1-mg demand dose, 6-minute lock out, and 20 mg 4-hour limit; metoprolol 5 mg IV piggy back (IVPB) every 6 hours; famotidine 20 mg IVPB once daily; metoclopramide 10 mg IVPB every 6 hours as needed for nausea and vomiting; Benadryl 25 mg IVPB every 12 hours as needed for itchiness; out-of-bed to chair in a.m.; and physical therapy and nutrition consults.

1. Describe the application of best practice guidelines for KL's transition from PACU to the surgical unit.

Patient safety is an utmost consideration.

Transitions between the various operative units should be marked by high-quality handoff between providers using standardized forms, both in paper and electronically. Bedside safety checks are best done with both the giving and receiving providers present using a checklist. Specific institutional procedures and protocols should be followed (e.g., who should accompany the patient during transport).

2. Describe key assessment parameters for KL's postsurgical care.

When KL arrives on the surgical unit, a priority is to ensure she has a patent airway and is hemodynamically stable. A thorough head-to-toe assessment is essential, giving special attention to abdominal and operative wound assessment and ensuring that KL's vital signs are within baseline. It is important to ensure that the Salem sump tube is attached to suction and that VTE prophylaxis is maintained (SCD). As KL has baseline CKD, a close monitoring of her urine output and implementation of the CAUTI bundle are important considerations.

3. Describe the importance of medication reconciliation in postop older adult patients.

Medication reconciliation should be performed during every transition in order to prevent inadvertent omission of essential medications (e.g., beta-blockers) and use of inappropriate medications. In KL's case, it is important to raise clinical concern regarding the order of metoclopramide for postop nausea and vomiting. It is best avoided among older adults as it can cause extrapyramidal effects, including tardive dyskinesia (AGS, 2012). The use of diphenhydramine, chlorpromazine, and H2-receptor antagonist is also considered inappropriate in older adults because of increased risk of confusion/delirium (AGS, 2012). In KL's case, famotidine can be replaced with pantoprazole and metoclopramide with ondansetron. If KL develops itchiness as a result of the morphine, nonpharmacological interventions should be tried first (e.g., applying lotion to her skin). For mild to moderate pain, acetaminophen can be ordered for KL.

4. Describe ongoing best practices for postop older adult patients.

The postop period is a vulnerable time that can set back the older patient from major gains such as overcoming general anesthesia. Essential to achieving positive outcomes is hardwired interprofessional collaboration across all disciplines. In addition to focused assessments, purposeful hourly rounding (e.g., addressing pain, positioning, elimination, and comfort needs) will enable the staff to address the patient's routine needs and avert potentially high-risk events such as a fall. Fall-risk assessment and interventions need to be reviewed as per hospital protocol. The removal of catheters or other nonessential invasive devices will reduce the overall risk for infection. Key postop complications that require special attention are listed in the following.

A. *Postop ileus*—Preventing postop ileus can be a challenge for KL because of the use of morphine. Using the lowest dose and transitioning from PCA to "as needed" status might be considered. Early mobilization and active range-of-motion exercises will be beneficial in promoting peristalsis, preventing VTE, and improving general well-being. The nurse needs to continue focused GI surveillance for signs of ileus. When listening for bowel sounds, KL's Salem sump tube should be disconnected from the LCS in order not to confuse the negative pressure from the suction as bowel sounds.

B. *Postop atelectasis*—The nature of abdominal surgeries puts the patient at greater risk for atelectasis. Although KL has no pulmonary comorbidities, she should be encouraged and coached to use the incentive spirometer (e.g., 10 times every hour while awake). Nursing measures to improve compliance with breathing and coughing exercises include splinting wound with a binder, premedicating with pain relievers, and empowering the patient.

C. *Postop VTE*—KL's abdominal surgery and her comorbidities make her vulnerable to VTE. Early mobilization, adequate hydration, and the use of SCD and pharmacological prophylaxis (e.g., heparin) will help reduce the risk.

(*continued*)

CASE STUDY 39.1 (*continued*)

D. *Surgical site infection*—The implementation of evidence-based practices listed in this chapter will eliminate the risk of SSI. The operative wound should have a sterile dressing for 24 to 48 hours postop. Monitoring and reporting changes in KL's mental status that might signal an infection are essential. The trend of KL's white blood cell count and wound appearance should be monitored. Hand hygiene remains the most cost-effective and most effective way to prevent the transmission of infection.

5. Describe best practices in patient/family education for postop patients.

Patients' active participation in their care is now recognized as an essential element for positive health outcomes. For surgical patients, physical (e.g., wound) and psychological healing continues on discharge. This endeavor requires high-quality patient education using proven methods such as the teach-back approach. KL and her daughter should be provided easy-to-understand handouts on wound care, nutrition, and exercise at home. Providing KL and her daughter a script from the National Patient Safety Foundation (e.g., What is my main problem? What do I need to do? Why is it important for me to do this?) for use when they visit the surgical provider will help them feel empowered and improve follow-up care. For best practices in transitional care, please refer to Chapter 36, Fluid Overload: Identifying and Managing Heart Failure Patients at Risk of Hospital Readmission.

SUMMARY

Older adult surgical patients are at higher risk for morbidity and mortality following surgery due to age-related changes that lead to limited physiological reserve as well as a potential number of medical comorbidities that may further complicate recovery. As such, the nurse must work diligently with the interprofessional team to develop a comprehensive plan of care post surgery. Frequent assessment and early intervention are necessary to prevent debilitating complications, including postoperative delirium, functional decline, HAIs, pressure injuries, and falls. Pain management, early ambulation, and adequate nutrition and hydration can help prevent complications or lessen the intensity or duration of their effects. With an appropriate plan of care, the older adult surgical patient will experience shorter lengths of stay, be discharged with baseline cognitive and physical functioning, and transition to the location from which he or she was admitted.

NURSING STANDARD OF PRACTICE

Protocol 39.1: General Surgical Care of the Older Adult

I. GOAL

To restore physiological stability, prevent complications, maintain safety and comfort, and preserve presurgical functional ability and QOL in older adult surgical patients

II. OVERVIEW

A. Physiological changes of aging can significantly affect the recovery time of older adult surgical patients and put them at greater risk for postoperative complications (Makary et al., 2010).
B. Older adults often present for elective and nonelective or emergent surgeries with a number of medical comorbidities that place them at further risk for postoperative morbidity and mortality (Dasgupta et al., 2009).
C. The risk of complications and mortality increases with advancing age, with those aged 90 years and older experiencing twice the rate of mortality at less than 48 hours post surgery as compared with those younger than 65 years (Deiner et al., 2014).
D. Longer lengths of stay have been consistently linked to increased postoperative adverse outcomes (Makary et al., 2010).

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

E. Surgical patients at hospitals with a higher percentage of nurses with a baccalaureate or higher degree experienced shorter lengths of stay and fewer postoperative complications (Blegen et al., 2013).
F. A proportionate increase in staff nurses with bachelor's degrees decreases the risk of death among patients following common surgeries in acute care settings (Aiken et al., 2014).

III. BACKGROUND

A. Definition
   1. The patient is discharged from the PACU following an established protocol, such as the Aldrete Score, a post-anesthesia recovery score. Patients with scores of 9 or 10 may be discharged to the surgical or equivalent units, those with eight require further observation, and those with 7 or less require admission to the ICU (Aldrete & Kroulik, 1970). Another tool in use is the PADSS (Chung, Chan, & Ong, 1995). No matter which tool is used, collaborative ongoing assessment and clinical judgment are required.
   2. Nursing priorities when the patient arrives from the PACU to the surgical unit include high-quality handoff; focus on airway, breathing and circulation; assessment of vital signs based on specific protocol; monitoring of complications; and discharge readiness (Odom-Forren, 2015).
B. Etiology/epidemiology
   1. In 2010, 19.2 million operative procedures were performed among older adults in acute care settings. These accounted for more than 37% of all procedures and 45% of total hospital days of care (CDC, 2010).
   2. Hospital stays that involve surgical procedures have been shown to be more costly, required longer lengths of stay, and resulted in higher morbidity and mortality (Weiss & Elixhauser, 2014).
   3. The need for comprehensive baseline status assessment and the use of an interdisciplinary team with surgical and geriatric expertise to follow the patient from preop to discharge are essential for achieving positive outcomes (McGory et al., 2009).
   4. Postoperative delirium can occur in up to 50% of high-risk older adult surgical patients, leading to prolonged and more costly hospitalizations, functional decline, and death (AGS, 2014).
   5. Older adult surgical patients are at higher risk for delirium resulting from medication side effects; immobility; infection; inadequate pain management; and cardiac, renal, and respiratory complications (Hughes et al., 2013).
   6. Hospitalized older adults are consistently less likely to receive adequate pain control compared with younger adult patients (Schofield, 2014).
   7. A lack of pain control for the older surgical patient can lead to delirium, depression, fluid imbalances, atelectasis, and fatigue (AGS, 2014; Bashaw & Scott, 2012).
   8. A large majority of hospitalized older adults are malnourished or at risk of malnutrition, placing them at risk of impaired skin integrity, wound or other infections, sepsis, and death (Kaiser et al., 2010; Lagoo-Deenadayalan et al., 2011; Scandrett et al., 2015).
   9. Approximately 1.5% of older surgical patients develop postoperative renal insufficiency, with a mortality rate of greater than 31% (Gajdos et al., 2013).
   10. Postoperative pulmonary complications occur in about 10% of older adult surgical patients, accounting for 40% of postoperative complications and 20% of preventable deaths (Lagoo-Deenadayalan et al., 2011).
   11. Among older surgical patients, SSI occurred in 8%, with a 7% mortality rate for those developing an SSI (Gajdos et al., 2013).
   12. Approximately 60% of SSIs are preventable. Developing an SSI can lead to an additional 11 postoperative hospital days and a two- to 11-fold increase in mortality risks (Anderson et al., 2014).
   13. The risk of developing CAUTI increases by 5% per day of catheterization (Bhardwaj et al., 2012; IHI, 2011a).
   14. CLABSI has been shown to double mortality risk, add up to 10 additional hospital days, and increase healthcare costs (Kaye et al., 2014).

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

15. Postsurgical deconditioning can slow recovery, delay in restoring independence with ADL, and increase risk for VTE, delirium, incontinence, constipation, pressure injuries, and falls (Lagoo-Deenadayalan et al., 2011).
16. The postsurgical period is a vulnerable time for increased risk of falls (Currie, 2008).
17. Approximately 15% of hospitalized patients in hospitals at any given time have pressure injuries, with 60,000 dying per year (IHI, 2011b).
18. The postsurgical older adult is at increased risk of VTE, which occurs in about 1 million patients each year (Bashaw & Scott, 2012; Dobesh, 2009).
19. Restraint use increases the risk of falls, pressure injuries, and delirium, leading to increased morbidity, mortality, and length of stay (Baumgarten et al., 2008; Inouye et al., 2007; Shorr et al., 2002).

IV. PARAMETERS OF ASSESSMENT

A. The PSIs are the key drivers of assessment and screening of surgical older adult patients. PSIs that are relevant to surgical patients include (AHRQ, 2014):
   1. Death among surgical inpatients
   2. CVC-related bloodstream infection
   3. Postoperative hemorrhage or hematoma, physiological and metabolic derangements, respiratory failure, pulmonary embolism or DVT, sepsis, and wound dehiscence
   4. Transfusion reaction

B. A seamless synthesis of various practice guidelines, such as those recommended in the Assessing Care of Vulnerable Elders-3 (ACOVE) Quality Indicators (AGS, 2007), Beers Criteria for Potentially Inappropriate Medication Use in Older Adults (AGS, 2014), and Clinical Practice Guideline for Postoperative Delirium in Older Adults (AGS, 2014), will be essential in achieving positive outcomes. All older adult postsurgical patients must be assessed and screened for:
   1. Falls (AGS, 2007)
   2. Frailty (AGS, 2007)
   3. Inappropriate medication use (AGS, 2012)
   4. Postoperative atelectasis (AGS, 2007)
   5. Postoperative delirium (AGS, 2007, 2014)
   6. Postoperative ileus (AGS, 2007)
   7. PONV (ASPAN, 2006)
   8. Postoperative pain (AGS, 2007, 2014)
   9. Pressure injuries (AGS, 2007)
   10. SSI (TJC, 2019)
   11. VTE (AGS, 2007; AHRQ, 2012)
   12. Restraint use (McGory et al., 2009)

C. Other epidemiologically significant assessment parameters, depending on the specific patient scenario, would include screening patients for CAUTI, CLABSI, and VAP. The nurse is encouraged to be familiar with the current best practices related to these HAIs.

V. NURSING CARE STRATEGIES

A. Unit admission
   1. Provide for high-quality handoff to include the following information:
      a. Preoperative assessment of cognitive and functional status
      b. List of comorbidities and preoperative home medications
      c. Preoperative assessment for falls and pressure injuries

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

d. Course of surgery, including any surgical complications and interventions for such, blood loss, blood transfusions, and intraoperative fluid use
e. Description of surgical sites, including dressings and instructions for care
f. Identification of invasive lines, including arterial and/or venous catheters, urinary catheters, GI tubes, chest tubes, and any other drainage devices (e.g., Jackson–Pratt, t-tube)
g. Patient's respiratory, cardiovascular, and cognitive status before transfer
h. Patient's current pain level and description of pharmacological and nonpharmacological interventions (used since surgery) before transfer

2. Perform comprehensive admission assessment to include:
   a. Airway, breathing, circulation, and cognitive status
   b. Pain and/or PONV, with immediate intervention if necessary
   c. Surgical site or surgical dressing if in place and intact
   d. Invasive lines, including line patency and visual inspection of site and dressing
   e. Thorough skin examination, particularly on bony prominences that may have been damaged during surgery
   f. ROM, mobility, and functional status
3. Discuss plan of care with patient and caregivers, addressing pain management, mobility, nutrition, hydration, and functional status.
4. Advocate for older adult patients who are unable to fully engage in their own care and for their designated caregiver.

B. Duration of stay—comprehensive management to prevent postoperative complications and sentinel events
   1. Postoperative delirium/cognitive and sensory function
      a. Use a validated tool to assess for delirium at least once per shift for up to 3 days postop.
      b. Provide for continuity of care (familiar residents, nurses, and care technicians).
      c. Provide continuous environmental and personal orientation.
      d. Adequately manage pain (see Pain Management in subsequent discussion).
      e. Avoid delirium-inducing medications such as benzodiazepines and anticholinergics (see also the AGS Beers Criteria; AGS, 2012).
      f. Avoid use of routine sedation.
      g. Provide for adequate fluid and nutrition intake (see Nutrition and Hydration in the following text).
      h. Avoid use of restraints (see Restraints).
      i. Avoid urinary catheterization or ensure prompt removal if in place (see HAIs in the following discussion).
      j. Promote adequate sleep, including involving family and caregivers in managing daytime sleepiness.
      k. Promote appropriate use of glasses, hearing aids, and other assistive devices.
      l. Provide for adequate communication as necessary, including the use of pen/paper, nonverbal communication, or translators.
      m. Minimize noise and patient care activities, as much as possible, during nighttime hours.
   2. Pain management
      a. Perform comprehensive pain assessment during hourly rounding or, at a minimum, with each set of vital signs.
         i. Rating of intensity (numeric, verbal, or visual scales)
         ii. Pain description to include location, characteristics, and impact of pain on function
         iii. Observation of signs of pain
         iv. Use appropriate scales (e.g., PAINAD) for patients with dementia
      b. For pain scores greater than 5, initiate comprehensive pain management plan.
         i. Pharmacological strategies
            a. Preferable use of nonopioid pain medications
            b. Address medication side effects, as necessary (e.g., morphine and constipation)
            c. Avoid NSAIDs, if possible

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

ii. Nonpharmacological strategies (e.g., massage, acupuncture, cognitive behavioral therapy, and distraction)
iii. See Chapter 18, Preventing Functional Decline in the Acute Care Setting, for specific protocols on the management of pain in older adults

c. Reassess pain post intervention.
i. At 15 minutes, for IV medication interventions
ii. At 1 hour for by-mouth medication interventions
iii. Within 4 hours, at a minimum, for other interventions

3. Nutrition and gastrointestinal complications
a. Assess for postoperative dysphagia.
i. Assessment by speech therapist if patient is at high risk for aspiration
ii. Modification of diet as necessary (e.g., alteration in food consistency)
b. Assess for and aggressively manage PONV.
c. Implement a comprehensive nutrition plan.
i. Assessment by a registered dietitian specializing in geriatric care
ii. Include adequate nutritional intake with supplementation as necessary
d. Implement a collaborative feeding plan, involving care technicians, family, and caregivers.
i. Maintain upright position while feeding and for at least 1 hour after.
ii. Provide comprehensive oral care.
iii. See Chapter 10, Assessment of Physical Function in the Older Adult and Chapter 25, Urinary Incontinence in the Older Adult for further discussion on nutrition and mealtime difficulties in older adults, respectively.
e. Assess for and manage constipation.
i. Avoid excessive use of anticholinergics and opioid medications, with quick transition to acetaminophen for mild to moderate pain.
ii. Administer bowel stimulants (e.g., senna and bisacodyl) and osmotic agents (e.g., polyethylene glycol) as needed.
iii. Provide adequate hydration (see Hydration).
iv. Promote early ambulation and mobilization (see Mobility).
f. Assess for and manage diarrhea.
i. Maintain adequate hydration (see Hydration) and nutritional intake.
ii. Collect stool samples, as ordered, to assess for *C. difficile* infection.
iii. Provide prompt treatment if positive for *C. difficile*, including implementation of contact precautions and maintenance of adequate hand-hygiene regimens.
g. Manage postoperative ileus for GI surgery patients.
i. Promote early feeding and mobilization.
ii. If NG decompression is used, continuously monitor for aspiration and postoperative pulmonary complications.

4. Hydration and renal complications
a. Initiate oral hydration as soon as feasibly possible.
i. Promptly manage PONV.
ii. Provide adequate hydration through IV fluids or tube feedings if oral hydration is not possible.
iii. Provide comprehensive oral care.
b. Monitor fluid status at least once per shift for the first 5 days postop.
i. Weigh patient daily.

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

ii. Accurately assess and document intake and output.
iii. Assess for changes in blood pressure, mental status, and new-onset atrial fibrillation that could indicate dehydration.
c. Perform routine screening of serum electrolytes, urea nitrogen, and creatinine.

5. Respiratory complications
   a. Implement an aggressive pulmonary toilet regimen.
      i. Promote use of incentive spirometer 10 times/hr.
      ii. Perform turn, cough, and deep-breathing exercises every 2 hours.
      iii. Provide chest percussion or chest physiotherapy as needed.
      iv. Promote early mobilization and ambulation (see Mobility).
      v. Maintain head of bed in an elevated position.
      vi. Adequately manage pain (see earlier section on Pain Management).
      vii. Avoid excessive use of narcotics and sedatives.
   b. Prevent VAP for intubated patients.
      i. Implement a VAP bundle, including:
         a. Elevation of the head of the bed between 30° and 45°
         b. Daily sedative interruptions and assessment of readiness to extubate
         c. Peptic ulcer disease prophylaxis
         d. DVT prophylaxis
         e. Daily oral care with chlorhexidine
6. Infection prevention
   a. Implement unit-wide HAI prevention programs.
      i. Continuing education on the appropriate use of guidelines for HAI prevention
      ii. Enforce universal precaution and contact precaution protocols
      iii. Hand-hygiene protocols, including hand rubbing with alcohol-based products or scrubbing with soap and water if hands are visibly soiled:
         a. Before touching the patient
         b. Before clean and aseptic procedures
         c. After contact with body fluids
         d. After touching a patient
         e. After touching a patient's surroundings
   b. Assess for signs/symptoms of infection.
      i. Local signs/symptoms, including redness, tenderness, swelling, and warmth
      ii. Systemic signs/symptoms, including:
         a. Fever greater than 38.0°C after postop day 2
         b. Altered mental status, agitation, respiratory distress, tachycardia, and hypotension
         c. Elevated white blood cell count
   c. SSI
      i. Perioperative prevention protocols, including prophylactic antibiotics and proper hair removal before incision (see Chapter 32, HIV Prevention and Care for the Older Adult on the perioperative care of older adult surgical patients)
      ii. For closed surgical incisions
         a. Maintain sterile dressing for closed surgical incisions up to 48 hours.
         b. Perform dressing changes using sterile technique.
         c. Remove dressing after 48 hours, unless instructed otherwise.

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

iii. For open surgical incisions
   a. Pack wound with sterile gauze and cover with sterile dressing.
   b. Consult with wound ostomy continence nurse for dressing-change regimen, which may continue post discharge.
iv. Continue to assess for local and systemic signs/symptoms of infection
v. Aggressively treat SSI
   a. Reopening and drainage of incision
   b. Wound culture
   c. Antibiotic treatment of infection if it becomes systemic
   d. Contact precautions and adequate cleaning and disinfecting of equipment/environment if infectious agent is an MDRO

d. CAUTI
   i. Implement CAUTI bundle.
      a. Avoid unnecessary catheterizations.
      b. Insert catheters using an aseptic technique, using the smallest possible catheter.
      c. Review catheter necessity daily and remove promptly if use is no longer indicated.
   ii. Remove catheters placed during surgery by postop day 3. If not removed, provide documentation of the need for continued use.
   iii. Provide bedpan, urinal, bedside commode, and/or ambulation to the bathroom as an alternative to catheterization.
   iv. Involve the patient, family, and caregivers in catheter plan of care.
   v. Continue to assess for local and systemic signs/symptoms of infection.
   vi. See Chapter 26, Prevention of Catheter-Associated Urinary Tract Infection, for further information on the prevention of CAUTI.

e. CLABSI
   i. Implement a CLABSI bundle.
      a. Maintain adequate hand-hygiene regimens.
      b. Provide maximal barrier precautions when inserting lines.
      c. Use chlorhexidine skin antiseptic before insertion.
      d. Optimize site selection, avoiding the use of the femoral vein.
      e. Review necessity of line daily and provide for prompt removal if no longer indicated.
   ii. Institute appropriate dressing-change regimens.
      a. Use sterile gauze and a transparent, semipermeable dressing to cover the site.
      b. Replace dressing if it becomes damp, loosened, or visibly soiled.
      c. Replace gauze dressings every 2 days and transparent dressings every 7 days for short-term sites.
      d. Use chlorhexidine-impregnated sponge dressing for temporary catheters if other measures are not working.
   iii. Replace administration sets at appropriate intervals.
      a. At least every 7 days (but not less than 96 hours) for continuous or secondary infusion tubing
      b. Within 24 hours for tubing involving blood, blood products, or fat emulsions
      c. Every 6 to 12 hours for propofol infusion tubing
   iv. Disinfect (scrub) using an appropriate antiseptic when accessing catheter hubs, needleless injectors, and injection ports, using only sterile devices/equipment.
   v. Educate the patient and monitor to prevent submersion of CVC sites in water during showering or bathing.
   vi. Continue to assess for local and systemic signs/symptoms of infection.

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

7. Mobility, function, and frailty
   a. Work with interprofessional team to develop a plan for re-enablement after surgery.
   b. Incorporate the patient, family, and caregivers in the development of the plan of care for re-enablement.
   c. Address barriers to plan, including lack of understanding of roles among healthcare team members, patient dependence and daytime sleepiness, scheduling conflicts, and patient care equipment (e.g., IV tubing, catheters, and SCDs).
   d. Ensure physical therapy provides early assessment of the patient postsurgery and develops a mobility and strengthening plan, including the need for assistive devices.
   e. Provide ambulation by postop day 2.
      i. If ambulation is not possible, then documentation should be provided as to why ambulation did not occur.
      ii. Provide ROM exercises for patients unable to ambulate.
      iii. If ROM exercises cannot be performed, then documentation should be provided as to why they did not occur.
   f. Assist patient with ADL and IADL, while allowing for as much independence as possible.
8. Fall prevention
   a. Routine screening of fall risk, at least once per shift, using validated assessment tools
   b. Use a multipronged approach to address falls, including:
      i. Fall-risk screening on admission
      ii. Injury and injury risk-factors screening on admission
      iii. In-depth admission screening for any positive findings
      iv. Communication and education about the patient's fall risk
      v. Standardized interventions (e.g., armband identification, bed alarms, exercise and toileting regimens, pain relief) for any positive findings
      vi. Customized interventions for those at highest risk
   c. If a fall occurs, perform a comprehensive fall evaluation within 24 hours to include the presence or absence of any signs/symptoms of injury and a review of medications that may have contributed to the fall.
   d. See Chapter 19, Late-Life Depression, for a more detailed discussion on fall prevention in the older adult.
9. Skin integrity
   a. Address pressure injury prevention from admission to discharge, including:
      i. Perform a comprehensive skin assessment and adequately document findings on admission to the unit.
      ii. Complete a pressure injury risk assessment at least daily using a validated assessment tool (e.g., Braden Scale).
      iii. Daily comprehensive assessment of skin integrity
      iv. Moisture management
         a. Skin cleaning routinely and at times of soiling with mild cleansing agents
         b. Use of skin moisturizers for dry skin
         c. Use of absorbent underpads for excessive incontinence, perspiration, or wound drainage
      v. Maintenance of adequate nutrition and hydration (see earlier sections Nutrition and Hydration)
      vi. Minimize pressure on skin and bony prominences
         a. Turn and reposition the patient every 2 hours.
         b. Use mattresses and cushions to redistribute pressure.
         c. Address pressure from medical devices.
      vii. Use care when removing dressings, pads, tape, or leads in order to prevent skin tears.
   b. See Chapter 28, Preventing Pressure Injuries and Skin Tears, for further information on the prevention of pressure injuries in older adults.

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

10. VTE prevention
    a. Institute VTE prophylaxis, including:
        i. Assessment of VTE risk factors using validated measures (e.g., Caprini Risk Score)
        ii. Patient education about VTE risk
        iii. Early ambulation (see earlier section, Mobility)
        iv. Mechanical prophylaxis
            a. Use of SCDs
            b. Caution when using compression stockings as tight fit may impair circulation and lead to complications
            c. ROM exercises for patients unable to ambulate
        v. Pharmacological prophylaxis
            a. Use of LMWH or LDUH, as indicated
            b. Monitor for signs/symptoms of bleeding
11. Restraint use
    a. Restraint use should be avoided if at all possible.
    b. If restraints must be used, address the target behavioral or safety issue with the patient and caregivers and document in the chart.
    c. Use and document methods other than restraints that can be used as part of the plan of care.
    d. Seek early removal of devices or lines that will allow for the discontinuation of restraint use.
    e. Implement a care plan for the management of the patient in restraints.
        i. Release from restraints and reposition every 2 hours.
        ii. Perform face-to-face assessment at least every 4 hours (with physician assessment before renewal of restraint order).
        iii. Provide 15-minute observations, more frequently if warranted by the patient's condition.
        iv. Perform nurse-related interventions every 2 hours to address nutrition, hydration, toileting, personal hygiene, and ROM.
    f. See Chapter 27, Physical Restraints and Side Rails in Acute Care and Critical Care Settings, for further information on the use of restraints in the hospitalized older adult.

C. Discharge
1. Assess the need for social support or home healthcare expected after discharge.
2. Perform comprehensive discharge assessment of cognition and function (mobility, ADL, IADL) and compare with preoperative levels.
3. Assess nutritional status before discharge.
4. Perform comprehensive medication reconciliation.
    a. Address both prior-use and new medications.
    b. Facilitate education for new medications, including purpose of the drug, how to take it, expected side effects, and adverse side effects.
5. Provide detailed explanation to patient, family, and caregivers about the plan of care, including:
    a. Home health visits
    b. Physical or occupational therapy appointments
    c. Follow-up appointments
    d. Education on the use of new equipment or devices, and activity
    e. Education using teach-back strategies on performance of activities such as dressing changes, wound care, and medication administration

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

VI. EVALUATION/EXPECTED OUTCOMES

A. Patient outcomes
   1. Maintain patient safety across the postoperative continuum.
   2. Assess patient decision-making capacity and honor patient and family care decision choices.
   3. Receive a comprehensive unit admission screening and ongoing assessment, including, but not limited to, the following domains: cognitive and behavioral, cardiopulmonary, functional status, nutrition, medication, and frailty.
   4. Receive adequate pain control through implementation of a patient-centered pain management plan.
   5. Restore mobility and functioning to preoperative levels before discharge.
   6. Receive timely and accurate information related to plan of care, including transitional care and long-term follow-up.
   7. Patient will not develop postop complications such as delirium, HAI, VTE, cardiopulmonary adverse events, GI or renal complications, and pressure injuries.
   8. Patient will be free from adverse events such as medication errors and falls.
   9. Comprehensive discharge planning, including discharge assessment of cognitive, functional, and nutritional status; medication reconciliation; discharge location; and home health or other follow-up care.

B. Provider outcomes
   1. Receive education and ongoing training on best practices in the care of the geriatric surgical patient.
   2. Assess patient's and family's decision-making capacity and involve the patient and family in the development of the plan of care.
   3. Provide patient and caregivers with timely and accurate information of patient's condition and plan of care, including transitions.
   4. Participate in high-quality interprofessional collaboration throughout the postoperative stay, including rounding, handoff, pain management, early mobility, nutrition and hydration, medication reconciliation, and transitional care.
   5. Use an evidence-based teamwork system to improve communication and teamwork skills (e.g., TeamSTEPPS) for patient safety (AHRQ, n.d.).
   6. Employ consistent and accurate documentation throughout the postoperative stay.
   7. Apply teach-back method in all patient and family education encounters that are culturally competent and patient centered.
   8. Staff nurses achieve a minimum of a bachelor's degree and obtain practice-specific certification (e.g., gerontological nursing).
   9. Organize and participate in unit-based practice and quality-improvement councils.
   10. Receive education and undergo competency verification that addresses the specialized knowledge and skills related to the care of older adults (AORN, 2015).

C. Systems outcomes
   1. Uphold patient safety and quality in the care of older adults through policy and social statements (e.g., safety language in hospital's mission).
   2. Review and align existing institutional policies and procedures with the latest national standards (see Relevant Practice Guidelines section).
   3. Facilitate and sustain interprofessional geriatric care teams.
   4. Establish a system of reporting patient safety issues (e.g., falls, medication errors, HAI, restraint use, etc.) across the postoperative continuum to identify opportunities for improvement.
   5. Adopt specific patient safety initiatives for older adults that include use of informatics, algorithms, checklists, and personnel oversight.
   6. Develop ongoing quality-improvement initiatives consistent with practice guidelines.

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

7. Facilitate clinical rotations for nursing students across postoperative units to promote experiential learning for prelicensure students.
8. Enforce SSI, CAUTI, CLABSI, and VAP prevention policies, and conduct SSI surveillance based on CDC and TJC guidelines.
9. Organize and support interprofessional unit-based practice and quality-improvement councils (IHI, n.d.).
10. Demonstrate a commitment to culture of safety based on openness and mutual trust (e.g., patient safety leadership walk rounds; IHI, n.d.).

VII. RELEVANT PRACTICE GUIDELINES

A. ACS NSQIP and the AGS's Best Practices Guidelines for Optimal Preoperative Assessment of the Geriatric Surgical Patient (2012): https://www.facs.org/~/media/files/quality%20programs/nsqip/acsnsqipagsgeriatric2012guidelines.ashx
B. AGS Clinical Practice Guideline for Postoperative Delirium in Older Adults (2014): http://onlinelibrary.wiley.com/doi/10.1111/jgs.13281/epdf
C. AGS Assessing Care of Vulnerable Elders-3 Quality Indicators (2007)
D. AORN Position Statement on Care of the Older Adult in Perioperative Settings (2015): https://www.aorn.org/guidelines/clinical-resources/position-statements
E. CDC—Guideline for Prevention of Surgical Site Infection (2017): https://jamanetwork.com/journals/jamasurgery/fullarticle/2623725
F. Evidence-Based Guidelines for Selected Hospital-Acquired Conditions: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/Downloads/2016-HAC-Report.pdf
G. IHI—How-to Guide: Prevent Surgical Site Infections: http://www.ihi.org/resources/Pages/Tools/HowtoGuidePreventSurgicalSiteInfection.aspx
H. The Joint Commission. (2019). *National Patient Safety Goals*: https://www.jointcommission.org/assets/1/6/NPSG_Chapter_HAP_Jan2019.pdf.
I. Surgical Care Improvement Guidelines (2014): http://www.jointcommission.org/assets/1/6/SCIP-FactSheet_010114v4.3.pdf
J. SCIP Core Measure Set. (2014): http://www.jointcommission.org/assets/1/6/SCIP-Measures-012014.pdf
K. Enhanced Recovery After Surgery (ERAS) Guidelines: http://erassociety.org/guidelines/list-of-guidelines
L. VTE Prophylaxis Guidelines for Surgical Patients: https://www.clinicalkey.com/#!/content/playContent/1-s2.0-S0039610914002126

ABBREVIATIONS

ACS	American College of Surgeons
ADL	Activities of daily living
AGS	American Geriatrics Society
CAUTI	Catheter-associated urinary tract infections
CDC	Centers for Disease Control and Prevention
CLABSI	Central line–associated bloodstream infections
CVC	Central venous catheter
DVT	Deep vein thrombosis
ERAS	Enhanced recovery after surgery
GI	Gastrointestinal
HAI	Hospital-acquired infection
IADL	Instrumental activities of daily living
ICU	Intensive care unit

(*continued*)

Protocol 39.1: General Surgical Care of the Older Adult (*continued*)

IV	Intravenous
LDUH	Low-dose unfractionated heparin
LMWH	Low-molecular-weight heparin
MDRO	Multidrug-resistant organisms
NG	Nasogastric
NSAIDs	Nonsteroidal anti-inflammatory drugs
NSQIP	National Surgical Quality Improvement Program
PACU	Postanesthesia care unit
PADSS	Postanesthetic discharge scoring system
PAINAD	Patient assessment in advanced dementia
PONV	Postoperative nausea and vomiting
PSI	Patient safety indicators
QOL	Quality of life
ROM	Range of motion
SCD	Sequential compression device
SCIP	Surgical care improvement project
SSI	Surgical site infection
TJC	The Joint Commission
VAP	Ventilator-associated pneumonia
VTE	Venous thromboembolism
WHO	World Health Organization

RESOURCES

Advancing Effective Communication, Cultural Competence, and Patient- and Family-Centered Care (Joint Commission)
http://www.jointcommission.org/assets/1/6/ARoadmapforHospitalsfinalversion727.pdf

Always Use Teach-Back
http://www.teachbacktraining.org

American Geriatrics Society (AGS) Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults
https://www.guidelinecentral.com/summaries/american-geriatrics-society-2015-updated-beers-criteria-for-potentially-inappropriate-medication-use-in-older-adults/

Ask Me 3: Good Questions for Your Good Health—Institute for Healthcare Improvement
http://www.ihi.org/resources/Pages/Tools/Ask-Me-3-Good-Questions-for-Your-Good-Health.aspx

Enhanced Recovery After Surgery
http://erassociety.org

Frequently Asked Questions About SSI
http://www.cdc.gov/HAI/pdfs/ssi/SSI_tagged.pdf

Institute for Healthcare Improvement (IHI)—Develop a Culture of Safety
http://www.ihi.org/resources/Pages/Changes/DevelopaCultureofSafety.aspx

Targeted Solutions Tool for Hand Hygiene, Hand-off Communications and Safe Surgery by TJC
http://www.centerfortransforminghealthcare.org/tst.aspx

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Care of the Older Adult With Fragility Hip Fracture*

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40

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Discuss the impact of fragility hip fracture on global healthcare systems.
2. Describe methods to assess bone health and fracture risk.
3. Identify common complications associated with care of older adults with fragility hip fracture.
4. Articulate specific nursing management strategies to address common complications.
5. Discuss fracture liaison service as a process for secondary fracture prevention.

OVERVIEW

The global incidence of fragility hip fractures continues to rise on an annual basis, making it one of the most common causes of hospital admission following trauma for older adults. In 1990, the global incidence of hip fracture was approximately 1.26 million; conservative estimates indicate that this number will burgeon to between 4.5 and 6.3 million by 2050 (Gullberg, Johnell, & Kanis, 1997). Although regional costs of hip fracture differ, it is a significant economic burden globally (Williamson et al., 2017). The annual cost of treating fragility fractures in the United States in 2005 was $17 billion, with hip fractures accounting for 72% of these expenses (Burge et al., 2007); these costs will increase with the growing aging population. Rehabilitation is not always successful. A study by Bertram, Norman, Kemp, and Vos (2011) found that 1 year after fragility hip fracture, 29% of patients did not achieve their prefracture level of function for activities of daily living (ADL).

Age-standardized incidence of hip fracture is falling in many countries, but this is far outweighed by overall population aging (Veronese & Maggi, 2018). Globally, the number of high-risk individuals is expected to double over the next 40 years (Odén, McCloskey, Kanis, Harvey, & Johansson, 2015), and the actual number of hip fractures is increasing. In the United States, although an analysis of Medicare claims data (2002–2015) showed a plateau in the age-adjusted hip-fracture incidence, this plateau featured 11,000 more hip fractures in women than previously estimated (Michael Lewiecki et al., 2018).

Despite advances in anesthesia, nursing care, and surgical techniques, this injury can be overwhelming for both patient and family, often resulting in permanent disability and increased reliance on others. Evidence-based interventions to reduce common complications and prevent secondary fractures are crucial to maximize recovery for individuals as well as decrease mortality and contain healthcare costs. Nurses are in an optimal position to make

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

a significant difference for patients who suffer a fragility fracture.

BACKGROUND AND STATEMENT OF PROBLEM

Hip fracture is the most devastating of all fragility fractures with risk of long-lasting disability and significant morbidity and mortality (Flikweert et al., 2018; Katsoulis et al., 2017). Although the vast majority of people who suffer a hip fracture are older females, the number of men suffering from fragility hip fracture is increasing, with almost 30% of all hip fractures occurring in men (Khosla, Amin, & Orwoll, 2008). As the age of patients with these injuries continues to trend upward and include more of the very old (older than 90 years), the incidence of coexisting medical problems and subsequent complications will increase (Bergstrom et al., 2009). Studies show that many of those who survive do not regain their prefracture level of independence (Bentler et al., 2009; Bertram et al., 2011). Many people recovering from hip fracture experience ongoing limitations in mobility, basic ADL, self-care, and quality of life (Dyer et al., 2016).

Mortality rates after hip fracture are significant as well; rates in the first year after fracture range from 18% to 33% (Abrahamsen, van Staa, Ariely, Olson, & Cooper, 2009; Pugely et al., 2014). von Friesendorff and colleagues (2016) followed 1,013 fracture patients and 2,026 matched community controls for 22 years; excess mortality remained high in postfracture patients of both sexes—up to 10 years in women and up to 20 years in men. The CHANCES Project that included over 120,000 patients from Europe and the United States found that hip fracture was associated with excess short- and long-term all-causes mortality in both men and women (Katsoulis et al., 2017).

Functional decline and subsequent death are attributable to the complex interplay of surgical stress, comorbidity, prefracture frailty, and level of physical and cognitive function. Although the fracture itself is responsible for less than half of the deaths (Parker & Johansen, 2006), families often identify the hip fracture as playing a central role in the patient's decline.

Decades of research shows that half of those who sustain fragility hip fracture have had a previous fragility fracture (Edwards, Bunta, Simonelli, Bolander, & Fitzpatrick, 2007; Gallagher, Melton, Riggs, & Bergstrath, 1980). Despite evidence demonstrating benefits of early detection of osteoporosis and implementation of strategies to reduce fracture risk (Akesson et al., 2013, Greene & Dell, 2010; Newman, Ayoub, Starkey, Diehl, & Wood, 2003), studies reveal that these recommendations are not being applied in practice (Ellanti et al., 2014; P. J. Mitchell, 2013; Sobolev, Sheehan, Kuramoto, & Guy, 2015).

Nurses are ideally positioned to play a pivotal role in preventing or mitigating the effects of common complications associated with fragility hip fracture, such as pain, delirium, venous thromboembolism (VTE), malnutrition, pressure ulcers, infections, fluid and electrolyte imbalances, and functional decline, and to manage programs focused on secondary fracture prevention.

DEFINITION OF FRAGILITY HIP FRACTURE

A fragility fracture is defined as a break in the bone resulting from low-impact trauma, such as falling from a standing height or less, or one that occurs in the absence of significant trauma. *Hip fracture* is a collective term for different types of fractures in the proximal end of the femur. The type and location of the fracture will determine how the fracture is repaired, specific postoperative restrictions, and how quickly healing will progress. Hip fracture location can be broadly categorized into two areas: intracapsular and extracapsular. Intracapsular fractures occur within the capsule that forms the hip joint and involve the head and neck of the femur. Fractures outside the capsule are further described as trochanteric or subtrochanteric fractures.

The most common location for a fragility hip fracture is the femoral neck (45%–53%), followed by intertrochanteric fractures (38%–49%) and, less often, subtrochanteric fractures (5%–15%; Marks, Allegrante, Ronald MacKenzie, & Lane, 2003; see Figure 40.1). A large prospective study of more than 220,000 persons found that people who suffered fractures around the trochanters tended to be older, with poorer health status, longer hospital stays, and poorer functional recovery (Fox, Magaziner, Hebel, Kenzora, & Kashner, 1999).

SURGICAL REPAIR OF HIP FRACTURE

When the bone breaks, the broken pieces may remain in their original position, and the fracture is said to be nondisplaced. A displaced fracture occurs if the broken pieces move out of alignment. Surgical treatment approaches depend on a variety of factors, including quality of the bone and postsurgical rehabilitation potential. A nondisplaced fracture may be stabilized using percutaneously inserted pins (Figure 40.2). If the fracture is displaced, or out of alignment, the blood supply to the area is often compromised, and patients will generally do better if some of the components of the hip are replaced. If both the ball and the socket, or acetabulum, are replaced, the procedure is referred to as a total hip replacement (Figure 40.2). If only the head of the femur is replaced, the procedure is referred to as a hemiarthroplasty (Figure 40.3). A nondisplaced fracture around the trochanters may be repaired with a large screw that slides within

FIGURE 40.1

Common sites of hip fracture.

