Chapter e25: Geriatrics: Assessing Health and Delivering Healthcare to Older Adults

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CHAPTER SUMMARY FROM THE PHARMACOTHERAPY HANDBOOK

For the Chapter in the Schwinghammer Handbook, please go to Appendix 2, Geriatric Assessment and Pharmacotherapy.

KEY CONCEPTS

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1. The population of older adults in the United States is increasing and is expected to become more racially and ethnically diverse.
2. Ageism, or negative ideas about age and aging, can adversely affect health outcomes in older adults.
3. The primary goal of care for older adults is to maximize the amount of time they can live independently.
4. Living arrangements of older adults are tied to health and functional status, presence of disabilities, and caregiver ability, rather than chronological age.
5. Geriatric assessment is a multidisciplinary, multifaceted approach to promote wellness and prolong independence.
6. Geriatric syndromes are multifactorial clinical conditions that are linked with poor health outcomes.
7. Pharmacists can play an important role in identifying medications that may be contributing to geriatric syndromes.
8. Transitions of care are common and risky for older adults.
9. Optimal care transitions require teamwork, and the pharmacist's primary role on the care transitions team is to identify and address current and potential medication-related problems.

BEYOND THE BOOK

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As the population of older adults continues to grow, there is a pressing need to reimagine what it means to age, to reframe thoughts about how older people contribute to society, and to combat ageism, which is defined as discrimination based on age. The Reframing Aging Initiative offers important suggestions on how to achieve this goal. Navigate to the Reframing Aging website resource page (https://www.reframingaging.org/Resources/Multimedia). Listen to the two-part podcast "Words Matter: a Podcast with Patricia D'Antonio." As you are listening to the podcast, recognize any implicit bias you may have against older people. Commit to making language choices that are less "othering" of or discriminatory against older people. Start by identifying one or two words that you will either avoid using or start using in your everyday life and future practice. Reframing your thoughts about age and aging can have a positive impact on health outcomes for older adults.

INTRODUCTION

The population of older adults aged 65 years or older is growing both globally and in the United States. This is due to increased life expectancy associated with advances in science and technology in early detection of diseases, therapeutic interventions that increase survival, and overall improved healthcare delivery to the general public such as vaccinations, access to care, and multiple treatment options.[1]

As people are living longer, they are likely to experience multiple chronic medical conditions. The fraction of older adults using healthcare resources will increase, primarily due to the aging of the "Baby Boomer" generation. Despite the development of chronic medical conditions, many older adults lead full, active lives with functional abilities largely preserved. This is contrary to the myth that older age is linked with sickness and disability or poor functional status. Many of these older adults either have few chronic conditions or have them well-controlled. The healthcare needs for an active 65-year-old person are different from an octogenarian living in a skilled-nursing facility. Additionally, with the advances in cancer treatment and the emergence of new therapies that have transformed diseases such as hepatitis C and acquired immunodeficiency syndrome into chronic conditions, it is likely that the healthcare resources used by older adults will include treatment of advanced diseases, life-prolonging measures, and general health maintenance.

The goal of providing optimal healthcare to older adults is to promote and maintain independence, which has a direct effect on quality of life. To achieve and maintain independence, healthcare providers can target interventions and approaches to promote and maintain functional status. The functional status of older adults is impacted by disease, accidents, age-related changes (eg, decreased muscle mass or bone density), and frailty; it is independent of chronological age. Because of this, there has been a shift in focus in older adults from managing health conditions alone to incorporating functional status into the assessment of health and wellness. This requires a holistic, multidisciplinary approach.

In addition to the anticipated growth in numbers, the older American population is also expected to become more racially and ethnically diverse. An increasingly large body of literature describes differences across various ethnic groups and patient populations with regard to body composition, risk for developing certain diseases, assessment approaches, threshold for interventions, and treatment goals. From the pharmacotherapeutics standpoint, it is also important to understand the predictors of efficacy and adverse drug reactions in different patient populations. Some of these factors may include diet, lifestyle, and genetics. Equally important is the understanding of the patient's values and beliefs in their acceptance of interventions. Collectively, these factors help clinicians develop and implement a personalized health management plan that is more likely to reach the mutually defined goals established by both the older adults and their healthcare providers.

This chapter discusses the epidemiology of aging as well as various threads of wellness and illness, independence, functional status, and disability that are relevant for clinical practice. In addition, housing options for older adults, geriatric syndromes, and some of the most common models of care delivery will be introduced. This chapter concludes with a summary of transitions of care for older adults.

