Elder Care

LEARNING OUTCOME AND OBJECTIVES: Upon completion of this continuing education course, you will have increased your knowledge of the unique issues related to caring for older adult patients. Specific learning objectives to address potential knowledge gaps include:

- Summarize the models and goals of care for the older adult.
- Discuss the major age-related physiologic changes impacting older adults and related assessment and management recommendations.
- Discuss cognitive and psychosocial changes impacting the health of older individuals and related management recommendations.
- Identify key elements in the functional assessment of the older adult.
- Discuss risk factors and assessment strategies for falls prevention and home safety.
- Explain the risks, safety, and management of medications for older adults.
- Relate strategies for supporting family caregivers of elders.
- Discuss legal and ethical considerations in the care of the older adult.
- Review the assessment and management of elder abuse victims.
- Clarify the principles that guide end-of-life care.

INTRODUCTION

By 2034, older adults are projected to outnumber young people for the first time in U.S. history, with people ages 65 and older numbering 77.0 million and children under 18 numbering 76.5 million. The main reason for this occurrence is the nation’s “baby boom” generation of the 1950s and 1960s.
Starting in 2030, when all baby boomers will be older than 65, they will make up 21% of the population, up from 15% in 2020. By 2060, nearly 1 in 4 Americans will be 65 years and older, the number of those 85 and older will triple, and there will be a half million who are 100 years and older.

Other important causes for this increase in the aging population in the United States and around the world include advancements in disease control and health technology, lower infant and child mortality rates, improved sanitation, and better living conditions that have occurred during the twentieth century. During this period, the leading cause of death changed from infectious diseases to chronic noncommunicable diseases, resulting in increased life expectancy. As this trend continues, the United States is facing greater demands for healthcare, in-home caregiving, and assisted-living facilities (WHO, 2020; U.S. Census Bureau, 2019a).

In 2018, the Health Policy Institute of the University of Pittsburgh wrote that by 2050 adults age 65 and older will make up over 20% of the total U.S. population. The institute notes that meeting the healthcare needs of an aging America will require sizable changes in our existing approach to treatment and service delivery and finds that the fragmented U.S. healthcare system is “ill-suited” to address an expanding aging population’s complex needs (UPHPI, 2018).

Today, this topic still remains one of prime concern and must be addressed by all healthcare providers if we are to meet the unique medical and quality-of-life needs of this growing population. Continuing education of the healthcare community is an essential step in the process.

**Demographics of Aging**

Generally, the older adult population is defined as 65 years and older and grouped under the category of “old.” It is now recognized that there are differences within this age group, which may be further categorized as:

- Young-old: 65 to 74
- Old: 75 to 84
- Oldest old: 85+ (the fastest-growing segment)

In 2019 the U.S. Census Bureau (2019b) estimated the number of the persons ages 65 and older to be over 54 million. In 2020 the CDC reported that the average life expectancy for both sexes and all races and ethnic origins was 78.6 years. At age 65, the estimated remaining life expectancy was 18.1 years for men and 20.6 years for women.

By **racial and gender** comparison, White females have the longest life expectancy, followed by Black females, White males, and Black males. By Hispanic origin, Hispanic females have the longest life expectancy, followed by non-Hispanic White females, Hispanic males, Non-Hispanic Black females, Non-Hispanic White males, and Non-Hispanic Black males.

The population of **centenarians (100+)** is overwhelmingly female (84%), lower educated, more impoverished, widowed, and more disabled as compared to other older adults.
The CDC also reported in 2019 that 22% of noninstitutionalized persons aged 65 and over were in fair or poor health, and those who needed help with personal care from others was 7%. Persons aged 65 and over comprised 84% of nursing home residents and 93% of those living in residential care communities (CDC, 2021).

The leading causes of death among this population include:

- Heart disease
- Cancer
- Cerebrovascular disease (stroke)
- Chronic lower respiratory disease (COPD)
- Alzheimer’s disease
- Diabetes mellitus
- Nephritis, nephrotic syndrome, and nephrosis
- Unintentional injuries
  (Maul, 2018; Eliopoulos, 2018)

**The Aging Process**

Aging is associated with an accumulation of DNA damage and delayed repair of DNA throughout life. Defects in the repair of DNA or excessive damage that overcomes the repair capacity are more likely to occur, increasing the prevalence of age-related disease.