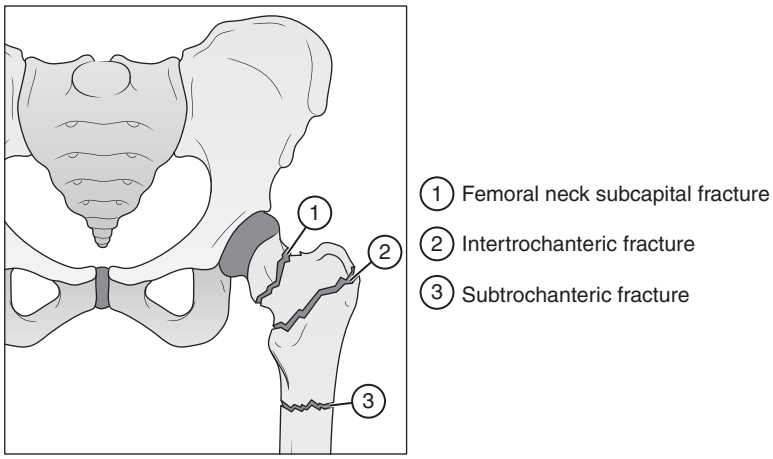


FIGURE 40.2

Total hip replacement (right hip) and cannulated screws (left hip).



Source: Image courtesy of Dr. K. G. Thorngren, Lund University Hospital.

the barrel of a plate that is screwed to the side of the femur. This type of fixation will stabilize the fracture over time by impacting the broken area on itself, thus stimulating new bone growth and is called a dynamic or compression hip screw (Figure 40.4). A subtrochanteric fracture distal to the trochanters is commonly fixed with an intermedullary rod and stabilized with a large screw (Figure 40.5). Regardless of the type of fixation, the goal postoperatively is to advance the patient to maximum weight-bearing status as quickly as possible. The type of surgical fixation and quality of the bone will determine weight-bearing limitations and/or postoperative positioning restrictions.

Fracture Repair as a Palliative Measure

The 1-year mortality rate after hip fracture is approximately 30% (Pugely et al., 2014). Those most likely to die have advanced age, severe comorbidities, poor ambulation abilities, severe dementia, and reside in a facility (Hu, Jiang, Shen, Tang, & Wang, 2012; Pugely et al., 2014; Wiles, Moran, Sahota, & Moppett, 2011). The fall and hip fracture may be precipitated by a cardiorespiratory, metastatic, or neurological condition. For patients with advanced age, severe comorbid illness, and high dependency needs, the hip-fracture surgery may be viewed as a palliative intervention performed with the goal of reducing pain and improving the quality of life (Ko & Morrison, 2014; Koso, Sheets, Richardson, & Galanos, 2018; Leland, Teno, Gozalo, Bynum, & Mor, 2012). For more detailed information, see Chapter 43 Palliative Care Models.

PATHOPHYSIOLOGY

Fragility hip fracture is a painful sequela of poor bone quality and a traumatic event, often involving a fall. In adults, small amounts of bone mineral are lost as osteoclast cells clean up old bone, in a process known as resorption. These bone minerals are replaced by bone-building cells called osteoblasts in a process known as remodeling. With aging, the loss of bone occurs progressively and asymptomatically,

FIGURE 40.3

Hip procedures.

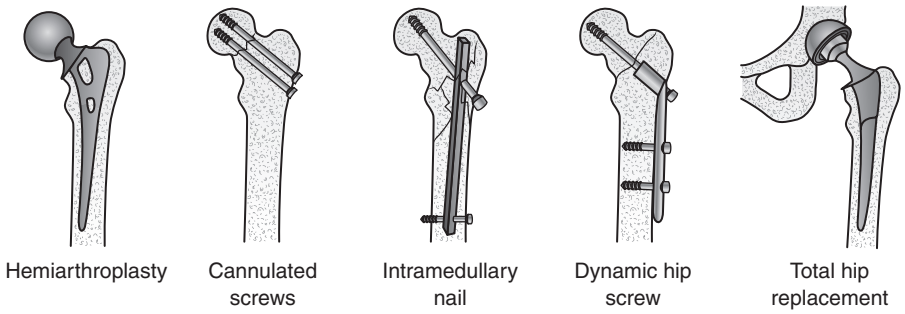
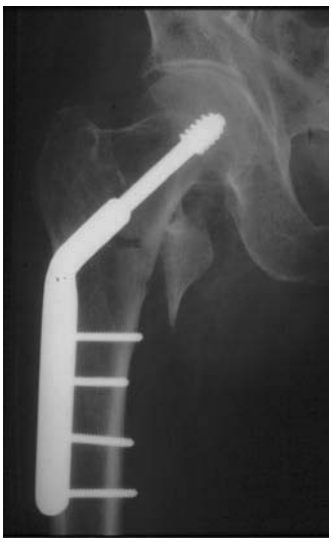


FIGURE 40.4

Compression or dynamic hip screw.



Source: Image courtesy of Mr. Phillip Roberts, University Hospital of North Midlands.

FIGURE 40.5

Intramedullary rod.



Source: Image courtesy of Mr. Phillip Roberts, University Hospital of North Midlands.

accelerating in women after menopause. When the balance tips toward excessive resorption, bones weaken (osteopenia) and can become brittle and prone to fracture (osteoporosis) over time. Based on a number of factors, men develop greater bone strength as they mature and lose bone strength more slowly, in part because of a more gradual loss in sex hormone levels with aging (Willson, Nelson, Newbold, Nelson, & LaFleur, 2015).

A fracture is often the first indication of diminished bone health. Approximately 10 million people in the United States have osteoporosis, and as the population continues to age, an increasing number of people will be affected by this disease (Wright et al., 2014).

Risk Factors for Fragility Hip Fracture

Falling is the leading cause of hip fracture in older adults. Determination of the circumstances precipitating a fall and fracture is essential to illuminate underlying issues that

need to be addressed in addition to the fracture. Intrinsic factors, such as acute medical conditions, exacerbation of chronic conditions, and visual or balance problems, as well as extrinsic factors, including environmental factors and lifestyle, contribute to increasing the risk of falling.

Intrinsic Fall Risk Factors

Normal age-related changes affecting vision, hearing loss, balance, and/or gait disturbances coupled with a slowed reaction time are factors that contribute to increased fall risk in older adults. In addition, many older adults have underlying chronic conditions or an acute event that may result in a fall. A neurological event, cardiac condition, dehydration, urge incontinence, or underlying infection may contribute to increasing the risk of falling and subsequent fracture. Medications may have anticholinergic side effects that increase fall/fracture risk, for example, dizziness or blurred vision.

Sarcopenia is an age-related decline in muscle bulk and quality that may escalate the risk of fracture, especially if associated with diminished functional mobility, reduced lower quadriceps strength, and poor balance or body sway. Sarcopenia and osteoporosis are linked from a biological and functional perspective and increase fracture risk in older adults. The elevated fracture risk from sarcopenia and osteoporosis is a result of the decline of muscle mass and strength, the decrease in bone mineral density (BMD), and limited mobility (Tarantino et al., 2015).

Extrinsic Fall Risk Factors

Environmental tripping hazards, for example, small pets, clutter, or poor fitting footwear, may contribute to increasing fall risk. Alcohol or drug use may impair balance and/or cause drowsiness or delirium. Another concern in this population is potential elder abuse. The admitting head-to-toe assessment is critical to determine whether the circumstances of the fall are consistent with the pattern of injury. (For more detailed information, see Chapter 16, Elder Mistreatment Detection; Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care; and Chapter 34, "Substance Misuse and Alcohol Use Disorder in the Older Adult.)

Diminished Bone Strength

The other risk factor that contributes to increasing the risk of fragility fracture is bone loss associated with aging. There are several factors that increase the risk of bone loss.

- *Age.* Bones weaken as we age. Eighty percent of patients hospitalized for hip fracture are of age 65 years and older (Hall, DeFrances, Williams, Golosinskiy, & Schwartzman, 2010).
- *Gender.* The drop in estrogen levels that occurs with menopause accelerates bone loss in women. The majority of hip fractures occur in women.
- *Nutrition.* Poor nutrition and a diet low in calcium and vitamin D contribute to increasing risk of hip fracture.
- *Heredity.* A family history of osteoporosis or broken bones after age 50 years and people with a low body mass index are at greater risk for fragility fracture.
- *Lifestyle.* Smoking and drinking more than two alcoholic beverages per day can interfere with normal processes of bone remodeling, resulting in bone loss. Inactivity can weaken bones.
- *Medications.* Long-term corticosteroid use can weaken bones. Side effects of medications can affect balance and eyesight, which increases fall risk.
- *Medical conditions.* Endocrine disorders, such as hyperparathyroidism, and intestinal disorders, such as Crohn's disease, may reduce absorption of calcium and vitamin D, which negatively impacts bone health.

Frailty and Sarcopenia

Two complex geriatric syndromes, frailty and sarcopenia, are now recognized as significant risk factors for fragility fracture. They often coexist (Carmeli, 2017), but while sarcopenia is considered a component of frailty, frailty is not considered a component of sarcopenia (Wilson, Jackson, Sapey, & Lord, 2017). So while frail older individuals will exhibit some degree of sarcopenia, not all sarcopenic individuals are frail.

Frailty

Although a consensus definition remains elusive, frailty is characterized by an older person's increased vulnerability and diminished resistance to stressors that increase risk of adverse health outcomes (Morley et al., 2013; Rodríguez-Mañas et al., 2013). Frailty occurs on a continuum (Sieber, 2017) that is dynamic and can improve or worsen over time. It can incorporate physical and/or psychological aspects and is influenced by a range of factors that are treatable (medical diagnoses, social issues such as isolation and food insecurity) and those that are more difficult to manage (dementia, depression, catabolic disorders; Marques & Quierós, 2018). Frailty can be objectively measured, although only a few frailty measures seem to be valid and have good predictive ability (Apóstolo et al., 2017). Frailty is closely linked to musculoskeletal health (McGuigan, Bartosch, & Åkesson, 2017). It contributes to functional disability and osteoporosis development (Rosen & Klibanski, 2009) as well as increasing fall risk in

community dwelling older adults (Cheng & Chang, 2017; Kojima, 2015). In a representative profile of U.S. elders using data from the National Health and Aging Trends Study, over half of the individuals identified as frail had suffered a fall in the previous year (Bandeen-Roche et al., 2015). For more information on frailty, see Chapter 31, The Frail Hospitalized Older Adult.

Sarcopenia

Primary sarcopenia is an age-related, progressive, and generalized decline in muscle mass and strength along with low physical performance that negatively impacts ADL (Carmeli, 2017; Cruz-Jentoft et al., 2010). The decline in muscle mass begins around age 30 and significantly accelerates after age 5 with a concomitant decrease in muscle strength (Curcio et al., 2016). In 2018, the European Working Group on Sarcopenia in Older People (EWGSOP2) updated their guidelines, which now define sarcopenia as a muscle disease and emphasize that "practitioners have ever-increasing possibilities for preventing, delaying, treating, and sometimes even reversing sarcopenia by way of early and effective interventions" (Cruz-Jentoft et al., 2019, p. 17).

Sarcopenia increases fracture risk due to decline in muscle mass and strength (a critical component of walking), which in turn increases the risk for gait and balance deficits as well as falls (Beaudart, Zaaria, Pasleau, Reginster, & Bruyère, 2017; Carmeli, 2017; Dhillon & Hasni, 2017; Wong et al., 2019). In a meta-analysis that included 10,073 subjects, Zhang et al. (in press) found that sarcopenia is a risk factor for falls among community older people but not among nursing home residents.

Clinically, muscle strength is evaluated by handgrip strength, whereas physical performance can be measured by gait speed and/or the Short Physical Performance Battery and "timed up and go" from a chair (Liguori et al., 2018). Muscle mass evaluation remains a diagnostic issue (Curcio et al., 2016), with whole body DXA and CT/MRI scans being the most commonly used (Lee et al., 2019), while CT/MRI remains the gold standard. There is ongoing research about determining clinically meaningful cutoff values for muscle mass and strength (see, e.g., Chiles Shaffer, Ferrucci, Shardell, Simonsick, & Studenski, 2017) as well as appropriate values across diverse populations (Cruz-Jentoft et al., 2019).

Our understanding of sarcopenia continues to expand and evolve (Marzetti et al., 2017). Interventions can mitigate some of the functional decline it causes. These include aerobic and resistance exercise; nutritional interventions (e.g., increased protein to counteract changes in protein metabolism as well as higher catabolic rates associated with chronic illness, vitamin supplements); and pharmaceutical agents currently under investigation (testosterone, selective androgen receptor modulators, ghrelin and ghrelin receptor agonists, and angiotensin-converting inhibitors, among others.) For more detailed information, see Cruz-Jentoft et al. (2019); Cruz-Jentoft, Kiesswetter, Drey, & Sieber, (2017); Carmeli (2017); and Liguori et al. (2018).

Assessment of Fracture Risk and Bone Health

There are two widely used measures to determine fracture risk and bone health. The World Health Organization (WHO) developed the Fracture Risk Assessment Tool (FRAX) in 2008 (Kanis, Johnell, Oden, Johansson, & McCloskey, 2008). The FRAX is a major achievement in helping to determine those patients who may suffer a fragility fracture (Vernon & King, 2011) as well as those who may be candidates for pharmacological therapy for osteoporosis (Watts, 2011). The FRAX contains 12 variables used to calculate risks, such as BMD, including age, low body mass index, previous fragility fracture, parental history of fracture, glucocorticoid treatment, current smoking status, rheumatoid arthritis history, alcohol intake, and other secondary causes of osteoporosis. The FRAX takes approximately 20 minutes to complete and provides a qualitative estimate of 10-year fracture risk. Its intended use is for those not currently being treated for osteoporosis. The FRAX is commonly administered in conjunction with dual-energy x-ray absorptiometry (DEXA scan; www.shef.ac.uk/FRAX/tool.jsp).

The DEXA scan is the most widely used method to evaluate BMD. The WHO uses BMD measured by the DEXA to define osteoporosis. A DEXA scan measures the density of bone at two areas, the proximal femur and the lumbar spine. The results are reported as a T-and a Z-score. The standard measure T-score is 0.0, representing bone density of a young healthy individual at peak bone health. According to WHO criteria (Kanis et al., 2008), a T-score higher than −0.1 is considered normal bone density, a T-score between −1.0 and −2.5 is considered osteopenia, and a T-score below −2.5 is considered osteoporosis. The Z-score is a comparative measure of persons of the same age and gender as the patient and can be used to evaluate men, children, and premenopausal women. A Z-score measure of −2.0 is considered low bone mass for chronological age, and a Z-score of above −2.0 is considered within the expected range for age (National Osteoporosis Foundation [NOF], 2010).

Although BMD using the DEXA is considered the gold standard surrogate marker of bone health, and

assessment of fracture risk is completed using the FRAX, there are newer measures being reported in the literature that hold promise as measures of bone health and treatment monitoring (Fitton, Astroth, & Wilson, 2015). Bone turnover markers (BTM) are measures of by-products of protein secreted by bone-forming osteoblasts, measured in serum, and bone-resorbing osteoclasts, measured in urine. Unlike the DEXA, which evaluates specific skeletal sites, these markers reflect global skeletal activity and have the potential to be used to monitor effectiveness of treatment (Kleerekoper, 2001). Another approach under investigation is the use of MRI to evaluate bone marrow adipose tissue (BMAT). A study conducted by Li et al. (2014) found that women with osteopenia and osteoporosis had a higher marrow fat content compared to those with normal BMD. There is growing attention to the use of BTM and BMAT as biomarkers for bone quality (Burch et al., 2014; Li et al., 2014; Tang et al., 2010).

COMMON COMPLICATIONS AND EVIDENCE-BASED NURSING CARE STRATEGIES

Although in most cases surgical repair is crucial, optimal outcome depends on an interprofessional approach to care, often referred to as orthogeriatrics (Wallace et al., 2019). Advanced age, chronic conditions, and diminished physical and cognitive reserves expose older adults with fragility hip fracture to increased risk of developing specific geriatric syndromes. It is of crucial importance that nursing care include evidence-based strategies to engage both patient and family in learning about risk factors, prevention, and management of complications such as delirium, pressure ulcers, VTE, malnutrition, constipation, fluid and electrolyte imbalances, functional decline, infections, and prevention of secondary fractures (Meehan et al., 2019).

Although hospitalized older adults experience many of these complications and most are discussed elsewhere in this book, they coalesce in the hip-fracture patient population to increase morbidity and mortality and significantly reduce the individual's prospects for maximum functional recovery. Nurses play a vital role in ameliorating these risk factors and ensuring optimal outcomes.

PAIN: SIGNIFICANCE IN HIP-FRACTURE PATIENTS

A fall, hip fracture, and surgical repair are painful assaults injuring the skin, muscle, and bone. Older patients with hip fractures are at high risk for unmanaged pain with higher rates of delirium, impaired mobility, and long-term functional impairment as a result (Bjorkelund, Hommel, Thorngren, Lundberg, & Larsson, 2011; Peeters et al., 2016). Unmanaged pain disturbs sleep, diminishes appetite, and may also increase the risk of delirium (American Geriatrics Society [AGS] Panel on the Pharmacological Management of Persistent Pain in Older Persons, 2009). Painful conditions, such as osteoarthritis, osteoporotic fractures, degenerative spine disease, cancer, and neuralgias, increase in prevalence with age and may add to the pain experience for patients with hip fracture (Reid, Eccleston, & Pillemer, 2015).

Nursing Management Strategies to Address Pain

There is a paucity of evidence on pain management for patients with hip fractures. Studies often exclude those with delirium, dementia, and/or severe comorbid illness, approximately 40% of the population, because of challenges with communication and obtaining consent. Therefore, expert opinion supplements the evidence for this section.

As functional mobility is the key to recovery, a balanced approach to pain management is required to achieve both mobility and comfort. Frequent evidence-based pain assessment is the foundation for effective pain management. This begins with an evidence-based pain history tool and screening health records. Information on preexisting painful conditions and prior pain treatments serve to illuminate potential sources of discomfort and types of pain to incorporate into the treatment plan. Assessing and recording pain intensity using a valid scale with vital signs make the pain assessment visible and help ensure that pain is assessed on a regular basis (Purser, Warfield, & Richardson, 2014). The specific pain scale used would be based on the patient's comprehension and preference (Herr & Titler, 2009). For patients with severe cognitive impairment, one should use a validated pain behavior scale such as the Pain Assessment in Advanced Dementia (PAINAD) Scale, created for those with dementia (Herr, Coyne, McCaffery, Manworren, & Merkel, 2011; Warden, Hurley, & Volicer, 2003). For information on specific pain assessment tools, see Chapter 22, Pain Management in the Older Adult.

A multimodal approach to analgesia helps maximize the synergistic effect of analgesics while decreasing the dose requirement of any one medication, thereby limiting their adverse effects (Kang et al., 2013; Roberts & Brox, 2015). Preoperative regional anesthesia is recommended (Amin, West, Farmer, & Basmajian, 2017; Peeters et al., 2016). A combination of a geriatric-appropriate opioid together with acetaminophen and regional analgesia (e.g., nerve block) may manage pain while reducing side effects such as sedation and delirium (Kang et al., 2013). Nonpharmacological strategies, such as relaxation exercises, physiotherapy, and application of heat or cold, may reduce opioid requirements and improve comfort (Abou-Setta

et al., 2011). Nonsteroidal anti-inflammatory medications are usually not recommended because of their higher rates of adverse effects, such as bleeding, cardiovascular complications, and acute kidney impairment, in older patients (AGS Panel on the Pharmacological Management of Persistent Pain in Older Persons, 2012; AGS Beers Criteria Update Expert Panel, 2019).

Minimizing sedation while maximizing pain control is a goal to facilitate mobility. It is important to identify the time of the peak effect of the specific analgesic and route of administration and administer the analgesic when peak effect will coincide with physiotherapy or ambulation. Strategic timing of analgesics can help alleviate the increased pain of mobilization and reduce the need for additional opioid doses.

Regional blocks (e.g., femoral and fascia iliaca compartment block) are effective in relieving the acute pain of hip fracture compared with standard care (Amin et al., 2017; Peeters et al., 2016; Steenberg & Møller, 2018). The block is typically administered before surgery and provides substantial perioperative pain relief, reducing the need for opioid analgesia and the risk of delirium (Peeters et al., 2016). Nurse-initiated fascia iliaca blocks have improved pain management effectiveness and safety (Dochez et al., 2014).

Managing moderate to severe pain after hip fracture may involve the administration of opioids. Older adults are more susceptible to the adverse effects of opioids, and a "start low/go slow" approach to opioid administration is advised. This approach is not appropriate if the patient was on opioid therapy before admission because a higher dose may be required. An individualized approach considering the patient's opioid use history with careful monitoring and titration of analgesic to achieve an acceptable pain level is essential.

Strategies to Manage Adverse Effects of Analgesics

Oversedation is a serious adverse effect of opioid therapy that could lead to respiratory failure. According to Pasero (2009), the level of sedation increases gradually and is a warning sign requiring a prompt reduction in opioid use with more frequent monitoring. The first 24 hours of opioid therapy are the riskiest time, and sedation assessment using a validated tool every hour is recommended, with reduction to every 4 hours thereafter if the patient is stable (Pasero, 2009). The Pasero Sedation Scale is recommended as a validated tool that defines levels of sedation as well as actions to take for patient comfort and safety.

Constipation is highly likely to occur and increases the risk of abdominal and rectal pain, delirium, agitation, and bowel obstruction (Neighbour, 2014). Although individual bowel habits vary, in general, the goal is that the patient has a moderate to large bowel movement (BM; e.g., at least 8 ounces) every 48 hours (Auron-Gomez & Michota, 2008), and daily monitoring of BMs is required. The preemptive use of a laxative, a high-fiber diet, and fluids is recommended (Neighbour, 2014).

Other practice recommendations include:

- Avoid prolonged fasting and delays to surgery.
- Encourage a minimum of 6 cups of oral fluid daily unless otherwise restricted.
- Mobilize frequently, for example, walk to the toilet while awake.
- Avoid the use of bedpans; use a toilet or bedside commode. Ensure privacy for patient dignity.

Nausea and vomiting are potential adverse effects of opioids and are typically managed with antiemetic medication. However, medications with anticholinergic properties should be avoided, because they can cause delirium (AGS Beers Criteria Update Expert Panel, 2019). Delirium can also be an adverse effect of analgesics; however, delirium is also associated with unmanaged pain. Assessing and adjusting the medication or reducing the dose of analgesics are interventions that may reduce the analgesic contribution to delirium (Meehan et al., 2019).

DELIRIUM: SIGNIFICANCE IN HIP-FRACTURE PATIENTS

Delirium is the most common complication associated with hip fracture. Rates of delirium in this population have been reported to be as high as 62% (J. J. White, Khan, & Smitham, 2011). Findings from multiple studies confirm that delirium is independently associated with a variety of adverse outcomes, including pressure injuries, functional decline, institutionalization, dementia, and death (Arshi et al., 2018; Krogseth, Wyller, Engedal, & Juliebø, 2014; Malik, Quatman, Phieffer, Ly, & Khan, 2019; Morandi et al., 2019).

One of the strongest predictors of postoperative delirium is preoperative cognitive dysfunction (Oh et al., 2015). Cognitive impairment is common in the hip-fracture population. Griffiths et al. (2012) report that approximately 25% of hip-fracture patients have a moderate cognitive impairment. A systematic review and meta-analysis of 32 studies involving 6,704 patients with hip fracture found that those with dementia were six times more likely to develop postoperative delirium (Smith et al., 2017). Lundstrom, Stenvall, and Olofsson (2012) studied 129 patients with hip fracture who developed postoperative delirium and found that patients with delirium

superimposed on dementia (54%) displayed hyperactive symptoms, whereas those without baseline dementia more commonly displayed symptoms of hypoactive delirium.

Patients with hypoactive delirium are 2.9 times more likely to die within 1-year post fracture than those whose delirium resolves (Kiely et al., 2009). Bellelli, Mazzola, et al. (2014) reported that for each day of postoperative delirium in patients with hip fracture, the risk of dying at 6 months increases by 17%. Postoperative delirium is also a prognostic indicator for dementia. A prospective study of 106 hip-fracture patients found that those who developed delirium, when compared to those who did not, were at increased risk for dementia at 6 months post op (36% vs. 7%; Krogseth, Wyller, Engedal, & Juliebø, 2011). The patient's primary care provider should be alert to test for cognitive changes post hip fracture.

The ability to differentiate between dementia and delirium is important because, unlike dementia, the cognitive changes in delirium are potentially preventable, and likely reversible. Despite its prevalence, significant cost, and negative outcomes, nurses and physicians often fail to recognize delirium, especially when dementia or the hypoactive form of delirium is present (Lemiengre et al., 2006; Steis & Fick, 2008). Nurses are ideally suited to assess for risk factors and initiate prevention strategies and interventions to address delirium in this vulnerable population.

Nursing Management Strategies for Delirium

Early identification of risk and timely initiation of preventive interventions is the most effective approach to manage delirium (Oberai et al., 2018). Studies suggest that this approach may prevent up to 40% of the cases of delirium (Inouye et al., 1999; Marcantonio, Flacker, Wright, & Resnick, 2001). The Delirium Elderly At Risk (DEAR) is a tool created to identify risk for pre- and postoperative delirium in the hip-fracture population (Freter, Dunbar, Koller, MacKnight, & Rockwood, 2015). For those identified as being at high risk, further and continued daily assessment for delirium should be performed using a validated measure such as the brief version of the confusion assessment method (bCAM) or the 4 A's test (4AT; Bellelli, Morandi, et al., 2014). Vigilant assessment and documentation of cognitive status in the medical record will increase the likelihood that delirium is detected and underlying causes identified and addressed.

Determination of baseline cognition is essential in the assessment for delirium. One of the highest predictors of delirium is having a history of delirium, so it is important to inquire about a previous episode. It is also important to ask about alcohol or other drug use in order to avoid withdrawal symptoms during hospitalization. Often family is the best source of this information. While delirium cannot be prevented in every instance, optimal results are achieved by clinicians who are knowledgeable of the risk factors and initiate preventive strategies. Martinez, Tobar, and Hill (2015) conducted a systematic review of nonpharmacological, multicomponent interventions for delirium. They found that strategies such as ensuring access to sensory aids, providing a restful environment, ensuring adequate hydration and nutrition, and adequate and appropriate pain control were effective in reducing incident delirium. Hip fracture is a painful event, and the management of postoperative pain can be especially challenging in the delirious patient. It is not uncommon for analgesia to be withdrawn or reduced as a way to reduce agitation associated with acute confusion. However, as Morrison et al. (2003) demonstrated, inadequate pain control may also contribute to delirium.

Delirium is a frightening experience for the patient and family, and distressing for staff. Conversations should be initiated with families on admission to educate them on risks for delirium and reinforce the vital role families and friends play in providing a sense of familiarity, comfort, and reassurance (AGS Expert Panel on Postoperative Delirium in Older Adults, 2015; Meehan et al., 2019; for more detailed information, see Chapter 20, Delirium: Prevention, Early Recognition, and Treatment).

MALNUTRITION: SIGNIFICANCE IN HIP-FRACTURE PATIENTS

It is estimated that as many as 63% of patients with fragility hip fracture are malnourished at the time of admission (Wyers et al., 2010). Circumstances prior to and surrounding the fall and fracture coupled with processes of care, such as prolonged restriction of solid food while awaiting surgery, combine to increase the risk of malnutrition. The stress of the acute injury and surgical intervention results in postoperative nutritional intake that routinely fails to meet energy and protein requirements, contributing to further deterioration in nutritional status (Bell, Bauer, Capra, & Pulle, 2013). Surveys of dietary intake of patients recovering from hip fracture reveal a less-than-optimal dietary intake (Lumbers, New, Gibson, & Murphy, 2001).

Lack of adequate nutrition leads to lowered cognitive function, lean muscle wasting, weakness, and impaired cardiac function, all of which contribute to impaired mobility and an increased risk for developing postoperative complications (Wyers et al., 2010). Duration of preoperative fasting is also a precipitating and modifiable risk factor for postoperative delirium (Radtke et al., 2010). A descriptive cohort study of 428 older adults with hip

TABLE 40.1
Complications Associated With Malnutrition

Complication	Odds Ratio of Developing If Malnourished
Pressure ulcers	3.8
Postop pneumonia	2.8
Catheter-associated urinary tract infections	5.1
Surgical site infections	2.5

Source: Data from Fry, D. E., Pine, M., Jones, B. L., & Meimban, R. J. (2010). Patient characteristics and the occurrence of never events. *Archives of Surgery, 145*(2), 148–151. doi:10.1001/archsurg.2009.277. *Evidence Level IV.*

fractures revealed that preoperative fasting of 12 hours or longer was a risk factor for development of delirium and an increased risk for mortality at 4 months postoperatively (Bjorkelund et al., 2011). Fry, Pine, Jones, and Meimban (2010) reviewed the records of more than 800,000 surgical patients from more than 13,000 hospitals and found malnutrition was an independent risk factor for developing a number of hospital-acquired infections (Table 40.1).

Although common preoperative fasting time in the United States remains "NPO (nothing by mouth) after midnight," a growing number of organizations have endorsed liberalizing food and fluid restrictions (American Society of Anesthesiologists Committee, 1999; Braga et al., 2009). Evidence indicates that patients with no specific risk of aspiration may drink clear fluids up to 2 hours before anesthesia and have solid foods up to 6 hours before surgery. The maximum period of oral fasting should be no greater than 12 hours under any circumstances (Shiga, Wajima, & Ohe, 2008).

In addition to liberalizing fasting restrictions, several studies have reported on the benefits of prescribing, in select patients, a clear carbohydrate-rich beverage, either apple juice or a commercially prepared formula, to be consumed 2 to 3 hours before surgery. Carbohydrate loading may reduce the negative consequences of preoperative fasting, which includes postoperative nausea and vomiting, loss of muscle strength, and postoperative insulin resistance (Melis et al., 2006; Nygren, Thorell, & Ljungqvist, 2015; Yagci et al., 2008).

The American Academy of Orthopaedic Surgeons (AAOS) guidelines for management of hip fractures in the older adult (Roberts & Brox, 2015), the European Pressure Ulcer Advisory Panel (EPUAP), and National Pressure Ulcer Advisory Panel (NPUAP, 2014) support the practice of offering a high-protein oral nutritional supplement (ONS) in addition to regular diet for patients at nutritional risk caused by chronic or acute illness following surgery. A systematic review of nutritional interventions provided to older adults recovering from hip-fracture surgery endorsed the benefits of pre- and postsurgical protein and energy supplements in preventing complications 6 months after surgery; however, more robust studies are needed (Avenell, Smith, Curtain, Mak, & Myint, 2016).

Nursing Management Strategies for Malnutrition

Nutritional screening is suggested for all hospitalized patients (Mueller, Compher, & Ellen, 2011). Biochemical indicators should no longer be used to identify malnutrition. Albumin and prealbumin in the presence of inflammation are depressed. Thus, a low albumin or low prealbumin may indicate illness and inflammation rather than reflect nutritional status (Anthony, 2008; White, Guenter, Jensen, Malone, & Schofield, 2012). Screening for malnutrition should be performed using a validated tool.

While there is no "gold standard" screening tool for malnutrition, the Mini Nutritional Assessment (MNA) tool was developed specifically for screening malnutrition in the geriatric population. The MNA and a shortened version, the MNA-SF, have been used internationally; both are available in 30 languages and are free to download (www.mna-elderly.com). Several studies have tested nutrition risk assessment measures in the hip-fracture population and found MNA-SF optimal in identifying functional decline during the postop period (Inoue, Misu, Tanaka, Kakehi, & Ono, 2019; Koren-Hakim et al., 2017). Prompt referral to a registered dietitian for at-risk patients should be a nursing priority and is essential in order to curtail the negative consequences associated with malnutrition (Jefferies, Johnson, & Ravens, 2011).

Nurses should be aware of the potential for swallowing problems in older adults with hip fracture. A prospective cohort study of 181 patients after hip-fracture surgery found that 34% presented with oropharyngeal dysphasia within 72 hours after surgery. Common factors in those with swallowing problems included preexisting dementia, postoperative delirium, and preexisting respiratory problems (Love, Cornwell, & Whitehouse, 2013). Early identification and referral to speech therapy for a more comprehensive swallow evaluation are essential to avoid aspiration pneumonia.

Implementation of protocols that liberalize preoperative fasting in accordance with existing guidelines should be advocated for patients who have no specific risk of aspiration, for example, gastroparesis. Evidence-based

protocols should include orders to advance the diet as tolerated after surgery (Association of Anaesthetists of Great Britain & Ireland, 2014). In all care settings, nursing staff should monitor dietary intake and notify a dietitian if a consistent pattern of consuming less than 50% of meals is observed. For patients who are malnourished, incorporating a high-protein ONS as part of the daily medication distribution is an effective strategy to enhance the likelihood of consumption and embed a nutritional intervention into the routine process of care (Breedveld-Peters et al., 2012; Dillabough, Mammel, & Yee, 2011; Meehan et al., 2015). Incorporating dietitian recommendations in discharge handoff information is essential in order to continue interventions aimed at addressing or preventing malnutrition in this vulnerable population.

For more detailed information, see Chapter 13, Nutrition in the Older Adult.

FLUID AND ELECTROLYTE IMBALANCE: SIGNIFICANCE IN HIP-FRACTURE PATIENTS

Patients admitted for hip fracture are at risk for dehydration, electrolyte disturbances, fluid overload, and heart failure because of advanced age and comorbid conditions (Bukata et al., 2011). Optimized perioperative fluid management helps to manage the frequent incidence of dehydration in hip-fracture patients while avoiding volume overload, which is crucial because many of these patients have coexisting cardiac disease (Gerber et al., 2013). Strict fluid balance monitoring that begins in the emergency department and continues throughout the acute hospitalization is essential.

Dehydration

Older adults admitted with hip fracture often present with dehydration for a variety of reasons. These include preexisting restricted fluid intake, diminished thirst reflex with subsequent diminished fluid intake, and prolonged time from injury to discovery and initiation of care. Many patients who suffer from incontinence or frequency self-regulate fluid intake to reduce the risk of incontinence, or they may have difficulty accessing toilet facilities. Diuretic use is high in this patient group and may be partly responsible for altered fluid balance. Because dehydration diminishes perfusion to both organs and tissues, it is implicated in the development of a range of conditions and complications prevalent in the hip-fracture population, such as delirium, acute kidney injury (AKI), pressure ulcers, falls, VTE, and urinary tract infections.

Fluid Overload/Heart Failure

Preexisting heart failure or renal conditions that increase fluid load will worsen with the stress of the injury and subsequent surgery. This diminished cardiac and renal function renders the frail older adult more susceptible to fluid overload. For a detailed discussion, see Chapter 36, Fluid Overload: Identifying and Managing Heart Failure Patients at Risk of Hospital Readmission.

Electrolyte Imbalance/Acute Kidney Injury

Electrolyte imbalances such as hyponatremia and hypokalemia are prevalent in patients admitted with hip fracture and are associated with increased risk of 30-day mortality (Madsen, Jantzen, Lauritzen, Abrahamsen, & Jorgensen, 2016). Diuretics and inappropriate maintenance of intravenous fluids may exacerbate these problems. Limited renal reserve is reflected in the high risk of AKI in hip-fracture patients, which is estimated to be 16% (Bennet, Berry, Goddard, & Keating, 2010) and is associated with prolonged hospital stay, increased morbidity and mortality, and poor outcome (Ulucay et al., 2012).

Older patients admitted to the hospital for emergency surgery are at increased risk for AKI and its associated pre- and postoperative complications. Risk factors include preexisting comorbid conditions; age; complex polypharmacy; and use of diuretics, nephrotoxic medications such as angiotensin-converting enzyme (ACE) inhibitors used in the management of hypertension and heart failure, and nonsteroidal anti-inflammatory drugs (NSAIDs) used for pain relief. Time spent down before patient discovery after injury as well as immobility before surgery also increases the risk of rhabdomyolysis. The most significant complication of rhabdomyolysis is AKI (Torres, Helmstetter, Kaye, & Kaye, 2015).

Nursing Management Strategies: Fluid and Electrolyte Imbalances

Dehydration

Factors that add to the normal risk of dehydration in this population include preoperative fasting and surgical blood loss. A short period of preoperative fasting supported by intravenous fluids with early resumption of oral intake in the postoperative period is optimal. Environmental factors, such as limited access to fluids, visual impairments, and drinking containers that are difficult to handle, may compound the problem. Hourly rounding that includes proactive offering of fluids as well as mouth care are two important nursing interventions.

Fluid Overload

Recommended nursing interventions include ensuring that regular diuretics are administered as prescribed, monitoring vital signs, maintaining accurate documentation of fluid balance, and promptly reporting alterations in the patient's clinical and cognitive status. The stress of surgery leads to an increased secretion of the antidiuretic hormone (ADH), which impairs the ability to excrete sodium and water. Symptoms to monitor include urinary output less than 30 mL/hr, increasing blood pressure, shortness of breath, moist breath sounds, and dependent edema.

Electrolyte Imbalance/AKI

AKI, previously referred to as acute renal failure, is an abrupt change in kidney function signaled by a rise in serum creatinine and a reduction in urine output (Pakula & Skinner, 2016). This type of injury usually occurs within 48 hours of one or more precipitating events, such as a hip fracture. Baseline renal function is an independent predictor for AKI (Ulucay et al., 2012), but establishment of this may be difficult in hip-fracture patients, because they may be acutely dehydrated on admission with or without the presence of some chronic renal dysfunction. However, vigilance is necessary, as Porter and colleagues (2017) found in their study that AKI occurred in 24% of over 2,000 individuals with hip fracture and was associated with longer length of stay and worse outcomes.

Close monitoring of fluid balance, particularly decreasing urine output and rising serum creatinine, is essential to early identification of this significant clinical problem. AKI is managed with renal replacement therapy, a topic that is beyond the scope of this chapter. For more information, see, for example, Bagshaw and Wald (2017); Romagnoli, Clark, Ricci, and Ronco (2017).

PRESSURE INJURY: SIGNIFICANCE IN HIP-FRACTURE PATIENTS

Older adults undergoing surgical repair of a fragility hip fracture constitute a high-risk population for developing pressure injury (PI). Findings from several studies indicate that long periods of immobility before, during, and after surgery are a major factor for increasing risk for PI in this population. A meta-analysis (Simunovic et al., 2010) revealed that earlier surgery was associated with a lower risk of death and lower rates of postoperative complications, such as pneumonia and pressure ulcers, among older patients with hip fracture. Rai, Varma, & Wani (2018) showed that it is beneficial to undergo surgical treatment as early as possible because surgery within 24 hours definitively improves outcome and reduces morbidity, PI, infection, and the length of hospital stay in this population. Furthermore, a study by Magny et al. (2017) showed that pressure injuries are associated with 6-month mortality in older patients with fragility hip fracture. Patients with fragility hip fracture are an important group to target for assessment of risk factors and implementation of prevention strategies to reduce the risk of developing these debilitating wounds.

Nursing Strategies to Avoid Pressure Injury

A head-to-toe skin assessment on admission with examination of pressure points every shift is an important strategy to proactively avoid development of pressure ulcers. Prior to surgery, it is important to ensure that the heels are offloaded and free from pressure. Patients should be cared for on pressure-relieving mattresses throughout the continuum of care, including the ED, the perioperative area, and the nursing unit. Interoperative padding of bony prominences and avoidance of friction and shearing forces are also imperative to avoid skin tears. Patients with fragility fracture will often require assistance with repositioning, especially before surgery. Adequate pain relief, both before and after surgery, is crucial to reduce fear of repositioning. These patients often have poor nutritional status and are fasting prior to surgery, thus increasing the risk of developing pressure-related skin breakdown. Strategies to reduce this risk include introducing an evidence-based pathway that includes early surgery and optimizing fluid and nutritional balance, which are clinical imperatives for these vulnerable patients (Hommel, Bjorkelund, Thorngren, & Ulander, 2007).

PI prevention must be an organizational priority. Protocols that reflect the importance of vigilant skin assessment, commencing on admission and continuing throughout the hospital stay, coupled with timely initiation of prevention interventions, should be considered standard of care (Hommel, Gunningberg, Idvall, & Bååth, 2017; Meehan et al., 2019). Prevention protocols should include use of pressure redistributing/relieving surfaces for high-risk patients across the care continuum: on nursing units, in the operating theater, and in the emergency department (Beckett, 2010; Pham et al., 2011; Meehan et al., 2019). For a more detailed discussion, see Chapter 28, Preventing Pressure Injuries and Skin Tears.

VENOUS THROMBOEMBOLISM (VTE): SIGNIFICANCE IN HIP-FRACTURE PATIENTS

VTE is a serious, potentially fatal, surgical complication in patients operated on for hip fracture and one of the principal causes of perioperative morbidity and mortality

(Carpintero et al., 2014). It is, therefore, no surprise that prophylaxis is recommended in evidence-based clinical practice guidelines (AAOS, 2014; Falck-Ytter et al., 2012; National Institute for Health and Clinical Excellence [NICE], 2018) and has long been a part of standard treatment protocols. A Cochrane review by Kakkos and colleagues (Kakkos et al., 2016) agreed with current guidelines recommendations supporting the use of combined modalities in hospitalized trauma and surgical patients at risk for developing VTE.