EPIDEMIOLOGY OF AGING

In 2050, 21.3% of the global population will be at least 60 years old.[2] The US population will experience similar trends. By 2030, as the "Baby Boomers" age, approximately 20% of the US population will be 65 years old. Those aged ≥85 years will reach 4.3% of the total population by 2050.[3] Nearly half of older adults in the 50- to 54-year-old age range self-report their health as "excellent" or "very good." This decreases with age to 28% of those aged 85

years and older.[4] Many older adults report that they receive assistance with Instrumental Activities of Daily Living (IADLs) or Activities of Daily Living (ADLs); more than half of those who have reached 85 years of age report receiving no assistance or supervision with functionally related activities.[4]

In 2015, a relatively small number (1.5 million) and percentage (3.1%) of the US population aged ≥65 years lived in institutional settings. Among those who did, 1.2 million lived in nursing homes. The percentage increases dramatically with age, ranging from 1% for persons aged 65 to 74 years to 3% for persons aged 75 to 84 years and 9% for persons ≥85 years.[5]

Chronic diseases are highly prevalent in older adults. Multimorbidity, or having more than one chronic disease, is particularly common among older adults, as shown by Medicare claim data in which nearly two-thirds of older adults have two or more chronic conditions. The most common chronic conditions are cardiovascular diseases (eg, hypertension, hyperlipidemia, and ischemic heart disease), arthritis, diabetes, and chronic kidney disease.[6] The five leading causes of death of those aged ≥65 years are heart disease, malignant neoplasm, chronic lower respiratory diseases, cerebrovascular diseases, and Alzheimer's disease.[7]

As the population in the United States ages, it will also become more racially and ethnically diverse. The US Census Bureau projects that in 2044 the aggregate minority population will surpass in number the current majority of White, non-Hispanic people. By 2050, "minority" individuals will account for 42% of the US population aged ≥65 years and 33% of the population aged ≥85 years.[3] This demographic shift is expected to be accompanied by the different cultural values, needs for social support, attitudes toward healthcare utilization, and adherence to prescribed interventions such as pharmacotherapy. It is important for clinicians to be aware of these factors in order to develop a trusting relationship with older adults and their designated care providers. Clinicians with competency in these areas may help patients develop plans that are associated with the highest adherence and best outcomes.

AGEISM

The United Nations has declared the years 2021 to 2030 the Decade of Healthy Aging. As part of this initiative, the World Health Organization (WHO) released a Global Report on Ageism, which outlines a framework for combating ageism.[8] Ageism refers to the stereotypes (how we think), prejudice (how we feel), and discrimination (how we act) directed toward people on the basis of their age. A recent systematic review showed that ageism is a global phenomenon that has negative effects across 11 domains of health, including being denied access to health services and treatments; mental illness; physical illness; and poor quality of life and well-being.[9] While there is a dearth of literature describing the effect of ageism specifically on medication use, it may be inferred that a portion of the health domains (eg, health services and treatments) would likely include, at least partially, medication use. Some researchers have described polypharmacy and inappropriate medication use as a manifestation of ageism.[10]

Careful language choices are important tools to combat ageism. The Reframing Ageing Initiative's Quick Start Guide offers suggestions for choosing words and phrases that are less "othering" or ageist. Examples include using "older adults" or "older people" rather than "seniors" or "elderly," which evoke negative stereotypes of older adults.[11]

DISABILITY AND INDEPENDENCE

Maintenance of independence and prevention of disability are primary goals in the clinical care of persons who have reached 65 years of age. The Centers for Disease Control and Prevention (CDC) defines disability as any condition of the body or mind (impairment) that makes it more difficult for the person to carry on with certain activities (activity limitation) and interact with the world around them (participation restrictions). To achieve these goals, it is necessary that all healthcare professionals understand the concept of functional status. Functional status is a proxy measure of a person's ability to live independently and can be determined, in part, by inquiring about an older person's ability to perform specific tasks and is independent of chronological age. Two types of functional measurements are basic ADLs for self-care and the more complex instrumental ADLs (Table e25-1). To fully assess functional status, the patient's psychological state, financial resources, physical function, and social circumstances also must be considered.[12] The types of disability experienced by the US Medicare population are shown in Table e25-2.

TABLE e25-1

Activities of Daily Living

Self-Care	Instrumental	Mobility
Bathing	Shopping	Walking from room to room
Dressing	Preparing meals	Climbing stairs
Transferring into and out of bed, chairs	Managing housework	Walking outside one's home
Toileting	Using the telephone	
Grooming	Handling finances	
Eating	Managing medications	
	Doing laundry	
	Managing transportation	

Adapted from Gill TM. Assessment. In: Harper GM, Lyons WL, Potter JF, eds. Geriatrics Review Syllabus: A Core Curriculum in Geriatric Medicine. 10th ed. New York, NY: American Geriatrics Society; 2019. Avaiable at: http://geriatricscareonline.org.

TABLE e25-2

Percentage of US Medicare Population with Disability

Type of Disability Experienced	% of US Population Affected
Ambulatory (mobility—eg, walking, climbing stairs)	22.5
Hearing	14.6
Independent Living (eg, IADLs)	14.6
Cognitive	8.9
Self-care	8.1
Vision	6.6

Data from Reference 42.