Aging involves changes in physiology. Some changes result in declines in function of the senses and activities of daily life and increases in susceptibility to and frequency of disease or disability. In fact, aging is a major risk factor for a number of chronic diseases (see below), and many diseases appear to accelerate the aging process, manifesting in declines in function and quality of life (NIA, 2020; Kane et al., 2018).

Along with physiological changes, behavioral and psychological factors such as physical activity, smoking, cognitive and social engagement, personality, and psychosocial stress play a major role in health across the lifespan. Along with these changes, increasing age brings changes in cognition and emotions, which can impact subjective well-being, social relationships, decision-making, and self-control (NIA, 2020).

**Aging and Chronic Disease**

Older adults have fewer acute illnesses (e.g., pneumonia, flu, broken bones, heart attack) than younger age groups and a lower death rate from them, although they do require longer periods of recovery and have more complications. Most older adults, however, have at least one and often multiple chronic conditions that have a significant impact on independence and quality of life, and are the leading causes of death among this population (Eliopoulos, 2018).
It is estimated that 80% of those 65 years or older have one chronic disease and that 50% have two or more. The most common of these include:

- Heart disease
- Arthritis
- Respiratory problems
- Cancer
- Diabetes
- Stroke

These conditions often impair functional capacity and limit the person’s ability to perform activities of daily living (ADLs) and instrumental activities of daily living (IADLs) (Kennedy-Malone et al., 2019; NIA, 2020).

Adults with chronic diseases have a greater prevalence of subjective (self-reported) cognitive decline, and prevalence increases with age. Adults with a history of stroke have the highest prevalence, followed by COPD and heart disease. Chronic conditions often require close medical management and self-care activities such as taking medications as prescribed. However, managing a chronic condition can be made increasingly difficult with the presence of memory loss or confusion (Taylor et al., 2020).

**CHRONIC DISEASE AND POLYPHARMACY**

In 2017, prescriptions for chronic conditions accounted for more than two thirds of all prescriptions in the United States (CDC, 2021). Older patients with multiple comorbidities often require management with more than one medication. This increases the risk of polypharmacy and its negative outcomes. Polypharmacy in geriatrics is defined as a patient age 65 or older receiving five or more appropriate medications for treatment of various chronic conditions. Older adults with multiple subspecialist physicians and no primary care physician are particularly vulnerable to polypharmacy.

Negative consequences of polypharmacy include:

- Increased risk of adverse drug events
- Increased mobility issues
- Increased mortality
- Increased need for long-term care placement
- Medication nonadherence
- Decreased quality of life
- Increased use of the healthcare system

(Halli-Tierney et al., 2019; CDC, 2021)
CHRONIC ILLNESS AND FUNCTIONAL CAPACITY

Chronic health conditions often impair the physical, psychological, cognitive, and social abilities to perform ADLs and IADLs that allow an individual to live independently in the community. ADLs include bathing, dressing, personal hygiene, toileting, functional mobility, and self-feeding. IADLs include managing money, preparing meals, shopping for necessary items, taking medications as prescribed, and maintaining the home.

Many health issues (e.g., falls) common to people over age 65 can be prevented, many (e.g., hypertension) can be effectively treated, and others (e.g., visual impairment, hearing loss, mobility problems) can be compensated for with assistive devices and/or rehabilitative interventions. Nurses, physical therapists, occupational therapists, and other rehabilitation specialists can address a person’s ability to function in the home or living environment at the highest possible level of independence and can also identify any environmental safety risks (e.g., loose rugs, uneven steps, clutter, etc.), appropriate adaptive equipment, durable medical equipment, or assistive devices that might be needed (Kennedy-Malone et al., 2019).