Patients sustaining hip fracture are at increased risk for VTE resulting from advanced age, delay to surgery, blood vessel damage secondary to the fracture as well as the operative repair (Prisco, Cenci, Silvestri, Emmi, & Ciucciarelli, 2014), cardiac and respiratory comorbidities (Falck-Ytter et al., 2012), and delay to postoperative mobilization. Patients with orthopedic trauma are also more vulnerable to coagulation activation from tissue and bone injury as well as reduced venous emptying perioperatively (Cionac Florescu, Anastase, Munteanu, Stoica, & Antonescu, 2013). Unlike in other hip surgeries, the risk of VTE increases immediately after injury (Shin, Lee, & Suh, 2017), and this excess risk persists for up to 1 year following the fracture (Pedersen, Ehrenstein, Szépligeti, & Sørensen, 2017).

Nursing Strategies to Avoid VTE

Mobilization

Prevention of VTE is the key. Early mobilization and adequate hydration are essential components of VTE prevention. Encourage patients to mobilize as soon as practical after surgery and to undertake leg exercises as instructed in order to get the calf muscles pumping and limit blood stasis. Request that family provide sturdy footwear with a closed heel and toe and ensure that an individually fitted walker is available at the bedside. Offer and encourage fluid intake in accordance with any limitations.

Pharmacological Prophylaxis

There is no way to predict which patients will develop VTE (Cionac Florescu et al., 2013), and, therefore, pharmacological prophylaxis must be administered to all patients with hip fractures unless contraindicated (Marsland, Mears, & Kates, 2010). In patients with acquired coagulopathies and other conditions at risk for bleeding, Prisco and colleagues (Prisco et al., 2014) note that the risk/benefit ratio for treatment must be accurately assessed as soon as the hemorrhagic risk is under control, and pharmacological prophylaxis should be started if the thrombotic risk persists. Current treatment with aspirin or clopidogrel is not a contraindication for pharmacological prophylaxis (AAOS, 2014).

Pharmacological agents recommended for VTE prophylaxis include primarily low-molecular-weight heparin (LMWH) or fondaparinux (Falck-Ytter et al., 2012; NICE, 2018; Prisco et al., 2014). LMWH interrupts the clotting cascade at various levels, whereas fondaparinux is a specific Factor Xa inhibitor. LMWH is an option for preventing preoperative VTE because of its fast onset of action and short elimination half-life (Shin et al., 2017). Agents, such as unfractionated heparin and aspirin, among others, may be used depending on individual patient circumstances. Nursing strategies include administering medications within the prescribed time schedule and monitoring the patient for adverse effects, primarily bleeding. Other complications include liver function abnormalities, skin rashes, and bruising.

Mechanical Prophylaxis

The most important intervention for VTE prevention is the mechanism of walking. Establish mobility goals and stress the importance of mobility in healing and restoring functional recovery as well as VTE prevention. Until such time as the patient is ambulatory or when resting in bed, mechanical prophylaxis may also include intermittent (or sequential) compression devices and graduated compression stockings (GCS). The magnitude of individual benefit from these mechanical treatment methods is unclear because they are usually combined with pharmacological methods (Cionac Florescu et al., 2013).

Intermittent pneumatic compression devices (IPCD) provide a good alternative to anticoagulation and may be used alone for VTE prophylaxis in patients at high risk for bleeding (Koo, Choi, Ahn, Kwon, & Cho, 2014). IPCD are appropriate for thromboprophylaxis in postoperative surgical patients when used within current clinical guidelines, although the current evidence base for specific device or type of device is limited (Pavon et al., 2016). Moderate quality evidence suggests that combining IPC and pharmacological prophylaxis, compared with IPC or pharmacological prophylaxis alone, decreases the incidence of deep venous thrombosis (DVT) when compared to compression and PE (pulmonary embolism) incidence when compared to anticoagulation (Kakkos et al., 2016).

However, many IPC units are large and bulky, making correct application difficult for patients after discharge and increasing fall risk. Smaller portable, battery-powered units are an alternative. Foot compression requires higher pressures than calf compression, so patient cooperation with therapy may be problematic. When part of a patient's

treatment plan, ensure correct application and continuous use for the recommended time period daily.

A recent Cochrane review (Sachdeva, Dalton, & Lees, 2018) concluded that there is high-quality evidence that GCS/antiembolic stockings are effective in reducing risk of DVT in hospitalized patients following orthopedic surgery with or without other methods of background prophylaxis. The review found moderate quality evidence that GCS reduces the risk of proximal DVT and low-quality evidence to assess their effectiveness in diminishing risk of PE.

Compression stockings can be difficult and painful for patients and caregivers to apply correctly, and thus compliance with their appropriate use is a concern. Most commonly cited adverse effects are skin irritation and skin breakdown. To prevent the development of a PI from compression stockings, Bukata et al. (2011) suggest stockings be removed while the patient is in bed. Although rare, pain and numbness could be early warning signs of compartment syndrome or peroneal nerve injury, which have been described in the literature as complications (Guzelkucuk, Skempes, & Kumnerddee, 2014; Hinderland, Ng, Paden, & Stone, 2011). It is recommended that stockings be removed at least once daily for hygienic purposes and to inspect skin condition because this is the most notable complication associated with their use. Stockings should be discontinued if there is marking, blistering, or discoloration of skin, particularly over heels and bony prominences, or if the patient has associated pain, numbness, or discomfort. The nurse is advised to use caution and clinical judgment when applying antiembolism stockings over wounds. If edema or postoperative swelling develops, legs are remeasured and stockings refitted. GCS are contraindicated in patients with diagnoses such as arterial disease, peripheral arterial bypass graft, peripheral neuropathy, leg deformities, and certain skin conditions and cardiac failure (NICE, 2018).

Patient Education

VTE prophylaxis usually continues past the acute care period. In preparation for discharge, patients and/or their families and care providers require both verbal and written information addressing:

- The signs and symptoms of VTE and PE
- The proper technique for administering injectable medication
- The importance of taking the medication at the appropriate time and for the prescribed duration
- Mobilization as instructed and to maintain adequate hydration (Copanitsanou, 2018)
- The signs and symptoms of adverse reactions related to VTE prophylaxis and the importance of seeking medical help as well as whom to contact; and for those patients who are discharged with antiembolism stockings or intermittent compression devices, their use and whom to contact for questions
- For patients who are discharged with antiembolism stockings or intermittent compression devices, instruction on their use and whom to contact for questions about their use

CATHETER-ASSOCIATED URINARY TRACT INFECTION: SIGNIFICANCE IN HIP-FRACTURE PATIENTS

Older adults with fragility hip fracture are at increased risk for developing a urinary tract infection. There is no good-quality evidence to support routine catheterization in this population, although indwelling urinary catheters (IUCs) are commonly inserted on admission to the ED. The clinical indication for the catheter is to avoid movement at the fracture site before surgical repair, which is in compliance with Centers for Disease Control and Prevention (CDC) criteria. The Joint Commission (TJC) and Centers for Medicare & Medicaid Services (CMS) Surgical Care Improvement Project (SCIP) have developed and implemented standards (core measures) aimed at encouraging early discontinuation of these devices in surgical patients. The SCIP core measure related to IUCs states that IUCs are to be removed on postoperative day 1 or 2, with day 0 defined as the day of surgery (TJC, 2015).

It is important to remember that these devices are not innocuous. IUCs are known to be a contributing factor to the development of urinary tract infection and delirium, and they are considered a one-point restraint impacting ease of mobility (Saint, Lipsky, & Goold, 2002). A study of 402 surgically treated older hip-fracture patients concluded that those who developed a CAUTI (catheter-associated urinary tract infection) seemed to be at risk for inferior functional outcomes (Bliemel et al., 2017).

Nursing Management Strategies to Avoid Catheter-Associated Urinary Tract Infection

The criteria for avoiding the development of a CAUTI include ensuring that insertion is clinically necessary and reflects CDC and Society for Healthcare Epidemiology of America (SHEA)/Infectious Disease Society of America (IDSA) criteria, use of aseptic technique when inserting the device, good/routine perineal hygiene, and removal of the device as soon as no longer needed (Gould et al., 2010; Lo

et al., 2014). Nurse-initiated protocols for the management of IUCs have proven beneficial in reducing dwell time and thus reducing the risk of infection (Alexaitis & Broome, 2014; Mori, 2014). For more detailed information, see Chapter 26, Prevention of Catheter-Associated Urinary Tract Infection.

FUNCTIONAL DECLINE: SIGNIFICANCE IN HIP-FRACTURE PATIENTS

Fragility hip fracture in old age is a condition recognized as a major cause of functional decline and disability (Dyer et al., 2016). The devastating effect on long-term function is described in a review by Bertram et al. (2011), who found that 29% of the patients with hip fracture did not regain their prefracture level of ADL function. Furthermore, at 1 year postoperatively, more than 40% had not regained their prefracture level of function, and 47% reported pain. More than one third were unable to walk independently as a result of the fracture. Decreased mobility and pain contribute to functional decline and may lead to frailty. These findings suggest that a significant proportion of the patients experience disability post fracture, with many becoming dependent on community and home care services. They are also at increased risk for falling and future fracture (Milte & Crotty, 2014). A randomized controlled study of patients that received early rehabilitation in the home setting showed improved balance, confidence, independence, and physical activity in the group participating in the program (Ziden, Kreuter, & Frandin, 2010).

Nursing Management Strategies to Avoid Functional Decline

The goal of rehabilitation is that the patient will regain as much of his or her prefracture level of function and health-related quality of life as he or she had before the fracture (Rasmussen & Uhrenfeldt, 2016). A nursing strategy to achieve that goal is to adopt a function-focused approach to care, encouraging and supporting hospitalized patients to be active participants in their self-care activities (Boltz, Resnick, Capezuti, Shuluk, & Secic, 2012). Early mobility, transferring in and out of bed, dressing, grooming and walking to the toilet, and being out of bed for meals are essential. Nurses should ensure patients have their sensory aids in place and that pain is managed in anticipation of ambulation. Effective interventions also include nutritional therapy and resistance training (Morley et al., 2013). Continued rehabilitation after the patient returns home is also important (see Chapter 18, Preventing Functional Decline in the Acute Care Setting).

LOSS, GRIEF, DEPRESSION: SIGNIFICANCE IN HIP-FRACTURE PATIENTS

Patients vary greatly in the speed and extent of their recovery. For some patients and families, the hip fracture is a catastrophic event that results in diminished function, a loss of independence, and a high risk of death within 1 year. Patients may lose hope for the future and experience loss, grief, and depression. A quality of life survey of women aged 75 and older at risk for hip fracture reported 80% feared the disability associated with hip fracture more than they feared dying (Salkeld et al., 2000).

The rate of depression in hip-fracture patients in a review of eight U.S. and U.K. studies ranged from 9% to 47% (Holmes & House, 2000). Hip-fracture patients with depression are less likely to regain function and are prone to longer stays in hospital (Atay, Aslan, Burç, Demirci, & Atay, 2016; Lenze et al., 2004). A qualitative study of patients' perceptions of their capacity to regain function post hip fracture found the culture in the acute care setting fostered dependence that tended to erode initial feelings of self-confidence toward recovery (Gesar, Hommel, Hedin, & Bååth, 2017). A positive attitude, social supports, and active participation/movement were findings across two qualitative studies that identified themes reported by patients as important in their recovery (Schiller et al., 2015; Young & Resnick, 2009).

Nursing Strategies to Address Grief, Loss, and Depression

Nurses can support and foster a positive attitude and hope by informing patients and families that most patients survive and can regain some or all of their prefracture function through participation in rehabilitation. Nurses play a key role in assessing the patient's and family's emotional well-being. Maintaining a heightened awareness of the prevalence of depression in this population combined with screening for depression and ensuring referrals are sent to medical or psychiatric clinicians if warranted is essential. For more detailed information, see Chapter 19, Late-Life Depression.

CARE TRANSITIONS: SIGNIFICANCE IN HIP-FRACTURE PATIENTS

Care transition is a term used to describe a patient's movement from one healthcare setting to the next (Coleman & Berenson, 2004). Leaving the hospital to go home is a perilous time for patients with hip fractures. Without

a coordinated plan and clear communication, medication adverse events, complications, emergency department visits, and unnecessary readmissions to the hospital can occur (Forster, Murff, Peterson, Gandhi, & Bates, 2003; Glenny, Stolee, Sheiban, & Jaglal, 2013). Although deemed ready for discharge by the healthcare team, some patients and families feel unprepared to manage independently at home. Interviews of family care providers reveal that they are often confused and distressed about the fracture and surgery, feel uninformed about their medications, and may become overwhelmed with the challenges of coping at home (Sims-Gould, Byrne, Hicks, Khan, & Stolee, 2012). Older adults report extreme vulnerability following a hip fracture, with the first 12 weeks being particularly turbulent (Ziden et al., 2010).

The readmission rate for hip-fracture patients was determined to be 11.9% in a university-affiliated trauma center (Kates, Behrend, Mendelson, Cram, & Friedman, 2015). The 1-year mortality rate for readmitted patients was 56.2% versus 21.8% for those not readmitted. Readmission was attributed to medical causes for 81.4% of patients and surgical causes for 18.6%. It was concluded that 17% of these readmissions were preventable through interventions.

Coleman's Care Transitions Intervention (Coleman & Berenson, 2004; Coleman, Parry, Chalmers, & Min, 2006) is a proven model shown to improve the safety and experience for patients and family. In this model, patient and family caregivers engage with the healthcare team to prevent and address risks by focusing on (a) medication adherence strategies; (b) postdischarge follow-ups, for example, for bone health and medication reviews; (c) detecting and addressing "red flags," indicative of complications or medical deterioration; and (d) keeping a personal health record to aid communication.

Hip fracture represents a major traumatic life change for many patients and families. They may be anxious and distressed and may require emotional support and counseling around loss and grief (Lenze et al., 2007; Ziden et al., 2010). The following guidelines are derived from the Fresh Start Toolkit: Hip Fracture Recovery Guide for Patients and Families, an evidence-based tool developed collaboratively by patients and the interprofessional team (BC Hip Fracture Redesign Committee Centre for Hip Health and Mobility, 2015). Involvement of the interprofessional team is required to address the patient's needs through the following activity:

1. Apply principles of teaching appropriate to older adults, provide both verbal and written instruction, and begin early in the hospital stay; see Chapter 42, Transitional Care.
2. Include information on the surgical procedure/activity restrictions, the importance of frequent ambulation, healthy diet, sleep strategies, and pain management at home.
3. Educate patients on early warning signs of "red flags" and what to do (e.g., VTE, delirium, infection, dislocation, and constipation).
4. Determine home-assistance requirements for ADL, housekeeping, shopping, and banking. Assist patients to arrange the aforementioned.
5. Assess medication management skills, and develop a plan for medication review and safety at home.
6. As falls remain a significant risk for these patients, conduct a fall risk assessment and develop an individualized plan.
7. Evaluate need for home modifications to improve home safety and convenience, for example, a bath or shower bench, grab bars installed for the toilet and bath, setting the bed to knee height, solid handrails on stairs, removing tripping hazards, and good lighting. Specialized equipment, such as a walker, raised toilet seat, and a reacher, may also be required. Assess the individual's needs, and facilitate arrangements to procure and install as appropriate.
8. Because so many patients feel overwhelmed at home, a follow-up phone call or home visit from a healthcare professional is recommended for support, teaching, and problem-solving.

SECONDARY PREVENTION: SIGNIFICANCE IN HIP-FRACTURE PATIENTS

It is well known that one of the highest risk factors for sustaining a fragility fracture is the history of a previous fracture (Cooper, Mitchell, & Kanis, 2011). The highest risk period is in the first year following a fracture, but the risk persists for at least 10 years (Sobolev et al., 2015). It has been known for decades that half of all patients who suffer a fragility hip fracture experienced a prior fracture (Edwards et al., 2007; Gallagher et al., 1980; Port et al., 2003). The first fragility fracture should serve as a signal alerting clinicians to the need to evaluate the patient for underlying osteoporosis and, if confirmed, to initiate interventions to prevent the occurrence of future fracture (Port et al., 2003). Although effective treatments and care models have been available for many years, a review of current practice suggests that care gaps continue (P. J. Mitchell & Chem, 2013). This gap in secondary care

needs to be addressed in order to minimize both the debilitating consequences of subsequent fractures for patients and the associated economic burden to healthcare systems (Marsh et al., 2011).

Sobolev et al. (2015) reviewed more than 38,000 records of patients aged 60 years or older discharged after hip fracture and found that less than 20% were screened for osteoporosis. An observational cohort study of 51,346 Medicare patients admitted to 318 hospitals in the United States with a diagnosis of osteoporosis found that despite proven therapies for osteoporosis, hip-fracture patients who sustain hip fractures remain grossly undertreated and that only 2% were provided ideal therapy (Jennings et al., 2010).

One of the most commonly used and most effective approaches to fracture management is a fracture liaison service (FLS). This approach has been developed and successfully implemented, both nationally and internationally, with the most mature programs in the United Kingdom. FLS programs center on the use of a dedicated coordinator to identify patients with fragility fracture. Marsh et al. (2011) conducted a systematic review of fracture-management programs and found that 65% included a dedicated coordinator. The role of the coordinator, often an advanced practice nurse, is to identify patients with fragility fracture, and following evidence-based protocols, facilitate BMD testing, provide osteoporosis education, evaluate and address fall risks, initiate osteoporosis treatment, and monitor adherence to therapy. A review of best practices (P. J. Mitchell, 2013) and findings of a task force commissioned by the Society of Bone and Mineral Research (Eisman et al., 2012) reports that the most effective tool for change and the optimal approach to fracture management is a program that uses a dedicated fracture liaison coordinator.

Several FLSs have been established in the United States. Kaiser Permanente, a California-based health maintenance organization, established a "Healthy Bones Program" in 2002. Within this fracture-management program, advanced practice nurses identify, stratify risk, treat, and track patients with osteoporosis as well as individuals who have had or are at risk for a fragility fracture. Since its inception, it is estimated that the Healthy Bones Program has reduced the incidence of hip fractures by more than 40% (Dell, 2011; Greene & Dell, 2010). The Geisinger Health System, serving a large population in rural central Pennsylvania, developed an osteoporosis disease management program and, using a cost–benefit model, projected a $7.8 million cost savings over the 5-year period from 1996 to 2000 (Newman et al., 2003). The success of these programs is aided by having integrated electronic medical record systems, which enhance the ability to share information and monitor patients.

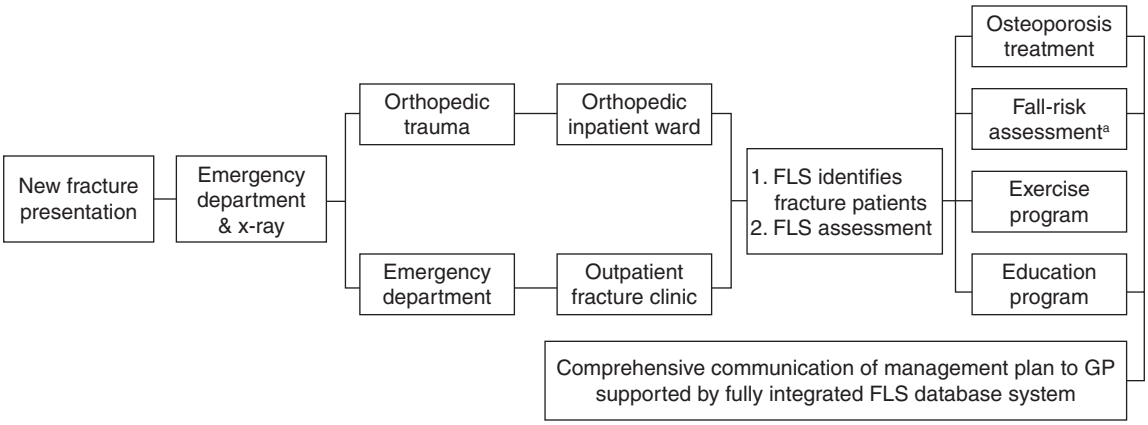
The International Osteoporosis Foundation (IOF) launched a Capture the Fracture program in 2012 with the goal of promoting coordinator-based FLSs globally (Akesson et al., 2013). In 2012, the National Bone Health Alliance (NBHA) and Kaiser Permanente unveiled their 20/20 vision for reducing hip fractures by 20% by the year 2020. They are lobbying the federal government to establish reimbursement criteria within the Medicare system that would support the development of secondary fracture-prevention services for Medicare recipients (NBHA, 2012). In addition, the NBHA has developed an online education program for nurses interested in being certified as a fracture liaison nurse. The growing emphasis on quality improvement for reimbursement and accreditation may heighten interest in expanding the number of fragility-fracture management services in other institutions (Aizer & Bolster, 2014).

The ultimate goal of a fracture-management program is to capture 100% of fragility-fracture sufferers and prevent a second fragility fracture. Core objectives include:

1. Inclusive case finding
2. Evidence-based assessment to:
   a. Stratify risk
   b. Identify secondary causes of osteoporosis
   c. Evaluate fall risk
3. Initiate individualized treatment plan in accordance with relevant evidence-based guidelines
4. Improve long-term adherence to treatment plan. These programs ensure that all patients presenting with fragility fractures receive fracture risk assessment, education, and treatment appropriately. The fracture-management program can be based in secondary or primary care healthcare settings and requires support from a medically qualified practitioner, commonly an advanced practice nurse, with expertise in fragility-fracture prevention or a primary care physician with a specialist interest. An example of the structure of a hospital-based fracture-management service is provided in Figure 40.6.

FIGURE 40.6

Hospital-based fracture liaison service algorithm.



[a] Older patients, where appropriate, are identified and referred for falls assessment.

FLS, fracture liaison service; GP, general practitioner.

Source: Akesson, K., Marsh, D., Mitchell, P. J., McLellan, A. R., Stenmark, J., Pierroz, D. D., … Cooper, C. (2013). Capture the Fracture: A Best Practice Framework and global campaign to break the fragility fracture cycle. *Osteoporosis International, 24*(8), 2135–2152. doi:10.1007/s00198-013-2348-z. *Evidence Level V.* With permission from Springer Nature.For more information on secondary prevention and fracture-management programs, visit the IOF Capture the Fracture website (http://share.iofbonehealth.org/WOD/2012/report/WOD12-Report.pdf), the National Bone Health Alliance website (http://nbha.org/projects/secondary-fracture-prevention-initiative), and the Fragility Fracture Network website (http://fragilityfracturenetwork.org).

CASE STUDY 40.1

Mrs. W is an 84-year-old widow and a retired schoolteacher who lives in a senior apartment complex. Her 80-year-old sister lives in a nearby apartment. Mrs. W is independent in her ADL; she cooks meals and sorts her medications; however, her daughter provides help with bill paying and transportation because Mrs. W voluntarily gave up driving 2 years ago as a result of limited motion in her neck. She wears glasses for reading and distance and uses a cane for walking outside her apartment. Her medical history includes hypertension, osteoarthritis, and gastroesophageal reflux disease (GERD). She has urge incontinence and chronic pain caused by osteoarthritis, which sometimes interferes with her sleep. Her family will tell you that she has some "occasional forgetfulness." Her medications include a multivitamin, antihypertensive, a proton pump inhibitor, and extra-strength acetaminophen for her arthritic pain, which she takes as needed. Past surgical history includes hysterectomy for fibroids (age 48 years) and a nondisplaced distal radius fracture that was treated with a cast (age 58 years), and 6 years ago she had a total left hip replacement for degenerative joint disease.

The night of her fall, Mrs. W recalls taking two acetaminophen PM tablets before going to bed. She remembers waking during the night needing to toilet and falling on her way to the bathroom. Unable to get up or summon help, she remained on the floor until discovered in the morning by her sister. She presents in the ED complaining of pain in her right hip. Her sister accompanies her in the ambulance to the ED, and her daughter is on the way. She arrives at your hospital, which has a geriatric section in the ED and protocols based on best practice to care for older adults with hip fracture.

Nursing concerns in the ED will include:

- Medication history
- Review of circumstances surrounding fall/fracture and pattern of injury
- Assessment and treatment for acute pain and chronic pain
  - Regional pain block would reduce opioid use.
- Sensory devices and family at bedside
- Monitoring of fluid balance
- Monitoring of oxygenation/avoidance of hypoxia
- Establishing baseline cognition

(*continued*)

CASE STUDY 40.1 (*continued*)

- Awareness of increased risk of delirium
- Skin assessment; pressure ulcer prevention
- Evaluation of need for indwelling catheter before insertion
  - Catheter inserted because of fracture instability and related immobility
- Protocol for fast tracking through ED to the orthopedic unit

An x-ray of Mrs. W's hip confirms a displaced neck of the femur fracture. She is transferred to the orthopedic unit within 4 hours of arrival. Nursing strategies on the *admitting unit* include:

- Monitoring of adequate and appropriate pain relief
- VTE prophylaxis as ordered
- Delirium assessment every 12 hours; more frequent if changes in mentation
- Sensory aids in place
- Inviting family involvement/providing information on potential risk of delirium
- Pressure-relieving mattress/position changes
- Nutritional assessment, dietary consults
- High-protein oral nutritional supplement with medications
- Protocol in place that liberalizes presurgical fasting restrictions consistent with patient's fluid balance
  - High-carbohydrate drink, such as apple juice, up to 2 hours before surgery
- Avoiding overstimulating environment/preserving sleep–wake cycle

Mrs. W is scheduled for surgery within 48 hours of arrival. She is transferred to the *perioperative* area, where her fracture is repaired with hemiarthroplasty. She spends a total of 4 hours in the *preoperative, surgery, and postoperative* units. Nursing management strategies include:

- Pressure-relieving surfaces in the perioperative area
- Padding of pressure points
- Monitoring of oxygenation
- Administration of ordered antibiotics
- Monitoring of fluid balance/blood loss

Mrs. W returns to the nursing unit after surgery. *Postoperative* nursing management strategies include:

- Continuation of adequate and appropriate pain relief, both acute and chronic
- Sensory aids in place, family involvement
- Nursing begins mobilization day of surgery/physical therapy (PT) and occupational therapy (OT) consulted
- Continuation of VTE prophylaxis
- Removal of IUC postoperative day 1
- Awareness of increased risk and assessment for delirium and depression
- Pressure-point assessment; pressure-relieving seat cushion when in chair
- Advance diet as tolerated per protocol; continuation of oral nutritional supplements with medications
- Monitoring of fluids and electrolytes
- Monitoring of bowel function

Proactive care strategies designed to avoid risk factors associated with common complications of hip fracture ensured an uneventful course during hospitalization. PT and OT recommend discharge to a rehabilitation facility before returning home with assistance. As part of the care transition process, nursing management strategies include the following:

- With Mrs. W's permission, arrange a meeting with her daughter and her sister to help them prepare for Mrs. W's eventual homecoming.
- Provide both verbal and written instructions on the surgical procedure, activity restrictions, and importance of frequent ambulation and early warning signs of "red flags" and what to do if they develop (e.g., VTE, delirium, infection, constipation, and dislocation).
- PT and OT assess Mrs. W's home-equipment needs and provide further information on where to obtain additional items. Review home safety instructions to reduce fall risk.
- Before transfer to rehab unit, a consultation with FLS is initiated for evaluation and ongoing fracture risk management.
- Follow up with orthopedic surgeon and family nurse practitioner needed in 6 weeks.

SUMMARY

A hip fracture is a serious injury with a significant impact on the patient, family, and healthcare system. Healthcare resources will be strained as the proportion of older adults in the population steadily increases and the incidence of hip fracture reaches unprecedented numbers. Although there is a high rate of mortality and disability post fracture, an interprofessional approach that incorporates best

practices can significantly improve the experience and outcomes for these patients.

The risks that lead to death and disability post fracture are foreseeable and, in many cases, preventable. People with fragility hip fractures, with few exceptions, are older than 65 years with comorbid conditions and thus highly susceptible to the stress of the injury, surgery, and immobility. Timely surgery, good pain management, early and frequent mobility, prevention of infection, and fluid balance are associated with improved outcomes. Providing support for loss and grief, goal setting for recovery, and screening and referral for depression when warranted will aid in longer-term recovery. Going home is a precarious time, and patients are at high risk for readmissions resulting from medical concerns, falls, and subsequent fractures. Patients and families require education and support to prepare their home environments, caregivers, and follow-ups for medical concerns and bone health. Nurses who provide evidence-based care focused on the patient and family ensure the best possible outcomes for patients with fragility hip fractures.



NURSING STANDARD OF PRACTICE

Protocol 40.1: Managing Patients With Hip Fracture

I. GOALS

Patients with hip fracture are susceptible to foreseeable and potentially avoidable complications. An interprofessional team approach to care that uses evidence-based strategies for prevention, early detection, and proactive care to avoid complications are the key to optimal patient outcomes.

II. EMERGENCY ROOM

The majority of these patients will enter the hospital via the emergency department. Consideration must be given to provide an environment that is sensitive to the care needs of this vulnerable population. Increasingly, hospitals are providing spaces in their emergency departments designed to accommodate the needs of older adults and avoid the negative consequences associated with an overstimulating environment. Early implementation of multifactorial interventions aimed at reducing complications in this vulnerable population, starting in the emergency department, has proven beneficial (Arshi, Rezzadeh, Stavrakis, Bukata, & Zeegen, 2019; Bjorkelund et al., 2011; see Chapter 44, Care of the Older Adult in the Emergency Department).

III. TIMELY SURGERY

Delays to surgery greater than 24 to 48 hours increase the risk of complications, delirium, and mortality. Hommel et al. (2008) found higher mortality at 4 months among medically fit patients with administrative delay to surgery compared to patients with no delay and longer hospital stays for those with delays greater than 24 hours. In a study of 38,020 patients with hip fractures, Daugaard et al. (2012) concluded that avoiding surgical delay is the most important factor in reducing mortality for hip-fracture patients. A systematic review seeking to answer the questions of the effect of early hip-fracture surgery on patients 60 years or older on all-cause mortality and postop complications found early surgery reduced the incidence of pressure injury, postoperative pneumonia, and mortality (Simunovic et al., 2010). A retrospective review of American College of Surgeons National Quality Database from 2006 to 2013 of 17,459 patients who sustained hip fracture found delay to surgery prolonged length of stay; however, there was no reported difference in postoperative readmission, postoperative infection, or mortality. Interestingly, 74% of the patients reviewed in this study underwent surgery within 48 hours (S. M. Mitchell et al., 2018). Nurses can play an important role in advocating for timely access to surgery.

IV. DELIRIUM

A. Determine patient's preadmission cognitive status and cognitive presentation on admission using a standardized tool and information from family.
B. Screen for delirium every 12 hours using an evidence-based tool.

(*continued*)

Protocol 40.1: Managing Patients With Hip Fracture (*continued*)

C. Educate patient and family on the increased risk of delirium with hip fracture and how they can help prevent and cope with it.
D. Prevent/address the factors that may contribute to delirium, for example, pain, urine retention, infection, constipation, sensory impairment, sleep, metabolic disturbances, medications, alcohol withdrawal, dehydration, and environmental over-/understimulation.
E. Reassess cognitive status before care transition.

V. MALNUTRITION

A. Assess for malnutrition on admission using a standardized screening tool.
B. Consult registered dietitian for comprehensive assessment if malnourished or if the patient is unable to tolerate the diet.
C. Screen for dysphagia and refer to a speech or occupational therapist if dysphagia is suspected.
D. Adopt protocols that minimize fasting before surgery. Evidence supports the benefits of:
   1. Solid food up to 8 hours before surgery
   2. Clear fluids up to 2 to 4 hours before surgery
   3. Clear fluid high-carbohydrate drink 2 to 4 hours before surgery, for example, clear juice
E. Postsurgery nutrition
   1. Provide a regular diet as tolerated the day of surgery.
   2. Monitor nutritional intake. Inform dietitian or physician if intake is consistently less than 50% of the diet provided.
   3. Provide scheduled administration of high-protein, high-calorie nutritional supplements in addition to ordered diet.

VI. PAIN

A. Assume your patient has moderate to severe pain. Recognize that unmanaged pain increases complications, impedes recovery, and increases mortality.
B. Assess pain and pain history on admission using a comprehensive validated tool.
C. Consider any painful comorbid conditions and prehospital analgesic use in the pain management plan, for example, arthritic joint pain exacerbated by immobility.
D. Assess valid pain scale with vital signs; differentiate between acute and chronic pain.
E. Assess using a validated sedation scale every hour for 24 hours and then every 4 hours thereafter. Adjust analgesic dosing according to the scale.
F. Time the administration of analgesics such that their peak effect coincides with physiotherapy and mobility.
G. Use a pharmacological and nonpharmacological multimodal approach to reduce the need for opioids.
H. Advocate for regional blocks (nerve/compartment).
I. Ensure that geriatric-appropriate analgesics/doses are prescribed and administered.
J. Use regularly scheduled doses of analgesics while pain persists.

VII. CONSTIPATION

A. Assess prehospital bowel habits and management.
B. Assess for BM daily, including size, consistency, and color.
C. Assume your patient will be constipated as a result of immobility, analgesics, and pain.
D. Use a standardized geriatric-appropriate bowel protocol.
E. Administer prophylactic laxatives as ordered unless contraindicated, for example, diarrhea, multiple daily moderate to large BMs.

(*continued*)

Protocol 40.1: Managing Patients With Hip Fracture (*continued*)

F. Ensure adequate fluid intake and a high-fiber diet where appropriate, for example, bran, prunes, applesauce, and dates.
G. Encourage ambulation to promote bowel function. Avoid bedpans; ambulate to the toilet.

VIII. CATHETER-ASSOCIATED URINARY TRACT INFECTION

A. Avoid indwelling catheters. Use an indwelling catheter only if evidence-based criteria are met, for example, Centers for Disease Control and Prevention (CDC) criteria (Gould et al., 2010).
B. Reassess the need for the catheter each shift and remove as soon as possible, within 36 hours after surgery.
C. Use an evidence-based nursing protocol to guide insertion, hygiene, and management of the catheter and drainage system.

IX. PRESSURE ULCER PREVENTION

A. Conduct a head-to-toe pressure-point assessment on admission and then each shift.
B. Use an evidence-based pressure ulcer risk-screening tool (i.e., Braden Scale) to identify areas to be monitored and addressed.
C. Implement a written care plan to address any underlying risk factors as indicated (e.g., immobility, nutrition, moisture, etc.).
D. Consider using pressure reduction mattresses and chair surfaces routinely for hip-fracture patients.
E. Ensure that patients are repositioned every 2 hours (some patients may do this independently).
F. Mobilize and assess toileting needs every 2 to 3 hours while awake.
G. Ensure nutrition and hydration are monitored and needs are met.
H. Implement a written care plan to address any skin injury or breakdown as per evidence-based clinical guidelines.

X. VENOUS THROMBOEMBOLISM

A. Recognize that hip-fracture patients are at high risk for VTE.
B. Advocate for evidence-based treatment.
C. Ensure that treatment is initiated as prescribed.
D. Monitor for adverse events, for example, bleeding, bruising, or rashes with chemoprophylaxis or skin breakdown and circulatory impairment with compression stockings or pneumatic compression sleeves.
E. Encourage leg exercises and early, frequent mobilization.
F. Encourage fluid intake of six cups minimum daily unless contraindicated.
G. Educate patients and families on detection and prevention of VTE at home and actions to take if VTE is suspected.

XI. FLUID AND ELECTROLYTE IMBALANCE

A. Monitor fluid balance after surgery.
B. Review lab values and report abnormalities to medical practitioner as indicated.
C. Ensure adequate fluid intake, minimum 6 cups per day or as per fluid restrictions.
D. Assess for clinical signs of dehydration (hypotension, headache, dry mouth, oliguria, and skin turgor) or overload (edema, cough, and coarse breath sounds). Follow up with medical practitioner as indicated.

XII. MOBILITY

The nurse is responsible for ensuring timely and consistent postoperative mobility.

A. Request that family provide sturdy footwear with a closed heel and toe.
B. Ensure that an individually fitted walker is available at the bedside.

(*continued*)

Protocol 40.1: Managing Patients With Hip Fracture (*continued*)

C. Teach bed exercises: Buttock tightening, foot circles, dorsal and plantar flexion of both feet. Remind patient to do exercises every hour while awake.
D. Teach the importance of mobility in healing and restoring function.
E. Establish mobility goals with patient.
F. Assist patient to:
   1. Sit at the bedside, stand, and/or walk on the day of surgery.
   2. Get up in a chair for at least two meals each day beginning the day after surgery.
   3. Walk every day after surgery at least three times with increasing distances.

XIII. TRANSITIONS FROM HOSPITAL TO HOME

A. Both verbal and written instructions on preparing to go to the next level of care should begin early in the hospital stay (see Chapter 36, Fluid Overload: Identifying and Managing Heart Failure Patients at Risk of Hospital Readmission).
B. For those going to a rehabilitation facility, handoff should include information on surgical procedure/activity restrictions and cognitive status, including delirium assessment results, diet/appetite, sleep strategies, and pain management.
C. For those going directly home, determine home-assistance requirements and assist patients to make arrangements. Stress the importance of frequent ambulation, healthy diet, adequate sleep, pain management, and follow up to ensure adequate bone health.
D. Educate patients on early warning signs of "red flags" and what to do (e.g., VTE, delirium, infection, dislocation, and constipation).
E. Assess medication management skills, and develop a plan for medication review and safety at home.
F. Consult with occupational or physical therapists to assess and address the need for home modifications and equipment.
G. Arrange a home follow-up phone call or home visit from a healthcare professional for support, teaching, and problem-solving.
H. Provide information for follow-up with orthopedic surgeon.

Include information on the surgical procedure/activity restrictions, the importance of frequent ambulation, healthy diet, sleep strategies, bone health, and pain management.

XIV. SECONDARY FRACTURE PREVENTION

A. Ensure consultation with fracture liaison service before discharge.
   1. Evaluation of bone health and fracture risk
   2. Evaluate for referral to fall prevention program
   3. Ongoing osteoporosis management

ABBREVIATIONS

BM	Bowel movement
VTE	Venous thromboembolism

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Models of Care

V

Chapter 41 Acute Care Models

Chapter 42 Transitional Care

Chapter 43 Palliative Care Models

Chapter 44 Care of the Older Adult in the Emergency Department

Acute Care Models*

Elizabeth Capezuti, Marie Boltz, Michael L. Malone, and Robert M. Palmer

41

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Identify the objectives common to all geriatric acute care models.
2. Describe the various types of models employed in North American hospitals.
3. Understand the evidence to support implementation of geriatric acute care models.

OVERVIEW

Advances in geriatric science, coupled with the increasing older adult patient population, have led to the development of several geriatric models of care across all healthcare settings. Acute care models addressing the unique needs of older hospitalized patients began with the comprehensive geriatric assessment (CGA) programs first developed in the 1970s (Palmer, 2018a, 2018b).

Geriatric acute care models aim to facilitate improved overall outcomes by promoting a rehabilitative approach while preventing adverse events that occur more commonly in older patients. Also known as geriatric syndromes, these are clinical conditions in older persons that do not fit into discrete disease categories (Palmer, 2018a, 2018b) and include functional decline, pressure ulcers, fall-related injury, undernutrition or malnutrition, urinary tract infection, and delirium (see Part III, Clinical Interventions). These syndromes or complications contribute to prolonged hospital stays as well as increased likelihood for rehospitalization, institutionalization, ED usage, and postacute rehabilitation therapy services. These complications rarely occur alone; the interrelationships among these various syndromes during hospitalization are well documented (Flood, Booth, Danto-Nocton, Kresevic, & Palmer, 2015; Inouye, Studenski, Tinetti, & Kuchel, 2007; Koroukian et al., 2016; Palmer, 2014).

Acute care models attend to the age-specific vulnerabilities (i.e., frailty, comorbidities, and cognitive impairment) of older hospitalized patients. These models also address the role of institutional factors that determine staff practices and the physical environment that can contribute to iatrogenic complications. Thus, the overall goals of acute geriatric models of care are (a) prevention of complications that occur more commonly in older adults and (b) address hospital factors that contribute to complications (Capezuti, Boltz, Tejada, & Malone, 2018). This chapter provides an overview of care delivery issues that are addressed by acute models of care for older adults and a description of the most commonly employed hospital models.

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

OBJECTIVES OF GERIATRIC ACUTE CARE MODELS

There are several geriatric acute care models, each with its own approach to prevent complications and address institutional/staff practices that can contribute to complications. All of these models, however, share a common set of general objectives (Bell et al., 2016; Hickman, Newton, Halcomb, Chang, & Davidson, 2007; Hickman, Rolley, & Davidson, 2010). The general objectives of geriatric acute care models are discussed herein.

Employ Geriatric Specialists

The expert knowledge of clinicians with specific geriatric preparation such as geriatricians, geriatric psychiatrists, geriatric advanced practice nurses, social workers, pharmacists, and others (some disciplines only provide continuing education without recognized specialty expertise) are needed to facilitate integration of geriatric care principles into practice (Conley et al., 2012a, 2012b; Maxwell, Mion, & Minnick, 2013).

Educate Healthcare Providers in Core Geriatric Principles

Many healthcare providers have not received the core geriatric care principles, such as recognition of age-specific factors that increase the risk of complications, in their basic or continuing education (Miller & Rosenthal, 2017; Nunnelee et al., 2015). All acute care models require a coordinator with advanced geriatric education; however, successful implementation depends on direct-care staff with the knowledge and competencies to deliver evidence-based care to older patients. Thus, the coordinator or a clinician with geriatric specialization will facilitate staff learning via individual patient consultation, in-service group education, unit rounds, journal clubs, web-based discussion groups, conferences, and other internal institutional educational venues (Conley et al., 2012a, 2012b; Fletcher, Hawkes, Williams-Rosenthal, Mariscal, & Cox, 2007).

Promote Interprofessional Communication

The management of geriatric syndromes is not limited to medical intervention but requires other disciplines, such as nursing, pharmacy, social work, and physical and occupational therapy, to address the complex interaction of medical, functional, psychological, and social issues leading to these complications. Communication of the various disciplines' input, facilitated by geriatric care models, is essential.