HOUSING OPTIONS FOR OLDER ADULTS

The CDC defines "aging in place" as the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level. While this is the goal for all older adults, declining health and/or functional status may prompt the older adult or family members to seek alternate living arrangements or additional support at home. There are several housing options available to older adults and the best

option is, in part, determined by the health and functional status of the older adult and how much and what type of assistance they need each day (Table e25-3). Another important consideration is cost. The four major categories of housing options for older adults are described later.[13]

TABLE e25-3

Housing Options Based on Health Status, Functional Status, and Independence

Health Status	Level of ADL Limitations	Housing Options
Excellent	Few or no limitations	Own home or with family
Very Good	Some self-limiting situations	• Own home or with family • Independent living communities
Good	Needs some assistance	• Own home or with family • Independent living communities • Assisted living communities
Fair	Limitations	• Own home or with family • Independent living communities • Assisted living communities • Institutional setting
Poor	Many limitations	Institutional setting

Adapted from The Gerontological Society of America. Longevity economics: leveraging the advantages of an aging society 2018. Available at: https://www.geron.org/images/gsa/documents/gsa-longevity-economics-2018.pdf.

Independent Living

Older adults who are in relatively good health and are relatively independent with ADLs can live in their own homes or with family members. They can be supported by in-home visiting caregivers and cleaning and meal services. Slight modifications to the home, such as installing bathroom railings, wheelchair ramps, built-in shower seat, or an emergency call system, can make it safer for the older adult to remain in a comfortable, familiar environment. This option is relatively low-to-medium in cost.

Independent Living Communities

Older adults who prefer to live in an active community setting among peers, without the worries of daily chores like cooking, housekeeping, or house maintenance can opt for independent living communities (also called retirement communities, retirement homes, or senior housing). These communities also offer social and recreational activities. This option is medium in cost.

Assisted Living Communities

As health status declines or the need for more assistance with ADLs increases, older adults may choose housing that provides a higher level of care. One option in this category is an assisted living community. This type of living arrangement is good for the older adult who can still live independently but requires some assistance with some ADLs or IADLs (eg, medication management, transportation). These communities also offer social and recreational activities. Cost is high and varies based on the amount of help received and size of the living space.

Institutional Setting

For older adults who require 24-hour supervised care with meals, activities, and health management, the most appropriate option is an institutional setting, such as the nursing home or skilled-nursing facility (SNF). A licensed physician oversees the care of older adults living in these types of facilities. A nurse or other health professional is nearly always onsite. Cost is high and varies based on the amount of help received and size of the living space.

Assessment of the older adults' housing situation is important as it may have a direct relationship in maintaining a patient's independence and functional status. As described in Chapter e24 ("Geriatrics: Medication Use in Older Adults"), a medication that has the potential to cause falls is associated with a higher risk of losing independence by an older adult who lives independently than to someone living in an SNF. When prescribing or adjusting a medication regimen, it is important to take the patient's living situation into consideration to maximize the safety of the intervention.

ASSESSMENT OF HEALTH IN OLDER ADULTS

Geriatric assessment is a multifaceted, interprofessional, complex approach to the care of older adults, with the goal of promoting wellness and independent function. It is intended to aid in the diagnosis of medical conditions, including geriatric syndromes, develop treatment and monitoring plans, coordinate care, and evaluate long-term care needs.[12] Geriatric assessment is a holistic and interprofessional process. In addition to the familiar elements of physical examination, it also includes the evaluation of the following additional domains: psychological conditions, functional status, social circumstances, and environmental conditions.[12]

The physical portion of the assessment includes the usual components of the clinical examination and also assesses gait and balance; lying and standing blood pressure; pain; weight; and nutrition, especially malnutrition. The functional assessment comprises mobility, ADLs, IADLs, and visual and hearing loss. The psychological domain assesses mood and cognition.

A routine, regular medication review is a core component of geriatric assessment. The medication review should include all prescription medications, over-the-counter products, vitamins and mineral supplements, herbal and other dietary supplements, and immunization status. Because the response to medications may change as a person ages, regular review of medications, with a critical evaluation of the risk/benefit ratio for each medication, is crucial for minimizing the risk of adverse drug events (see Chapter e24, "Geriatrics: Medication Use in Older Adults").

Older adults can present to healthcare providers with symptoms or complaints different from what is considered "classic" in the usual medical models used to establish diagnoses. Because of this, geriatric assessment is required as a central tenet of high-quality care for older adults. Approximately half of older patients present with atypical symptoms or complaints. For example, cardiac ischemia in an older person may present as syncope or weakness rather than the typical presentation of chest pain. Confusion may be the presenting symptom of a urinary tract infection rather than dysuria, fever, and flank pain. Serious adverse consequences may result if a diagnosis is delayed or missed because of these atypical presentations. The absence or delayed presentation of the "classical signs and symptoms" may be caused by age-related physiologic changes, the presence of multimorbidity or compromised function, and the presence of psychological stressors.[14] Table e25-4 lists other examples of medical illnesses that often present atypically in older adults.[10,11] For frail older adults, delirium, falls, and nonspecific functional decline (eg, "failure to thrive") frequently are presenting problems that can mask an underlying disease process.[14,15]