Aging and Long-Term Care

Loss of the ability to care for oneself safely and appropriately means further loss of independence and can often lead to the need for care by family and informal caregivers (i.e., unpaid individuals) or formal caregivers (i.e., paid care providers associated with a service system). Long-term care includes a wide range of services and supports available to meet personal care needs. These services and the percentage of individuals ages 65 and older utilizing them include:

- Adult day services centers: 62.5%
- Home health agencies: 81.9%
- Hospice care agencies: 94.6%
- Nursing homes: 83.5%
- Residential care communities: 93.4%

(CDC, 2021)

The costs of long-term care can be very expensive, and many individuals may be financially unprepared for this type of expense (see box below).

<table>
<thead>
<tr>
<th>AVERAGE U.S. LONG-TERM CARE COSTS (2020)</th>
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<tbody>
<tr>
<td>• Home health services</td>
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<tr>
<td>o Homemaker services: $20.50 per hour</td>
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<tr>
<td>o Home health aide: $22.00 per hour</td>
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<td>• Adult day care center: $68 per day</td>
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Ageism and Healthcare

Aging is not solely a biological process. It is embedded in social contexts and shaped by social factors. Ageism is a term that refers to bias and discrimination based on age. Stereotypes about aging, particularly in North America, are primarily negative—a time of ill health, loneliness, dependency, and poor physical and mental functioning (Donizzetti, 2019).

Stereotypes of ageism influence:

- Self-perception
- How older adults view other older adults
- Cognitive and physical performance
- Ability to recover from illness
- Health behaviors such as decisions to engage in cognitive, social, and physical activity
- Seeking medical assistance
- How older adults are treated by others and society as a whole

Older adults are often perceived to be vulnerable, lonely, physically and mentally impaired, and “old-fashioned.” They are expected to be slow and poor thinkers, movers, and talkers. All of these stereotypes have the potential to affect the mental, physical, social, and emotional well-being of an older adult and ultimately their length and quality of life.

Negative attitudes toward and discriminatory treatment of older adults are present in the healthcare community, across professional disciplines, and across care settings, having an effect on the quantity and quality of care provided to older patients and a profound influence on the type and amount of care offered, requested, and received.

Despite the growing need for more providers with geriatrics expertise, many medical and nursing students come to view the care of older adults as frustrating, uninteresting, and less rewarding overall. Attitudes are further shaped by the persistent misconceptions that older patients are demented, frail, and somehow beyond saving.

Ageism in the healthcare system discriminates against older adults in several ways, putting them at risk for undertreatment and overtreatment. For example, if a nurse has the belief that older

- Assisting-living facility (one-bedroom unit): $119/day or $3,628/month
- Nursing home
  - Semi-private room: $225/day or $6,844/month
  - Private room: $253/day or $7,698/month

(AoA, 2020)
adults are less healthy, less alert, and more dependent, then their initial assessment of the patient will reflect this belief. Or if the occupational or physical therapist believes that dependence in self-care normally goes with the aging process, the older patient will likely not be questioned regarding their strengths and abilities.

Other factors that increase the risk for under- and overtreatment include the decline in the number of providers with advanced geriatrics training. Secondly, more practitioners are opting out of participation in the Medicare system. Thirdly, older adults are frequently excluded from clinical trials of medications that are meant to help them, resulting in data that is problematic when caring for those with multiple chronic illnesses (Ouchida & Lachs, 2020).

Research has found that adults 65 years and older who hold more negative age stereotype beliefs and who perceive more age discrimination have a worsened perception of their own aging. Given the important role of self-perceptions, it is important that clinicians promote more positive self-perceptions in order to maintain or increase older adults’ well-being (Marquet et al., 2019).