Target Risk Factors for Complications

The ideal method to prevent complications is timely screening of potential geriatric syndromes, early identification, and subsequent reduction of risk factors. Some of the models focus on a particular syndrome; however, because of the interrelationship of shared risk factors, reduction of one complication will affect the prevention of other geriatric syndromes. Standardized assessment tools are recommended to properly identify individuals who are at an increased risk of geriatric syndromes. The Portal of Geriatrics Online Education (www.pogoe.org) and the Hartford Institute for Geriatric Nursing (www.hartfordign.org) websites provide assessment instruments. At the institutional level, incorporating these risk-assessment tools into the workflow of everyday practice requires hospital policies, procedures, and protocols that will promote usage such as embedding these tools within the electronic health record.

Embed Geriatric Care Principles Within the Organization

The high proportion of complications in older hospitalized patients is partly attributed to the lack of evidence-based geriatric care practices, including CGA of those screened as vulnerable to such complications. In several systematic reviews and meta-analyses, CGA in the acute care setting has demonstrated positive patient outcomes (Conroy et al., 2019; Ellis et al., 2017; Pilotto et al., 2017).

There is tremendous variability, however, in the adoption of geriatric protocols (Neuman, Speck, Karlawish, Schwartz, & Shea, 2010). Issues with overuse or inappropriate medications (e.g., overuse of psychoactive drugs), unnecessary restraints, inadequate detection of cognitive or affective changes (e.g., delirium and depression), and poor pain control are examples of hospital factors that can lead to adverse outcomes. Geriatric acute care models promote the use of standardized evidence-based protocols such as those described in this book.

Thus, to be effective, geriatric models of care cannot be limited to a few individuals or a team but most work within institutional committees to embed evidence-based geriatric care processes within the organizational structure of the health system. For example, this may include incorporating these geriatric-specific screening tools in the electronic medical record (Khan, Malone, Pagel, Vollbrecht, & Baumgardner, 2012) as well as in-hospital policies, procedures, and protocols (Capezuti et al., 2012; 2013).

Incorporate Patient or Family Choices and Treatment Goals

Informed patient's choices are essential whether they are decisions about activity level and medication use to more complex issues such as advance directives. Family members of patients who can no longer participate in decision-making must often deal with the complicated balance between quality-of-life considerations and potential length of life (Reinhard, Capezuti, Bricoli, & Choula, 2017). The decision to employ life-sustaining treatments consistent with patients' preferences is often only considered when the patient is hospitalized (You et al., 2015). For this reason, many geriatric models work collaboratively or in conjunction with palliative care programs (see Chapter 43, Palliative Care Models).

Support a Senior-Friendly Physical Environment

The built environment is meant to reduce physical obstacles for transferring and ambulating, as well as promote cognitive orientation and socialization (Boltz, Capezuti, Shabbat, & Hall, 2010; Fox et al., 2013; Palmer, Landefeld, Kresevic, & Kowal, 1994). Physical modifications in the typical hospital setting include grab bars, furniture (chairs and bed) that adjusts height to facilitate mobility, carpeted flooring, clocks, and calendars (Fox et al., 2013). Most of these are now considered universal design elements to promote patient safety. Other environmental interventions are not typically used (Parke et al., 2016) such as a communal dining space to reduce isolation that can promote intake (Singh, Subhan, Krishnan, Edwards, & Okeke, 2016). Others include shock-absorbing flooring (Latimer, Dixon, Drahota, & Severs, 2013) and therapeutic use of lighting to reduce agitation (Barrick et al., 2010) and promote night-time sleep (Patel, Baldwin, Bunting, & Laha, 2014).

Emphasize Proactive Discharge Planning

Older hospitalized patients are more likely to experience delays in discharge, greater emergency service use, hospital readmission, and rehabilitation in an institution or at home (Coleman, Min, Chomiak, & Kramer, 2004). Hospital readmission for older patients is most likely associated with medical errors in medication continuity (Coleman, Smith, Raha, & Min, 2005; Foust, Naylor, Boling, & Cappuzzo, 2005; Parekh, Ali, Page, Roper, & Rajkumar, 2018), diagnostic workup, or test follow-up (Forster, Murff, Peterson, Gandhi, & Bates, 2003). Geriatric acute care models address the posthospital care environment and the care transition following hospital discharge by promoting coordination among healthcare providers, facilitating medication reconciliation, preparing patients and their caregivers to carry out discharge instructions, and making appropriate home care referrals (Bowles, Naylor, & Foust, 2002; Flacker, Park, & Sims, 2007; Le Berre, Maimon, Sourial, Guériton, & Vedel, 2017). Two of the models consider care transition as the primary focus of their programs.

TYPES OF ACUTE CARE MODELS

Although there are several types of geriatric acute care models that are used in U.S. hospitals, all address both common health problems and care delivery issues. Most consider all geriatric syndromes, whereas others target specific syndromes such as delirium. The models are implemented in various degrees from a hospital-wide to a unit-based approach, whereas others focus on specific processes of hospitalization such as discharge planning.

Geriatric Consultation Service

The consultants in a geriatric service may include a geriatrician, a geropsychiatrist, a geriatric advanced practice nurse (GAPN), or an interprofessional team of geriatric healthcare providers who conduct a CGA or evaluate a specific condition (older adult mistreatment), symptom (wandering), or situation (adequacy of spouse to care for patient at home). Geriatrics consultation programs have been successfully implemented in community hospitals, academic medical centers, and in Veterans Affairs hospitals. A unique trend at some sites is integrating nurse practicioners as the primary expert leading the consultation. Some hospitals will require that all patients who are screened as high risk for geriatric-related complications or are admitted from a homebound program or a nursing home will receive a geriatric consult, whereas most are requested by another primary service for an individual patient (Hung, Tejada, Soryal, Akbar, & Bowman, 2015). A systematic review/meta-analysis of randomized and nonrandomized studies did not find a statistically significant reduction in functional decline, readmissions, or length of stay but did report fewer consult patients dying at 6 and 8 months following discharge (Deschodt, Flamaing, Haentijens, Boonen, & Millisen, 2013). A more recent study found significant reductions in daily charges, ICU days, potentially inappropriate medication use, and use of physical restraints and increased end of life planning while reducing costs (Bernstein, Graven, Drago, Dobbertin, & Eckstrom, 2018). It is difficult to evaluate any consultation

service because their recommendations may not be followed or the hospital may not have the resources or staff to adequately implement the recommendations (C. M. Allen et al., 1986). Further, rural hospitals in North America seldom have access to geriatric consultation programs, even though a large proportion of their patients are older adults (Howe & Kramer, 2019).

Acute Care for Elders Units

These discrete geriatric units provide CGA delivered by a multidisciplinary team with a focus on the rehabilitative needs of older patients. Team rounds and patient-centered team conferences are considered essential. The core team includes a geriatrician, GAPN, and social worker, as well as specialists from other disciplines providing consultation—occupational and physical therapy, nutrition, pharmacy, audiology, and psychology. In the last 20 years, hospitalists have become the physician provider for most of the patients and hence are an essential member of the team. Geriatric evaluation and management (GEM) units developed in the U.S. Department of Veterans Affairs (VA) system have documented significant reductions in functional decline and suboptimal medication use as well as return to home postdischarge and, more recent, decreased rate of nursing home placement among hospitalized veterans on GEM units compared with general medical units (Flood et al., 2018; Phibbs et al., 2006).

Since the 1990s, acute care for the elderly (ACE) units have been implemented in non-VA hospitals. An interprofessional team consisting of staff with geriatric expertise works collaboratively using strategies such as team rounds and family conferences. Most ACE units have made physical environment adaptations to address age-related changes (e.g., flooring to reduce glare), support orientation (white boards indicating staff names and discharge goals), and promote staff observation (e.g., alarmed exit doors and communal space for meals). Led by geriatricians and/or GAPNs, the interprofessional team facilitates care coordination and identification of modifiable risk factors for geriatric syndromes and prevents avoidable discharge delay (Flood et al., 2015; Fox et al., 2013; Malone, Capezuti, & Palmer, 2014).

Compared with other medical units, patients hospitalized on ACE units have maintained prehospital or demonstrated improved functional status at discharge without increases in hospital or postdischarge costs and are less likely to be discharged to nursing homes (Fox et al., 2012; Landefeld, Palmer, Kresevic, Fortinsky, & Kowal, 1995). Other important positive outcomes associated with ACE units include improved drug prescribing (Spinewine et al., 2007), fewer falls (Fox et al., 2012), less delirium (Bo et al., 2009; Fox et al., 2012), and reduced mortality (Saltvedt, Mo, Fayers, Kaasa, & Sletvold, 2002). In addition, reduced costs have been reported in those on ACE units as a result of shorter hospital stays (Barnes et al., 2012; Fox et al., 2012) and fewer 30-day readmissions (Flood et al., 2013).

These positive outcomes are attributed to processes of care more likely found in ACE units: less restraint use, early mobilization, fewer days to discharge planning, and less use of high-risk medications (Counsell et al., 2000). A 2013 systematic review suggested that the best outcomes from ACE programs were those that included patient-centered care, medical review, and early mobilization (Fox et al., 2012). In a recent shift, more hospitals are using ACE units for those at the highest risk of age-related complications with ACE staff also providing consultation, while exporting ACE principles, throughout the health system to reach a greater number of older hospitalized patients. These "virtual" and/or "ACE without walls" consult teams work similarly to a geriatric consultation service except for the fact that there is also an inpatient ACE unit within the hospital or health system. In another variant, the Mobile Acute Care for Elders (MACE) service, an outpatient geriatric team (attending geriatrician hospitalist, geriatric medicine fellow, social worker, and clinical nurse specialist), also provides primary care to its patients when hospitalized (Hung, Ross, Farber, & Siu, 2013; Farber, Korc Grodzicki, Du, Leipzig, & Siu, 2011). An evaluation of this model in one hospital reported that MACE service patients experienced fewer adverse events (catheter-associated urinary tract infection, pressure ulcers, restraint use, and falls) and had shorter hospital stays when compared with similar older patients cared for on medical units (Hung et al., 2013).

Nurses Improving Care for Healthsystem Elders

A national program aimed at system improvement to achieve positive outcomes for hospitalized older adults, Nurses Improving Care for Healthsystem Elders (NICHE), seeks to improve the quality of care provided to older patients and improve nurse competence by modifying the nurse practice environment with the infusion of geriatric-specific (a) core values into the mission statement of the institution; (b) special equipment, supplies, and other resources; and (c) protocols and techniques that promote interprofessional collaboration (Boltz et al., 2008b; Bub, Boltz, Malsch, & Fletcher, 2015; Capezuti, Bricoli, & Boltz, 2013; Capezuti et al., 2012). NICHE includes several approaches that promote dissemination of

evidence-based geriatric best practices into hospital care. The system-level approach of NICHE provides a structure for nurses to collaborate with other disciplines and to actively participate in or coordinate other geriatric acute care models. A NICHE coordinator acts in a leadership role by facilitating, teaching, and mentoring others and changing systems of care (Fletcher et al., 2007). In some hospitals, a GAPN functions in this role as well as providing direct clinical consultation for evaluating and managing patients. The geriatric resource nurse (GRN) model is foundational to NICHE; it is an educational intervention whereby the NICHE coordinator or the GAPN prepares staff nurses to be the clinical resource person on geriatric issues to other nurses on the unit (Capezuti et al., 2012; Lee, Fletcher, Westley, & Fankhauser, 2004). The GRN model provides staff nurses, via education and role modeling (e.g., nursing bedside rounds) by a GAPN or NICHE coordinator, with content focusing on care management for geriatric syndromes. Application of evidence-based practice at the bedside is facilitated by organizational strategies such as incorporation of institution-wide clinical protocols as provided in this book.

The GRN model fosters professional development and enhanced work satisfaction for nurses who feel that they have institutional support in providing quality care. These supports include geriatric-specific resources (continuing education, equipment, and specialty services); interprofessional collaboration; and patient, family, and nurse involvement in treatment-related decision-making. Evaluation in NICHE hospitals has reported improved clinical outcomes, rate of compliance with geriatric institutional protocols, cost-related outcomes, and improved nurse knowledge (Boltz et al., 2013; Bub et al., 2015; Capezuti et al., 2013; Hendrix, Matters, West, Stewart, & McConnell, 2011; Pfaff, 2002; Swauger & Tomlin, 2002; Turner, Lee, Fletcher, Hudson, & Barton, 2001; Wald, Bandle, Richard, Min, & Capezuti, 2014a, 2014b). The GRN model is associated with positive outcomes such as reduced delirium in a NICHE orthopedic unit (Guthrie, Schumacher, & Edinger, 2006) and reduced complications among hospitalized older adults with dementia (J. Allen & Close, 2010). In studies aggregating results from several NICHE hospitals, NICHE implementation is associated with improved processes of care as well as higher nurse-perceived quality of care (Boltz et al., 2008a).

NICHE also promotes implementation of the ACE model. The ACE model, as promoted by NICHE, emphasizes nurse-driven protocols and geriatric continuing education of all nursing staff. Similar to other ACE units, study of a NICHE–ACE unit found lower fall and pressure ulcer rates and lower length of stay when compared with overall hospital rates (LaReau & Raphelson, 2005). Similarly, a geriatric nurse consultant-led CGA program implemented in three medical units of a large, academic NICHE medical center was found to uncover clinically actionable findings (Trotta, Rao, Hermann, & Boltz, 2018).

The Hospital Elder Life Program

The Hospital Elder Life Program (HELP), developed in 1993, is a multicomponent intervention that utilizes an interdisciplinary assessment, trained volunteers, and protocols to prevent cognitive and functional decline in hospitalized older adults. The primary goals of HELP are to maintain physical and cognitive functioning during hospitalization, maximize independence, assist with transition to home, and prevent unplanned hospital readmission (Inouye et al., 1999).

Standardized protocols incorporate interventions tailored to the patient's preferences and abilities may include cognitive stimulation/orientation, therapeutic activities, early mobilization, vision and hearing adaptations, hydration and feeding assistance, and sleep enhancement (Inouye, Bogardus, Baker, Leo-Summers, & Cooney, 2000). Hospital volunteers are well trained and closely supervised to deploy patient care interventions (Bradley, Webster, Schlesinger, Baker, & Inouye, 2006b) that are coordinated by elder life nurse specialists. The elder life nurse specialist typically has advanced geriatric nursing education and will supervise the implementation of nursing-related assessments and tracking of delirium risk-factor-protocol adherence.

In 2013, HELP protocols were adapted to ensure compliance with the National Institute for Health and Care Excellence (NICE) guidelines (Yue, Kshieh, & Inouye, 2015). Interventions added based on the NICE guidelines include prevention of infection and management of constipation, pain, and hypoxia. HELP clinical protocols are often supplemented with operational enhancements including geriatric nursing assessment and intervention, interdisciplinary rounds, ongoing staff educational programs, postdischarge community linkages, and telephone follow-up (Inouye, Baker, Fugal, Bradley; the HELP Dissemination Project, 2006; Yue et al., 2015).

HELP has been disseminated to more than 200 hospitals worldwide, implemented in multiple types of hospital units (medical, medical subspecialty, neurological, surgical, surgical subspecialty, mixed medical-surgical, orthopedic, palliative care, intensive care, rehabilitation, and emergency department). A systematic review of 44 HELP studies and a meta-analysis (Hshieh, Yang, Gartaganis, Yue, & Inouye, 2018) demonstrated that, in the 14 studies examined for effectiveness, all 14 demonstrated

significant reductions in delirium incidence (OR 0.47, 95% CI 0.37–0.59). The rate of falls was reduced by 42% among intervention patients in three comparative studies (OR 0.58, 95% CI 0.35–0.95). The meta-analysis indicated that in the nine studies that examined length of stay, the mean difference was −0.24 days, favoring the intervention group (95% CI −0.95 to 0.48), but this did not achieve statistical significance, and heterogeneity was high (I^2 = 71%). In the four studies of HELP models that reported outcomes related to institutionalization after hospital discharge, the meta-analysis showed that the odds of being institutionalized was not significantly different (OR 1.00, 95% CI 0.72–1.27, I^2 = 0%) among intervention subjects. In nine studies of cost-effectiveness, the program saved US$1,600 to US$3,800 per patient in hospital costs and over US$16,000 per person-year in long-term care costs in the year following delirium. One of the studies demonstrated that modifying the HELP program to include only three key interventions was cost-effective and effective for surgical patients (Chen et al., 2017). These components included orienting communication, oral care and nutritional assistance, and early mobilization.

The impact of HELP upon additional outcomes is beginning to be explored. A secondary data analysis of administrative data and electronic health records at an academic community hospital in which HELP was implemented indicated that HELP intervention participants, compared to pre-intervention patients, were less likely to receive inappropriate treatment for asymptomatic bacteriuria (3.0% vs. 6.7%, adjusted odds ratio = 0.46, 95% confidence interval = 0.26–0.79, p = .005). HELP was associated with a reduction in the treatment of asymptomatic bacteriuria (O'Donnell, Walsh, Tang, & Weinberg, 2019).

A modified version of HELP has been implemented in a long-term care facility ("HELP-LTC") by Boockvar, Teresi, and Inouye (2016) with mobile certified nursing assistant (CNA) collaborating with the resident's primary medical and nursing team and a geriatrician program director. Delirium-prevention components were provided to individuals with moderate-to-severe physical and cognitive impairment and at the time of onset of acute illness by case-finding and referral. The mobile CNAs provided daily visits targeting delirium risk factors, notably cognition, mobility, hydration, and nutrition. Although the preliminary study was limited by lack of a comparison group, study findings suggest that HELP-LTC is feasible, decreased delirium severity, and resulted in individuals returning to baseline cognitive function after acute illness (Boockvar et al., 2016).

Transitional Care Models

Transitional care models address the needs of older adult patients with complex medical and social needs and their caregivers as they move from hospital to postacute care. Two models with demonstrated positive outcomes are the advanced practice nurse (APN) transitional care model (Naylor & Keating, 2008) and the care transitions coaching or care transitions intervention (Coleman, Parry, Chalmers, & Min, 2006; Coleman, Smith, et al., 2004). (These are described in more detail in Chapter 42, Transitional Care.)

COLLABORATIVE APPROACHES

Hospitalists

Considering that hospitalists provide care for an increasing number of older acutely ill Medicare patients, some hospitals have initiated a proactive geriatrics consultation service implemented in collaboration with hospitalists (Sennour, Counsell, Jones, & Weiner, 2009). After 4 years and more than 1,500 consults, this service reported a high level of satisfaction by hospitalists while resulting in a shorter hospital stay and less hospital costs in patients receiving a geriatrics consultation (Sennour et al., 2009). Others have employed collaborative learning experiences to "geriatricize" hospitalists (Gillespie et al., 2014; Sinvani et al., 2018). A program in which hospitalists are trained to lead transitional care teams (BOOST—Better Outcomes for Older adults through Safer Transitions) has shown preliminary evidence to suggest prevention of post-discharge complications and readmissions within 30 days and increased confidence in self-management (Dedhia et al., 2009). In an analysis of the initial hospitals participating in the quality-improvement program, BOOST was associated with a modest but significant reduction in 30-day hospital readmissions from 14.7% at baseline to 12.7% after the intervention (Hansen et al., 2013). Administered by the Society of Hospital Medicine, the BOOST program provides technical support to optimize the hospital discharge process and diminish discontinuity and fragmentation of care (Williams & Coleman, 2009), including a risk stratification tool to predict 30 day readmissions (Sieck, Adams & Burkhart, 2019).

E-Approaches

The availability of geriatric clinicians is essential to implementing any model; however, there is a significant shortage of fellowship-trained geriatricians, geriatric psychiatrists, and master's-prepared geriatric nurse specialists, as well as specialists in other disciplines (Committee on the Future

Health Care Workforce for Older Americans, 2008). This is especially true for hospitals located in rural areas as well as small hospitals without the financial capacity to employ geriatric specialists (Howe & Kramer, 2019). Some hospitals are working with other hospitals in their health system or in their region to create learning collaboratives or "knowledge networks" by using web-based and other long-distance communication strategies. Thus, a geriatrician (Malone et al., 2010) or a GAPN (Capezuti, 2010) can participate in "virtual" rounds with staff in another location (Friedman, Mendelson, Kates, & McCann, 2008; Pallawala & Lun, 2001) to foster communication; that is, the e-Geriatrician or e-APN has access to a system-wide electronic health record such as the ACE Tracker and the TeleGeriatric system (Pallawala & Lun, 2001) or similar web-based assessment tool (Booth et al., 2019; Gray & Wootton, 2008; Martin-Khan et al., 2012; Meyer, 2011; Vollbrecht et al., 2015). In this way, collaboration and mentoring of professional colleagues are facilitated while enhancing the care provided to older adults. The e-approaches require health system leadership buy-in and payment systems which support geriatrics care provided to populations of patients, compared to fee-for-service payment models which reimburse care for individuals.

COMBINATION/SPECIALTY GERIATRIC MODELS

In some hospitals, a combination of geriatric models is implemented such as a geriatric consultation team and transitional care (Arbaje et al., 2010), inpatient geriatric assessment and intensive home care (Buurman, Parlevliet, van Deelen, de Haan, & de Rooij, 2010), CGA with NICHE (Borenstein et al., 2016), or an ACE unit incorporating NICHE and HELP (Sinha, Bennett, Ramsden, Bon, & Chalk, 2018). In others, a core geriatric interprofessional team provides direct consultation as well as screens patients for other related services, such as palliative care, rehabilitative services, or pain management programs. Some hospitals have developed dual-function units, such as merging an ACE unit with a palliative care (Gelfman, Meier, & Morrison, 2008; Tomasovic, 2005), stroke (K. R. Allen et al., 2003), or oncology (Flood, Brown, Carroll, & Locher, 2011) unit, as well as incorporating a "delirium room" within an ACE unit (Flaherty et al., 2003), whereas others have developed programs that incorporate geriatric comanagement with other specialties such as rehabilitation, orthopedics, trauma, and oncology (K. R. Allen et al., 2003; Gelfman et al., 2008; Kammerlander et al., 2010; Mendelson & Friedman, 2014). These programs have demonstrated increased detection of and reduced incidence of delirium, as well as reduced length of stay, readmission rates, morbidity, and mortality (Flaherty et al., 2003; Flood et al., 2011; Kates, 2014; Milisen et al., 2001; Pareja et al., 2009).

Senior ED Care Models

Organizational models have emerged to address the specialized needs of older adults using the ED, and their families. Core components of these models include interprofessional collaboration, the use of evidence-based clinical interventions, and the central role of the nurse in coordinating care. Interprofessional teams (geriatrician, nurse practitioner, rehabilitation therapists, and social worker) evaluate high-risk patients in the ED (and follow them throughout the hospital stay; Gold & Bergman, 1997). A prospective, randomized controlled trial conducted in a medical school–affiliated urban public hospital in Sydney, Australia, found that older adults sent home from the ED who received a CGA demonstrated positive outcomes. Although there was no difference in admission to nursing homes or mortality, patients randomized to the intervention group maintained a greater degree of physical and mental function (Caplan, Williams, Daly, & Abraham, 2004). In the randomized controlled trial of SIGNET (Systematic Interventions for a Geriatric Network of Evaluation and Treatment), an intervention (CGA) conducted in the ED by an APN resulted in very modest reductions in the risk of 90-day admission of elderly patients to a nursing home and in the mean number of hospital days among high-risk patients who received the intervention (Mion et al., 2003).

Mobile interprofessional teams in the ED conduct a brief geriatric assessment and develop a comprehensive plan. Two types of recommendations have been made: (a) medical recommendations for diagnosis and treatment of the presenting illnesses, and other geriatrics syndromes; and (b) gerontological recommendations for social and home needs. Outcomes reported include shortened hospital stay and early discharge from the ED (Launay, Decker, Hureaux-Huynh, Annweiler, & Beauchet, 2012).

GEM nurses provide targeted geriatric assessment and intervention for older adult patients (aged 65+ years) in the ED. At-risk patients are identified through the Triage Risk Factor Screening Tool (TRST) and the Identification of Seniors at Risk (ISAR) tool. Interventions include support for staff to implement geriatric care strategies in the ED, linkage to community support services, referral for specialized geriatric services, and collaboration with the family physician. GEM nurses have provided timely development of care plans and initiation of needed referrals (Asomaning, Loftus, & Ramsden, 2012; Rogers, 2009); however, there has been limited demonstrated impact upon clinical outcomes. A

systematic review of geriatric focused nurse assessment and intervention included seven randomized controlled trials and two prospective pre/post-intervention designed studies. Consistencies in assessment and interventions were apparent between studies. The interventions did not have a statistical impact on hospitalization, readmissions, length of hospital stay, and ED revisits. An increase in ED visits in the intervention group at 30 days post-intervention was noted (Malik, Moore, Patton, O'Connor, & Nugent, 2018).

In Australia, the Geriatric Emergency Department Intervention (GEDI) model, a nurse-led, physician-championed intervention, reduced ED length of stay, hospital admission, and, if admitted, hospital length of stay and cost without increasing mortality or same cause re-presentation in adults over the age of 70. The nurses, working 2.4 full-time equivalent 7 days from 07:00 to 17:30 hours (15:30 hours on weekends), had gerontology experience and education and provided targeted geriatric assessment and streamlining of care (Wallis et al., 2018).

The first senior-friendly ED, a self-contained unit within a larger ED, was created by Holy Cross Hospital in Maryland in 2008. The physical environment is adapted to age-related changes (warm colors with select use of color contrast; thick mattresses; indirect light; glare-free floors; large, easy-to-use call light/TV remotes, telephones, and clocks; and documents with larger print). Dedicated, gerontologically prepared nursing staff, nurse practitioners, and social workers staff the unit and volunteers provide comfort measures. Evidence-based clinical protocols are used. A geriatric pharmacist reviews the medications of seniors who receive seven or more medications. The staff provides follow-up calls or home visits after discharge from the ED and care coordination is provided as indicated.

The trend of senior-friendly EDs is growing, although research is needed to evaluate their clinical and organizational effectiveness (Hwang & Morrison, 2007). A senior ED in a large community hospital screened patients aged 65 years and older for fall risk, depression, alcoholism, delirium, and cognitive and functional impairments, and at-risk patients are provided with additional resources. Additionally, pharmacists and social workers were included in assessment and clinical management. The senior ED was not associated with reduced ED recidivism or hospital length of stay, but was associated with decreased rate of admission in a large community hospital (Keyes, Singal, Kropf, & Fisk, 2014).

The elder-friendly hospital conceptual framework offered by Parke and Brand (2004) provides guidance in efforts to develop a senior-friendly ED. This framework includes four major components to consider when developing a senior-friendly ED, and is described in Box 41.1.

BOX 41.1

Dimensions of a Senior-Friendly Hospital

Social climate: Evident in the treatment of older people in the hospital and the degree of conflict and stress experienced in the ED environment.

Policies and procedures: Expressed in the conduct of hospital staff, which is influenced by the explicit and implicit bureaucratic rules and regulations.

Care systems and processes: The organization of clinical ED care and how work is completed in the provision of services; access to best practice.

Physical design: The observable built environment and all its architectural features, including equipment, furnishings, and decor, that together enable or disable an older person's independent functioning.

Source: Parke, B., & Brand, P. (2004). An elder-friendly hospital: Translating a dream into reality. *Nursing Leadership, 17*, 62–76. doi:10.12927/cjnl.2004.16344

Additionally, the Geriatric Emergency Department Guidelines Task Force (2014), developed by the Emergency Nurses Association, American College of Emergency Physicians, American Geriatrics Society, and Society for Academic Emergency Medicine, create a template for staffing (including management roles), equipment, education, policies and procedures, follow-up care, and performance improvement measures. Chapter 44, Care of the Older Adult in the Emergency Department, provides more information on senior EDS and clinical care.

Surgical Specialty Models

Although most geriatric care models target medical patients, there are now many surgical programs that consult or integrate geriatrics. Integration means geriatric comanagement programs in both general surgery and other surgical specialties (urology, vascular surgery, cardiothoracic surgery, and neurosurgery). For example, a VA hospital with these multiple comanagement surgical units reported higher rates of discharge back to the community (Walke et al., 2014). A urology comanagement program with a geriatrician-led unit rounds resulted in reduced inpatient stay and total postoperative complications (Braude et al., 2017).

Orthogeriatric Models

The American College of Surgeons TQIP (Trauma Quality Improvement Program) Geriatric Trauma specialized geriatric surgical care including criteria for early geriatric

consultation and geriatric expertise on the multidisciplinary trauma care team. During the last 30 years orthopedic programs have emerged that incorporate geriatric input into hip surgery care. The goal is to reduce the incidence of iatrogenic complications and streamline flow though in-hospital care including early discharge that will improve survival, clinical, and cost outcomes (Giusti et al., 2015).

The organization of ortho-geriatrics programs vary considerably but generally fit within one of these three types: (a) A geriatrician and/or geriatric interdisciplinary team that consistently consults older patients admitted to an orthopedic hospital unit; (b) a geriatric or ACE unit with the orthopedic surgeon providing consultation; or (c) comanagement in which the responsibility for care of the older patient on an orthopedic unit is shared between the surgeon and the geriatrician/geriatric team (Grigoryan, Javedan, & Rudolph, 2014). The latter has become the more frequently employed approach.

The components of care including the outcome criteria also differ considerably among orthogeriatric programs (Grigoryan et al., 2014). Some focus on minimizing time to surgery and employment of standardized orders and protocols (Friedman et al., 2008) while some deliver daily geriatrics recommendations for older patients who were receiving care for hip fracture. The latter demonstrated reduction of delirium by over one-third, severe delirium by over one-half, as well as decreased predicted length of stay, readmission rates, complication rates, and mortality (Marcantonio, Flacker, Wright, & Resnick, 2001). Another approach is having a geriatrician and GAPN evaluate all older trauma patients and share recommendations in weekly multidisciplinary rounds and performance improvement meetings of the trauma service. Fallon et al. (2006) reported that nearly all (91%) geriatric recommendations were followed and included: advanced care planning, disposition decisions to promote function, decreased inappropriate medications, and pain management (Fallon et al., 2006).

The difference among orthogeriatric programs in terms of overall organization, personnel, and interventions employed makes it challenging to compare outcomes among these programs. A systematic review and meta-analysis of 18 orthogeriatric programs (Grigoryan et al., 2014) reported that the 10 programs utilizing routine geriatric consultation resulted in significant decreases in long-term mortality, in-hospital mortality, and time to surgery, compared to controls receiving usual orthopedic care. There were only three studies examining the geriatric unit approach but it was not possible to report conclusions due to low quality methodology and sample size. The five studies of orthogeriatric comanagement found patients experienced shortened length of stay compared to controls. Other positive outcomes among the 18 studies in this review included reduced postoperative complications such as decreased incidence of delirium and functional decline.

Since 2012, three other reviews of co-managed care have reported reductions in in-hospital complications (Giusti et al., 2015; Martinez-Reig, Ahmad, & Duque, 2012; Van Grootven et al., 2017) while two demonstrate decreased occurrence of short- and long-term mortality (Giusti et al., 2015; Martinez-Reig et al., 2012). In particular, two well-executed, randomized controlled trials have shown that orthogeriatric care is positively associated with improved mobility at 4 months post surgery compared to controls (Prestmo et al., 2015; Watne et al., 2014).

The increased utilization of orthogeriatric comanagement demonstrates the feasibility of easily integrating this care. There has been considerable evidence collected about these programs that supports the idea that consistent geriatric input embedded into the orthopedic service is ideal since "as needed" geriatric consultation is often too late to prevent common complications of older patients (Giusti et al., 2015). The outcome reporting, however, needs to be consistent. In response, the AO trauma network of Europe recommends that the following should be collected at admission: quality of life, pain, satisfaction, function, falls, medication use, and place of residence. At discharge, the following should also be collected: mortality, length of stay, time to surgery, complications (medical and surgical), and costs (Liem et al., 2013). Depending on the type of surgery, readmission rates should also be collected 30 days, 90 days, and 1-year post surgery.

Surgical Onco-Geriatrics

Most (60%) persons with cancer are over 65 years of age and older cancer patients account for 70% of annual cancer deaths. The high complication rate, such as delirium (Korc-Grodzicki et al., 2015) with oncologic treatment, has prompted the integration of geriatric assessment into standard oncology practice in cancer centers (McEvoy & Cope, 2012) and oncology units of general hospitals (Burhenn, Perrin, & McCarthy, 2016; Lynch, DeDonato, & Kutney-Lee, 2016). Functional status, comorbidity, and frailty are the most predictive factors associated with post-oncology surgery complications according to a systematic review of nine systematic reviews (Huisman et al., 2017). Moreover, older oncology patients, in general, have more complex medical and social needs than adult oncology patients. This has spurred the development of onco-geriatric consultation teams or geriatric–oncology units, some of

which are part of an existing ACE unit to address prevention or reduction of these complications (Flood et al., 2006; Flood et al., 2011; Retornaz, Seux, Pauly, & Soubeyrand, 2008; Retornaz et al., 2007).

Medical Gero-Oncology

Due to the complexity of nursing care for older cancer patients, many cancer centers are educating nurses in comprehensive geriatric screening and assessments (Burhenn et al., 2016; Lynch et al., 2016). These efforts are often led by APNs (Morgan & Tarbi, 2016) and many are part of the hospital's NICHE implementation. This is also being integrated in medical oncology (Magnuson et al., 2016).

THE AGE-FRIENDLY HOSPITAL

In 2016, the John A. Hartford Foundation, under the leadership of foundation president Dr. Terry Fulmer, spearheaded a new initiative to accelerate geriatric quality acute care via the Age-Friendly Health Systems initiative (John A. Hartford Foundation, 2018). The focus is not one discipline or area of the hospital; rather, it supports integration of services across the care continuum (Fulmer, Mate, & Berman, 2018). This initiative is administered by the Institute for Healthcare Improvement (IHI, n.d.), well-known for their Triple Aim framework for "improving the patient experience of care, improving the health of populations, and reducing the per capita cost of health" (para. 2). IHI's track record in optimizing healthcare across U.S. healthcare systems makes them an ideal facilitator for meeting the aims of age-friendly health systems.

The John A. Hartford Foundation and IHI, together with five major U.S. health systems (Ascension, Trinity Health, Anne Arundel Medical Center, Providence St. Joseph, Kaiser Permanente) known for their quality geriatric care, as well as with other experts and organizations (e.g., American Hospital Association and the Catholic Health Association of the United States), identified and operationalized four essentials of geriatric care. These essentials address the major reasons for complications during hospitalization and following discharge, including knowing and acting on what *m*atters to the older person, *m*edication, *m*obility, and *m*entation (Fulmer & Li, 2018). These essentials or "4Ms" are when clinicians fail to systematically assess and manage cognitive changes (mentation), reconcile medications and evaluate for potentially inappropriate medications, and employ a function-focused approach (mobility).

A systems-level approach to implementation of the 4Ms consistently across all settings (hospitals, home care, postacute rehabilitation, primary care, nursing homes, and assisted living) was developed in each of the five health systems (Fulmer & Berman, 2016). Since September 2018, 100 health systems began their participation in a 7-month intensive training program. By 2020, the initiative expects to enroll 20% of all U.S. healthcare systems in the program that will likely compel all U.S. health systems to be age friendly (Fulmer & Berman, 2016; Fulmer & Li, 2018; Mate, Berman, Laderman, Kabcenell, & Fulmer, 2017).

SUMMARY

Despite differences in approaches or foci, all models share common goals. The model employed in a hospital or health system is based on the unique needs of that hospital's patient population, the resources available (geriatric clinicians, bed size, volunteers, etc.), and especially the senior administrator's commitment to geriatric programming. Because there is currently no direct reimbursement for many components of these models, administrators are motivated by the model's alignment to the institution's strategic plan or mission, consumer or community satisfaction, and costs savings (such as reduced costly and nonreimbursable complications; Adunsky et al., 2005; Boult et al., 2009; Bradley, Webster, Schlesinger, Baker, & Inouye, 2006a; Capezuti, Bricoli et al., 2013; Hart, Frank, Hoffman, Dickey, & Kristjansson, 2006; Kammerlander et al., 2010; Leff et al., 2012; Siu, Spragens, Inouye, Morrison, & Leff, 2009).

Although all of the models have demonstrated positive outcomes, only a small number (approximately 750) have been implemented in U.S. acute care facilities. Most are located in academic or teaching hospitals. For example, although slightly less than half of Americans admitted to the hospital due to traumatic injury are 65 or older, only 7% of trauma centers incorporate the acute care models of NICHE or HELP (Maxwell et al., 2013).

Implementing and monitoring these acute care models can be seen as a continuous quality-improvement process. Geriatric nurses and geriatricians play a key role in leading these system-based programs to bring best-practice strategies to populations of older individuals. Expansion to more than 3,000 hospitals that serve a high proportion of older adults may depend on advancing the unique contributions of each within an integrated model such as the Age-Friendly Hospital initiative that will enhance the entire hospital experience of the older patient (Capezuti & Brush, 2018).

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Transitional Care*

Fidelindo Lim and Janice B. Foust

42

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Describe various transitional care models (TCMs) and hospital discharge redesign.
2. Identify potential for nurse-led and advanced practice nurse (APN)-led transitional care.
3. Identify essential elements of successful transitional care.

OVERVIEW

Persons with continuous complex care needs frequently require care in multiple settings. *Transitional care* is defined as "a set of actions designed to ensure the coordination and continuity of healthcare as patients transfer between different locations or different levels of care within the same location" (Coleman, 2003, p. 549). Representative locations include (but are not limited to) hospitals, subacute and postacute nursing facilities, the patient's home, primary and specialty care offices, and long-term care facilities (Coleman, 2003). During transitions between settings, older adults are particularly vulnerable to experiencing poor care quality and problems of care fragmentation. An estimated 3.3 million adult 30-day, all-cause hospital readmissions in the United States were reported in 2011, costing $41.3 billion (Hines, Barrett, Jiang, & Steiner, 2014). For Medicare patients, the three conditions with the largest number of 30-day all-cause readmissions were heart failure, septicemia, and pneumonia. One in four heart failure patients is readmitted within 30 days of discharge (Suter et al., 2014). For patients aged 65 and older, the readmission rate is 16.2% for 30-day all-cause readmissions in 2013 (Barrett, Weir, Jiang, & Steiner, 2015). Despite how common these readmissions and transitions have become, the challenges of improving care transitions have received little attention from policy makers, clinicians, and quality-improvement entities (Coleman, 2003), until recently.

With hospital readmission now heralded as a quality indicator, there is more of an incentive to address transition-related problems. As part of the Affordable Care Act (Obamacare), Medicare created the Hospital Readmissions Reduction Program (HRRP) in 2012. HRRP is a value-based purchasing program that lowers payments to Inpatient Prospective Payment System (IPPS) hospitals with too many readmissions (Centers for Medicare and Medicaid Services [CMS], 2019a). It financially penalizes hospitals whose 30-day readmission rates for six targeted conditions—heart attack, heart failure, pneumonia, chronic obstructive pulmonary disease (COPD), elective

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

hip and knee replacement, and coronary artery bypass graft (CABG)—are high relative to other facilities (CMS, 2019a). Acute myocardial infarction (AMI), heart failure (HF), COPD, and pneumonia are the four high-volume conditions resulting in approximately 500,000 readmissions in 2013, costing $7 billion (Fingar & Washington, 2015). Reducing 30-day hospital readmissions is a major impetus in designing and adopting evidence-based transitional care models (TCMs; Jack et al., 2009).

Many factors contribute to gaps in care during critical transitions. Poor communication, incomplete transfer of information, inadequate education of older adults and their family caregivers, limited access to essential services, and the absence of a single point person to ensure continuity of care all contribute to transition-associated problems (Naylor & Keating, 2008). The practice of nursing is closely tied to health illness transitions in a person's lifetime. The quality of the outcomes during these transitional events is determined largely by the degree of care coordination among healthcare environments and proactive involvement of the patient and their families in the process, wherein a nurse plays a pivotal role. Success in implementing evidence-based transition-care strategies will help curtail preventable rehospitalizations and save healthcare dollars.

This chapter reviews issues and trends associated with transitional care mainly from the acute care setting and presents evidence-based TCMs, redesigned hospital discharge models, and strategies to enhance outcome performance.

BACKGROUND AND STATEMENT OF PROBLEM

In 2017, an estimated 51.7 million U.S. residents (15.6% of the U.S. population) were older than 65 years (United States Census Bureau, 2017). All baby boomers will be older than age 65 in 2030. It is projected that by 2035, there will be 78 million people 65 years and older compared to 76.7 million under the age of 18 (United States Census Bureau, 2018). This population subset remains the core consumer of healthcare resources. There were approximately 137.8 million ED visits in 2014 (a 14.8% increase from 2006). Of these, 18.1%, or about 25 million patients, were 65 years and older (Moore, Stocks, & Owens, 2017). The number of ED visits resulting in hospital admission among persons over 65 years dropped from 42% to 33.6% from 2006 to 2015 (Sun, Karaca, & Wong, 2018). However, patients aged 65 years and older with Medicare and private insurance accounted for 95% to 96% of all ED visits from 2006 to 2015 (Sun, Karaca, & Wong, 2018). The likelihood of older adults being in a state of transition between care environments is very high, with a steep price tag. In 2013, aggregate inpatient hospital costs for all hospital stays totaled $381.4 billion (Torio & Moore, 2016).

Current trends indicated a decrease in hospitalization rates from 2005 through 2014 for those aged 75 years and older by 11.8%. However, for those between 65 and 74 years old, the number of hospital stays did not change substantially during the 10-year period (McDermont, Elixhauser, & Sun, 2017). An estimated 13.5 million discharges (38.7% of total discharges) from short-stay hospitals among this age group were reported in 2010 (U.S. Department of Health and Human Services, 2012). This cohort is also reported to have the highest mean hospitalization cost ($14,300 per episode in 2014 dollars; McDermont et al., 2017). Although adults aged 85 and older accounted for only 2% of the U.S. population in 2010, 9% of hospital discharges belonged to this age group (Levant, Chari, & DeFrances, 2015).