TABLE e25-4

Atypical Disease Presentation in Older Adults

Disease	Presentation
Acute myocardial infarction	Only ~50% present with chest pain. In general, older adults present with weakness, confusion, syncope, and abdominal pain; however, electrocardiographic findings are similar to those in younger patients.
Congestive heart failure	Instead of dyspnea, older patients may present with hypoxic symptoms, lethargy, restlessness, and confusion.
Gastrointestinal bleed	Although the mortality rate is ~10%, presenting symptoms are nonspecific, ranging from altered mental status to syncope with hemodynamic collapse. Abdominal pain often is absent.
Upper respiratory infection	Older patients typically present with lethargy, confusion, anorexia, and decompensation of a preexisting medical condition. Fever, chills, and productive cough may or may not be present.
Urinary tract infection	Dysuria, fever, and flank pain may be absent. More commonly, older adults present with incontinence, confusion, abdominal pain, nausea or vomiting, and azotemia.

Data from References 14 and 15.

GERIATRIC SYNDROMES

As people age, they may develop one or more clinical conditions referred to as "geriatric syndromes." The term is used to describe clinical conditions that are not distinct disease entities resulting from well-defined etiology. Geriatric syndromes often involve a complex interaction between age-related physiologic changes, multimorbidity, and patient-specific stressors (eg, adverse drug events).[16] As such, geriatric syndromes are multifactorial in nature and require a different approach for diagnosis and management. The presence of geriatric syndromes is associated with poor patient health outcomes (eg, disability), poor quality of life, and need for institutionalization.[16] Performing a geriatric assessment in patients presenting with these syndromes is important to improve the management of these conditions and prevent or delay complications.

Some common geriatric syndromes include frailty, falls, delirium, cognitive impairment, incontinence, and pressure ulcers (Table e25-5).[16] Polypharmacy is sometimes referred to as a geriatric syndrome but may be more accurately considered as a risk factor for geriatric syndromes.[17] Another important feature of geriatric syndromes is that they share a set of common risk factors, including older age, decline in functional status, loss of independence, impaired mobility, and impaired cognition.[16] It is important to screen for modifiable risk factors in a person presenting with a geriatric syndrome. Certain medications may be a modifiable risk factor for geriatric syndromes and present an opportunity for pharmacists and other healthcare providers to deprescribe medications that may be contributory factors. A few select geriatric syndromes—frailty, falls, and delirium—are discussed below.

TABLE e25-5

Geriatric Syndromes

Urinary Incontinence	Falls
Sleep disorders	Osteoporosis
Delirium	Weight Loss
Dementia	Pressure Ulcers
Sensory deficits	Dizziness
Frailty	Gait disorders

Data from Reference 43.

Frailty

The health status of older adults in heterogeneous. The concept of frailty was introduced about 20 years ago as a way to understand this variability. Frailty refers to a state of increased risk for poor outcomes compared with others of the same age. In 2013, an international consensus group defined frailty as, "a medical syndrome with multiple causes and contributors that is characterized by diminished strength, endurance, and reduced physiologic function that increases an individual's vulnerability for developing increased dependency and/or death."[18]

An individual with frailty has reduced homeostatic reserves to compensate for or recover from stressors.[19] For example, in a person with frailty, a seemingly small stressor, such as infection or surgery, may be the trigger that initiates a cascade of events culminating in disability, institutionalization, or death.

Frailty occurs in 15% of community-dwelling older adults.[20] There are two main clinical approaches to defining frailty.[19] One approach, the physical frailty phenotype, defines people as frail it they have at least three of the following impairments: exhaustion, reduced activities, impaired grip strength, slow walking speed, or weight loss. In this approach, a biological basis involving a dysregulation of multiple physiological systems (eg, immune system, energy production) is hypothesized to precede the frailty phenotype. While weight loss is one of the listed impairments, it is not required for the diagnosis of frailty. The growing number of people who enter older adulthood with overweight or obesity can have reduced muscle mass that is masked by increased fat stores ("sarcopenic obesity"), creating deficits in strength, gait, and stability, and the ability to handle daily chores. The second approach, or "deficit accumulation frailty," is based on the theory that the accumulation of health and functional issues serves as an indicator of an individual's "physiological age." This index is based on the inclusion of a wide range of symptoms, signs, medical conditions, disabilities, or laboratory abnormalities. The deficits are summed and divided by the number of total deficits to produce a score between 0 and 1; a higher score represents greater risk.

Identifying frailty in a patient is important because it is prognostic for a more limited life expectancy, and thus, the goals of care and patient preferences may change as a result. This may allow for deprescribing of medications that may no longer be providing benefit and maybe placing the person at greater risk for adverse drug events.[16] Furthermore, targets for blood pressure and diabetes control are often less stringent in older adults with frailty as the risk of adverse drug events often outweighs the benefit of strict control.

Falls

Falls and fall-related injuries constitute a critical, and growing, public health problem.[21] One in three community-dwelling adults aged ≥65 years, and one in two aged ≥80 years, sustains a fall each year[22] About half of all falls result in an injury.[21] Treatment of injurious falls is expensive, costing more

than $30 billion annually.[23] As the aging population grows, the adverse impacts of falls (fractures, functional dependency, permanent nursing home residence) will increase, and costs will rise substantially.