MODELS AND GOALS OF CARE FOR THE OLDER ADULT

The U.S. population is aging rapidly, and this growth, along with a slow adaptive policy framework, is creating an urgent need to reengineer and improve the quality, safety, and cost-effectiveness of health systems to meet the needs of older adults. The nation’s decision makers are confronting an enormous range of specific challenges in caring for the aging. These include development of:

- Policies affecting older adults with multiple, serious chronic conditions: Costs of care; differential impact of healthcare costs and access by race, ethnicity, gender, socioeconomic status; improvements in the healthcare system models of care coordination, integrated mental health, and preventive health

- Policies affecting the economic and physical security of vulnerable and disadvantaged older adults: Access to low-income benefits (i.e., Medicare, Medicaid, food stamps, etc.); pensions and retirement income; employment and transitions to work; consumer protections (i.e., predatory lending, telemarketing fraud, etc.); financial literacy; nutrition education; environmental and transportation issues affecting older adults

- Policies that promote civic engagement (i.e., volunteerism) and community engagement by older adults and caregivers to improve the healthcare system and the well-being of all older adults (HAPF, 2020)

Models of Care

There is a need to shift from episodic acute illness care to a population health approach in the fields of geriatric and palliative care. Such an approach is an example of a model of care, which defines the way health services are delivered and outlines best-practice care and services to
improve access to and quality of healthcare, improve the patient’s quality of life, and moderate healthcare costs. Such models must integrate physical and mental health, long-term services and supports, social services, and home- and community-based services. Examples of models of care are described below.

**ACUTE CARE FOR ELDERS (ACE)**

Acute Care for Elders is a continuous quality improvement model of care designed to prevent the patient’s loss of independence in the performance of activities of daily living from hospital admission to discharge.

An ACE hospital unit consists of several core components:

- Patient-centered care with proactive geriatric assessments
- Nurse-driven care plans for the prevention and management of geriatric syndromes
- Comprehensive care transition planning beginning on admission
- Medical care review to prevent iatrogenesis and incident geriatric syndromes
- An environment modified to promote safe mobility and cognitive stimulation
  (Palmer, 2018; Flood et al., 2018)

**GERIATRIC SYNDROMES**

The term *geriatric syndrome* refers to common health conditions in older adults that do not fit into distinct organ-based disease categories and often have multifactorial causes. They may include:

- Cognitive impairment
- Delirium
- Incontinence
- Malnutrition
- Falls
- Gait disorders
- Pressure injuries
- Sleep disorders
- Sensory deficits
- Fatigue
- Dizziness
  (Ward & Reuben, 2020)
Using the ACE model, care is delivered by an interprofessional team that conducts frequent team meetings (rounds) to develop the geriatric care plans for each patient. In most ACE units, a geriatrician or geriatric advanced nurse practitioner either participates in the team meetings and/or is an attending practitioner for patients (Palmer, 2018; Flood et al., 2018).

This model encourages patients to be mobile. The physical design of the hospital unit is adapted to a patient’s age-related changes and includes special features to enhance a patient’s mobility and independence. The goals are to prevent or reduce:

- Delirium
- Functional decline
- Cognitive decline
- Falls
- Skin breakdown
- Immobility
- Constipation
- Use of indwelling catheters

(URMC, 2020)

PROGRAM OF ALL-INCLUSIVE CARE FOR THE ELDERLY (PACE)

A coordination model, PACE provides comprehensive medical and social services to certain frail, community-dwelling older adults, most of whom are dually eligible for Medicare and Medicaid benefits. An interdisciplinary team of health professionals provides PACE participants with coordinated care, enabling them to remain in the community rather than receive care in a nursing home. Eligible individuals must be age 55 or older, be eligible for nursing home care, and be able to live safely in the community. At a minimum, PACE centers must provide:

- Primary care services (physician and nursing services)
- Social work services
- Restorative therapy (physical and occupational therapy)
- Personal care and supportive services
- Nutritional counseling
- Recreational therapy
- Meals

(CMS, 2020)
GERIATRIC RESOURCES FOR ASSESSMENT AND CARE OF ELDERS (GRACE)

The GRACE model is designed to address healthcare challenges faced by low-income older adults with multiple chronic conditions. It is a home-based care model led by a geriatrician and including a nurse practitioner, social worker, pharmacist, and mental health liaison. This model supports office-based care management, with the goal of preventing unnecessary emergency department visits, hospitalizations, and long-term nursing home placement. The target population is 65 years or older with functional limitations and/or geriatric conditions (e.g., falls, depression, dementia) and a high risk for hospitalization. With this model, patients and families participate in the development of an individualized care plan (Health Innovation, 2018).