In 2015, the 10 most common diagnoses for inpatient stays among patients between 65 and 74 years of age are septicemia, HF, dysrhythmias, COPD and bronchiectasis, pneumonia, AMI, complication of device (implant or graft), acute cerebrovascular disease, and spondylosis (intervertebral disc disorders and other back problems; Agency for Healthcare Research and Quality [AHRQ], 2017). This is notable because evidence-based TCMs have targeted these high-volume, high-risk conditions (Naylor et al., 2013).

Transitions are considered high-stress events for patients, their families, and care providers alike. Evidence suggests that transitions are particularly vulnerable to breakdowns in care and that there is thus a need for transitional care services (Naylor et al., 2013). Two especially problematic areas are medication discrepancies and poor posthospital follow-up with primary care providers. Forster, Murff, Peterson, Gandhi, and Bates (2003) found that nearly 20% of recently discharged medical patients experienced an adverse event during the first several weeks at home. Of these, 66% involved medications and were the most common type of adverse event (Forster et al., 2003). In a study on home medication discrepancies, Corbett, Setter, Daratha, Neumiller, and Wood (2010) found that the problems were astoundingly widespread, with 94% of the participants having at least one discrepancy. The average number of medication discrepancies identified was 3.3 per patient during hospital-to-home transition (Corbett et al., 2010). Similarly, 71% of the hospital discharge records of older adults with HF had at least one type of medication reconciliation problem (i.e., discrepancies, partial discharge instructions, or incomplete discharge summaries; Foust, Naylor, Bixby, & Ratcliffe, 2012). Another major area of breakdown is

patient follow-up visits after discharge. For example, one study reported that among Medicare patients rehospitalized within 30 days, up to 50% did not have documentation of physician follow-up visits post discharge (Jencks, Williams, & Coleman, 2009). Standardizing handoff processes and developing metrics for transfers of care have been shown to improve transition care to and from the ED (Kessler, Williams, Moustoukas, & Pappas, 2013).

Patients and their caregivers are often unprepared for transitions and are overwhelmed by discharge information. Poor preparation of the patient and his or her informal caregivers for the next level-of-care interface, be it the home or another facility, compromises overall patient safety (Coleman, Parry, Chalmers, & Min, 2006). Follow-up visits after discharges provide opportunities to reinforce discharge education and monitor for changes in conditions. Three important patient and caregiver outcomes related to transitions were (a) feeling cared for and cared about, (b) clear accountability, and (c) feeling prepared and capable to implement the posthospital care (Mitchell et al., 2018). The authors also described strategies to improve outcomes, which included empathic communication, anticipatory guidance regarding home care needs, collaborative discharge planning, clear information, and limiting handoffs with continued care.

At an increasing rate, patients are being discharged home or to other healthcare environments with both complex and complicated treatment plans with limited timely follow-through by professionals, causing undue stress to the patient and his or her informal caregivers once they leave the hospital. Levine, Halper, Peist, and Gould (2010) have described informal caregivers' essential role and called for more proactive involvement of caregivers as partners during transitions, especially when they could be the major source of continuity for the patient. The stress of caregiving is likely to be exacerbated during episodes of acute illness (Naylor & Keating, 2008), readmissions, and transfers to various healthcare environments.

Healthcare disparities and lack of or inadequate access to transition-care resources will be more pronounced in the disenfranchised segment of older adults, namely, those who are living alone, have multiple comorbidities, are undomiciled, are suffering from mental illness, are victims of elder abuse and neglect, are uninsured, and are lacking in legal status. Notable disparities related to transitions of care include (AHRQ, 2018):

- Percentage of hospitalized adult patients with HF who were given complete written discharge instructions was lower for American Indians and Alaska Natives than for Whites.
- Black and Asian patients were less likely than White patients to receive good communication about discharge information.
- Black, American Indian or Alaska Native, and multiple-race patients were more likely than White patients to strongly disagree or disagree that they understood how to manage their health after discharge.
- Black, Native Hawaiian or other Pacific Islander, American Indian or Alaska Native, and multiple-race patients were more likely than White patients to strongly disagree or disagree that staff took their preferences and those of their families and caregiver into account when deciding what the patient's discharge healthcare would be.

Inadequate health literacy is a significant risk factor for adverse outcomes such as preventable readmissions among hospitalized patients (Boyle et al., 2017). This underscores the importance of comprehensive assessment that includes the use of a validated health literacy assessment tool and meaningful implementation of the teach-back method in patient education.

ASSESSMENT OF THE PROBLEM

Several studies have delineated the problems that patients encounter during transitions. Coleman, Min, Chomiak, and Kramer (2004) identified four major content areas that patients and caregivers who recently underwent posthospital care transitions expressed as most essential and most needed: medication self-management, a patient-centered health record, primary care and specialist follow-up, and knowledge of "red-flag" warning symptoms or signs indicative of a worsening condition. Similarly, Miller, Piacentine, and Weiss (2008) identified posthospital difficulties faced by adults during the first 3 weeks at home. Among those patients who had difficulty coping, pain was the most frequent stressor, followed by managing complications and recovery challenges. These recently discharged patients also described relying on family or friends for emotional support and were concerned about being a burden. A lack of written detail and accessibility of hospital discharge instructions were significant problems described by patients, informal caregivers, and home healthcare clinicians when patients returned home from the hospital (Foust, Vuckovic, & Henriquez, 2012). The enactment of the Caregiver Advise, Record, Enable (CARE) Act in most states is designed to educate caregivers about the medical tasks they will need to perform for the patient at home (American Association of Retired Persons, n.d.).

A study that compared the referral decisions of hospital clinicians with those of nurses with expertise in discharge planning and transitional care found that transitional care nurses (TCNs) judged that 96 of 99 of the control-group patients discharged without home care had unmet discharge needs that may have benefited from a postdischarge referral (Bowles, Naylor, & Foust, 2002). Some nurse researchers have developed standardized discharge planning assessment tools (Holland & Bowles, 2012) and predictors of discharge readiness (Weiss et al., 2007).

A prospective observational cohort study to evaluate the quality of discharge practices at an academic medical center (N = 395) found that, although the majority of patients (95.6%) reported understanding the reason for their hospitalization, fewer patients (59.6%) were able to accurately describe their diagnosis in postdischarge interviews (Horwitz et al., 2013). Other key findings include deficiencies in follow-up appointments and advance discharge planning, and patient understanding of key aspects of postdischarge care (Horwitz et al., 2013). The impetus to implement high-quality discharge instructions stems from the CMS and The Joint Commission's (TJC) Core Measures to meet accreditation and public reporting requirements.

A retrospective cohort study of age and other risk factors for medication discrepancies reported that 96% of all hospitalized patients have at least one medication or dosage change compared with their home medication regimens (Unroe et al., 2010). Only 44% of them were notified of the changes at hospital discharge. A study of older Chinese Americans, who transitioned from hospital to home care, reported that 24.3% of participants were prescribed at least one potentially inappropriate medication (PIM) at hospital discharge, whereas 67.1% experienced at least one medication discrepancy. A positive correlation was found between the occurrence of PIM and medication discrepancy (Hu, Capezuti, Foust, Boltz, & Kim, 2012). It is imperative that during discharge medication reconciliation and instructions, a standard guideline, such as the Beers Criteria for PIM use in older adults, be hardwired in the transition process (Hu, Foust, Boltz, & Capezuti, 2014). Another medication-related concern is posthospitalization adverse drug events (Kanaan et al., 2013). Among 1,000 hospital discharges, 19% of them involved an adverse drug event within 45 days among older adults discharged home from the hospital (Kanaan et al., 2013). More than half of these events occurred within 2 weeks of discharge. This highlights the importance of medication reconciliation in care transitions (TJC, 2019). The current Joint Commission National Patient Safety Goals (TJC, 2019) now focus on the safe use of medicines. The goals include patient education, steps on obtaining an accurate list of medications from patients, and encouraging patients to bring a current medication list to physician or provider visits (TJC, 2019).

A review of literature noted that direct communication between hospital and community physicians was relatively rare (3%–20%), and available discharge summaries at the first primary care visit were low (12%–34%; Kripalani et al., 2007). Additionally, discharge summaries did not always have essential information (i.e., medications and diagnostic results) when available. The most common example of communication breakdown is when systems of care fail to ensure that the essential elements of the patient's care plan that were developed in one setting are communicated to the next team of clinicians (i.e., preparation for the goals of care delivered in the next setting, arrangements for follow-up appointments and laboratory testing, and reviewing the current medication regimen; Coleman, 2003). Language and health literacy issues and cultural differences exacerbate the communication breakdowns encountered in healthcare transition (Hu et al., 2014; Naylor & Keating, 2008). The use of pictographs in discharge instructions for older adults with low-literacy skills has been demonstrated to be effective (Choi, 2011).

INTERVENTIONS AND CARE STRATEGIES

Various TCMs have been described in the literature, and several randomized controlled trials (RCTs) have tested interventions. Key outcome variables from these RCTs include rehospitalization rate, cost reduction, patient satisfaction, and quality of care. Specific features of the two well-known evidence-based models are summarized in Table 42.1.

The Two Leading Examples of Transitional Care Interventions

The Advanced Practice Nurses TCM

The TCM was developed at the University of Pennsylvania. It provides a comprehensive in-hospital planning and home follow-up for chronically ill, high-risk older adults hospitalized for common medical and surgical conditions (Naylor & Keating, 2008). The central facilitator of the model is an advanced practice TCN, who follows patients from the hospital into their homes and provides services designed to streamline plans of care, interrupt patterns of frequent acute hospital and ED use, and prevent health status decline. Although the TCM is nurse led, it is a multidisciplinary model that includes the physician, other nurses, social workers,

TABLE 42.1

Transition Care—Strategies for Implementation

Model	Transition Interface	Target Population	Implementation	Primary Provider	Duration of Follow-Up
Transitional care model (TCM; Bradway et al., 2012; Naylor, 2002; Naylor & Sochalski, 2010; Naylor et al., 2004, 2009, 2013, 2014, 2017, 2018; Toles, Colon-Emeric, Naylor, Barosso, & Anderson, 2016)	Hospital to home and home to hospital	Sixty-five years or older, high-risk, adults with a variety of medical and surgical conditions (i.e., CHF and comorbidities)	Initial APN visit within 24 hours of hospital admission. APN visits at least daily at index hospitalization. APN home visits (one within 24 hours of discharge), weekly visits during the first month (with one of these visits coinciding with the initial follow-up visit to the patient's physician). Bimonthly visits during the second and third months. Additional APN visits based on patients' needs and APN telephone availability 7 d/wk. If a patient was rehospitalized for any reason during the intervention period, the APN resumed daily hospital visits to facilitate the transition from hospital to home. Use of care management strategies foundational to the quality-cost model of APN transitional care model, including identification of patients' and caregivers' goals and individualized and collaborative plan of care Implementation of an evidence-based protocol, guided by national heart failure guidelines	APN in a "manager coordinator" role	From admission to 3 months post discharge
Care transitions intervention (CTI; Coleman, Mahoney, & Parry, 2005; Coleman et al., 2006; Gardner et al., 2014; Hung & Leidig, 2015, Li, Guo, Suga-Nakagawa, Takahashi, & Renaud, 2015)	Hospital to home and hospital to skilled nursing facility	Sixty-five years or older with at least one of the following diagnoses: stroke, congestive heart failure, coronary artery disease, cardiac arrhythmias, COPD, diabetes mellitus, spinal stenosis, hip fracture, peripheral vascular disease, deep venous thrombosis, and pulmonary embolism	The transition coach first met with the patient in the hospital before discharge. Arrange a home visit, ideally within 48–72 hours after hospital discharge. For those patients transferred to a skilled nursing facility, the transition coach telephoned or visited at least weekly. The home visit involved the transition coach, the patient, and the caregiver. The primary goal of the home visit is to reconcile all of the patient's medication regimens (i.e., prehospitalization and posthospitalization medications). Transition coach imparted skills on how to effectively communicate care needs during subsequent encounters with healthcare professionals. The patient and transition coach rehearsed or role-played effective communication strategies. The transition coach reviewed with the patient any red flags that indicated a condition was worsening and provided education about the initial steps to take to manage the red flags and when to contact the appropriate healthcare professional. Following the home visit, the transition coach maintained continuity with the patient and caregiver by telephoning three times during a 28-day posthospitalization discharge period. The first telephone call generally focused on determining whether the patient had received appropriate services (i.e., whether new medications had been obtained or durable medical equipment had been delivered). In the two subsequent telephone calls, the transition coach reviewed the patient's progress toward goals established during the home visit, discussed any encounters that took place with other healthcare professionals, reinforced the importance of maintaining and sharing the personal health record, and supported the patient's role in chronic illness self-management.	Nurse "transition coach" in a supportive role (social workers and occupational therapists may also serve as a transition coach)	From admission to 28 days post discharge

APN, advanced practice nurses; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease.

discharge planners, pharmacists, and other members of the healthcare team, all of whom implement tested protocols uniquely focused on increasing the ability of patients and their caregivers to manage their care (Naylor et al., 2009).

This model involves advanced practice nurses (APNs) who assume a primary role in managing patients and coordinating the transition from hospital to home and vice versa. APNs implement a comprehensive discharge planning and home follow-up protocol. A qualitative analysis highlighted the barriers and facilitators faced by advanced practice TCNs and emphasized how individualized approaches, providing care that exceeds the type of care typically staffed and reimbursed by insurers, and advanced clinical judgment influenced positive outcomes in the implementation of TCM (Bradway et al., 2012). When compared with the control group, members of the intervention group had improved physical function, quality of life, and satisfaction with care. People in the intervention group had fewer rehospitalizations during the year after discharge, resulting in a mean savings in total healthcare costs of $5,000 per patient (Naylor & Keating, 2008). An RCT using the TCM for older adults hospitalized with HF showed an increase in the length of time between hospital discharge and readmission or death, reduced the total number of rehospitalizations, and decreased healthcare costs (Naylor et al., 2004). A systematic review reported that transition interventions carried out by a HF trained nurse who conducts at least one home visit and follows the patient at least weekly for a minimum of 30 days post discharge with either additional home visits or telephone contact resulted in reduced readmissions (Slyer, Concert, Eusebio, Rogers, & Singleton, 2011).

Among cognitively impaired older adults, a comparative effectiveness of RCT among three models (Augmented Standard Care [ASC], Resource Nurse Care [RNC], and TCM) has demonstrated a statistically significant decrease in mean 30-day rehospitalization per patient using TCM, with similar effects 90 days after the index hospitalization (Naylor et al., 2014). The TCM had significantly lower costs than the ASC group at 30 (p <.001) and 180 days (p = 0.030) and significantly lower costs than RNC at 30 days (p = 0.02; Pauly et al., 2018).

The Care Transitions Intervention Model

Coleman et al. (2006) developed the Care Transitions Intervention Model through the Division of Health Care Policy and Research at the University of Colorado Health Sciences Center in Denver. This model involves a nurse (social workers and occupational therapists may also serve as a coach) functioning as a "transition coach," who teaches patients self-management skills and ensures their needs are met during a transition between healthcare settings. The transition coach helps the patients achieve the positive outcomes outlined in the four pillars of care transitions intervention (CTI): medication self-management, dynamic patient-centered health record keeping, follow-up care with primary physician, and learning how to recognize and respond to red flags that indicate the condition is worsening.

Providing patients with support and tools to participate in their transitional care using this model has been shown to reduce hospital readmissions and associated costs (Coleman et al., 2006). An RCT found that patients who received this intervention had lower all-cause rehospitalization rates through 90 and 180 days after discharge compared with control patients. At 6 months, mean hospital costs were approximately $500 less for patients in the intervention group compared with controls (Coleman et al., 2006).

A self-care model of the CTI has been demonstrated to improve outcomes in a Medicare fee-for-service population. There were significantly fewer hospital readmissions at 30, 90, and 180 days in the intervention group as compared with those who did not receive the CTI (Parry, Min, Chugh, Chalmers, & Coleman, 2009). When compared with matched internal controls (N = 321), patients who received the CTI had significantly lower utilization in the 6 months post discharge and lower mean total healthcare costs ($14,729 vs. $18,779, p = .03). The cost savings per patient receiving the CTI were $3,752 (Gardner et al., 2014). The CTI has been adopted by more than 900 healthcare organizations in 44 states (The Care Transitions Program, 2014). The CTI's website reports that an anticipated net cost savings for a typical Transitions Coach® panel of 350 chronically ill adults with an initial hospitalization over 12 months is conservatively estimated at $365,000 and a 20% to 50% reduction in hospital readmissions (The Care Transitions Program, n.d.).

A qualitative exploration of the value of CTI has demonstrated that patient-centered coaching interventions improved care transitions in chronically ill older adults, particularly because it fostered the perception of a caring relationship, leading to greater patient investment in the program (Parry, Kramer, & Coleman, 2006). A study aimed at understanding the barriers and facilitators for successful implementation of the CTI has been described in the literature (Hung & Leidig, 2015). Several studies have been conducted to explore quality-improvement processes in CTI implementation, particularly its dissemination and sustainability (Bennett, Coleman, Parry, Bodenheimer, & Chen, 2010; Coleman, Rosenbek, & Roman, 2013; Parrish, O'Malley, Adams, Adams, & Coleman, 2009).

Key Components of Transitional Care

The Patient-Centered Outcomes Research Institute (PCORI) sponsored Project ACHIEVE (Achieving patient-centered Care and optimized Health In care transitions by Evaluating the Value of Evidence) lists the components of comprehensive and effective transitional care. These are (Naylor et al., 2017):

- Patient engagement
- Caregiver engagement
- Complexity and medication management
- Patient education
- Caregiver education
- Patient and caregiver well-being
- Care continuity
- Accountability

These key elements can be used as a guide for program planning and implementation. The success of the TCM was tied to the comprehensive assessment of an individual's health goals and preferences; physical, emotional, cognitive, and functional capacities and needs; and social and environmental considerations. Coordinated services during and following the hospitalization by a healthcare professional with special preparation in the care of chronically ill people, preferably a master's-prepared nurse, is a desired feature of the TCM (Naylor & Keating, 2008). Until very recently, sustained transitional care programs outside of funded RCTs were lacking largely because of limited third-party reimbursement of transitional care services (Naylor & Keating, 2008). Medicare currently pays for transition-care management services for medical and psychosocial problems (CMS, 2019b). It is anticipated that reimbursement will continue to expand as part of valued-based patient initiatives.

Hospital Discharge Redesign

Randomized trials have demonstrated the benefits of redesigned hospital discharge processes to strengthen timeliness of primary care visits and/or reduce hospital readmissions or emergency department use (Balaban, Weissman, Samuel, & Woolhandler, 2008; Jack et al., 2009). The interventions included redesigned discharge forms or individualized information sent to primary care providers, medications with specific forms or having a clinical pharmacist call patients after discharge, and arranging patients' primary care visits and facilitating communication with the outpatient offices (i.e., sharing discharge forms). Redesigned discharge processes led to comparatively lower hospital use, especially for those with prior hospitalizations (Jack et al., 2009) and more patients following up with their primary care providers within 21 days (Balaban et al., 2008).

Other transition models that have been described in the literature include the following:

- Guided Care Model—Developed at Johns Hopkins University. It is described as an enhancement to primary care, including access to community resources and policies, and self-management (http://www.guidedcare.org).
- The Bridge Model—Developed by the Illinois Transitional Care Consortium (ITCC). The model emphasizes addressing social determinants of health, biopsychosocial factors, community-specific focus, and hospital–community collaboration (www.transitionalcare.org/the-bridge-model).
- Better Outcomes for Older Adults through Safe Transitions (BOOST)—A project funded by a grant from the John A. Hartford Foundation that provides face-to-face training and a year of expert mentoring and coaching to customize and implement BOOST interventions based on the TCM and CTI (The Society of Hospital Medicine, n.d.; www.hospitalmedicine.org/clinical-topics/care-transitions).
- Geriatric Resources for Assessment and Care of Elders (GRACE)—A model of primary care for low-income seniors and their primary care physicians (PCPs) aimed at improving the quality of geriatric care, optimizing health and functional status, decreasing excess healthcare use, and preventing long-term nursing home placement (graceteamcare.indiana.edu/home.html).
- Project RED (Re-Engineered Discharge)—Supported by grants from the Agency for Healthcare Research and Quality (AHRQ) and the National Institutes of Health's (NIH) National Heart, Lung and Blood Institute (NHBLI), Project RED is a research group at Boston University Medical Center that develops and tests strategies to improve the hospital discharge process and reduce rehospitalization rates (www.bu.edu/fammed/projectred/index.html).
- Interventions to reduce acute care transfers (INTERACT)—This is a quality-improvement program to improve early identification, assessment, documentation, and communication about changes in the status of residents in skilled nursing facilities (www.pathway-interact.com/).
- Connet-Home—A four-step process to address the unique transitional care needs of residents of a skilled nursing facility (SNF) who are returning home (www.lutheranservices.org/sites/default/files/media_room/C-H%20Outreach%20Brief%202-26-19.pdf)

Whichever model is adopted by the institution and stakeholders, staff training is of vital importance. Competency in cross-site collaboration is critical to the management of patients with complex acute and chronic illnesses.

CASE STUDY 42.1

Lin Kwon Ying is a 70-year-old widower who lives alone in an apartment in Chinatown. He was mostly independent up until 5 months ago when he started to develop shortness of breath, increasing fatigue, and cough. He has had three admissions for HF exacerbation. His medical–surgical history includes hypertension (HTN), arthritis, peptic ulcer disease, and gastrointestinal (GI) bleeding. He is back in the hospital for another HF exacerbation, a small left pleural effusion, and a left leg deep venous thrombosis (DVT). Although cognitively intact, Mr. Ying does not speak English, and his family is very much involved in his care. A relative is present during most of the day and evening while he is in the hospital. Most of his relatives have very limited English proficiency. Mr. Ying is scheduled for discharge home the next day after being in the hospital for 6 days. His current medications have been satisfactorily reconciled, with the addition of enoxaparin (low-molecular-weight heparin) injection for 7 days and to check with his primary care provider for possible oral anticoagulation. He is to continue taking prehospitalization medications: metoprolol, esomeprazole, multivitamins, and furosemide. The family reports that Mr. Ying uses Chinese liniment to ease his joint pains. He is described by his family as an obedient patient who will do whatever his doctor recommends, although he has received little advice or "teachings" during his previous HF admissions. He cannot recall being informed what lifestyle changes are required of him.

Factors, such as Mr. Ying's rehospitalization, a diagnosis of HF, language barrier, family involvement, being cognitively intact, and a complex plan of care (i.e., self-injection of enoxaparin), indicate that he is an ideal candidate to receive dedicated transitional care services. If transitional care service were available in the current institution, he would have been referred for a consult on admission. An assessment would have been made by an advanced practice TCN or "coach," preferably in the presence of the informal caregiver and a staff translator. From this transitional care evaluation, a multidisciplinary plan of care with emphasis on applying best practices, on family involvement, and patient teaching by the staff nurses would be drawn up. The handoff report would mention Mr. Ying's status as a transition-care patient, and a disease-specific clinical pathway (in his case HF) would be implemented and followed through during rounds and discharge planning.

To meet TJC standards, all his medication should have been reconciled within 24 hours of his admission and the record placed in a prominent location in his chart. The challenge is to create a medication reconciliation record written in Mr. Ying's own language (Mandarin) that he can take with him on discharge.

At the bedside level, the nurses (mostly bilingual Chinese) provided random or "ambush" teachings when they saw Mr. Ying consuming Chinese food brought from home that they considered high in sodium. No dedicated patient teachings were conducted, and no printed materials in the patient's language were provided. How best to standardize patient teachings in acute care transitions is an ongoing challenge. Staff often report not having the time to teach patients and their families. Patient education must be held as an essential and independent nursing intervention. The facility must provide adequate training, not only for the licensed providers (nurses, APNs, physicians, and social workers), but also for the auxiliary staff such as patient-care technicians and other staff members with direct patient contact. Repetition and reinforcement with the use of traditional printed media can easily be achieved. Numerous online patient teaching materials are now available. The institution could translate these materials into various languages based on local needs. In Mr. Ying's case, his ability to self-inject enoxaparin should be assessed, reinforced, and documented. During the handoff, the nurse would include the patient's teaching needs and the follow-up needed, focusing on health-promotion content, follow-up appointments, telephone numbers to call for questions, or to report changes in condition.

Depending on the TCM applied, Mr. Ying would receive a home visit from the nurse TCM coordinator or nurse "coach" within 24 hours post discharge with an individualized and explicit plan of care, including following up on medications, availability of equipment, and self-report of any "red-flag" signs for HF exacerbation or pulmonary embolism. On his first visit to his primary care provider, he would be accompanied by his transitional care coordinator/coach. In this visit and in future encounters with healthcare providers, Mr. Ying would be encouraged and provided with the

(*continued*)

CASE STUDY 42.1 (*continued*)

skills necessary for self-advocacy and self-management of his condition. Success would depend on various factors such as patient readiness, literacy, and longitudinal follow-up. From the evidence-based models mentioned in this chapter, follow-up varies from day 1 of hospitalization to up to 3 months post discharge. Patient follow-up must also address patients' and informal caregivers' satisfaction with the care received. Additionally, the postacute transition-care nurse could also coordinate referrals to relevant local community organizations to provide greater continuity and long-term social support.

SUMMARY

High-quality transitional care is especially important for older adults with multiple chronic conditions and complex therapeutic regimens, as well as for their family caregivers (Naylor & Keating, 2008). Nurses must recognize their critical role in safe transitions. Breakdown in communication is often cited as one of the major causes of poor-quality transitions that may lead to untimely rehospitalization, injury, and poor patient satisfaction. Clinicians and institutions must actively collaborate and communicate to ensure an appropriate exchange of information and coordination of care across healthcare settings among multiple providers.

The evidence supports the effectiveness of transitional care models to decrease readmissions and reduce costs. These models are now expanding beyond the traditional hospital-to-home model to include postacute home visits and hold promise to improve transitions from SNF to home (Naylor et al., 2018). In addition, evidence supports the need for close follow-up post-hospitalization, including home visits, telephone calls, and timely primary care provider visits. This provides opportunities to reinforce previous patient and family education, especially medications, and monitoring of condition changes (Coleman et al., 2006; Naylor et al., 2004; Rich et al., 1995).

As more evidence on the value of transitional care programs in improving health outcomes emerges, we hope that nurse-sensitive quality indicators of transitional healthcare delivery will emerge as well as sustainable adaptation of these models. Stakeholders in education, practice, research, and health policy will continue to assess the value of evidence-based transitional care interventions for the ever-growing older adult population.



NURSING STANDARD OF PRACTICE

Protocol 42.1: Transitional Care

I. GOAL

To facilitate the implementation of comprehensive and evidence-based transitional care services as patients transfer between different locations or different levels of care within the same location

II. OVERVIEW

A. Evidence that both quality and patient safety are jeopardized for patients undergoing transitions across care settings continues to expand (Coleman et al., 2005).
B. Care transitions are clinically dangerous times for older adults with complex health problems (Corbett et al., 2010).
C. Problems encountered with poor transition process can lead to unplanned readmission and ED visits (Jacob & Poletick, 2008).
D. Transitions are particularly vulnerable to breakdowns in care and, thus, have the greatest need for transitional care services (Coleman et al., 2006; Naylor & Keating, 2008).
E. Family caregivers play a major—and perhaps the most important—role in supporting older adults during hospitalization, especially after discharge (Naylor & Keating, 2008).

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Protocol 42.1: Transitional Care (*continued*)

III. BACKGROUND AND STATEMENT OF PROBLEM

A. Definition

Transitional care: The American Geriatrics Society defines *transitional care* as "a set of actions designed to ensure the coordination and continuity of healthcare as patients transfer between different locations or different levels of care within the same location. Representative locations include (but are not limited to) hospitals, subacute and postacute nursing facilities, the patient's home, primary and specialty care offices, and long-term care facilities. Transitional care, which encompasses both the sending and the receiving aspects of the transfer, is based on a comprehensive plan of care and includes logistical arrangements, education of the patient and family, and coordination among the health professionals involved in the transition" (Coleman & Boult, 2003, p. 549).

Transitional care encompasses a broad range of services and environments designed to promote the safe and timely passage of patients between levels of healthcare and across care settings (Naylor & Keating, 2008).

B. Etiology and/or epidemiology
   1. Situations likely to result in failed transitions include poor social support, discharge during times when ancillary services are unavailable, uncertain medication reconciliation, depression, and patients' cognitive limitations (Cumbler, Carter, & Kutner, 2008).
   2. Medication errors related to medication reconciliation typically occur at the "interfaces of care"—when a patient is admitted to, transferred within, or discharged from a healthcare facility (TJC, 2012).
   3. Hospital discharge practices are placing an increasing burden of care on the family caregiver (Bauer, Fitzgerald, Haesler, & Manfrin, 2009).
   4. RCTs of transitional care interventions have been shown to reduce hospital readmissions and healthcare costs (Arbaje et al., 2010; Coleman et al., 2006; Naylor et al., 2004).
   5. APN interventions in transition care have consistently resulted in improved patient outcomes and reduced healthcare costs (Naylor, 2002).

IV. PARAMETERS OF ASSESSMENT

A. The patient population that is most likely to benefit from transitional care interventions includes those who are diagnosed with one or more of the following diseases: CHF, cognitive impairment (dementia), chronic obstructive pulmonary disease, coronary artery disease, diabetes, stroke, medical and surgical back conditions (spinal stenosis), hip fracture, peripheral vascular disease, cardiac arrhythmias, DVT, and pulmonary embolism (Coleman, Smith, et al., 2004).

B. On admission to an acute care setting, starting at the ED, patient evaluation must include referral of vulnerable older adults for transitional care services.

C. Compliance with TJC standards in medication reconciliation will be used as one of the quality indicators and predictors in overall patient safety.

V. NURSING CARE STRATEGIES

A. A synthesis of best practice guidelines based on existing transitional care models recommends the following key features of a fully developed transition of care (TJC, 2012):
   1. Multidisciplinary communication, collaboration, and coordination, including patient/caregiver education, from admission through transition
   2. Clinician involvement and shared accountability during all points of transition
   3. Comprehensive planning and risk assessment throughout the hospital stay
   4. Standardized transition plans, procedures, and forms
   5. Standardized training of every care provider involved
   6. If a patient is readmitted within 30 days, gain an understanding of the factors associated with the admission
   7. Evaluation of transitions of care measures

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Protocol 42.1: Transitional Care (*continued*)

B. Successful and safe transitions demand active patient and informal caregiver involvement. To improve patient advocacy and safety, the nurse can:
   1. Use the teach-back method in all patient education encounters (AHRQ, 2015).
   2. Promote the "Speak Up" initiative by the TJC (2018). The brochure "Planning Your Follow-Up Care" lists patient-centered and safety-focused questions to be asked by the patients of their healthcare provider before they are discharged from the hospital.
   3. Encourage family involvement and direct them to the "Next Steps in Care" website (see "Resources" section).
   4. Provide the patient with a complete and updated medication reconciliation record. The record should include medications the patient was taking before admission, medications prescribed during hospitalization, and medications to be continued on discharge (TJC, 2019).
   5. Implement evidence-based interventions to reduce transition-related medication discrepancies (Corbett et al., 2010).
   6. Encourage the patients to carry a medication list (i.e., a copy of recent medication reconciliation from a recent hospital admission) and to share the list with any providers of care, including primary care and specialist physicians, nurses, pharmacists, and so forth (TJC, 2019).

C. Critical elements of successful transitions
   1. The Society of Hospital Medicine (n.d.), recommends the 8P Screening Tool to identify patients at risk for adverse events post hospital discharge (www.hospitalmedicine.org/globalassets/clinical-topics/clinical-pdf/8ps_riskassess-1.pdf).
   2. Team approach and preferably nurse led (APN or specialized nurse; Coleman et al., 2006; Naylor & Keating, 2008)
   3. Active and early family involvement across transitions (Almborg, Ulander, Thulin, & Berg, 2009; Bauer et al., 2009; Naylor & Keating, 2008)
   4. Proactive patient roles and self-advocacy (Coleman et al., 2006)
   5. High-quality and individualized patient and family discharge instructions (Clark et al., 2005)
   6. Apply interventions for improving comprehension among patients with low health literacy and impaired cognitive function (Chugh, Williams, Grigsby, & Coleman, 2009), such as the National Patient Safety Foundation's "Ask Me 3" campaign. Retrieved from http://www.ihi.org/resources/Pages/Tools/Ask-Me-3-Good-Questions-for-Your-Good-Health.aspx
   7. Patient and informal caregiver empowerment through education
   8. Commence interventions well before discharge (Bauer et al., 2009)
   9. Elements identified for effective and successful transitions (Coleman, 2003):
      a. Communication between the sending and receiving clinicians regarding a common plan of care
      b. A summary of care provided by the sending institution (to the next care interface providers)
      c. The patient's goals and preferences (including advance directives)
      d. An updated list of problems, baseline physical and cognitive functional status, medications, and allergies
      e. Contact information for the patient's caregiver(s) and primary care practitioner
      f. Preparation of the patient and caregiver for what to expect at the next site of care
      g. Reconciliation of the patient's prescribed medications before the initial transfer with the current regimen and communication of changes to the patient and family
      h. A follow-up plan for how outstanding tests and follow-up appointments will be completed
      i. An explicit discussion with the patient and caregiver regarding warning symptoms or signs to monitor that may indicate that the condition has worsened and the name and phone number of whom to contact if this occurs

D. Barriers to successful transitions (barriers to effective care transitions have been identified at three levels: the delivery system, the clinician, and the patient; Coleman, 2003).
   1. The delivery system barriers

(*continued*)

Protocol 42.1: Transitional Care (*continued*)

a. The lack of formal relationships between care settings represents a barrier to cross-site communication and collaboration.
b. Lack of financial incentives promoting transitional care and accountability in fee-for-service Medicare; although such incentives exist in Medicare-managed care, most plans do not fully address care integration.
c. The different financing and contractual relationships that facilities have with various pharmaceutical companies impede effective transitions. As patients are transferred across settings, each facility has incentives to prescribe or substitute medications according to its own medication formulary. This constant changing of medications creates confusion for the patient, caregiver, and receiving clinicians.
d. Neither fee-for-service nor Medicare-managed care has implemented quality or performance indicators designed to assess the effectiveness of transitional care.
e. There is a lack of information systems designed to facilitate the timely transfer of essential information.
f. There is a lack of interoperability of electronic health information.

2. The clinician barriers
   a. The growing reliance on designated institution-based physicians (i.e., hospitalists) and productivity pressures have made it difficult for primary care physicians to follow their patients when they require hospitalization or short-term rehabilitation.
   b. Nursing staff shortages have forced an increasing number of acute care hospitals to divert patients to other facilities, where a completely new set of clinicians, who often do not have timely access to the patients' prior medical records, manages them. SNF staff are also overwhelmed and do not have the time or initiative to request necessary information.
   c. Clinicians do not verbally communicate patient information to one another across care settings.
   d. Clinicians are not familiar with other clinical sites (e.g., sending or receiving).
3. The patient barriers
   a. There is a lack of advocacy or outcry from patients for improving transitional care until they or a family member are confronted with the problem firsthand.
   b. Older patients and their caregivers often are not well prepared or equipped to optimize the care they will receive in the next setting.
   c. Patients may have unrealistic expectations about the content or duration of the next phase of care and may not feel empowered to express their preferences or provide input for their care plan.
   d. Patients may not feel comfortable expressing their concern that the primary factor that led to their disease exacerbation was not adequately addressed.

E. Evaluation/Expected outcomes
1. Clinician outcomes
   a. Increase nurse involvement in leading transition-care teams.
   b. Enhance staff training of transitional care by a multidisciplinary team.
   c. Include patient's transitional care needs during in-hospital handoff.
   d. Improve medication reconciliation throughout all transition interfaces.
2. Patient outcomes
   a. Improve patient satisfaction, and increase involvement in their care during hospitalization and transitions across healthcare settings.
   b. Increase feeling of empowerment in making healthcare decisions.
   c. Reduce rehospitalization and ED visits because of primary disease and comorbidities.
   d. Increase timeliness of making follow-up appointments after hospital discharge.
3. Informal caregiver outcomes
   a. Improve informal caregiver satisfaction and exercise proactive roles during transitions across healthcare settings.
   b. Increase informal caregiver participation in all transition interfaces.

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Protocol 42.1: Transitional Care (*continued*)

4. Institutional outcomes
   a. Adopt evidence-based TCMs and provide logistic support.
   b. Provide orientation and ongoing education on transitional care strategies.
   c. Introduce transitional care content into nursing core curriculum, at both baccalaureate and graduate levels.
   d. Assess transition-care interventions as part of hospital accreditation by TJC and CMS.

VI. FOLLOW-UP MONITORING

A. Institute comprehensive and multidisciplinary transition-care planning as soon as the patient is admitted, and sustain throughout hospitalization.
B. Identify transition-care team members and perform periodic role reassessment, including roles of informal caregivers.
C. Incorporate continuous quality-improvement criteria into transition-care programs such as monitoring for rehospitalization of targeted older adults, quality of discharge instruction, and medication reconciliation.
D. Develop ongoing transitional care educational programs for both formal and informal caregivers, using high-tech and traditional media.
E. Provide orientation and ongoing education on procedures for reconciling medications to all healthcare providers, including ongoing monitoring (TJC, 2019).
F. Perform periodic debriefing of high-risk discharges as a quality-improvement strategy.
G. Improve recognition of condition changes or adverse events caused by medications.
H. Increase patients' and caregivers' knowledge concerning actions to take if condition worsens, including contact information.
I. Consistently transmit hospital discharge summary with all the relevant information to primary care providers (Burton, 2012).
J. Use the Assessing Care of Vulnerable Elders-3 Quality Indicators as a guide in assessing, monitoring, and evaluating care of specific conditions (American Geriatrics Society, 2007).
K. Use a decision support algorithm for referrals to post-acute care (Bowles et al., 2018).
L. Gauge hospital performance in the HRRP. Measure the hospital's relative performance and the ratio of predicted-to-expected readmissions (CMS, 2019a).

VII. RELEVANT PRACTICE GUIDELINES

A. Ongoing chart and medical records review of patients being considered for discharge or awaiting transition should reflect the QI outlined in the ACOVE under the Continuity and Coordination of Care QI heading (Askari et al., 2011).
B. Adopt NPSGs most relevant to transitions of care such as the domains of improving staff communication and using medicines safely (TJC, 2019). The elements of performance include:
   1. Obtain information on the medications the patient is currently taking when he or she is admitted to the hospital or is seen in an outpatient setting. This information is documented in a list or other format that is useful to those who manage medications.
      a. Current medications include those taken at scheduled times and those taken on an as-needed basis.
      b. It is often difficult to obtain complete information on current medication from a patient. A good-faith effort to obtain this information from the patient and/or other sources will be considered as meeting the intent of the EP.
   2. Define the types of medication information to be collected in non–24-hour settings and different patient circumstances.
      a. Examples of non-24-hour settings include the ED, primary care, outpatient radiology, ambulatory surgery, and diagnostic settings.
      b. Examples of medication information that may be collected include name, dose, route, frequency, and purpose.

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Protocol 42.1: Transitional Care (*continued*)

3. Compare the medication information the patient brought to the hospital with the medications ordered for the patient by the hospital to identify and resolve discrepancies.
   a. Discrepancies include omissions, duplications, contraindications, unclear information, and changes. A qualified individual, identified by the hospital, does the comparison.
4. Provide the patient (or family as needed) with written information on the medications the patient should be taking when he or she is discharged from the hospital or at the end of an outpatient encounter (i.e., name, dose, route, frequency, and purpose).
   a. When the only additional medications prescribed are for a short duration, the medication information the hospital provides may include only those medications.
5. Explain the importance of managing medication information to the patient when he or she is discharged from the hospital or at the end of an outpatient encounter.
   a. Examples include instructing the patient to give a list to his or her primary care physician; to update the information when medications are discontinued, doses are changed, or new medications (including over-the-counter products) are added; and to carry medication information at all times in the event of emergency situations.

C. The Position Statement of the American Geriatrics Society Health Care Systems Committee on Improving the Quality of Transitional Care for Persons With Complex Care Needs must be considered in developing practice guidelines (Coleman, 2003).

D. Implement policies and procedures related to the Caregiver Advise, Record, Enable (CARE) Act such as educating the caregiver with education and instruction of the medical tasks he or she will need to perform for the patient at home (American Association of Retired Persons, n.d.).

ABBREVIATIONS

ACOVE	Assessing Care of Vulnerable Elders
APN	Advanced practice nurse
BOOST	Better Outcomes for Older Adults through Safe Transitions
CARE	Act Caregiver Advise, Record and Enable (CARE) act
CBO	Community-based organization
CHF	Congestive heart failure
CMS	Centers for Medicare & Medicaid Services
DVT	Deep venous thrombosis
ED	Emergency department
EP	Elements of performance
HRRP	Hospital Readmissions Reduction Program
NPSG	National Patient Safety Goals
NTOCC	National Transitions of Care Coalition
QI	Quality indicator
SNF	Skilled nursing facility
TCM	Transitional care model
TJC	The Joint Commission

RESOURCES

Administration of Community Living
http://www.aoa.gov

Ask Me 3: Good Questions for Your Good Health
http://www.ihi.org/resources/Pages/Tools/Ask-Me-3-Good-Questions-for-Your-Good-Health.aspx

The Care Transitions Program
https://caretransitions.org

Centers for Medicare & Medicaid Services: Patient Discharge Checklist
https://www.medicare.gov/pubs/pdf/11376-discharge-planning-checklist.pdf

Improving Chronic Illness Care
http://www.improvingchroniccare.org/index.php?p=The_Chronic_Care_Model&s=212

Institute for Healthcare Improvement (IHI)
http://www.ihi.org/resources/Pages/Tools/HowtoGuideImprovingTransitionstoReduceAvoidableRehospitalizations.aspx

Meals on Wheels America
https://www.mealsonwheelsamerica.org

National Transitions of Care Coalition: Transition Care Advocacy Group
http://www.ntocc.org

Next Steps in Care: Family Caregivers and Health Professionals Working Together. United Hospital Fund
http://www.nextstepincare.org

The Hartford Institute for Geriatric Nursing—Transitional Care Models
https://consultgeri.org/try-this/general-assessment/issue-26

The Joint Commission: "Speak Up" Initiative
https://www.jointcommission.org/speakup.aspx

The Joint Commission—Transitions of Care: The Need for a More Effective Approach to Continuing Patient Care.
http://www.jointcommission.org/assets/1/18/Hot_Topics_Transitions_of_Care.pdf

Visiting Nurse Associations of America
http://vnaa.org

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Palliative Care Models*

Constance Dahlin

43

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Define palliative care and how it differs from hospice.
2. Describe how palliative care promotes quality healthcare.
3. Discuss the metrics that support the role of palliative care in reducing healthcare costs.
4. Delineate models of palliative care in the United States based on venue.