As with all syndromes, falls in older adults are multifactorial and rarely have a single cause.[22] One scheme for categorizing risk factors for falls is whether the factor is inherent to the individual (eg, age, cognitive deficits, chronic conditions) or external to the individual (eg, medications, footwear, home environment).[22] Common medications that have been linked with an increased risk for falls include benzodiazepines and non-benzodiazepine hypnotics, opioids, antipsychotics, and antidepressants.[24] The American Geriatrics Society (AGS)/British Geriatrics Society clinical practice guideline for prevention of falls in older adults recommends screening for falls in every person 65 years of age or older.[25] Healthcare providers should ask older adults if they have experienced a fall in the past year, and if so, the frequency and circumstances surrounding the fall. The AGS guidelines served as the basis for the CDC Stopping Elderly Accidents, Deaths & Injuries (STEADI) initiative which includes educational materials and tools to integrate these guidelines into clinical settings and improve fall prevention.[26] STEADI consists of three core elements for fall prevention: (1) screen, (2) assess, and (3) intervene to reduce fall risk by giving older adults tailored interventions. A free online training program for pharmacists is available on implementing STEADI strategies for older adults.[26]

Management of an older adult who has fallen should target the person's individual fall risk factors to prevent future falls. Pharmacists can play a key role in the prevention of falls in older adults by screening for high-risk medications and making recommendations for medication reduction and discontinuation. Safer medication alternatives and nonpharmacological strategies are available for managing insomnia and pain—two of the conditions that are often treated with fall risk increasing medications.

Delirium

Delirium is an acute decline in attention and global cognitive functioning that is characterized by a fluctuating course, abnormal arousal, and behavioral abnormalities.[27] It is a common and life-threatening problem, especially for hospitalized older adults. Delirium is common after surgery (15%-20%) and may affect 50% of older adults following high-risk procedures (eg, hip fracture repair).[27] Delirium is even more common in patients receiving palliative care. Despite the devastating consequences of delirium, it remains undiagnosed in up to 55% to 80% of patients.[28] Delirium is associated with poor functional and cognitive recovery after hospital discharge, need for nursing home placement, and mortality.[28]

Risk factors for delirium can be classified into two groups: baseline factors that predispose a person to delirium (eg, advanced age, preexisting dementia, multimorbidity) and factors that precipitate delirium (eg, medications, surgery, uncontrolled pain, infection).[28] For people with multiple baseline risk factors, it might only take a small precipitating factor to result in delirium. Medications most likely to precipitate delirium in susceptible individuals include anticholinergics (eg, tricyclic antidepressants, antihistamines, low-potency antipsychotics), benzodiazepines and non-benzodiazepine hypnotics, and opioids.

The first step in delirium management is to identify any precipitating factors and take measures to manage the underlying cause(s). It is important to conduct a thorough medication review to identify any potential medication-related causes (as listed above). It is also important to evaluate for any new medications (including OTCs) and recent dosage changes or discontinuation (especially abrupt or unintended) to assess potential contributors to delirium. Of note, delirium can be a manifestation of benzodiazepine withdrawal, which may occur inadvertently if a patient was taking a benzodiazepine prior to hospital admission that was not prescribed upon admission. Careful medication reconciliation upon hospital admission is a practical step to help prevent delirium in older adults.

MODELS OF GERIATRIC CARE, SERVICES, AND SETTINGS

Several models of care have been developed and implemented for the care of older adults across care settings (Table e25-6). These models utilize core principles of geriatric care. Common goals for these models of care include engaging patients in their care plan, enabling patients to remain in the site of care that maximizes their independence, and focusing on strategies that optimize functional status and quality of life.[29] Table e25-6 summarizes some of the most commonly used models of geriatric care along with key services and care settings for older adults.

TABLE e25-6

Models of Geriatric Care, Services, and Settings

Models of Geriatric Care, Services, and Settings	Description of Model
Across All Care Settings	
• Age-Friendly Health System	Incorporates four elements of high-quality care important to all older adults across the care system: What Matters, Medication, Mentation, and Mobility (the "4Ms")
Acute Care	
• Acute Care for Elderly (ACE)	Hospital-based program designated to provide acute care and mobilization
• Hospital Elder Life Program (HELP)	Hospital-wide program to prevent, recognize, and treat delirium
• Geriatric Trauma Care	Inpatient collaboration between trauma surgeons and geriatricians
• Geriatric Consults	Hospital-based consultations delivered specifically by a geriatrician
• Palliative Care Team	Interprofessional program to support persons and families with end-of-life transitions
• Hospital at Home	Collaborative program of physicians and other healthcare professionals to provide hospital-level care for patients in the home setting
• Geriatric Emergency Department (ED)	ED with geriatric-focused education and interdisciplinary staffing, providing standardized approaches to care that address common geriatric issues, ensuring optimal transitions of care from the ED to other settings, and promoting geriatric-focused quality improvement and enhancements of the physical environment and supplies
Post-Acute Care	
• Geriatric Care Hospital	Separate from the acute care hospital, older patients are transferred for acute and subacute care
• Geriatric Evaluation and Management	Program focused on older adults who need specialized rehabilitation

Unit (GEMU)	
• Skilled-Nursing Care Facility	Residential-based skilled care and a common setting for post-acute rehabilitation
Long-Term Care	
• Assisted Living Facility	Residential-based care facility in which older adults receive support with Activities of Daily Living (ADLs) and moderate nursing assistance
• Memory Care Units	Residential-based programs of specialized care for persons with dementia
• Skilled-Nursing Care Facility	Residential-based care facility in which older adults require high level of care and support with ADLs
• Program of All-Inclusive Care for the Elderly (PACE)	Community-based interprofessional program of care for persons who are eligible for skilled care and would otherwise be placed in a skilled care facility
• Adult Day Services	Community-based interprofessional program for persons who require ADL assistance and supervision during daytime hours
Outpatient Care	
• Geriatric Assessment	Comprehensive interprofessional geriatric assessment completed in an outpatient clinic setting
• Home Care	Home-based care provided by interprofessional teams for persons requiring medical, physical, and social support
• Home-Delivered Meals	Home-delivered meals and support for persons unable to meet food-related needs

Data from References 44,45 and Morley 2017 (personal communication).

TRANSITIONS OF CARE

Transitions of care are defined as the movement of a patient from one setting of care to another.[30] Transitions of care are common for older adults, but the process often introduces risks. A study of Medicare beneficiaries found that 22% of older adults experienced a transition of care within the prior 1 year, with the most common being a single transition to the hospital and back, but a large number representing extreme heterogeneity of

transitions (ie, >230 unique transition patterns).[31] Care transitions introduce risk for older adults who may receive inadequate or unsafe treatments for their medical conditions often due to poor communication across care settings. One example of a negative consequence is referred to as "post-hospital syndrome" in which older adults who have been hospitalized are at increased risk of a range of adverse health events beyond their recovery from their acute illness.[32] One proposed mechanism for this syndrome could be explained by the physiological stress that patients experience in the hospital separate from their acute illness, which can lead to muscle wasting, deconditioning, fall risk, and functional decline.[33]

Transitions of care can also lead to increased healthcare costs, although some of the costs may be avoidable without inducing negative clinical outcomes. One in five older adults are readmitted to the hospital within 30 days, and one in three are readmitted within 90 days.[34] These unplanned readmissions cost Medicare approximately $15 billion each year.[34] As a result, care transition programs have been a major focus of US healthcare systems since the passage of the Affordable Care Act, which financially incentivized systems—including both inpatient and ambulatory care settings—to reduce hospital readmission rates.[35] Transitions from the hospital to skilled-nursing facilities (SNFs) are a more recent focus of national health policy initiatives.[36]

Optimal care transitions require teamwork.[37] Care transitions team members could include a nurse, social worker, transition coach, physician, and/or pharmacist, among others. One of the most significant impacts of a pharmacist on the care transition team is to reduce current and potential medication-related problems. Two of the processes utilized to achieve this goal would include medication reconciliation and comprehensive medication review to identify and address current and potential medication-related problems.[38] The clinician should pay special attention to ensuring that medications held on admission are reconciled for discharge. In addition, discharge medication lists should include an indication for each medication as well as stop dates for any time-limited medications such as antibiotics. Many older adults are discharged on medications initiated as part of hospital-based order sets (eg, analgesics, proton pump inhibitors, laxatives) which may not be necessary upon discharge; clinicians should reconcile these medications and carefully evaluate their ongoing needs prior to discharge. Moreover, it is important for the clinician to know what services (eg, assistance with medication administration) are available for the older adult at their discharge destination. Overall, the discharge medication list should accurately reflect the older adults' discharge plan and be easily understood by the receiving provider.

Several models have been tested and validated to improve transitional care for older adults. One of the key components of these models is a care transition coach who is assigned to monitor and help the older adult navigate throughout the transition.[39] For example, the Care Transitions Program® is a 4-week program in which patients with complex care needs and family caregivers receive specific tools and work with a Transitions Coach to learn self-management skills that ensure their needs are met during the transition from hospital to home.[40] A complete description of the program along with tools and resources are available at: https://caretransitions.org. This program has been shown to reduce hospital readmissions and provide a net savings.[40] Other care transitions' models currently in practice include the following: Re-Engineered Discharge ("Project RED"), Better Outcomes by Optimizing Safe Transitions (BOOST), Discharge of Elderly from the Emergency Department (DEED), Interventions to Reduce Acute Care Transfers (INTERACT), and Geriatric Resources for Assessment and Care of Elders (GRACE), among others.[41] A key component of any successful care transitions model is clear and consistent communication across care settings. Pharmacists can serve as the lead for communicating medication-related plans among the medical team, with the older adult and their caregiver, and to the clinicians at the discharge destination.