OVERVIEW

The U.S. federal government defines *palliative care* as patient- and family-centered care that optimizes quality of life by anticipating, preventing, and treating suffering. Palliative care throughout the continuum of illness involves addressing physical, intellectual, emotional, social, and spiritual needs and to facilitate patient autonomy, access to information, and choice (Centers for Medicare & Medicaid Services, 2012).

There are specific characteristics that underpin palliative care: (a) services are appropriate at any stage of illness for a person with a serious illness based on the needs and not on prognosis; (b) care provision is holistic and provided by an interdisciplinary team; (c) the circle of care includes patients, families, and palliative and nonpalliative health providers who collaborate and communicate about care needs; (d) services are available in conjunction with or independent of curative or life-prolonging therapies; (e) goals of care for patients and families are supported and congruency is assured throughout the course of illness, during the dying process, and after death (National Consensus Project for Quality Palliative Care [NCP, 2018]).

Palliative care is especially synergistic with nursing (Lynch, Dahlin, Hultman, & Coakley, 2011). The aims of nursing actions are to protect, promote, and optimize health; prevent illness and injury; and alleviate suffering (American Nurses Association, 2015). Nurses have been in the forefront of efforts to improve quality of life for patients and families throughout the experience of illness (Benoliel, 2010). Indeed, the establishment of palliative care in the United States occurred during the late 1970s. Dr. Florence Wald, the dean of Yale School of Nursing, visited Dame Cicely Saunders, founder of the modern hospice movement in England (Dahlin & Mazanec, 2011; Yale Bulletin and Calendar, 2001). Dr. Wald stated that, "hospice care was the epitome of good nursing care, as it enables the patient to get through the end of life on their own terms. It is a holistic approach, looking at the patient

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

as an individual, a human being. The spiritual role nurses play in the end-of-life process is essential to both patients and families" (Yale Bulletin and Calendar, 2001). On return to Yale University, Dr. Wald developed a comprehensive nursing curriculum of the essential nursing skills necessary in the care of dying patients, including communication, as well as pain and symptom management (Adams, 2010). This was the beginning of the specialty of hospice and palliative nursing.

This stimulated national interest in hospice care. The comprehensive care model, inclusive of physical, psychological, spiritual, and emotional aspects of care in the context of culturally appropriate care, involved a cultural shift to the more technological type of healthcare in which death and dying were ignored. Reaction to this resulted in the creation of the Centers for Medicare & Medicaid Services (CMS) demonstration project of eight hospice sites across the country. In 1982, the Medicare Hospice Benefit was enacted as part of healthcare, offering benefits to patients with terminal illness. At the time, the payment structure was progressive because its fee structure was a capitated rate of a specific rate per day. It became the gold standard by which to measure care of patients with life-limiting illnesses.

To promote consistency and quality, the hospice conditions of participation (CoPs) were created, which specified required services and characteristics for hospice development and care delivery (CMS, 2008). Eligibility for hospice is determined by meeting three criteria: a life-limiting diagnosis, a prognosis of 6 months or less, and the desire to forgo curative treatment. It should be noted that patients may start on home health before moving to hospice. However, the home health CoPs are more directed toward reversible conditions and nurses may lack the expertise to provide specialty care to patients with serious illness (CMS, 2017). Four categories of hospice care are available: home care, continuous care, inpatient care, and respite care. Patients and families receive a range of services such as medications, equipment, and interdisciplinary care. In programs across the United States, the majority of hospice care centers on care delivery by nurses visiting the patient's home. These nurses represent all levels of practice from nursing assistant to licensed practical or vocational nurse, registered nurse, and APRN. Patients receive care during the benefit period in which attestations are made to the patient's continued eligibility.

CURRENT STATE OF PALLIATIVE CARE

Forty years later, the basic structure of the Medicare Hospice Benefit remains relatively intact. Eligibility criteria are unchanged, but are more tightly monitored. However, benefit periods have been redefined and recertification processes have been added. Revisions have occurred in reimbursement rates, and in the broader expansion of provider roles. Finally, the Affordable Care Act brought the Medicare Hospice Benefit care into the fold of quality-measurement and reporting, similar to all other healthcare delivery providers (Patient Protection and Affordable Care Act [PPACA], 2010).

Hospice remains a wonderful model of care for patients with end-stage illness and who want to forgo curative treatment. The challenge is what to do for patients with serious illness, diagnosed with life-limiting illnesses, who do not qualify for hospice, want to pursue curative therapies, or for whom hospice means "giving up" (Casarett & Quill, 2007). The answer is palliative care. Palliative care was developed for patients diagnosed with serious illness for whom cure is not possible. However, the illness could have a trajectory of years to days, and so the "dosing" of palliative care may vary depending on the illness and the stage of severity.

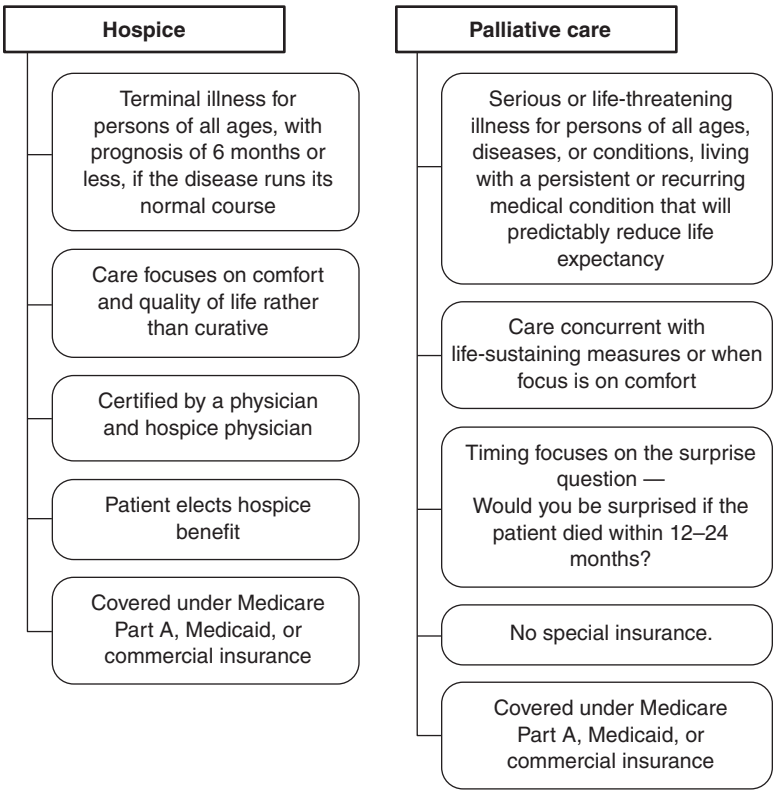
Palliative care focuses on quality of life and can be provided concurrently with life-sustaining therapies. In the 1990s, a Canadian physician, Balfour Mount, coined the term *palliative care* when he brought hospice concepts of caring for patients with life-limiting illness into the academic hospital setting. The focus was on care for patients with serious illness at diagnosis with the potential for care to occur over longer periods. In the United States, this meant more time than possible under the hospice benefit. More specifically, care was moved upstream to diagnosis to provide care that was consistent with patients' values, preferences, and belief throughout the disease trajectory. Figure 43.1 provides a comparison of hospice and palliative care.

This focus on patient wishes was mandated by the *Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatment* (SUPPORT), the 1995 landmark study that demonstrated a failure to honor patients' preferences (SUPPORT Principal Investigators, 1995). It revealed continued lack of communication between patients and their healthcare providers about end of life, high levels of pain reported by the seriously ill and dying, and that in spite of expressed patient preferences that suggested otherwise, aggressive care continued (SUPPORT Principal Investigators, 1995).

Other important documents about the process of dying in America indicated the demand for palliative care. In 1997, the Institute of Medicine (IOM) published *Approaching Death*, which set the groundwork for subsequent review and analysis (Field & Cassel, 1997). This

FIGURE 43.1

Comparison of hospice and palliative care.



report recommended specialty palliative care, endorsed appropriate utilization of medications for pain and symptom management, supported financial investment in palliative care, and called for healthcare provider education with the inclusion of palliative care principles and practice in both training programs and curriculum textbooks (Field & Cassel, 1997). The 2001 IOM published *When Children Die* and *Crossing the Quality Chasm*, which called for significant changes in care of dying children and quality in healthcare (Field & Behrman, 2002; IOM, 2001). These commentaries focused on the need for better care of dying children similar to adults and for better quality measurement in healthcare. In 2002, Last Acts—a Robert Wood Johnson Foundation supported entity—published a state-by-state report card of end-of-life care in America, which captured a fairly bleak picture of palliative care in the United States (Last Acts, 2002). Clearly, there was work to be done.

A monograph by the National Hospice Work Group (NHWG) and the Hastings Center, in association with the National Hospice and Palliative Care Organization (NHPCO), titled *Access to Hospice Care: Expanding Boundaries, Overcoming Barriers,* argued for significant changes in access to palliative care, including all ages, all health settings, and all progressive chronic or serious life-threatening illness and injuries (Jennings, Ryndes, D'Onofrio, & Baily, 2003).

In 2013, the IOM published *Delivering High-Quality Cancer Care: Charting a New Course for a System in Crisis* (Levit, Balogh, Nass, & Ganz, 2013). There were two palliative care-specific recommendations. The first was that the cancer care team should provide patients and their families with understandable information on cancer prognosis, treatment benefits and harms, palliative care, psychosocial support, and estimates of the total and out-of-pocket costs of cancer care. The second was that in the setting of advanced cancer, the cancer care team should provide patients with end-of-life care consistent with their needs, values, and preferences.

In 2014, the IOM released *Dying in America—Improving Quality and Honoring Individual Preferences Near End of Life* (IOM, 2014). The report provided five areas for quality palliative care in achieving healthcare improvement and moving care upstream to patients with serious illness, rather than focusing on end of life: (a) delivery of person-centered and family-focused palliative care; (b) clinician–patient communication and advance care planning; (c) professional education in palliative care; (d) policies and payment for palliative care; and (e) public education and engagement in palliative care (IOM, 2014). Currently, over 75% of hospitals with over 300 beds have palliative care services and 33% of counties in the United States have palliative care in their communities (Center to Advance Palliative Care, 2018). In just over 25 years, the field of palliative care has emerged as a specialty and has matured so that it is now available at diagnosis of a serious illness across all settings, populations, and ages.

QUALITY AND PALLIATIVE CARE

Quality is and has been an essential component of palliative care. Within hospice, there are guidelines and standards for care. From the outset of the hospice benefit, CMS created the CoPs, as previously described. Most recently updated in 2011, the CoPs articulate essential components of hospice care, such as the eligibility criteria, core services, hospice care planning, benefit periods, and coverage. The NHPCO (2011) created 10 quality and practice standards: (a) patient- and family-centered care, (b) ethical behavior and consumer rights, (c) clinical excellence and safety, (d) inclusion and access, (e) organizational excellence, (f) workforce excellence, (g) standards, (h) compliance with laws and regulations, (i) stewardship and accountability, and (j) performance measurement.

Although hospice had standards of care, palliative care did not. This need for quality, consistency, and access was the backdrop to a national discussion regarding national guidelines for palliative care. In 2001, an interdisciplinary meeting of palliative, hospice, and end-of-life leaders convened to create national palliative care standards. This meeting served as the inception of the National Consensus Project (NCP) for quality palliative care. With representation from the national palliative care organizations in the United States, this consortium created the *Clinical Practice Guidelines for Quality Palliative Care*, which was first published in 2004 (NCP, 2004). The guidelines have been updated three times to ensure that they reflected the ongoing maturity of the field, healthcare reform, and the growing literature within the field (NCP, 2009, 2013, 2018). The most recent edition focuses on palliative care in the community, and again all populations from neonates to very old adults.

BOX 43.1

Eight Domains of Palliative Care

Domain 1: Structure and Processes of Care
Domain 2: Physical Aspects of Care
Domain 3: Psychological and Psychiatric Aspects of Care
Domain 4: Social Aspects of Care
Domain 5: Spiritual, Religious, and Existential Aspects of Care
Domain 6: Cultural Aspects of Care
Domain 7: Care of the Patient Nearing the End of Life*
Domain 8: Ethical and Legal Aspects of Care

*Note this domain title has changed three times.

Source: National Consensus Project for Quality Palliative Care. (2018). *Clinical practice guidelines for quality palliative care* (4th ed.). Richmond, VA: National Hospice and Palliative Care Coalition. Retrieved from https://www.nationalcoalitionhpc.org/wp-content/uploads/2018/10/NCHPC-NCPGuidelines_4thED_web_FINAL.pdf.

The document delineates eight domains of palliative care (Box 43.1) and encapsulates the palliative care–related research (NCP, 2018). From its outset, the aim of the *Clinical Practice Guidelines* was as follows: (a) promote quality and consistency, thereby reducing variation in new and existing programs; (b) develop and encourage continuity of care across settings; and (c) facilitate collaborative partnerships among palliative care programs and community hospices, as well as a wide range of other healthcare delivery settings (NCP, 2004, 2009, 2013). Rather than setting minimally acceptable practices, ideal practices and goals for quality palliative care service delivery are offered. The *Clinical Practice Guidelines* offer a framework for the future of palliative care in serving as a manual or blueprint to create new programs, guide developing programs, and set high expectations for excellence for existing programs.

In 2006, the National Quality Forum (NQF, 2006) adopted the *Clinical Practice Guidelines for Quality Palliative Care* within the document—*A National Framework and Preferred Practice for Palliative and Hospice Care Quality*. The NQF is a private, nonprofit, membership organization created to develop and implement a national strategy for healthcare quality improvement. Its mission is to improve American healthcare through the endorsement of consensus-based national standards for measurement and public reporting of healthcare performance data (NQF, 2019a, 2019b). Because the NQF is recognized as the national leader in healthcare quality improvement and representative of the broadest possible array of practice areas and topics,

it offered palliative care both legitimacy and recognition within a broad healthcare focus to policy makers and payers.

The NQF had not previously addressed the topic of hospice and palliative care. Given the consensus-based process of the guideline development, it was consistent with the NQF goals. The NCP requested the NQF to review and endorse the guidelines. The NQF appointed a technical expert panel to review the guidelines and propose preferred practices. The result was the *Framework* document, which formulated palliative care standards and preferred practices with implications for reimbursement, internal and external quality measurements, regulation, and accreditation (NQF, 2006). With important recognition of the federal government as the basis for reimbursement, regulation, and accreditation, the significance of this endorsement cannot be overstated. See Appendix 43.1for the correspondence between the NCP *Clinical Practice Guidelines* and the NQF Preferred Practices.

The NQF has continued to recognize the importance of quality palliative care. In 2008, the National Priorities Partnership (NPP)—a consortium of U.S. healthcare organizations working with NQF—identified palliative care as one of six top priorities for improving the U.S. health system (NPP, 2008). They developed a National Priority Partners Palliative and End-of-Life work group to consider the next steps. NPP released the report *National Priorities & Goals—Aligning Our Efforts to Transform America's Healthcare*. It identified palliative care and end-of-life care as one of the six national priorities that, if addressed, would significantly improve the quality of care delivered to Americans (NPP, 2008). In 2010, the NPP convened a palliative and end-of-life meeting to develop strategies to promote palliative care, including quality improvement stakeholders, insurers, consumer groups, certification groups, professional groups, and education institutions (NPP, 2010). In 2018, the NQF initiated a new Serious Illness Care Initiative funded by the Moore Foundation to examine quality in palliative care. Their work includes identification of existing measures and recommendation of approaches to address measure gaps that exist within serious illness. A summit report to disseminate findings has been released.

Within the federal reporting structures of healthcare reporting, palliative measure development remains a priority. In 2011, as required by the Affordable Care Act, the NQF established the Measure Applications Partnership (MAP) as a public–private partnership entity that reports directly to the U.S. Department of Health and Human Services secretary and advises on quality measures for public reporting across all healthcare settings and performance-based payment programs (NQF, 2019a). They evaluate measures for CMS for public reporting and reimbursement. There is palliative representation on all these groups, which promotes and supports palliative-related measures.

A Palliative Care and End-of-Life Care Endorsement Maintenance Measures Project was established in 2011. Over the course of a year, it evaluated 22 measures that addressed assessment and management of conditions and symptoms in patients, including pain, dyspnea, weight loss, weakness, nausea, serious bowel problems, delirium, and depression; patient- and family-centered palliative and hospice care focused on psychosocial needs and care transitions; as well as patient, caregiver, and family experiences of care (NQF, 2012b). In February 2012, the NQF (2012a, 2012b) endorsed 14 quality measures for palliative and hospice care. The goal of these measures is to ensure the provision of high-quality palliative care and end-of-life care. The measures, some of which are applicable to all clinical settings and provider types, will help hospice and palliative care providers to improve quality of care and generate ideas for future research.

One of the MAP workgroups, the Post-Acute Care/Long-Term Care (PAC/LTC) workgroup, is responsible for reviewing and advising on hospice and palliative care measures. However, there are measures that occur within the Clinician Workgroup and the Hospital Workgroup. The June 2012 MAP Final Report on Performance Measurement Coordination Strategy for Hospice and Palliative Care states that, "while measurement in this area is new, MAP suggests a phased approach that emphasizes clinically-focused measures at first, but quickly expands to more measures that follow the patient and their full set of experiences rather than the setting or fragments of a patient's care (often referred to in this report as 'cross-cutting')" (NQF, 2012a, p. 3). The MAP report also addresses quality reporting in palliative care, by stating "while there is not a formal quality reporting program for palliative care, settings in which palliative care is provided (e.g., hospitals, home health) are required to participate in federal quality initiatives" (NQF, 2012a, p. 4). Each year, they provide a summary of metrics reflecting palliative care and care of individuals with serious illness.

Another project on quality is the joint program between the American Academy of Hospice and Palliative Medicine (AAHPM) and the Hospice and Palliative Nurses Association (HPNA), *Measuring What Matters* (Dy et al., 2015). As the population ages and the demand for this type of care grows, the ability to assess quality throughout the country and across care settings is increasingly important. This project promotes the use of validated indicators in order to ensure consistent quality measures that can ultimately be used for benchmarking, comparison, and quality improvement (Dy et al., 2015). They have identified 10 measures that range from

a complete assessment (including physical, psychological, social, spiritual, and functional needs) to a plan for managing pain and shortness of breath to having patients' treatment preferences followed. Currently, there are two joint HPNA–AAHPM working groups to promote further measurement in the field: Technical Specifications for electronic Clinical Quality Measures (eCQMs) Working Group and the Quality Improvement (QI) Education and Strategies Working Group (AAHPM, 2019a).

Finally, in terms of quality, specialty palliative care designation for both healthcare programs and providers demonstrates quality to the public and insurers. Specialty certification is now possible in each of the core services—chaplaincy, medicine, nursing, and social work, as well as hospital-based programs (AAHPM, 2019b; Advanced Palliative Hospice Social Worker Certification Board, 2018; Board of Chaplaincy, 2019; Hospice and Palliative Credentialing Center, 2015; National Association of Catholic Chaplains, 2019; National Association of Social Workers, 2015). Different discipline-specific organizations are responsible for certification, which occurs either by examination or meeting standards of practice. See Table

TABLE 43.1

Health Disciplines With Palliative Care Specialty Certification

Discipline	Organization	Certification Process	Credential	Eligibility
Chaplaincy	Collaboration of: Association of Professional Chaplaincy National Council of Catholic Chaplains	Application	BCC-PCHAC	■ Board certification as a chaplain for 1 year ■ Clinical experience in hospice/palliative care spanning over 3 years at minimum of 520 hours a year ■ Completion of course in hospice and palliative care equivalent to three (3) credit hours (45 hours)
Medicine	American Academy of Hospice and Palliative Medicine	Examination		■ 1-year fellowship
Nursing	Hospice and Palliative Credentialing Center	Examination	CHPN	■ RN ■ 500 hours in 1 year or 1,000 hours in 2 years of specialty palliative nursing practice
			ACHPN	■ APRN ■ 500 hours in 1 year or 1,000 hours in 2 years of specialty palliative nursing practice
Social work	SWHPN—Advanced Palliative Hospice Social Worker Certification Board	Examination	APHSW-C	■ BSW ■ 3 years postdegree supervised experience in hospice and palliative care ■ 3 years postdegree experience within the past 5 years ■ MSW ■ 2 years postdegree supervised experience in hospice and palliative care
Social work	National Association of Social Work and the National Hospice and Palliative Care Organization	Application	CHP-SW	■ BSW—A bachelor's degree in social work from an accredited university ■ 3 years of practice ■ 20 CEUs in hospice or palliative care
			ACHP-SW	■ MSW—Master's degree in social work from an accredited college or university program is required ■ 3,000 hours of post-MSW practice ■ 20 CEUs in H&P care ■ Reference review of advanced SW palliative competencies

ACHPN, advanced certified hospice and palliative nurse; ACHP-SW, advanced certified hospice and palliative social worker; APHSW-C, advanced palliative hospice social worker-certified; BCC-PCHAC, board certified chaplain-palliative care and hospice advanced certified; BSW, bachelor's in social work; CE, continuing education; CEU, continuing-education units; CHPLN, certified hospice and palliative licensed practical/vocational nurse; CHPN, certified hospice and palliative nurse; CHP-SW, certified hospice and palliative social worker; H&P, hospice and palliative; RN, registered nurse; MSW, master's in social work; SW, social work.

43.1 for a list of disciplines with the association responsible and the eligibility for certification.

In 2011, The Joint Commission (TJC) created the first voluntary specialty palliative care designation for hospital palliative care teams followed by designation for community-based home health agencies and hospices in 2016 (TJC, 2016). Today, there are several other organizations that offer designation for specialty community-based palliative programs and hospital-based palliative care programs, including Accreditation Commission for Health Care (ACHC), DNV-GL (DNV), and Community Health Accreditation Partner (CHAP; ACHC, 2017; CHAP, 2019; DNV-GL, 2019). Although all the organizations' survey standards and indicators are steeped with the NCP Guidelines, they vary in eligibility criteria, duration of designation, and cost. For hospitals, both TJC and DNV offer specialty palliative care designation; however, TJC requires the organization to hold TJC primary certification. In the community, both TJC and ACHC offer palliative care designation to home health agencies and hospice and private duty agencies for palliative care delivery who are TJC- and ACHC-certified. CHAP offers a specialty palliative care designation to any eligible care delivery model in the community that meets its requirements, such as clinics, physician/provider groups, or programs in a long-term care setting. See Table 43.2 for a comparison of program specialty palliative care designation.

TABLE 43.2

Program Specialty Palliative Care Designation

Organization/Year Initiated	Designation	Length/Eligibility	Requirements	Survey Criteria
Hospital-Based Palliative Care				
TJC (2011) https://www.jointcommission.org/certification/palliative_care.aspx	Advanced Certification for Palliative Care	Valid for 2 years. Hospital must be TJC-certified. Any hospital eligible—long-term care, children's hospitals, acute care.	Provide the full range of palliative care services to hospitalized patients 24 hours/day, 7 days/week. Programs must have team members available to answer phone calls during nights/weekend and the ability to come to the hospital to see patients 24/7 when necessary to meet patient/family needs. Programs must commit to long-term evaluation of process and clinical measurement.	39 standards within six categories Foundation 1. TJC prior accreditation 2. NCP Guidelines
DNV-GL (2019) https://www.dnvgl.us/assurance/healthcare/PalliativeCare.html	Palliative Care Program Certification	Valid for 1 year. No requirements about prior certification.		37 standards within 11 categories Foundation: 1. CMS hospital CoPs 2. NCP Guidelines
Community-Based Palliative Care				
ACHC (2017) https://www.achc.org/achc-distinctions.html	Distinction in Palliative Care	Valid for 3 years. Organization must have prior ACHC Home Health, Hospice, or Private Duty accreditation. This may include home health agencies, hospices, clinics, group practices, and the like.		

(*continued*)

TABLE 43.2

Program Specialty Palliative Care Designation (*continued*)

Organization/Year Initiated	Designation	Length/Eligibility	Requirements	Survey Criteria
TJC (2011)	Community-Based Palliative Care (CBPC) Certification	Valid for 3 years. Organization must be TJC-certified. Patients may live at home, in a skilled facility, in assisted living, or another domiciliary setting receiving services under the home health or hospice benefit.	Provide the full range of palliative care services to patients 24 hours/day, 7 days/week. Programs must commit to long-term evaluation of process and clinical measurement.	48 standards within eight categories Foundation: 1. TJC prior accreditation 2. NCP Guidelines
CHAP (2019) https://education.chaplinq.org/chap-standards-of-excellence	Palliative Care Certification	Valid for 3 years. No prior certification. Any organization (home health agency, hospice, assisted living, skilled nursing facility, physician/clinician practice. palliative care program in the home, clinic/office, long-term care setting) can apply based on their ability to meet the standards.	Focus is on delivery of services, rather than a particular organization. If program CHAP accredited for home health, or private duty, they do not have to re-create the QI process.	56 standards within 86 categories Foundation: 1. NCP Guidelines

ACHC, Accreditation Commission for Health Care; CHAP, Community Health Accreditation Partner; CMS, Centers for Medicare & Medicaid Services; CoP, conditions of participation; NCP, National Consensus Project for Quality Palliative Care; TJC, The Joint Commission.

Lastly, to promote quality, there have been various initiatives to assure quality palliative care education for all disciplines. Within nursing, the American Nurses Association and the HPNA released *A Call for Action: Nurses Lead and Transform Palliative Care*, which stated that all nurses should receive End-of-Life Nursing Education Consortium (ELNEC) training (ANA & HPNA, 2017). To accomplish this, competencies for nurses to achieve in both undergraduate and graduate nurses education have been established. There was a major revision to the nursing end-of-life competencies to reflect serious illness care. In 2016, Competencies and Recommendations for Educating Undergraduate Nursing Students was developed to be integrated into undergraduate nursing programs (AACN, 2016). In 2019, Graduate Competencies and Recommendations for Educating Nursing Students was developed to be integrated into graduate nursing programs at the master's and doctorate levels (AACN, 2019).

OUTCOMES

Over the past 15 years, research has demonstrated the quality of palliative care (Evans, Ison, & Ellis-Smith, 2019). For years, many hospice and palliative providers have intuitively known that they promoted quality of life. However, there were no studies to support these claims. The seminal studies to demonstrate the positive aspects of palliative care, specifically quality of life and survival in patients with the involvement of palliative care, occurred between 2009 and 2010 (Bakitas et al., 2009; Temel et al., 2010). Other studies in patients with noncancer diagnoses in outpatient settings have also demonstrated more comprehensive care, higher satisfaction rates, and deaths at home (Brumley et al., 2007; Rabow, Hauser, & Adams, 2004; Rabow, Schanche, Petersen, Dibble, & McPhee, 2003). More recent studies have demonstrated cost savings and better care for patients, across age groups, site of care, and diseases (Cassel, Kerr, Kalman, & Smith, 2016, May, Garrido, Aldridge, et al. 2017; May, Garrido, Cassel et al., 2017).

MODELS ACROSS HEALTHCARE VENUES

As the definition of palliative care has broadened to patients with serious illness, the potential to affect a range of populations is apparent. The NCP *Clinical Practice Guidelines* describe how a serious or life-threatening illness is assumed to encompass populations of patients at all ages within the broad range of diagnostic categories, living with a persistent or recurring medical condition that adversely affects their daily functioning or will predictably reduce life expectancy. Moreover, palliative care crosses all settings. In the

community, patients may live in a residence, a group home or shelter, or in long-term care settings such as a skilled facility, assisted living facility, continuing care retirement community, or chronic care facility. They may receive care from office-based practices such as palliative care clinics or disease-specific clinics, outpatient practices, or the like. In the hospital, there may be practices in rural, community, and urban hospitals as well as academic medical centers.

Palliative care focuses on expert assessment and management of physical and psychological symptoms, assessment of caregiver needs, and support and coordination of care. Hence, it is appropriate at any time of a serious illness, provided in an interdisciplinary manner over time, and offered across settings in a manner consistent with goals of the patient (NCP, 2018). As a model, palliative care has several tenets set forth by the NCP (Box 43.2). Both clinical and service delivery models have been identified (Luckett et al., 2014). Clinically, they range from case management to liaison, integrated care, and consultative models. Service delivery ranges from clinical networks to managed care networks, and collaboration among community providers (Luckett et al., 2014). Service delivery models have complex considerations and financial implications and are beyond the scope of this chapter. Clinical models range from models in the hospital, home, office, and long-term care setting and are discussed as follows.

Every palliative model provides comprehensive assessment in all domains (physical, spiritual, emotional, and social) related to quality of life. There is simultaneous evaluation and reevaluation of initiation of interventions to manage any of these aspects of care (Partridge et al., 2014). Specifically, palliative care addresses pain and symptoms, psychosocial distress, quality of life, and care preferences. This may look different depending on the diagnosis (American Colleges of Surgeons, 2012; Braun et al., 2016; Ferrell et al., 2017; Holloway et al., 2014; Smith et al., 2012). The National Comprehensive Cancer Network suggests the following criteria for palliative care: (a) uncontrolled symptoms, (b) moderate to severe distress related to diagnosis and treatment, (c) serious comorbid physical and psychosocial conditions, (d) life expectancy less than 6 months, and (e) patient concerns about the course of disease and/or his or her treatment options, including when these are expressed by the family (Levy et al., 2014; National Comprehensive Cancer Network, 2012).

Palliative care is an essential aspect of healthcare, and it occurs across a variety of settings. The venue will determine the model of care and the financial aspects of program development. Venues can be based on a health system, a hospital, an office, a long-term care setting, a hospice organization, a home health agency, and in the community. With all the models, there is the overarching principle of giving the right care, to the right patients, in the right settings.

BOX 43.2

Tenets of Palliative Care

1. Palliative care is patient- and family-centered care.
2. There is comprehensive palliative care with continuity across health settings.
3. Early introduction of primary palliative care concepts should begin at diagnosis of a serious or life-threatening illness by the primary team.
4. The goal of palliative care is the relief of physical, psychological, emotional, and spiritual suffering of patients and families. If provided early, it allows patients to achieve quality of life while living with serious illness.
5. Palliative care may be offered concurrent with or independent of curative or life-prolonging care. Patient and family hopes for quality of life are supported throughout the course of illness. At advanced illness and end of life, peace and dignity are preserved during the dying process, and after death.
6. Palliative care team members have clinical and communication expertise achieved through education, training, and specialty palliative care certification.
7. Palliative care is interdisciplinary and collaborative. Communication between patients, families, palliative care specialists, and other healthcare providers is essential to provide patient-centered care and assure quality throughout care transitions.
8. Equitable access to quality requires a commitment to building primary palliative care skills across all disciplines and settings as well as building the interdisciplinary workforce of specialty palliative care providers.

Source: Adapted from the National Consensus Project for Quality Palliative Care. (2013). *Clinical practice guidelines for quality palliative care* (3rd ed.). Pittsburgh, PA: Author; National Consensus Project for Quality Palliative Care. (2018). *Clinical practice guidelines for quality palliative care* (4th ed.). Richmond, VA: National Hospice and Palliative Care Coalition.

Although hospice is considered the gold standard of care, it is a subset of palliative care. First of all, it focuses on end-of-life care as a result of the eligibility requirements of a prognosis of 6 months or less without curative measures. Patients must sign onto the benefit. Patients can receive care in the home, nursing home, hospice unit, or residential setting with different levels of intensity depending on the pain and symptom management. Palliative care programs can vary because there are no restrictions of prognosis, treatment direction, election of benefit, or necessity of specific interventions (Table 43.3).

TABLE 43.3

Palliative Care Models

Model	Payment Structure	Clinical Responsibility	Team Composition	Referral/Duration/Limitation
Hospital-Based Palliative Care				
Hospital-based (academic medical center, community hospital, rural hospital, critical or essential access hospital)	Medicare B Medicaid Commercial	Consultative, comanagement, or primary care role	Medicine, nursing, social work, and chaplaincy	■ By referral of primary attending (APRN, DO, MD, PA), other disciplines, or self-referral ■ Length of hospital stay ■ May not cross to other settings
Community-Based Palliative Care				
Office-based (independent clinic, outpatient clinic, ambulatory clinic)	Medicare B Medicaid Commercial	Consultative, comanagement, or primary care role	Medicine, nursing, social work, and chaplaincy	■ By referral of primary attending provider (APRN, DO, MD, PA), other disciplines, or self-referral ■ Duration of disease/condition ■ May move easily cross-settings
Home-based (home, rest home, group home, senior housing, shelter)	Medicare B Medicaid Commercial	Comanagement or primary care role	Medicine and nursing	■ By referral of primary attending (APRN, DO, MD, PA), other disciplines, service organizations, or self-referral ■ Duration of disease/condition ■ Center of care coordination
Palliative Care in Long-Term Care Settings				
Skilled nursing facility (skilled facility, long-term acute care, nursing home)	Medicare B Medicaid Commercial	Consultative comanagement	Medicine and nursing	■ By referral of primary attending (APRN, DO, MD, PA), other disciplines, service organizations, or self-referral ■ Duration of disease/condition ■ Center of care coordination
Assisted living facility	Medicare B Medicaid Commercial	Comanagement and/or primary care role	Medicine and nursing	■ By referral of primary attending (APRN, DO, MD, PA), other disciplines, service organizations, or self-referral ■ Duration of disease/condition ■ Center of care coordination

APRN, advanced practice registered nurse; DO, doctor of osteopathy; MD, medical doctor; PA, physician assistant.

There are positive and negative aspects to various hospice and palliative care models (Wiencek & Coyne, 2014). Hospital-based models are the most defined. Indeed, over the past 15 years, the focus has been on inpatient palliative care. These are inpatient consultative services that consist of an interdisciplinary team. They vary in resources and acuity by academic medical center, community hospital, rural hospital, and critical or essential access hospital. These programs must have interdisciplinary teams; in particular, a team for each of the core service disciplines. These programs may be led by any one of the team members, but are often led by physicians or APRNs.

There can be a range of clinical responsibilities after consultation. This includes consultation only in which recommendations of pharmacological and nonpharmacological interventions are offered; comanagement of a specific pain or symptom in which the team writes orders and prescriptions; assuming the role of a primary care provider responsible for all the care, not just the serious diagnosis; or a mix of all clinical responsibilities. Currently, the most common financial structure is based on billing and reimbursement through Medicare, Medicaid, and other commercial payers, as well as hospital support. However, within healthcare reform, there may be alternative payment models that pay either per-member-per-month or by incentives of care delivered. The palliative care team may see a range of patients all over a hospital, or have specific beds or even a unit.

Hospital-based palliative care models are often the easiest to implement as they usually build off of current hospital structures. They are, by nature, crisis-oriented and close to 24/7 access. They demand, however, the

collaboration of an interdisciplinary team, which may or may not be under the auspices of a palliative care department. The benefits may be lower costs, earlier discharge, higher satisfaction, and better pain management (Casarett et al., 2008, Cassel et al., 2016).

Office-based palliative care may offer more continuity to longer-term issues. Models include outpatient or ambulatory care clinics as well as independent clinics in the community or clinics run by a hospice, home health agency, or a collaborative effort. These practices may be imbedded in another specialty clinic such as oncology, heart failure, amyotrophic lateral sclerosis, liver failure, kidney failure, or gerontology. There are also stand-alone or free-standing palliative care clinics. The nature of these programs is care over a longer period of time with care coordination. The focus is on continuity and relationship building to promote and avoid both emergency visits and hospitalizations. Clinical responsibility of the palliative care team is most often comanagement of pain and symptoms as well as assuming primary care roles or a mix of comanagement and primary care. To be considered as a specialty palliative care service, the clinics must be either interdisciplinary or multidisciplinary teams depending on the structure. Very often, however, office-based practices lack the full scope of an interdisciplinary team, delineating them more as a palliative provider than interdisciplinary.

Many office-based programs developed from hospital teams. However, many are growing in the community that are separate from hospital teams. Office-based models necessitate different resources depending on the type of practice and ownership—outpatient clinic as part of a hospital, ambulatory clinic as part of a health system, or independent clinic as part of a hospice or palliative care provider. Resources depend on the financial structure of the clinic, in particular whether it is hospital or system-owned, independent, or supported philanthropically. Often, the primary providers are physicians and advanced practice providers because their visits are reimbursable under Medicare, Medicaid, and commercial insurance. The benefits of palliative care are reduction in emergency department admissions, hospital admissions, and better patient satisfaction (Bakitas et al., 2009; Brumley et al., 2007; Cassel et al., 2016; Kerr & Cassel 2014; May, Garrido, Aldridge, et al., 2017; May, Garrido, Cassel, et al, 2017; Temel et al., 2010).

Home-based palliative care models are growing. The focus is coordinating care from service agencies and delivering clinical care in the home. These programs work well for geriatric patients who have avoided the clinic or hospital for any care, but also for patients who are too sick to travel to appointments. It is essential for these programs to coordinate with service agencies such as Councils on Aging, Meals on Wheels, Parish Nurses, and so on. Some programs have clinicians who visit patients whom they have seen in the hospital. Other programs enroll patients from the community who lack primary care providers. Clinical responsibility is most often held by primary providers, although there may be comanagement of pain and symptoms as well. These teams are multidisciplinary in nature, depending on workforce availability and financial structure. Reimbursement occurs through Medicare, Medicaid, and commercial payers.

There is wide variability in home-based models differentiated by structure and services. Their benefit is keeping people in their homes and community. However, because of reimbursement and revenue streams, home-based models may not encompass a full interdisciplinary team. In addition, depending on the geography of the area covered, there may be issues in the number of patients seen or financial implications of transportation. However, there is research to suggest that home-based palliative care decreases healthcare costs, reduces 30-day hospital readmission rates, and increases patient satisfaction (Brumley et al., 2007; Cassel et al., 2016; Enguidanos, Vesper, & Lorenz, 2012; Kerr & Cassel, 2014).

Palliative care in the long-term care setting is less developed and not well-delineated (Ersek & Carpenter, 2013). Broadly, it includes consultation to patients in the skilled nursing facility, assisted living facility, nursing home, or chronic and acute rehabilitation settings. Although there is research about pain and symptom management for this population as well as advance care planning, there are few commentaries on models (Ersek & Carpenter, 2013). It has been suggested that outside of hospice, there are two models—external consultative teams and internal consultative teams (Ersek & Stevenson, 2013). Either model includes a variety of interdisciplinary team members to provide consultation to these complex populations. However, palliative care initiatives in nursing homes are beset with the challenges of high staff turnover, staff shortages of qualified individuals, regulatory requirements, reimbursement, and various health policies (Strumpf, Tuch, Stillman, Parrish, & Morrison, 2004).

Within a health system, such as an accountable care organization (ACO) or Patient-Centered Medical Home (PCMH), care is focused on keeping the patient out of the hospital. This palliative care model focuses on primary palliative care in which there is a strong communication and care coordination across the system. In particular, there is a major presence of nurse case management with a focus on advance care planning. There is constant assessment of the

TABLE 43.4

Current Palliative Care Delivery Under Medicare and Medicaid Hospice and Home Health Benefits

Hospice	Medicare A—Hospice Benefit Medicaid Hospice Benefit varies by state	Mostly primary care role	Mandated by conditions of participation Medicine, nursing, social work, and chaplaincy	Limited by 6-month eligibility
Hospice Benefit–based palliative care	Medicare A—limited palliative care under the Hospice Benefit Medicaid—may be included in Hospice Benefit	Consultative or comanagement	Physician and/or APRN	Medicare Hospice Benefit allows three visits
Home Health Benefit–based palliative care	Medicare B—under home care Medicaid—may be included in Home Health Benefit	Consultative or comanagement	Nurse	Must be homebound, defined as leaving the home is difficult

APRN, advanced practice registered nurse.

needs of the patient and the right services. Here, quality care for patients with serious illness may include hospital-, office-, and home-based palliative care. However, the model for palliative care will emanate from primary care practices.

Finally, there are palliative care models that occur broadly under Medicare programs such as under the Hospice or Home Health Benefit (Table 43.4). However, there are limitations because of Medicare regulations. First, under the Medicare Hospice or Home Health Benefit, palliative care may lack interdisciplinary care because nurses most often provide the care alone. Palliative care under the Medicare Hospice Benefit is time-limited to only a few consultation visits. Palliative care under Home Health is limited by the necessity that the patient qualify for homebound status. Moreover, hospices and home health agencies must attend to antitrust issues. Therefore, palliative care programs under Hospice and Home Health Benefits are restricted in their breadth and scope.

CASE STUDY 43.1

Sophie Jones, ACNOPC-BC, ACHPN, is a palliative nurse practitioner who works in a healthcare system that has a hospital, a clinic, and a home-based program. She performs palliative care consultations for patients with serious illness in a community palliative care clinic 3 days a week. She then sees patients in the home 2 days a week. She receives referrals from all eligible licensed professionals (physicians, physician assistants, nurse practitioners, and clinical nurse specialists).