CONCLUSION

Older adults represent an increasing proportion of the US and global population. Maintaining independence and functional status are the primary goals of care for older adults. The opportunities for pharmacists and other health professionals to improve care include identifying and managing medication-related contributions to geriatric syndromes, careful attention to medications at every transition of care, and routinely reviewing medications to determine the risk/benefit ratio. In order to be effective members of the healthcare team, pharmacists should know the most common services and care models available for older adults.

Understanding the diversity and growth of the older adult population will allow society to plan for the training, research, and resources needed for future clinical practice and adequate healthcare. The changes in demographics will have implications on healthcare delivery, in terms of both resources and the skills needed to work with people from various cultural value and belief systems, and open up the opportunity for further research to better understand the needs of this growing segment of the US population.

ABBREVIATIONS

ADLs	activities of Daily Living
AGS	American Geriatrics Society
BGS	British Geriatrics Society
CDC	Centers for Disease Control and Prevention
IADLs	Instrumental Activities of Daily Living
OTC	over-the-counter
SNF	skilled-nursing facility
WHO	World Health Organization

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SELF-ASSESSMENT QUESTIONS

1. The following are the most common chronic health conditions experienced by older adults except:

   A. Alzheimer's disease

   B. Arthritis

   C. Cardiovascular disease

   D. Chronic kidney disease

   E. Diabetes

2. When referring to or speaking about people aged ≥65 years, which term is least associated with "othering" or discrimination?

   A. Elderly

   B. Older adults

   C. Seniors

   D. Senior citizens

3. A full assessment of functional status incorporates of all the following components except:

   A. Activities of daily living

   B. Chronologic age

   C. Psychological state

   D. Financial status

   E. Social circumstances

4. Which type of disability is experienced by the largest percentage of older adults in the United States?

   A. Mobility

   B. Cognitive

   C. Hearing

   D. Self-care

   E. Vision

5. A 74-year-old man who lives in his own home slipped and fell while stepping out of the shower. He experienced only minor bruising, no significant injury. His family is concerned about his safety if he remains in his own home. He is in excellent health and can manage his ADLs and IADLs without assistance. He is an active volunteer at the local library. His family lives in another state and he does not wish to move away from his friends. Which housing arrangement best matches his needs and is least costly?

   A. Assisted living community

   B. Independent living in own home

   C. Independent living community

D. Live with family members

E. Skilled nursing facility

6. What is/are the goal(s) of the geriatric assessment?

A. Promote wellness

B. Promote independent function

C. Promote social connections

D. A and B

E. A and C

7. The functional assessment portion of the geriatric assessment is composed of all the following except:

A. Activities of daily living

B. Cognition

C. Hearing loss

D. Mobility

E. Visual loss

8. Which of the following statements is/are true about geriatric syndromes?

A. Geriatric syndromes are usually multifactorial.

B. Medications may be a risk factor for geriatric syndromes

C. The presence of geriatric syndromes is associated with disability and poor quality of life.

D. Performing a geriatric assessment will improve the management of geriatric syndromes.

E. All of the above.

9. Susan is a 77-year-old woman who presents to her provider after falling twice over the past month. During the medication interview, you find that she is taking hydrochlorothiazide 12.5 mg PO daily, metformin 500 mg PO twice daily, acetaminophen 500 mg three times daily, and zolpidem 5 mg at bedtime. She does not report dizziness and her blood pressure is well controlled. Which of her medications is most likely contributing to her falls?

A. Acetaminophen

B. Hydrochlorothiazide

C. Metformin

D. Zolpidem

10. Which of the following statements describe why it is important to identify a person's frailty status?

A. We may want to relax target goals for hypertension and diabetes.

B. We will want to monitor high-risk medications more closely, as frail individuals are at a higher risk for adverse drug events.

C. It is an opportunity for deprescribing medications as patient goals of care may change.

D. All of the above.

11. Margaret is a 72-year-old woman with Alzheimer's disease who presents to her provider with new-onset agitation and combativeness. She was found to have a UTI and the provider suspects that her presentation is consistent with delirium. Her current medications include lisinopril, tolterodine, atorvastatin, aspirin, and alendronate. Which of her medications is most likely contributing to delirium?

A. Alendronate

B. Atorvastatin

C. Aspirin

D. Lisinopril

E. Tolterodine

12. Post-hospital syndrome in older adults is associated with which of the following health risks?

A. Muscle wasting

B. Deconditioning

C. Fall risk

D. Functional decline

E. All of the above

13. Which type of long-term care setting is designed to provide specialized residential-based care for people with dementia?

A. Adult day services

B. Assisted living facility

C. Memory care unit

D. Program for All-Inclusive Care for the Elderly (PACE)

E. Skilled nursing facility

14. Persons and families facing end-of-life transitions can benefit from which of the following interprofessional models of care?

A. Geriatric Evaluation and Management Unit

B. Geriatric Emergency Department

C. Geriatric Trauma Care

D. Hospital at Home

E. Palliative Care Team

15. All of the following actions describe common pharmacist-led activities in transitional care models for older adults *except*:

A. Conduct medication reconciliation

B. Complete a comprehensive medication review

C. Complete a home hazard and safety assessment for falls risk

D. Communicate medication-related services available at discharge destination

E. Communicate medication-related plans among the transitional care team

SELF-ASSESSMENT QUESTION-ANSWERS

1. **A.** Rationale: Medicare claims data show the most common chronic conditions are cardiovascular disease, arthritis, diabetes, and chronic kidney disease. Alzheimer's disease, while experienced by older adults, is not among the most common chronic health conditions. See the "Epidemiology of Aging" section for additional details.

2. **B.** Rationale: Research from the Reframing Aging Initiative has shown that "older people" and "older adults" are less "othering" than the alternate terms listed. Terms such as "elderly," "the elderly," "seniors," and "senior citizens" can invoke negative stereotypes about older people. See the "Ageism" section and the podcasts in the "Beyond the Book" section.

3. **B.** Rationale: A person's functional status is independent of chronological age. For example, a person who is 65 years old may require assistance with ADLs and IADLs and not be able to live independently, whereas an 85-year-old person in generally good health may live independently and without assistance with ADLs and IADLs. A full functional status assessment includes the following components: psychological state, financial resources, physical function, and social circumstances. See the "Disability and Independence" and "Frailty" sections for additional information.

4. **A.** Rationale. The disability that affects the largest percentage of older adults in the United States is related to mobility (eg, walking, climbing stairs; 22.5%). The next most common disabilities are hearing, independent living, cognitive, self-care, and vision (14.6%, 14.6%, 8.9%, 8.1%, 6.6%, respectively). See Table e25-2 for additional information.

5. **B.** Rationale: This man is in excellent health and can manage all his needs independently. With minor modifications of his home (eg, shower seat, bathroom railings), he can remain at home relatively safely. Moving to live with his family could be a relatively inexpensive option, but he does not wish to move away. Assisted living and independent living communities and skilled nursing facilities provide more advanced care than he currently needs and are more costly than minor home modifications. See the "Housing Options" section for additional information.

6. **D.** Rationale: The geriatric assessment is a multifaceted, interprofessional approach to the care of older adults. The primary goals are to promote wellness and independent function. Promoting social connections is not a goal of the geriatric assessment. See the "Assessment of Health in Older Adults" section for additional information.

7. **B.** Rationale: The functional assessment portion of the geriatric assessment includes activities of daily living, instrumental activities of daily living, mobility, and visual and hearing loss. Cognition is a part of the psychological domain of the geriatric assessment. See the "Assessment of Health in Older Adults" section for additional information.

8. **E.** Rationale: Geriatric syndromes are clinical conditions that are not distinct disease entities resulting from a well-defined etiology. Geriatric syndromes are usually multifactorial in nature and involve complex interaction between age-related physiologic changes, multimorbidity, and patient-specific stressors. See the "Geriatric Syndromes" section for additional information.

9. **D.** Rationale: Falls and fall-related injuries are a critical public health problem affecting older adults. Common medications that have been linked with falls include benzodiazepines and non-benzodiazepine hypnotics. Zolpidem, a non-benzodiazepine hypnotic is the most likely medication contributing to her falls. See "Falls" section for additional information.

10. **D.** Rationale: Identifying frailty in a patient is important because it is prognostic for a more limited life expectancy, and thus the goals of care and patient preferences may change. This may allow for deprescribing of medications that may no longer be providing benefit and may be placing the person at greater risk for adverse drug events. Furthermore, targets for blood pressure and diabetes control are often less stringent in older adults

with frailty, as the risk of adverse drug events often outweigh the benefit of strict control. See the "Frailty" section for additional information.

11. **E.** Rationale: Medications likely to precipitate delirium include anticholinergics, benzodiazepines, nonbenzodiazepine hypnotics, and opioids. Tolterodine is a bladder antimuscarinic with anticholinergic properties. See the "Delirium" section for additional information.

12. **E.** Rationale: "Post-hospital syndrome" can occur in older adults who have been hospitalized, placing them at increased risk of a range of adverse health events beyond their recovery for their acute illness including muscle wasting, deconditioning, fall risk, and functional decline. See the "Transitions of Care" section for more information on this syndrome.

13. **C.** Rationale: Memory care units provide specialized care for older adults with dementia in a residential setting. Assisted living facilities and skilled nursing facilities are residential-based and provide wide ranging care, but they are not solely specialized in dementia care. Adult day services and PACE programs are community-based, meaning the person receiving those services resides outside the facility where the service is provided. See the "Models of Care" section for additional details.

14. **E.** Rationale: Palliative care is a model of care delivered by an interprofessional team to support persons and families with end-of-life transitions. See the "Models of Geriatric Care, Services, and Settings" section for more information.

15. **C.** Rationale: Pharmacists most commonly do all of these activities, except for completing a home hazard and safety assessment for falls risk as part of transitional care models. See the "Transitions of Care" section for more information on the pharmacist's role in transitional care models.