As part of her evaluation, she initiates advance care planning by eliciting a patient's and family's goals of care, and, if they are ready, complete the appropriate paper work, including the delegation of a surrogate decision-maker, advance directive/living will, and out-of-hospital orders for life-sustaining treatment (commonly known as Provider/Physician/Medical Orders for Life-Sustaining Treatment or POLST/MOLST forms). Sophie performs the Edmonton Symptom Assessment System on each patient to determine his or her symptoms and distress. She orders diagnostics as necessary to create a differential diagnosis. In order to implement a care plan, she collaborates with the patient's primary care providers. As part of her comanagement role, she writes orders and prescriptions for pain and symptom management when she makes recommendations and develops a palliative care plan. She records consultation documentation for new patients as well as follow-ups in the electronic health record (EHR).

Her clinical responsibilities include both a consultative role in the clinic, when she collaborates with other providers, and a primary care role in the home, when she assumes responsibility for the patient. She offers 24/7 coverage during the week. On the weekends, the covering provider for primary care covers both her clinic patients and her home patients.

She bills for her services under Medicare Part B professional billing for a palliative care encounter, as well as symptoms, and a primary diagnosis. She also bills for advance care planning (ACP). There are occasions in which she visits a hospitalized patient to provide continuity in terms of goals of care. The health system tracks her visits and her patient satisfaction scores are the highest in the system. Her patient satisfaction scores demonstrate better quality of life and better communication with her care plan. Her symptom

(*continued*)

CASE STUDY 43.1 (*continued*)

assessment data demonstrates that on average her patients' symptoms are managed within 48 hours.

She is able to recoup 40% of her salary in billing and reimbursement. Additionally, her care offers the ACO savings of around US$400,000 per year. This is achieved by her ability to prevent 30-day readmission hospitalizations and emergency department visits as well as prevent transfers to the intensive care unit for her patients. She is also able to promote earlier admissions to hospice and assure goal concordant care consistent with the patients' wishes.

SUMMARY

Palliative care is an important model of care. It promotes quality patient- and family-centered care that incorporates patient and family values and preferences of care in the settings where patients and families prefer to receive care. As healthcare reform continues, palliative care is essential in promoting patient-centered and family-focused care in accordance with patient preferences. Palliative care promulgates the foundational principle of healthcare by advocating for the four Rs—the right care, for the right patient, at the right time, in the right place. It has been demonstrated that palliative care increases patients' quality of life, satisfaction, improves pain and symptom management, and reduces cost of care. Although no one model of palliative care fits every setting, palliative care is being established for all ages in all types of hospitals (i.e., rural and community, not just urban or academic medical centers), offices (i.e., specialty adult or pediatric palliative care clinics or embedded in other specialties such as geriatrics, oncology, heart failure, pulmonology, or neurology), the home (i.e., the residence where the patient lives), and in long-term care settings. Nurses have a prominent role in all palliative care models as the largest segment of healthcare providers who are most often at the forefront of clinical care. There are many opportunities for developing competencies and skills in serious illness care. They can also demonstrate their skills through certification. Nurses must implement new initiatives, which build their skills, education, and training to practice to the full extent of their scope of practice (IOM, 2011). They have the capacity to lead and transform care in serious illness and beyond with creating new models. In this way, nurses will assure access to quality palliative care.

RESOURCES

Discipline-Specific Specialty Palliative Care Certification

Nursing

Hospice and Palliative Credentialing Center

Specialty certification in hospice and palliative nursing—nursing assistant, registered nurse, advanced practice registered nurse, pediatrics

Nonnursing—Perinatal loss
https://advancingexpertcare.org/certification

Specialty certification in hospice and palliative chaplaincy
https://www.nacc.org/certification/palliative-care-and-hospice-advanced-certification

Program-Specific Specialty Palliative Care Designation

Association of Health Care Accreditation (AHCA)
https://www.achc.org/achc-distinctions.html

Community Health Accreditation Partner (CHAP)

Specialty certification/accreditation-community-based programs
http://www.chapinc.org

DNV-GL. (2018). https://www.dnvgl.us/assurance/healthcare/PalliativeCare.htm

The Joint Commission (TJC)

Specialty certification in palliative care
1. *Hospital-based programs*
2. *Hospices and home health agencies*

https://www.jointcommission.org/certification/palliative_care.aspx

Continuing Education

End-of-Life Nursing Education Consortium (ELNEC)

Curriculum offerings—core, pediatrics, geriatrics, veterans, critical care, APRN, international products—articles about ELNEC and nursing education, 15th Anniversary Report
https://www.aacnnursing.org/ELNEC

Palliative Care Communication

Curriculum—COMFORT Communication

Products—Online communication curriculum, Communication in Palliative Nursing, Textbook of Palliative Care Communication
https://prc.coh.org

Palliative Care Standards

National Consensus Project for Quality Palliative Care (NCP)
https://www.nationalcoalitionhpc.org/ncp/

Clinical practice guidelines for quality palliative care (4th ed.), 2018
1. *Defines the domains and characteristics for quality palliative care across all settings in the United States.*
2. *Serves as the basis for specialty palliative program designation by The Joint Commission (TJC) and Community Health Accreditation Partner (CHAP).*

National Priorities Partnership

National Priorities & Goals—Aligning Our Efforts to Transform America's Healthcare

Palliative Care and End-of-Life Convening Meeting Synthesis Report

Measure Applications Partnership—Performance Measurement Coordination Strategies for Hospice and Palliative Care Final Report
https://www.qualityforum.org/Publications/2012/06/Performance_Measurement_Coordination_Strategy_for_Hospice_and_Palliative_Care.aspx

National Quality Forum (NQF)

A national framework and preferred practices for care and hospice care—A consensus report, 2006

Develops palliative care preferred practices based on the NCP Clinical Practice Guidelines
https://www.qualityforum.org/Publications/2006/12/A_National_Framework_and_Preferred_Practices_for_Palliative_and_Hospice_Care_Quality.aspx

Palliative Care and End-of-Life Care—A Consensus Report

Professional Specialty Palliative Care Organizations—Nursing

Hospice and Palliative Nurses Association (HPNA)—individual membership necessary

The specialty palliative nursing organization for all levels of nursing—the nursing assistant, the licensed practical/vocational nurse, the registered nurse, and the advanced practice registered nurse

Online education—E-Learning

Conferences—Annual Assembly, Clinical Practice Forum

Journals
1. *Journal of Hospice and Palliative Nursing*,
2. *Journal of Palliative Medicine*

Networking—Special interest groups—APRN, pediatrics, bioethics, community, research, heart failure, intensive care, LGBTQ, international, education

*Products—Palliative Nursing Scope and Standards (*ANA *and* HPNA*), Compendiums of Non-Cancer Diagnoses, Core Curriculum for the Hospice and Palliative* RN *and* APRN*, Primer on* APRN *Reimbursement, Palliative Nursing Manuals, and Patient Teaching Sheets*
https://advancingexpertcare.org

Professional Specialty Palliative Care Organizations—Non-Nursing

American Academy of Hospice and Palliative Medicine (AAHPM)—individual membership necessary

Online education—E-Learning

Conferences—Annual Assembly *Journals*
1. *Journal of Palliative Medicine*
2. *Journal of Pain and Symptom Management*

Products—Palliative care content—*Essentials in Hospice and Palliative Care*, position statements, AAHPM smart brief on current research and current events, primer of palliative care
www.aahpm.org

American Society of Clinical Oncology (ASCO)—individual membership necessary

Online Education—ASCO Learning

Conference—Palliative Care in Oncology Symposium

Journals
1. *Journal of Clinical Oncology*
2. *Journal of Oncology Practice*
www.asco.org

California Health Care Foundation—no membership necessary

Free products

Serious Illness and End-of-Life Care
1. *Snapshots of Palliative Care Practices*
2. *Up Close: A Field Guide to Community-Based Palliative Care in California*
3. *Innovative Models in Palliative Care Fact Sheet*
4. *Weaving Palliative Care Into Primary Care: A Guide for Community Health Centers*
http://www.chcf.org/topics/end-of-life-and-palliative

Center to Advance Palliative Care (CAPC)—organizational membership necessary

Online education—Clinical and technical assistance courses for palliative care delivery and program development

Conferences—CAPC seminar, webinars, virtual office hours

Free products—Tools, Articles, Team *Wellness Monograph, State-by-State Report Card*
www.capc.org

NHPCO—organizational membership necessary

Online education—E-Learning

Conferences—Clinical Team and Pediatric Conference, Management and Leadership Conference

Networking

Products—Newsbriefs, position statements, technical assistance

Journals
1. *Journal of Pain and Symptom Management*

www.nhpco.org

Social Work Hospice and Palliative Network (SWHPN)—individual membership necessary

Conferences—Annual Conference

Networking

Products—SWHPN *Newsbriefs*, *SWHPN Voice*

Journals
1. *Journal of Social Work in End of Life and Palliative Care*

www.swhpn.org

Society of Pain and Palliative Care Pharmacists (SPPCP)—individual membership necessary

Online education—E-Learning

Conferences—Virtual Conference

Products—Journal Club

Journals
1. *Journal of Pain and Palliative Care Pharmacotherapy*

http://www.palliativepharmacist.org

Professional Organizations—Nursing

American Association of Critical Care Nurses—individual membership necessary

Online education—Self-Assessment: Palliative and End-of-Life Care

Conferences—National Training Institute (NTI)

Journals
1. *Critical Care Nurse*
2. *American Journal of Critical Care*

Products—Acute and Critical Care Choices Guide to Advance Directives

AACN Protocols for Practice: Palliative Care and End-of-Life Issues in Critical Care

Repository for the Robert Wood Johnson Foundation Promoting Excellence in End-of-Life Care—Palliative Care in the Intensive Care Unit

http://www.aacn.org

American Nurses Association (ANA)

General Resources and Individual Membership

Online education—E-Learning

Journal—American Nurse Today

Professional issues panel—Palliative and Hospice Nursing

Products—Nursing Scope and Standards, Code of Ethics for Nursing, Palliative Nursing Scope and Standards (ANA and HPNA)

Position statements
1. *Registered Nurses' Roles and Responsibilities in Providing Expert Care and Counseling at End of Life, Nursing*
2. *Nursing Care and Do* Not Resuscitate *(DNR) and Allow* Natural Death *(AND) Decisions*
3. *Euthanasia, Assisted Suicide, and Aid in Dying*

www.nursingworld.org

Oncology Nursing Society (ONS)—individual membership necessary

Online education—E-Learning

Conferences—Congress, Fall Institute

Journals
1. *Oncology Nursing Forum*
2. *Clinical Journal of Oncology Nursing*

Networking—special interest groups

Products—core curriculum, core competencies, position statements

www.ons.org

Additional Resources

National Comprehensive Cancer Network

Guidelines for palliative care

Guidelines for psychosocial distress

http://www.nccn.org

Oxford University Press

Nursing-specific references—Ferrell, B., & Paice, J. (Eds.). (2019). *Oxford textbook of palliative nursing* (5th ed.); Dahlin, C., Coyne, P., & Ferrell, B. (Eds.). (2016). *Advanced practice palliative nursing*; *Palliative nursing manuals* with HPNA based on the eight domains of the National Consensus Project for Quality Palliative Care

Textbook of palliative care communication

https://global.oup.com/academic/category/medicine-and-health/nursing

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APPENDIX 43.1

Mapping the National Consensus Project Domains and the National Quality Forum Preferred Practices

2018 NCP Domains	2006 NQF Preferred Practices
Domain 1—Structure and Processes of Care	Preferred Practice 1 ■ Provide palliative and hospice care by an interdisciplinary team of skilled palliative care professionals, including physicians, nurses, social workers, pharmacists, spiritual care counselors, and others who collaborate with primary healthcare professional(s). Preferred Practice 2 ■ Provide access to palliative and hospice care that is responsive to the patient and family 24 hours a day, 7 days a week. Preferred Practice 3 ■ Provide continuing education to all healthcare professionals on the domains of palliative care and hospice care. Preferred Practice 4 ■ Provide adequate training and clinical support to assure that professional staff are confident in their ability to provide palliative care for patients. Preferred Practice 5 ■ Hospice care and specialized palliative care professionals should be appropriately trained, credentialed, and/or certified in their area of expertise. Preferred Practice 6 ■ Formulate, utilize, and regularly review a timely care plan based on a comprehensive interdisciplinary assessment of the values, preferences, goals, and needs of the patient and family and, to the extent that existing privacy laws permit, ensure that the plan is broadly disseminated, both internally and externally, to all professionals involved in the patient's care. Preferred Practice 7 ■ Ensure that on transfer between healthcare settings, there is timely and thorough communication of the patient's goals, preferences, values, and clinical information so that continuity of care and seamless follow-up are assured. Preferred Practice 8 ■ Healthcare professionals should present hospice as an option to all patients and families when death within a year would not be surprising, and reintroduce the hospice option as the patient declines. Preferred Practice 9 ■ Patients and caregivers should be asked by palliative and hospice care programs to assess physicians' or healthcare professionals' ability to discuss hospice as an option. Preferred Practice 10 ■ Enable patients to make informed decisions about their care by educating them on the process of their disease, prognosis, and the benefits and burdens of potential interventions. Preferred Practice 11 ■ Provide education and support to families and unlicensed caregivers based on the patient's individualized care plan to assure safe and appropriate care for the patient.
Domain 2—Physical Aspects of Care	Preferred Practice 12 ■ Measure and document pain, dyspnea, constipation, and other symptoms using available standardized scales. Preferred Practice 13 ■ Assess and manage symptoms and side effects in a timely, safe, and effective manner to a level acceptable to the patient and family.

(*continued*)

APPENDIX 43.1

Mapping the National Consensus Project Domains and the National Quality Forum Preferred Practices (*continued*)

2018 NCP Domains	2006 NQF Preferred Practices
Domain 3—Psychological and Psychiatric Aspects of Care	Preferred Practice 14 ■ Measure and document anxiety, depression, delirium, behavioral disturbances, and other common psychological symptoms using available standardized scales. Preferred Practice 15 ■ Manage anxiety, depression, delirium, behavioral disturbances, and other common psychological symptoms in a timely, safe, and effective manner to a level acceptable to the patient and family. Preferred Practice 16 ■ Assess and manage psychological reactions of patients and families to address emotional and functional impairment and loss, including stress, anticipatory grief, and coping, in a regular ongoing fashion. Preferred Practice 17 ■ Develop and offer a grief and bereavement care plan to provide services to patients and families before and for at least 13 months after the death of the patient.
Domain 4—Social Aspects of Care	Preferred Practice 18 ■ Conduct regular patient and family care conferences with physicians and other appropriate members of the interdisciplinary team to provide information; discuss goals of care, disease prognosis, and advance care planning; and offer support. Preferred Practice 19 ■ Develop and implement a comprehensive social care plan, which addresses the social, practical, and legal needs of the patient and caregivers, including but not limited to relationships, communication, existing social and cultural networks, decision-making, work and school settings, finances, sexuality/intimacy, caregiver availability/stress, and access to medicines and equipment.
Domain 5—Spiritual, Religious, and Existential Aspects of Care	Preferred Practice 20 ■ Develop and document a plan based on assessment of religious, spiritual, and existential concerns using a structured instrument and integrate the information obtained from the assessment into the palliative care plan. Preferred Practice 21 ■ Provide information about the availability of spiritual care services and make spiritual care available either through organizational spiritual counseling or through the patient's own clergy relationships. Preferred Practice 22 ■ Specialized palliative and hospice care teams should include spiritual care professionals appropriately trained and certified in palliative care. Preferred Practice 23 ■ Specialized palliative and hospice spiritual care professionals should build partnerships with community clergy and provide education and counseling related to end-of-life care.
Domain 6—Cultural Aspects of Care	Preferred Practice 24 ■ Incorporate cultural assessment as a component of comprehensive palliative and hospice care assessment, including, but not limited to, locus of decision-making, preferences regarding disclosure of information, truth-telling and decision-making, dietary preferences, language, family communication, desire for support measures such as palliative therapies and complementary and alternative medicine, perspectives on death, suffering and grieving, and funeral/burial rituals. Preferred Practice 25 ■ Provide professional interpreter services and culturally sensitive materials in the patient's and family's preferred language.

(*continued*)

APPENDIX 43.1

Mapping the National Consensus Project Domains and the National Quality Forum Preferred Practices (*continued*)

2018 NCP Domains	2006 NQF Preferred Practices
Domain 7—Care of Patient Nearing the End of Life	Preferred Practice 26 ■ Recognize and document the transition to the active dying phase and communicate to the patient, family, and staff the expectation of imminent death. Preferred Practice 27 ■ The family is educated on a timely basis regarding the signs and symptoms of imminent death in a developmentally, age-, and culturally appropriate manner. Preferred Practice 28 ■ As part of the ongoing care-planning process, routinely ascertain and document patient and family wishes about the care setting for site of death and fulfill patient and family preferences when possible. Preferred Practice 29 ■ Provide adequate dosage of analgesics and sedatives as appropriate to achieve patient comfort during the active dying phase and address concerns and fears about using narcotics and using analgesics to hasten death. Preferred Practice 30 ■ After death, treat the body with respect according to the cultural and religious practices of the family and in accordance with local law. Preferred Practice 31 ■ Facilitate effective grieving by implementing a bereavement care plan in a timely manner after the patient's death when the family remains the focus of care.
Domain 8—Ethical and Legal Aspects of Care	Preferred Practice 32 ■ Document the designated surrogate/decision-maker in accordance with state law for every patient in primary, acute, and long-term care and in palliative and hospice care. Preferred Practice 33 ■ Document the patient/surrogate preferences for goals of care, treatment options, and setting of care at first assessment and at frequent intervals as conditions change. Preferred Practice 34 ■ Convert the patient treatment goals into medical orders and ensure that the information is transferable and applicable across care settings, including long-term care, emergency medical services, and hospitals, such as the Physician Orders for Life-Sustaining Treatments (POLST) Program. Preferred Practice 35 ■ Make advance directives and surrogacy designations *available* across care settings, while protecting patient privacy and adherence to Health Insurance Portability and Accountability Act (HIPAA) regulations, for example, by Internet-based registries or electronic personal health records. Preferred Practice 36 ■ Develop healthcare and community collaborations to promote advance care planning and completion of advance directives for all individuals, for example, Respecting Choices, Community Conversations on Compassionate Care. Preferred Practice 37 ■ Establish or have access to ethics committees or ethics consultation across care settings to address ethical conflicts at the end of life. Preferred Practice 38 ■ For minors with decision-making capacity, document the child's views and preferences for medical care, including assent for treatment, and give appropriate weight in decision-making. Make appropriate professional staff members available to both the child and the adult decision-maker for consultation and intervention when the child's wishes differ from those of the adult decision-maker.

NCP, National Consensus Project; NQF, National Quality Forum.

Source: National Quality Forum. (2006). *A national framework and preferred practices for palliative and hospice care quality: A consensus report*. Washington, DC: Author. Retrieved from https://www.qualityforum.org/Publications/2006/12/A_National_Framework_and_Preferred_Practices_for_Palliative_and_Hospice_Care_Quality.aspx. *Evidence Level IV.*

Care of the Older Adult in the Emergency Department*

Rachel Arendacs and Marie Boltz

44

EDUCATIONAL OBJECTIVES

On completion of this chapter, the reader should be able to:

1. Identify evidence-based approaches and tools to assess the older adult in the ED.
2. Describe interventions to prevent and manage geriatric syndromes in the ED.
3. Discuss approaches to support effective transitions from the ED.

OVERVIEW

Older adults aged 65 years and older use more ED services than any other age group, comprising approximately 21% to 40% of all consumers who use the ED (Niska, Bhuiya, & Xu, 2010). One in five patients aged 65 to 74 years and one in four patients aged 75 years and older visit the ED each year; the percentage of ED visits made by nursing home (NH) residents, patients arriving by ambulance, and patients admitted to the hospital increases with age (Albert, McCaig, & Ashman, 2013). Approximately 42% of ED visits of patients 65 years and older result in hospitalization. ED use increased 25% for adults aged 65 and older from 2001 to 2009, outpacing the 21% population growth in older adults in general (Pines, Mullins, Cooper, Feng, & Roth, 2013).

The ED plays a critical role in the healthcare system for older adults, acknowledged by the American College of Emergency Physicians which has developed a geriatric ED accreditation process. The recommended interventions include geriatric-friendly equipment, geriatric-specialized staff, and more routine screenings for geriatric vulnerabilities (Huff, 2018). The most common role of the ED is related to its position in the crossroads of inpatient and outpatient care (Carpenter & Platts-Mills, 2013; Lutz et al., 2017). The higher prevalence of chronic disease and exacerbations of these conditions is one reason for high utilization of ED (McCelland & Sorrell, 2015; Perry, Macias, & Melady, 2018). In other cases, older adults transition from the ED to other settings such as long-term care or mental health facilities. Finally, others receive care for crises such as mistreatment or displacement. The ED may be used for the performance of complex diagnostic workups, overflow, and off-hours medical care; for some older adults, the ED is the only source of healthcare evaluation and treatment (Gonzalez Morganti et al., 2013; Stefanacci & Riddle, 2018). This chapter describes the evidence-based approaches to assessing the older adult presenting to the ED, as well as interventions to prevent and manage common geriatric syndromes that occur before or during the

* For a description of evidence levels cited in this chapter, see Chapter 1, Developing and Evaluating Clinical Practice Guidelines: A Systematic Approach.

ED admission. Transitions from the ED and organizational approaches to senior-friendly ED care are also discussed.

BACKGROUND AND STATEMENT OF PROBLEM

Older adults present to the ED with serious complaints such as injury, dyspnea, chest pain, and abdominal pain, as well as nonspecific complaints associated with atypical presentation, including weakness, fatigue, and dizziness, which may indicate serious disease (Theou, Campbell, Malone, & Rockwood, 2018). When compared to younger people, older adults have more diagnostic tests, longer stays in the ED, and are more likely to be admitted to the hospital (Banerjee, Dehnadi, & Mbamalu, 2011; Kreindler, Cui, Metge, & Raynard, 2015). Those older adults who are discharged from the ED are more likely to be readmitted; they also risk functional loss and higher rates of mortality (McCusker et al., 2007; Niska et al., 2010; Sklar et al., 2007).

Although they represent a cohort of frequent ED users, it has been argued that older adults typically do not receive specialized care. When compared to younger persons, older adults are more likely to experience missed or incorrect diagnoses (Theou et al., 2018), inadequate pain management (Hwang, Richardson, Harris, & Morrison, 2010; Iyer, 2011), and less information (Boltz, Parke, Shuluk, Capezuti, & Galvin, 2013; George, Jell, & Todd, 2006). There is international consensus that care of older adults in the ED warrants close attention and systemic approaches that support uptake of evidence-based care (Gruneir, Silver, & Rochon, 2011; Hwang et al., 2013; Parke & McCusker, 2008).

ASSESSMENT OF THE OLDER ADULT IN THE ED

The complex presentation of disease and illness in older adults, along with complicated polypharmacy, functional impairment (Schnitker, Martin-Khan, Beattie, & Gray, 2011; Wilber, Blanda, & Gerson, 2006), communication problems, and cognitive impairment (Press et al., 2009; Salvi et al., 2007), presents a challenge to the ED nurse. Therefore, assessment of older adults encompasses a comprehensive evaluation to detect critical health issues hidden within a complex clinical and social presentation. Whenever possible, and with the permission of the older adult, the emergency nurse should include the patient's significant other, family, and support person in the assessment process (Boltz et al., 2013). The three major components of assessment are triage, risk assessment to prevent adverse outcomes, and general assessment.

Triage/Primary Assessment

Accurate triage of elder patients is a key component of providing effective emergency care for this vulnerable population. The large number of ED visits by older adults, the growing problem of ED crowding, and the longer time it takes to evaluate older adults often result in delays at the point of triage (Brouns et al., 2015; Platts-Mills et al., 2010). Delays in triage are associated with increased waiting time, anxiety, and discomfort for older adults (Miró et al., 1999). Moreover, the resulting delay in treatment increases the risk for mortality, especially in older trauma patients (Perdue, Watts, Kaufmann, & Trask, 1998). Thus, there is a need for triage that promotes timely treatment.

The three widely used emergency patient triage methods are the Canadian Triage and Acuity Scale (CTAS), the Emergency Severity Index (ESI), and the Manchester Triage System (MTS). The performance of the MTS appears inferior in older patients than younger patients, illustrated by a worse predictive ability of the MTS for in-hospital mortality in older patients (Brouns et al., 2015). The ESI includes a comprehensive algorithm that describes symptoms, physiological indicators, and the resources anticipated to be used (Gilboy, Tanabe, Travers, & Rosenau, 2012). However, there has been reported under-triage in older adults when the ESI guidelines are not precisely followed (Platts-Mills et al., 2010). The CTAS has demonstrated high validity for older adults and it is an especially useful tool for categorizing severity and for recognizing older adults who require immediate life-saving intervention (Bullard, Unger, Spence, & Grafstein, 2008; Lee et al., 2011). See Table 44.1 for the CTAS levels and associated descriptions, examples of conditions, and recommended time to be seen by a physician in an ED.

Airway–Breathing–Circulation

The goal of the primary assessment is to identify and immediately treat the patient for all life-threatening conditions, incorporating prearrival information from emergency medical services (EMSs). During the assessment of *airway* patency, the emergency clinician considers the physiological changes with age that may alter patency of the airway. Dentures can occlude the airway if dislodged; additionally, dentures can cause difficulty with bag-valve mask ventilation of the airway. Kyphosis and other changes in spinal alignment may cause alterations in positioning of a cervical collar or spinal backboard, which may inhibit appropriate airway patency. Cervical rigidity may present challenges to establishing a definitive airway (Aresco & Stein, 2010). The quality of *breathing* and ventilation is evaluated. While

TABLE 44.1

Canadian Triage and Acuity Scale (CTAS) Used in an ED

Evidence Level	Description: Conditions That	Examples	Time to Be Seen by a Physician
1. Resuscitation	Pose threats to life or limb (or imminent risk for deterioration), requiring immediate aggressive interventions	Cardiac/respiratory arrest, major trauma, shock states, unconscious patients, severe respiratory distress, severe dehydration	Immediately 98% of the time
2. Emergent	Pose potential threat to life, limb, or function, requiring rapid medical intervention or delegated acts	Altered mental states, head injury, severe trauma, MI, overdose, and CVA	Less than or equal to 15 minutes 95% of the time
3. Urgent	Could potentially progress to a serious problem requiring emergency intervention. May be associated with significant discomfort or affect ability to function at work or activities of daily living.	Moderate trauma, asthma, GI bleeds, acute psychosis and/or suicidal thoughts, and acute pain	Less than or equal to 30 minutes 90% of the time
4. Less urgent/ semi-urgent	Are related to patient age, distress, or potential for deterioration or complications that would benefit from intervention or reassurance within 1–2 hours	Headache, corneal foreign body, and chronic back pain	Less than or equal to 1 hour 85% of the time
5. Nonurgent	May be acute but nonurgent as well as conditions that may be part of a chronic problem with or without evidence of deterioration	Sore throat, URI, mild abdominal pain (chronic or recurring), with normal vital signs, vomiting alone, and diarrhea alone	120 minutes 80% of the time

CVA, cerebrovascular accident; GI, gastrointestinal; MI, myocardial infarction; URI, upper respiratory infection.

assessing the volume of lung expansion and effectiveness of breathing, it is important to consider that pulmonary vascular tissue and parenchyma tissue may become stiff and cause decreased compliance as well as an increase in pulmonary vascular resistance. Lung capacity is diminished by alveolar changes in depth and width. Older adults are at risk for decreased respiratory reserve and arterial blood oxygenation, which can lead to decompensation sooner than their younger counterparts (Blumenthal, Plummer, & Gambert, 2010). Assessment of *circulation* may also be affected by physiological changes with increased age. Patients with cardiac history may be consuming antihypertensive medications or rate-control medications that may inhibit or alter the physiological responses. Additionally, hypertension in the patient may mask the signs of a lowered blood pressure caused by hypovolemic shock (Criddle, 2013).

Patients older than age 65 years are more likely to present with dysrhythmias. During the assessment phase, other causes of abnormal cardiac function should be evaluated, such as electrolyte imbalances, hypoxia, cardiac injury, or hypovolemia (McQuillan, Makic, & Whalen, 2009). Vague and, in some cases, nondramatic presentations indicate serious, life-threatening problems in older adults. Box 44.1 shows the common atypical presentation of geriatric emergencies. Additionally, "red flags" during triage that should be evaluated closely include acute change in mental status and/or physical function, dyspnea, fatigue, self-neglect, apathy, and falls (Gabayan et al., 2016).

Screening for Risk for Adverse Outcomes

Two commonly used tools, the Identification of Seniors at Risk (ISAR) and the Triage Risk Screening Tool (TRST), evaluate the presence or absence of risk factors for adverse outcomes. These tools are useful in guiding a plan to prevent avoidable complications during the ED stay, if admitted during hospitalization, and after an ED visit, when transitioning to home or another setting. The TRST (Box 44.2) is considered positive when an older adult has cognitive impairment or has two or more of the remaining risk factors and the screening has been found to be predictive of subsequent ED use, hospitalization, and NH admission (Meldon et al., 2003). The ISAR tool (Box 44.3) is positive when the score is greater than or equal to 2 and is a predictor of increased risk for death, institutionalization, functional decline, and both repeat ED visit and hospital admission in the following 6 months after an ED visit (McCusker et al., 1999). ISAR or TRST is administered

BOX 44.1

Atypical Presentation of Common Geriatric Emergencies

- Acute abdomen with constipation and decreased appetite, rather than severe pain
- Pneumonia with vague chest pain and dry cough, rather than fever
- Depression with agitation, rather than dysphoria
- Infection with falls, rather than fever or elevated white count
- Sepsis with functional decline and generalized weakness, rather than fever
- Myocardial infarction with dyspnea and confusion, rather than chest pain
- Heart failure with fatigue, rather than dyspnea

Source: Data from Fletcher, K. (2004). Geriatric emergencies part 1: Vulnerability and primary prevention. *Topics in Advanced Practice Nursing, 4*(2), 1–3. Retrieved from https://www.medscape.com/viewarticle/477731. *Evidence Level V.*

BOX 44.2

Triage Risk Screening Tool

- History or evidence of cognitive impairment (poor recall or not oriented)
- Difficulty walking or transferring or recent fall(s)
- Five or more medications
- ED use in previous 30 days or hospitalization in previous 90 days
- RN professional recommendation[a]

[a] Emergency department (ED) nurse (RN) concern for elder abuse/neglect, substance abuse, medication noncompliance, problems meeting instrumental activities of daily living, or other.

Source: Meldon, S. W., Mion, L. C., Palmer, R. M., Drew, B. L., Connor, J. T., Lewicki, L. J., … Emerman, C. L. (2003). A brief risk-stratification tool to predict repeat emergency department visits and hospitalizations in older patients discharged from the emergency department. *Academic Emergency Medicine, 10*(3), 224–232. doi:10.1197/aemj.10.3.224. *Evidence Level IV.*

by a nurse just after triage, to identify high-risk patients more likely to benefit from a comprehensive geriatric evaluation and follow-up, a longer observation time (or access to observation units), and appropriate referrals (primary physician, geriatric evaluation and management unit, and/or social service). Furthermore, all patients noted to be at risk who are admitted to the hospital are referred to case management; those who are discharged from the hospital can be followed up the following day, either through a home visit or telephone consultation (Salvi et al., 2012).

BOX 44.3

Identification of Seniors at Risk Tool

- Before the injury or illness, did you need someone to help you on a regular basis?
- Since the injury or illness, have you needed more help than usual?
- Have you been hospitalized for one or more nights in the past 6 months?
- In general, do you see well?
- In general, do you have serious problems with your memory?
- Do you take more than three medications daily?

Source: Data from McCusker, J., Bellavance, F., Cardin, S., Trépanier, S., Verdon, J., & Ardman, O. (1999). Detection of older people at increased risk of adverse health outcomes after an emergency visit: The ISAR screening tool. *Journal of the American Geriatrics Society, 47*(10), 1229–1237. doi:10.1111/j.1532-5415.1999.tb05204.x. *Evidence Level IV.*

General Assessment

At a minimum, the social history should address the person's living situation, marital status, work status, and advance directives. A social assessment also focuses on supports within the family and in the community. A way to assess this is to ask, "If something bad happened, who would you call?" Stressors related to loss, grief, relationship changes, and environmental factors are often antecedents to acute onset or exacerbation of illness and should be ascertained (Graf, Zekry, Giannelli, Michel, & Chevalley, 2011; Malik, Moore, Patton, O'Connor, & Nugent, 2018). In addition to the past medical/surgical history, medication use, and allergies, weight loss/changes in oral intake and details on recent changes in diagnosis or medication regimes are standard data. When evaluating the reason for coming to the ED, the nurse should elicit a comparison between the older adult's condition before the acute illness and new or exacerbated symptoms. Information about baseline cognition, mood, and physical function is essential because changes within these dimensions can be early and sensitive indicators of physiological dysfunction (Ellis, Marshall, & Ritchie, 2014; Hare, Wynaden, McGowan, & Speed, 2008).

Cognition and Mood

It is estimated that one-fourth of all older adults who present to the ED show impaired mental status associated with delirium, dementia, or both (Hustey & Meldon, 2002; Hustey, Meldon, Smith, & Lex, 2003). Although

common in older ED patients, cognitive impairment is often undetected (Hustey & Meldon, 2002; Lewis, Miller, Morley, Nork, & Lasater, 1995). The Geriatric Emergency Medicine Task Force recommends a mental status evaluation for all older adults presenting to the ED (Wilber, Lofgren, et al., 2005). The Six-Item Screener (immediate recall of three words; orientation to year, month, day of the week; recall of three words) is short and easy to use and detects cognitive impairment with a sensitivity of 94% and a specificity of 86% in the ED setting (Callahan, Unverzagt, Hui, Perkins, & Hendrie, 2002). If cognitive impairment is detected, the family or formal caregiver should be questioned regarding the baseline cognition; abrupt onset suggests delirium.

The Geriatric Emergency Department Guidelines (2014), developed by the Emergency Nurses Association, American College of Emergency Physicians, American Geriatrics Society, and Society for Academic Emergency Medicine, recommend a two-step process to assess for delirium. Step 1 (Figure 44.1) is the highly sensitive delirium triage screen (DTS). Step 2 is the highly specific Brief Confusion Assessment Method (bCAM; Han et al., 2013).

The DTS is comprised of two parts: (a) level of consciousness as measured by the Richmond Agitation Sedation Scale (RASS) and (b) inattention by spelling the word "LUNCH" backwards. If the patient has an RASS other than 0 (0 = alert and calm; Ely et al., 2003) or makes more than one error on the "LUNCH" backward spelling test, then the DTS is considered positive. The bCAM is then used to rule in delirium.

A variety of ED-appropriate dementia and mild cognitive impairment screening instruments have been validated; they are useful to reduce the probability of nondelirium cognitive impairment (dementia or mild cognitive impairment) rather than to rule in the diagnosis. During diagnosis of delirium, attention is paid to identify the underlying cause, which can be infection, medications, dehydration, electrolyte imbalance, alcohol/drug use or withdrawal, depression, stroke, or other neurological problems (Elie, Cole, Primeau, & Bellavance, 1998). Additionally, the following should be evaluated as risk factors for the development of delirium: decreased vision or hearing, decreased cognitive ability, severe illness, and dehydration/prerenal azotemia (Geriatric Emergency Department Guidelines Task Force, 2014).

Depression may interfere with the clinical presentation of acute medical disorders and results in a larger number of ED visits (Fabacher, Raccio-Robak, McErlean, Milano, & Verdile, 2002). Approximately one-third of older ED patients present with depression (Meldon et al., 2003; Sanders, 2001). The Emergency Department Depression Screening Instrument (ED-DSI) is appropriate for the detection of depression in the ED; it is brief, consisting of three questions (Do you often feel [a] sad and depressed? [b] helpless? [c] downhearted and blue?). The ED-DSI has a sensitivity of 79% and a specificity of 66% when compared with the longer Geriatric Depression Scale (Fabacher et al., 2002).

Physical Function

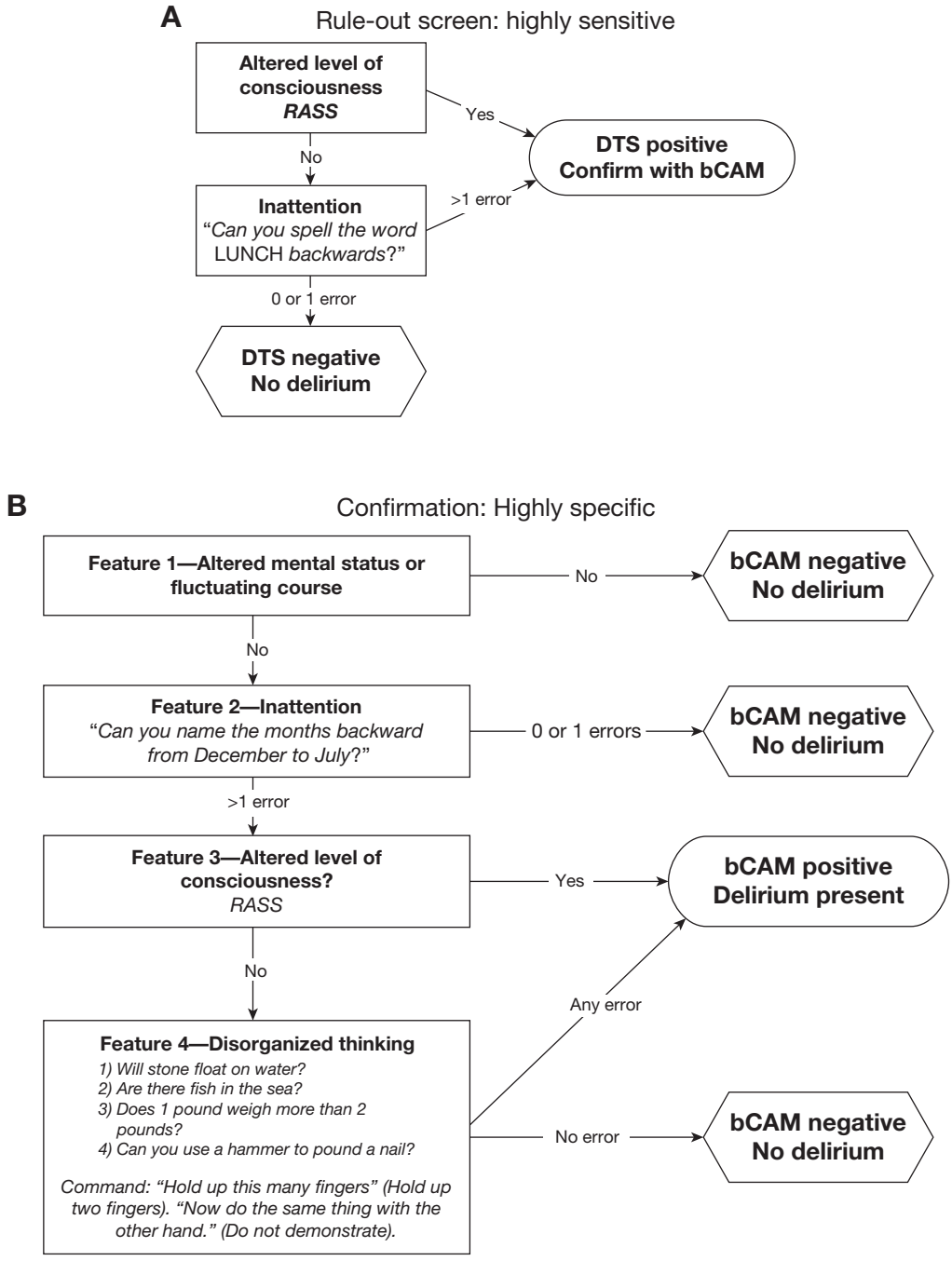
Physical function is an important metric of health in older adults, as described in Chapter 10, Assessment of Physical Function in the Older Adult. A recent loss of function often precedes a visit to the ED and can signify underlying illness (Wilber et al., 2006). Additional information on function is used to benchmark response to treatment as the patient transitions among various settings. Finally, the degree of services, including rehabilitation therapy, is largely guided by an assessment of functional status. Basic activities of daily living (ADLs) and instrumental activities of daily living (IADLs) function should be assessed for each patient, including capacity for dressing, eating, transferring, toileting, hygiene, ambulation, and medication adherence. Measurement needs to capture baseline function (before the acute admitting problem, typically 2 weeks before admission) as well as current functional performance. Physical function is appraised using a valid measure of basic function such as the Katz ADL Index (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963) or Barthel Index (Mahoney & Barthel, 1965) and IADLs using the Lawton IADL Scale (Lawton & Brody, 1969).

Medication Evaluation

A national surveillance study of adverse drug events (ADEs) and a national outpatient survey estimated that Americans aged 65 years or older have more than 175,000 ED visits for ADE yearly. One-third of ADE-related visits were attributed to three commonly prescribed drugs: warfarin, insulin, and digoxin (Budnitz, Shehab, Kegler, & Richards, 2007). Furthermore, older adults who are more frequent ED users have a greater number of potentially inappropriate medications (PIMs); they also tend to experience significant delay between hospital discharge and primary care follow-up (Wong, Marr, Kwan, Meiyappan, & Adcock, 2014). In addition to following established medication reconciliation processes, the emergency nurse has a pivotal role in facilitating systematic screening for polypharmacy and use of PIMs as well as detecting ADE in the ED (Samaras, Chevalley, Samaras, & Gold, 2010). For those patients who demonstrate polypharmacy, PIMs, and/or ADEs, and are admitted, a referral to the pharmacist and interdisciplinary

FIGURE 44.1

(A) Step 1: Delirium triage screen. (B) Brief Confusion Assessment Method.



bCAM, Brief Confusion Assessment Method; DTS, delirium triage screen; RASS, Richmond Agitation Sedation Scale.

Source: (A) Copyright Jin Ho Han. Vanderbilt University Medical Center. Retrieved from http://eddelirium.org/wp-content/uploads/2015/07/DTS-Flowsheet-07-09-2015-Revision-RASS-CORRECTED.pdf; (B) Han, J. H., Wilson, A., Vasilevskis, E. E., Shintani, A., Schnelle, J. F., Dittus, R. S., … Ely, E. W. (2013). Diagnosing delirium in older emergency department patients: Validity and reliability of the delirium triage screen and the brief confusion assessment method. *Annals of Emergency Medicine, 62*(5), 457–465. doi:10.1016/j.annemergmed.2013.05.003

team will enable collaborating with the attending physician to correct the medication problem (Geriatric Emergency Department Guidelines Task Force, 2014).

Fall Assessment

According to the Centers for Disease Control and Prevention (CDC, 2016), falls are the number one cause of nonfatal injuries treated in people older than age 65 treated in hospital ED. Furthermore, almost one-third of adults aged 65 years and older who fell in a bathroom were diagnosed with a fracture, and among adults aged 85 years and older, 38% were hospitalized as a result of their injuries (CDC, 2016).

The appropriate ED evaluation of an older adult who has fallen includes three components: (a) a thorough assessment for traumatic injuries, (b) an assessment of the cause of the fall, and (c) an estimation of future fall risk. Evaluation of the patient for injury should include a complete head-to-toe evaluation for all patients, including those presenting with seemingly isolated injuries. An EKG; complete blood count; standard electrolyte panel; evaluation of medications, including measurable levels; and appropriate imaging should be secured. For those older adults who present to the ED after a fall, traumatic injuries may be occult, presenting without classic signs or symptoms (Geriatric Emergency Department Guidelines Task Force, 2014). High-risk injuries, such as blunt head trauma, spinal fractures, and hip fractures, warrant a higher degree of suspicion and extensive workups (Sterling, O'Connor, & Bonadies, 2001). For example, hip fractures can present as isolated knee pain and can be underdetected on x-ray (Dominguez, Liu, Roberts, Mandell, & Richman, 2005; Guss, 1997). Older adults who have sustained head trauma, even when perceived by the patient to be slight, require neurological assessment and observation (Rathlev et al., 2006). Altered mental state, focal neurologic deficits, headache, and falls may indicate the presence of a chronic subdural hematoma (Adhiyaman, Asghar, Ganeshram, & Bhowmick, 2002).

A targeted interview with the patient and the family member should address previous falls as well as the location, activity, potential environmental factors, and symptoms preceding the actual fall. This description helps identify a fall as a result of an underlying pathology or general frailty. Falls may be the chief symptom of orthostatic hypotension, cardiovascular syncope, or carotid sinus syndrome (Mitchell, Richardson, Davies, Bexton, & Kenny, 2002). Other responsible pathologies may include acute myocardial infarction, infection, medications (side effects, interactions, and toxicity), metabolic disturbances, neurological event or conditions (e.g., seizure and transient ischemic attack), acute abdominal pathology, or elder abuse (Sanders, 1999). Finally, environmental factors, including physical hazards and unfamiliar surroundings, are common culprits.

A systematic review revealed the paucity of evidence in the literature regarding ED-based screening for risk for future falls among older adults (Carpenter et al., 2014). Six fall predictors were identified in more than one study (past falls, living alone, use of walking aid, depression, cognitive deficit, and more than six medications), with a self-report of depression associated with the highest likelihood of falling. Additionally, the assessment of the etiology of a fall will help determine if a patient will continue to be at risk for a fall at the time of discharge and the potential risk factors (Carpenter, Scheatzle, D'Antonio, Ricci, & Coben, 2009). This may include involving home health services (nursing, physical, or occupational therapies) to schedule a home safety evaluation. A home evaluation typically involves an assessment to determine if home modifications/hazard removal is needed as well as if use of assistive devices and proper footwear, medication management, and so forth, will decrease fall risk. Depending on hospital protocol, a physical therapy evaluation in the ED should be considered to ensure a safe discharge home, and is indicated for all patients admitted to the hospital after a fall (Aschkenasy & Rothenhaus, 2006). Communicating the details of the fall event and evaluation is critical during handoff to ensure mobilization of fall-prevention measures (see Chapter 23, Assessing, Managing, and Preventing Falls in Acute Care).

Substance Misuse

The ED may be the portal to treatment for older adults dealing with substance misuse. Alcohol is the drug that is most commonly misused by older adults, followed by tobacco and psychoactive prescription drugs, with trends indicating an increase in the numbers of older individuals using marijuana (Moore et al., 2009). *Misuse* is defined as the use of a drug for purposes other than that for which it was intended. Alcohol abuse is present in 6% to 11% of older persons admitted to the hospital, and 14% of older adults presenting to the ED have diagnosable alcoholism (Ferreira & Weems, 2008). Validated screening instruments for older adults, including the Alcohol Use Screening and Assessment for Older Adults, have shown to have good-to-excellent sensitivity and specificity (Ong-Flaherty, 2012). Other simple questions can also uncover a substance abuse problem. For example, the CAGE questionnaire, originally developed for alcohol (Ewing, 1984), has been modified to ascertain drug use and has been tested in older adults with some success. CAGE is an acronym for the four basic questions:

1. Have you felt you ought to *cut* down on your drinking or drug use?
2. Have people *annoyed* you by criticizing your drinking or drug use?
3. Have you felt bad or *guilty* about your drinking or drug use?
4. Have you ever had a drink or used drugs first thing in the morning to steady your nerves, get rid of a hangover, or get the day started (as an *eye-opener*)?

A complete social evaluation is vital given that social risk factors play a role in substance misuse. It is important to evaluate the patient's social network and identify which members are supportive of treatment and which are potentially hazardous to the patient. Harmful network members include active substance abusers; those who "enable" the patient's misuse; and those who abuse the patient physically, sexually, or emotionally. In addition, the evaluation should make sure the patient has adequate housing and access to food, adequate transportation, and medical care. The patient's mood, cognition, sleep patterns, and mental health history, including past treatment, should also be ascertained (Ross, 2005).

When there is evidence of substance misuse, nursing interventions focus on (a) monitoring for withdrawal; (b) providing an environment that is safe from potential harm to the patient; and (c) collaborating with the patient, family, physician, and social worker to secure a mental health evaluation and program directed to the substance abuse needs and support. If the patient is admitted to the hospital, careful handoff should include the communication of the patient's history and clinical findings as well as safety issues, including fall risk and the presence of delirium (Center for Substance Abuse Treatment, 1998).

Elder Mistreatment

EDs are often the first point of contact for elder mistreatment (EM) victims (Fulmer, Paveza, Abraham, & Fairchild, 2000). EM includes physical, verbal, sexual, and psychological abuse, as well as abandonment, exploitation, and neglect (Acierno et al., 2010). The ED nurse needs to be vigilant to recognize the clinical features of EM and to know the organization's policies for reporting suspected EM, as required by The Joint Commission on Accreditation and state mandatory reporting requirements (Dong, 2012; Falk, Baigis, & Kopac, 2012). The clinician should look for red flags of mistreatment—delays in seeking treatment, signs of withholding or giving too much medication, missed appointments, use of several hospitals, driving to a hospital farther away from home, description of an event that does not fit the injury sustained, and repetitive injuries (Heath & Phair, 2009). Signs of caregiver indifference, berating or threatening comments, hypervigilant/possessive behavior, or excessive concerns over finances warrant suspicion of EM (Bond & Butler, 2013; Stiegel, Klem, & Turner, 2007).

When EM is suspected, it is recommended to separate the older adult from the caregiver and obtain a detailed history and physical assessment; interviewing the patient about his or her feelings of safety is important (Bond & Butler, 2013). Care needs to be taken by clinicians to secure a careful medical history, including baseline conditions, and conduct a comprehensive physical examination. Physical examination cues may include poor hydration; poor hygiene; suspicious injuries in unusual locations and bruises in various stages of healing; and unexplained abrasions and/or markings on skin, including human bite marks, skin tears, pressure ulcers, or genital complaints, including infections or injury (Dong, 2017; Stiegel et al., 2007). Additional information on EM can be found in Chapter 16, Elder Mistreatment Detection.

NURSING INTERVENTIONS

Delirium and Dementia

In addition to collaborating with the physician to detect cognitive impairment, including delirium or delirium superimposed on dementia, the nurse provides key interventions to prevent delirium and promote comfort and safety. Strategies include controlling the environment: (a) supporting the family/familiar person (or volunteer) present with the patient; (b) providing sensory aides (glasses and hearing aids and offering hearing amplifiers and magnifiers as indicated); (c) controlling noise; (d) avoiding excessively bright lights when possible; and (e) providing comfort measures, including fluids and a warm blanket. Additional nursing interventions include promoting mobility and addressing need for pain management, toileting, rest/sleep, and fluid/hydration (Hshieh et al., 2015; Rivosecchi, Smithburger, Svec, Campbell, & Kane-Gill, 2015). Invasive procedures should be avoided as much as possible. Alternatives to physical restraints should be employed, such as camouflaging dressings and securing intravenous and other lines to promote comfort. Adapting communication to cognitive loss through the use of verbal and physical cues, brief and clear instructions, and inclusion of family in the sharing of information and decision-making will promote a sense of security for the patient and promote effective collaboration with family (Boltz, Chippendale, Resnick, & Galvin, 2015; Boltz, Resnick, Chippendale, & Galvin, 2014).

When delirium is detected, interventions are aimed at reversing the cause (which may include the use of supplemental oxygen, hydration, etc.) while continuing to provide supportive preventive measures. The use of physical and chemical restraints should be avoided (American Association of Critical Care Nurses, 2011). For more information on restraints, see Chapter 27 Physical Restraints and Side Rails in Acute and Critical Care Settings. Education about the etiology of delirium and planned interventions will reassure anxious family members and help enlist their involvement in promoting safety and comfort for the patient (Boltz et al., 2014, 2015).

Prevention of Falls and Related Injuries

The aforementioned interventions will also mitigate the risk for falls and injuries. In addition to addressing modifiable fall risk factors, such as offending medications or dehydration, attention to the patient's safety is paramount (Christopher, Carpenter, Cameron, Ganz, & Liu, 2019). Patients often fall when trying to get out of bed unsupervised or unassisted; bedrails do not reduce the amount of falls and may increase the severity of the fall (Capezuti, Maislin, Strumpf, & Evans, 2002). For the person who is at risk for injury as a result of cognitive impairment, weakness, and low mobility, and who is nonambulatory and at risk for leaving the bed unsafely, low beds should be considered with bedside mats. Close oversight is essential (Capezuti et al., 2002). Encouraging physical activity (e.g., range of motion) and helping the older adult to walk to the bathroom when possible or use of a commode is helpful to prevent early deconditioning and thereby to mitigate fall risk (Alexander, Kinsley, & Waszinski, 2013; Capezuti et al., 2002).

The Geriatric Emergency Department Guidelines recommend that EDs make an effort to align their physical and personnel resources with the physical needs of the older adult patient. Equipment to prevent falls in the ED should include: (a) rubber or nonskid flood surfaces/mats; (b) even floor surfaces; (c) handrails on walls and hallways; (d) aisle lighting; (e) bedside commodes and grab bars in restrooms; (f) bedrails properly positioned and functioning (avoid use of full rails); and (g) patient gown and hospital clothing that minimize fall risk (long, baggy, loose tie strings, etc.). The guidelines also recommend expedited outpatient follow-up for those patients discharged from the ED/hospital to address fall risk factors (Patterson et al., 2018), conduct home safety assessments, and provide walkers and other gait assistance devices as needed on discharge (Geriatric Emergency Department Guidelines Task Force, 2014).

Prevention of Pressure Ulcers

The use of pressure-redistributing foam mattresses has shown to be a cost-effective approach to prevent ED-acquired pressure ulcers (Pham et al., 2011). The use of reclining chairs in the ED instead of ED gurney beds has been shown to reduce pain and improve patient satisfaction (Wilber, Burger, Gerson, & Blanda, 2005). Evidence-based guidelines to prevent and manage pressure ulcers (as described in Chapter 28, Preventing Pressure Injuries and Skin Tears) should be followed, including skin assessment, pressure relief/off-loading, prevention/treatment of infection, pain control, and nutritional evaluation and management (Ayello, 2011; Reddy, Gill, & Rochon, 2006).

Prevention of Catheter-Associated Urinary Tract Infection

A catheter-associated urinary tract infection (CAUTI) is a urinary tract infection (UTI) that occurs while a patient has an indwelling urinary catheter (IUC) or within 48 hours of its removal. The use of preventive practices is associated with a lower incidence of CAUTIs. These practices include avoiding unnecessary urinary catheter use, removal prompts and nurse-initiated urinary catheter discontinuation protocols, alternatives to indwelling urinary catheterization, portable bladder ultrasound monitoring, and insertion care and maintenance (Oman et al., 2012; Saint et al., 2013). For more information on CAUTI, see Chapter 26, Prevention of Catheter-Associated Urinary Tract Infection.

In the ED, the identification of appropriate patients for urinary catheter insertion is an essential component of a protocol to prevent CAUTIs. According to the Infectious Disease Society of America and other expert opinion (Apisarnthanarak et al., 2007; Fink et al., 2012; Saint et al., 2013), these indications are as follows: (a) urinary retention/obstruction; (b) need for very close monitoring of urine output and patient unable to use urinal or bedpan; (c) open wound in sacral or perineal area with urinary incontinence; (d) patient too ill, fatigued, or incapacitated to use alternative urine collection method; (e) patient status after recent surgery, hip fracture, emergency pelvic ultrasound, neurogenic bladder, and other urologic problems; and (f) hospice/palliative care. After receiving a physician order with the appropriate indications documented, the nurse should insert the indwelling catheter as per protocol, using the smallest size catheter and sterile technique (Fink et al., 2012; Hooton et al., 2010). There should be a plan for the earliest removal, which is communicated during the handoff to the nurse on the transferred unit. Daily catheter rounds guide decision-making for continued use or removal of indwelling catheters (Wald & Kramer, 2011).

TRANSITIONS FROM THE ED

In a 12-state survey study of a combined 65.5 million ED visits from 2006 to 2007, carried out with patients older than 65 years, approximately 40% had medication errors after a hospital discharge, and 18% of Medicare patients discharged from a hospital were readmitted within 30 days (Steiner, Barrett, & Hunter, 2010). Older ED patients have identified misinformation, a factor associated with ED readmissions, as a primary source of dissatisfaction with ED care. Factors associated with misinformation include underrecognition of cognitive dysfunction, lower health literacy, and financial impediments for prescriptions and recommended outpatient follow-up (Baraff et al., 1992; Carpenter et al., 2009; Han et al., 2011).

ED-based interventions that emphasize patient education and care coordination have demonstrated mixed results on the rate of ED readmissions and the prevention of complications (Basic & Conforti, 2005; Corbett, Lim, Davis, & Elkins, 2005; Hegney et al., 2006). Experts agree, however, that the transition from the ED to other settings includes four systematic processes: discharge planning, patient/family education, handoff, and follow-up (Geriatric Emergency Department Guidelines Task Force, 2014).

Discharge Planning

Discharge planning from the ED is a multidisciplinary process that includes the family or significant others. The process is tailored to the individual needs of the older adult patient according to his or her discharge diagnosis and the destination setting. Components of discharge planning include (a) evaluation of the clinical status related to the admitting problem, (b) assessment of physical and psychosocial functional status (including fall/safety risk), (c) risk assessment for subsequent functional decline (e.g., ISAR or TRST), (d) assessment of caregiver availability and ability, (e) an appraisal of the patient/family readiness and ability to learn, (f) medication review, (g) review of advance directives, and (h) referrals with follow-up arrangements (Centers for Medicare & Medicaid Services [CMS], 2019). If the assessment by the nurse, physician, and other relevant disciplines determines that post-ED care is indicated, active engagement of patients and families and offering a range of options will support the patient's preferences and goals (Popejoy, 2011). The CMS (2014) recommends that the EDs maintain a complete and accurate file of appropriate community-based services, supports, and facilities to which the patient can be referred.

Patient/Family Education

Older adults often rely on the support of family and friends in the ED. ED patients frequently do not understand their discharge instructions (Crane, 1997; Jolly, Scott, Feied, & Sanford, 1993; Zavala & Shaffer, 2011). Education and information should be communicated in a concise manner, using the teach-back method. In a study of patient and caregiver understanding of discharge instructions, the investigators assessed patient and caregiver understanding of discharge instruction in four domains: (a) diagnosis and cause, (b) ED care, (c) post-ED care, and (d) return instructions. Seventy-eight percent of participants demonstrated deficient comprehension in at least one domain. Greater than one-third of the deficiencies involved understanding of post-ED care (Engel et al., 2009). Within the emergency medicine literature, commonly cited challenges to patient/caregiver understanding are limited literacy and numeracy (Ginde, Clark, Goldstein, & Camargo, 2008; Ginde, Weiner, Pallin, & Camargo, 2008). Adding to the problem, print discharge instructions are often not written at appropriate reading levels (Jolly et al., 1993; Williams, Counselman, & Caggiano, 1996).

To address these challenges, written instructions should be at the sixth-grade level (established using a literacy calculator). It is recommended that nurses use plain language, focusing on "need-to-know" information and limiting the documents to essential content to avoid information overload (McCarthy et al., 2012). Also, information and educational material should be provided in large font suitable for older adults. The use of the teach-back method has demonstrated a positive impact on recall of discharge instructions in the ED regardless of age and education (Slater, Dalawari, & Huang, 2013). This teaching method assesses the effectiveness of teaching by having the person explain and/or demonstrate back to the nurse what he or she has just been taught, ensuring that the patient is actively involved in the teaching process (Schillinger et al., 2003).

The nurse may use a standardized tool that assesses older adults' ability to self-administer their medication such as the Drug Regimen Unassisted Grading Scale (DRUGS), which takes approximately 5 minutes to complete. This tool requires subjects to perform the following four tasks with each of their medications: (a) identify the appropriate medication, (b) open the container, (c) select the correct dose, and (d) report the appropriate timing of doses (Edelberg, Shallenberger, Hausdorff, & Wei, 2000; Kripalani et al., 2006).

Handoff

Communication with primary care providers regarding an ED visit is considered to be a necessary process, particularly for vulnerable elders (ACOVE-3 Investigators, 2007). In an effort to improve continuity of care between the ED and other settings, the Geriatric Emergency Department Guidelines Task Force (2014) recommends standardized information be provided to the patient/family and outpatient care providers, including NHs and primary care providers (Box 44.4). Structured focus group interviews with NH staff, ED staff, and a county-wide EMS system identified the following additional approaches to support handoffs between EDs and NHs: (a) a verbal report from ED nurses provided to the NH as well as written documentation, (b) an emergency form in NH residents' charts that contains predocumented information with an area to write in the reason for transfer, and (c) brief NH-to-ED and ED-to-NH transfer forms that are accepted and used by local NHs and EDs (Terrell & Miller, 2006). Additionally, streamlined, structured data-sharing between healthcare systems, hospitals, clinics, and the SNFs is also an emerging systems-based priority to promote safe and effective transitions (Vollbrecht, Biese, Hastings, Ko, & Previll, 2018).

Interventions to Reduce Acute Care Transfers (INTERACT) is a publicly available quality improvement program that focuses on improving the identification, evaluation, and management of acute changes in condition of NH residents (J. G. Ouslander, Bonner, Herndon, & Shutes, 2014). One INTERACT objective is to improve communication between the ED and the NH (J. F. Ouslander, Scnelle, & Han, 2015). INTERACT tools include a checklist of key transfer documents, lists of critical data for interfacility communication at the time of transfers, and a medication reconciliation form. The "Nursing Home to Hospital Transfer Form" has information for ED clinicians to make informed decisions about evaluation and management of the transferred resident. When transferring an NH resident back to the NH, the ED may use the "Hospital to Post-Acute Care Transfer Form," which provides critical time-sensitive information essential to provide care in the first 48 to 72 hours after transfer (J. G. Ouslander et al., 2014).

Follow-Up

Telephone follow-up is recommended for patients discharged from the ED; home visits are ideally provided to high-risk individuals. Telemedicine alternatives hold promise for effective follow-up and should be considered, especially in rural areas (Kessler, Williams, Moustoukas, & Pappas, 2013).

BOX 44.4

Standardized Discharge Information

- Presenting complaints
- Test results and interpretation
- ED therapy and clinical response
- Consultation notes (in person or via telephone) in ED
- Working discharge diagnosis
- ED physician note or copy of dictation
- Patient condition (including fall risk and functional and cognitive status)
- New prescriptions and alterations with long-term medications
- Discharge recommendations: physical activity, diet, and resources/services
- Support systems
- Advance directives
- Follow-up plan

Source: Geriatric Emergency Department Guidelines Task Force. (2014). The geriatric emergency department guidelines. *Annals of Emergency Medicine, 63*(5), e7–25. doi:10.1016/j.annemergmed.2014.02.008. *Evidence Level VI.*

CASE STUDY 44.1

EMS transported an 86-year-old woman to the ED from a nearby assisted living facility (ALF). She was evaluated 3 days ago in the ED for UTI presenting with increased lethargy and a fall without injury. She was started on antibiotic therapy and returned to the ALF. Forty-eight hours later, a nurse from the ALF contacted the on-call physician to report continued confusion, poor oral intake, and declining functional status. She was sent back to the ED; her daughter is alarmed by her confusion and inability to respond to questions coherently, stating, "She is normally as clear as a bell." Transfer records indicate new-onset urinary and fecal incontinence in addition to the mental status changes. As the triage nurse identifies the emergent nature of the patient's condition because of the change in mental status, she is evaluated by the physician within 15 minutes of arrival. Before this, the ED nurse determines her past medical history (positive for hypertension, depression, and gastroesophageal reflux disease [GERD]), baseline cognition of being oriented times three with no apparent problems with recall and managing her daily routine at the ALF, and requiring assistance getting in and out of the bathtub. The Six-Item

(*continued*)

CASE STUDY 44.1 (*continued*)

Screener indicates impaired recall and orientation and the bCAM is positive for delirium.

The patient's medications include verapamil SR = 360 mg daily, donapezil = 10 mg daily, levofloxacin = 500 mg daily, ranitidine = 150 mg daily, hydrochlorothiazide (HTCZ) = 12.5 mg daily, and paroxetine 20 = mg daily. The labs are remarkable for a blood urea nitrogen (BUN) of 42 and creatinine of 2.6, and urinalysis with 15 to 20 red blood cells (RBCs) per high-power field, 0 to 2 white blood cells (WBCs) per high-power field, +1 protein, and +2 leukocyte esterase.

The ED nurse ascertains that a UTI is a likely cause of delirium. Additionally, the patient's medications may be contributing to her altered cognition. Ranitidine and paroxetine (unlike most other selective serotonin reuptake inhibitors [SSRIs]) exhibit anticholinergic activity and sedation as a side effect. Verapamil can cause constipation, which can contribute to UTI and delirium. Quinolone antibiotics cause delirium in a small percentage of older adults. A medication review is conducted with the physician and pharmacist to eliminate offending agents.

Important nursing interventions focus on safety, comfort, and preventing complications. The nurse encourages the daughter to stay with the patient, and advises her to let the staff know when she needs to leave, in which case a volunteer will cover. The patient is located in a quiet area, with gentle lighting and warming blankets. A pressure-relieving mattress and repositioning are provided to prevent ED-acquired pressure ulcers. The intravenous line is camouflaged and secured to minimize discomfort, as an alternative to a physical restraint. The nurse provides education to the daughter about delirium, including the plan to correct the probable causes, as well as interventions to support comfort and recovery (including familiar presence, calm approach, early mobility, and adequate food/fluids). The case manager covering the ED and the receiving nurse on the medical floor are notified of the patient's risk for functional decline, NH placement, and subsequent readmission, based on her TRST findings (cognitive impairment, use of five or more medications, recent fall, recent ED admission, and need for ADL support). During the handoff to the medical floor, the following are communicated: the patient's health and social history; details of ED admission, including findings; baseline and current cognitive status; fall and pressure ulcer risk; and daughter's involvement in her care. The daughter is present during the handoff.

SUMMARY

The nurse has the opportunity to positively influence the experience and outcomes of the older adult admitted to the ED. Careful assessment and planning as well as considering age-related changes and the interaction of the acute illness with comorbid conditions are critical to prevent complications and promote resolution of the admitting problem. Clear and comprehensive communication during transitions and engaging family in care delivery and decision-making support effectiveness and patient comfort. The nurse also plays a critical role in leading an interdisciplinary review of the national GED Guidelines and systematically addressing the specific education needs of their own staff regarding older adult ED patients (Schumacher, Hirshon, Magidson, Chrisman, & Hogan, 2018).

NURSING STANDARD OF PRACTICE

Protocol 44.1: Care of the Older Adult in the Emergency Department

I. GOALS

To ensure nurses in acute care are able to:

A. Identify evidence-based approaches and tools to assess the older adult in the ED
B. Describe interventions to prevent and manage geriatric syndromes in the ED
C. Discuss approaches to support effective transitions from the ED

(*continued*)

Protocol 44.1: Care of the Older Adult in the Emergency Department (*continued*)

II. OVERVIEW

A. One in five patients aged 65 to 74 years and one in four patients aged 75 years and older visit the ED each year (Albert et al., 2013).
B. The ED is:
   1. The portal to other settings, including the hospital, long-term care, and mental health facilities (Samaras et al., 2010)
   2. Used for the performance of complex diagnostic workups, overflow, and off-hour medical care
   3. For some older adults, the only source of healthcare evaluation and treatment (Gonzalez Morganti et al., 2013; Stefanacci & Riddle, 2018)

III. BACKGROUND AND STATEMENT OF THE PROBLEM

A. As compared to younger people, older adults:
   1. Have more diagnostic tests, longer stays in the ED, and are more likely to be admitted to the hospital (Banerjee et al., 2011)
   2. Are more likely to be readmitted on discharge from the ED; they also risk functional loss and higher rates of mortality (McCusker et al., 2007; Niska et al., 2010; Sklar et al., 2007)
   3. Are more likely to experience missed or incorrect diagnoses (Salvi et al., 2007), inadequate pain management (Hwang et al., 2010; Iyer, 2011), and less information (Baillie, 2005; George et al., 2006)

IV. ASSESSMENT OF THE OLDER ADULT IN THE ED

A. Triage/primary assessment
   1. Delays in triage for older adults are associated with increased waiting time, anxiety, and discomfort (Miró et al., 1999), and increased risk for mortality (Perdue et al., 1998).
   2. Tools
      a. The CTAS demonstrated high validity for older adults, which is especially useful for categorizing severity and for recognizing older adults who require immediate life-saving intervention (Bullard et al., 2008; Lee et al., 2011).
      b. The ESI includes a comprehensive algorithm that describes symptoms and physiological indicators as well as the resources anticipated to be used (Gilboy et al., 2012). There are reports of under-triage using this tool when guidelines are not precisely followed (Platts-Mills et al., 2010).
   3. A–B–C: identify and treat life-threatening conditions
      a. Airway: challenges to establishing an airway include the presence of dentures, kyphosis, and cervical rigidity (Aresco & Stein, 2010).
      b. Breathing and ventilation: consider age-related changes, including decreased pulmonary compliance, respiratory reserve, and arterial oxygenation (Blumenthal et al., 2010).
      c. Circulation: use of antihypertensive medication may inhibit physiological response and/or mask signs of hypovolemic shock (Criddle, 2013).
   4. Consider atypical presentation and "red flags" (acute change on mental status and/or physical function, dyspnea, fatigue, self-neglect, apathy, and falls; Fletcher, 2004).
B. Screen for risk for adverse outcomes: useful in guiding a plan to prevent avoidable complications during the ED stay, if admitted during hospitalization, and after an ED visit when transitioning to home or another setting
   1. TRST: is predictive of subsequent ED use, hospitalization, and NH admission (Meldon et al., 2003)
   2. ISAR: is predictive of increased risk for death, institutionalization, functional decline, and both repeat ED visit and hospital admission in the following 6 months after an ED visit (McCusker et al., 1999)
C. General assessment
   1. History
      a. Social history: living situation, marital status, work status, advance directives, supports within family and community, and stressors (Graf et al., 2011)

(continued)

Protocol 44.1: Care of the Older Adult in the Emergency Department (*continued*)

   b. Past medical/surgical history: medication use, allergies, weight loss/changes in oral intake, and recent changes in diagnosis or medication regimens
   c. Baseline cognition, mood, and physical function: early and sensitive indicators of physiological dysfunction (Ellis et al., 2014; Hare et al., 2008)
2. Cognition and mood
   a. Cognitive impairment: Geriatric Emergency Medicine Task Force recommends a mental status examination for older adults presenting to ED (Wilber et al., 2005).
      i. Six-Item screener (Callahan et al., 2002)
   b. Delirium: suggested by abrupt onset of cognitive impairment
      i. Two-step process included in the Geriatric Emergency Department Guidelines Task Force (2014): delirium triage screen followed by the Brief Confusion Assessment Method (Han et al., 2013)
   c. Depression: may interfere with clinical presentation and may be associated with greater number of ED visits (Meldon et al., 2003; Sanders, 2001)
      i. ED-DSI: three-question screener (Fabacher et al., 2002)
3. Physical function: recent loss often precedes the visit to the ED and can signify underlying illness (Wilber et al., 2006).
   a. Basic ADL: Katz ADL index (Katz et al., 1963) or Barthel index (Mahoney & Barthel, 1965)
   b. IADL: Lawton IADL Scale (Lawton & Brody, 1969)
4. Medications:
   a. ADEs: one-third are related to one of the following: warfarin, insulin, or digoxin (Budnitz et al., 2007).
   b. PIMs: greater number is associated with frequent ED use (Wong et al., 2014).
   c. Geriatric Emergency Department Guidelines Task Force (2014) recommendations:
      i. Medication reconciliation
      ii. Screening for polypharmacy, PIMs, ADEs; collaborate with pharmacist and interdisciplinary team as indicated, and attending physician to correct.
5. Falls: number one cause of nonfatal injuries in people older than 65 years treated in hospital EDs. (CDC, 2016)
   a. ED evaluation
      i. Assess for injury (consider occult presentation): complete physical examination; EKG; complete blood count; electrolytes; medication evaluation, including measurable levels; and appropriate imaging (Adhiyaman et al., 2002; Dominguez et al., 2005; Rathlev et al., 2006; Sterling et al., 2001)
      ii. Assess the cause of the fall (Mitchell et al., 2002; Sanders, 1999).
   b. Targeted interview with patient and family: previous falls, location, activity, potential environmental factors, and symptoms preceding the fall
   c. Comprehensive history and physical examination
      i. Estimation of future fall risk: guided largely by determination of reasons for past falls (Carpenter et al., 2009)
6. Substance misuse
   a. Misuse defined: use of a drug for purposes other than that for which it was intended
   b. Alcohol abuse: present in 14% of older adults presenting to the ED
      i. Screening tool: Alcohol Use Screen and Assessment in Older Adult has been shown to have good-to-excellent sensitivity and specificity (Ong-Flaherty, 2012).
   c. Evaluation (Center for Substance Abuse Treatment, 1998)
      i. Patient's social network: identify which members are supportive of treatment and which members are potentially hazardous to the patient. Harmful network members include active substance abusers; those who "enable" the patient's misuse; and those who abuse the patient physically, sexually, or emotionally.
      ii. Patient's mood, cognition, sleep patterns, and mental health history, including past treatment, should also be ascertained.

(*continued*)

Protocol 44.1: Care of the Older Adult in the Emergency Department (*continued*)

iii. It should also be verified that the patient has adequate housing and access to food, adequate transportation, and medical care (Ross, 2005).
iv. When there is evidence of substance misuse, nursing interventions focus on (a) monitoring for withdrawal; (b) providing an environment that is safe from potential harms to patient; (c) collaborating with the patient, family, physician, and social worker to secure a mental health evaluation and program directed to the substance abuse needs and support.
v. Careful handoff should include the communication of the patient's history and clinical findings as well as safety issues, including fall risk and the presence of delirium.

7. EM
   a. Definition: physical, verbal, sexual, and psychological abuse, as well as abandonment, exploitation, and neglect (Acierno et al., 2010)
   b. Nurse is expected to know the organization's policies for reporting suspected EM, as required by The Joint Commission on Accreditation and state mandatory reporting requirements (Dong, 2012; Falk et al., 2012).
   c. Red flags of EM: delays in seeking treatment; signs of withholding or giving too much medication; missed appointments; use of several hospitals; driving to a hospital farther away from home; description of an event that does not fit the injury sustained; repetitive injuries (Heath & Phair, 2009); and signs of caregiver indifference, berating or threatening comments, hypervigilant/possessive behavior, or excessive concerns over finances warrant suspicion of EM (Bond & Butler, 2013; Stiegel et al., 2007)
   d. When EM is suspected:
      i. Separate the older adult from the caregiver and obtain a detailed history and physical assessment; interviewing the patient about his or her feelings of safety is an important screening question (Bond & Butler, 2013).
      ii. Conduct a careful medical history, including baseline conditions, and a comprehensive physical examination.
         a) Physical examination cues may include poor hydration; poor hygiene; suspicious injuries in unusual locations and bruises in various stages of healing; and unexplained abrasions and/or markings on skin, including human bite marks, skin tears, pressure ulcers, or genital complaints, including infections or injury (Stiegel et al., 2007).
         b) Follow mandatory reporting procedures.

V. NURSING CARE STRATEGIES

A. Delirium and dementia
   1. Preventing delirium
      a. Control the environment:
         i. Support the family/familiar person (or volunteer) present with the patient.
         ii. Provide sensory aids (glasses and hearing aids, and offer hearing amplifiers and magnifiers as indicated).
         iii. Control noise.
         iv. Avoid excessively bright lights when possible.
         v. Provide comfort measures, including fluids and a warm blanket.
      b. Additional nursing interventions include promoting mobility and addressing the need for pain management, toileting, rest/sleep, and fluid/hydration (Hshieh et al., 2015; Rivosecchi et al., 2015).
   2. Managing delirium: in addition to interventions aimed at reversing the cause:
      a. Continue to provide aforementioned supportive measures.
      b. Avoid physical and chemical restraints (American Association of Critical Care Nurses, 2011).
      c. Educate patient/family about the etiology of delirium and interventions.
      d. Involve family in promoting safety and comfort for the patient (Boltz et al., 2014, 2015).

(*continued*)

Protocol 44.1: Care of the Older Adult in the Emergency Department (*continued*)

B. Prevention of falls and related injuries
   1. Collaborate with the interdisciplinary team to modify fall risk (e.g., correct orthostasis, remove offending medications, etc.; Alexander et al., 2013).
   2. Provide close oversight (Capezuti et al., 2002).
   3. Encourage physical activity (e.g., range of motion).
   4. Pay attention to toileting (Alexander et al., 2013; Capezuti et al., 2002).
   5. For the person who is at risk for injury caused by cognitive impairment, weakness, and low mobility, provide low beds with bedside mats (Capezuti et al., 2002).

C. Prevention of pressure ulcers
   1. The use of pressure-redistributing foam mattresses has shown to be a cost-effective approach to prevent ED-acquired pressure ulcers (Pham et al., 2011).
   2. The use of reclining chairs in the ED instead of ED gurney beds has been shown to reduce pain and improve patient satisfaction (Wilber, Burger, et al., 2005).
   3. Evidence-based guidelines to prevent and manage pressure ulcers should be followed, including skin assessment, pressure relief/off-loading, prevention/treatment of infection, pain control, and nutritional evaluation and management (Ayello, 2011; Reddy et al., 2006).

D. Prevention of CAUTI
   1. Definition: a UTI that occurs while a patient has an IUC or within 48 hours of its removal.
   2. Preventive practices
      a. Avoid unnecessary urinary catheter use (Apisarnthanarak et al., 2007; Fink et al., 2012; Hooton et al., 2010; Saint et al., 2013).
      b. Consider removal prompts and nurse-initiated urinary catheter discontinuation protocols (Fink et al., 2012).
      c. Use an aseptic technique and sterile products during catheter insertion; maintain cleanliness (Oman et al., 2012; Saint et al., 2013).
      d. Handoff: communicate plan/need for surveillance and for the earliest removal (Wald & Kramer, 2011).

VI. TRANSITIONS FROM THE ED

A. Problem: misinformation (Steiner et al., 2010)
   1. Primary source of older adults' dissatisfaction with ED care
   2. Contributes to readmission

B. Factors associated with misinformation include underrecognition of cognitive dysfunction, lower health literacy, and financial impediments for prescriptions and recommended outpatient follow-up (Baraff et al., 1992; Carpenter et al., 2014; Han et al., 2011).
   1. Three systematic processes to ensure appropriate transfer of information to patient/family and providers (Geriatric Emergency Department Guidelines Task Force, 2014):
      a. Discharge planning
         i. Components: (a) evaluation of the clinical status related to the admitting problem, (b) assessment of physical and psychosocial functional status (including fall/safety risk), (c) risk assessment for subsequent functional decline (e.g., ISAR or TRST), (d) assessment of caregiver availability and ability, (e) an appraisal of the patient/family readiness and ability to learn, (f) medication review, (g) review of advance directives, and (h) referrals with follow-up arrangements (AHRQ, 2009; CMS, 2014)
         ii. Patients and families prefer active engagement and a range of options will support the patient's preferences and goals (Popejoy, 2011).
         iii. CMS (2014) recommends that EDs maintain a file of appropriate community-based services, supports, and facilities to which the patient can be referred.

(*continued*)

Protocol 44.1: Care of the Older Adult in the Emergency Department (*continued*)

b. Patient/family education
   i. Challenges to patient/caregiver understanding are limited literacy and numeracy (Ginde, Clark, et al., 2008; Ginde, Weiner, et al., 2008).
   ii. Print discharge instructions are often not written at appropriate reading levels (Jolly et al., 1993; Williams et al., 1996).
   iii. To address challenges (Geriatric Emergency Department Guidelines Task Force, 2014):
      a) Written instructions should be at the appropriate grade level (established using a literacy calculator).
      b) Use plain language, focusing on "need-to-know" information, limiting the documents to essential content in order to avoid information overload (McCarthy et al., 2012).
      c) Information and educational material should be provided in large font suitable for older adults
      d) Use the teach-back method (Schillinger et al., 2003; Slater et al., 2013).
      e) Use a standardized tool that assesses older adults' ability to self-administer medication such as the DRUGS. This tool requires subjects to perform the following four tasks with each of their medications: (a) identify the appropriate medication, (b) open the container, (c) select the correct dose, and (d) report the appropriate timing of doses (Edelberg et al., 2000; Kripalani et al., 2006)

c. Handoff
   i. Recommended standardized information (Geriatric Emergency Department Guidelines Task Force, 2014) to provide cross-settings:
      a) Presenting complaints
      b) Test results and interpretation
      c) ED therapy and clinical response
      d) Consultation notes (in person or via telephone) in ED
      e) Working discharge diagnosis
      f) ED physician note, or copy of dictation
      g) Patient condition (including fall risk, functional and cognitive status)
      h) New prescriptions and alterations with long-term medications
      i) Discharge recommendations: physical activity, diet, resources/services
      j) Support systems
      k) Advance directives
      l) Follow-up plan
   ii. Additional approaches: (a) a verbal report from ED nurses provided to the NH as well as written documentation; (b) an emergency form in NH residents' charts that contains predocumented information with an area to write in the reason for transfer; (c) brief NH-to-ED and ED-to-NH transfer forms that are accepted and used by local NHs and EDs (Terrell & Miller, 2006); (d) structured data-sharing (Vollbrecht et al., 2018); and (e) INTERACT tools: checklist of key transfer documents, lists of critical data for interfacility communication at the time of transfers, a medication reconciliation form, and transfer forms (J. G. Ouslander et al., 2014).

d. Follow-up (Kessler et al., 2013)
   i. Telephone follow-up for patients discharged from the ED
   ii. Home visits provided to high-risk individuals
   iii. Telemedicine alternatives when indicated, especially in rural areas

VII. EVALUATION AND EXPECTED OUTCOME(S) FOR CARE OF OLDER ADULTS IN ED

A. Improved patient/family satisfaction and experience
B. Processes:
   1. Adherence to evidence-based practice and guidelines
   2. Throughput and waiting times
C. Better clinical outcomes, such as fewer falls, pressure ulcers, and hospital-acquired infections, as well as improved diagnostic accuracy

(*continued*)

Protocol 44.1: Care of the Older Adult in the Emergency Department (*continued*)

D. Improved organizational outcomes: readmission rates (ED and hospital) and cost
E. Enhanced staff competencies and satisfaction

ABBREVIATIONS

A–B–C	Airway–breathing–circulation
ADE	Adverse drug events
ADL	Activities of daily living
CAUTI	Catheter-associated urinary tract infection
CMS	Centers for Medicare & Medicaid Services
CTAS	Canadian Triage and Acuity Scale
DRUGS	Drug Regimen Unassisted Grading Scale
EM	Elder mistreatment
ESI	Emergency Severity Index
IADL	Instrumental activities of daily living
ISAR	Identification of Seniors at Risk
IUC	Indwelling urinary catheter
NH	Nursing home
PIMs	Potentially inappropriate medications
TRST	Triage Risk Screening Tool
UTI	Urinary tract infection

RESOURCES

Department of Health and Human Services Centers for Medicare & Medicaid Services Discharge Planning Guide
https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/Survey-and-Cert-Letter-13-32.pdf

Emergency Nurses Association
www.ena.org

Geriatric Emergency Department Guidelines
http://www.acep.org/geriEDguidelines

Geriatric Emergency Nursing Education (GENE) Course
http://www.ena.org/education/education/GENE/Pages/Default.aspx

National Center on Elder Abuse Administration on Aging
https://ncea.acl.gov/

Portal of Geriatrics Online Education
https://www.pogoe.org

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