CARE COORDINATION MODEL

Care coordination in primary care practice involves deliberately organizing patient care activities and sharing information among all of the participants concerned with a patient to achieve safer and more effective care (AHRQ, 2018).

COMMUNITY HOME HOSPICE-BASED CARE

This model is an intensive, bundled form of home-based care for patients whose life expectancy is defined in months and who are no longer benefitting from disease-directed intervention. Care is provided by nurses, physicians, social workers, chaplains, and home aides (Twaddle & McCormick, 2020).

CERTIFIED NURSING FACILITY MODELS

Nursing homes are facilities that serve as healthcare residences for those who require a higher level of care than can be provided at home or in an assisted-living facility. One such nursing home model, the “household model,” combines elements of traditional nursing and a physical environment that is homelike, the goal being to create real community within a space that older adults recognize as home (PHI, 2018).

Nursing Models of Care

Nursing models of care emphasize maximizing the role of nurses and advanced practice nurses in the provision of care to older adults.

NURSES IMPROVING CARE FOR HEALTH SYSTEM ELDERS (NICHE)

NICHE is a nurse-led program designed to improve the quality of care for older adults. Components include:

- Nursing care models to support specialized geriatric care delivered by nurses, nursing assistants, and other frontline clinical staff
- Research-based clinical practice protocols for common nursing problems and syndromes experienced by hospitalized older adults
- Staff development, quality improvement, and care coordination models to identify barriers and promote effective geriatric care within and across hospital nursing units (Witkoski Stimpfel & Gilmartin, 2019)

**GERIATRIC RESOURCE NURSE (GRN)**

The GRN model of care focuses on identifying older adults for nonemergency, geriatric-specific needs by nurses educated in geriatrics and emergency department nursing. A GRN may partner with a social worker, who will offer referrals and information on skilled nursing home care, home healthcare, hospice, respite care, and other resources. Adoption of the GRN program:

- Provides excellent bedside nursing to older adults
- Develops a core group of nurses to serve as a resource to other staff
- Stimulates interest in gerontological care and elder care services
- Develops incentives and improves morale for nurses caring for the older adult
- Provides a mechanism for professional growth of nurses
- Enhances the nurse-patient relationship and patient satisfaction
- Promotes the effectiveness of interdisciplinary teams
- Increases implementation of evidence-based clinical practice
- Provides optimal utilization of hospital services
- Facilitates safe and effective discharges (MHS, 2020)

**TRANSITIONAL CARE MODEL**

The transitional care model is a nurse-led hospital discharge and home follow-up program for chronically ill older adults designed to prevent complications and rehospitalizations. The care is coordinated by a master’s level transitional care nurse trained in the care of people with chronic conditions. Two main focuses of subsequent home visits and phone contacts are:

- Identifying changes in the patient’s health
- Managing and/or preventing health problems, including making any adjustments in therapy in collaboration with the patient’s physicians

The nurse also accompanies the patient to the first physician visit following hospital discharge to ensure effective communication (Social Problems That Work, 2018).
Healthcare Goals for the Individual

Healthcare goals relate to the values and activities that matter most to individuals and that help motivate them to sustain and improve health. There is often a gap between what care team members know about what matters to their patients and what care these patients receive in accordance with their goals and preferences. When identified in a specific, actionable, and reliable manner, patients’ health outcome goals can guide decision-making.

COMMON CONCERNS

Discussions with older adults about what matters to them have identified the following five common themes:

- **A need to access information** about what services are available, how to access services, and how services can be paid for.

- **A need for better communication** between patients and care providers, as well as among care providers. Older adults experience care as fragmented and disease-focused, which can cause feelings of isolation and of being reduced to individual body parts—not the whole person. (See also the box below).

- **A desire for care to be delivered by providers who know them**, listen to them, spend adequate time with them, and offer the opportunity to be involved in decisions about care and treatment options.

- **Support** from family and staff in the community to cope with chronic disease and to continue to age in place.

- **Smooth transitions** between acute and community services. Discharge from the hospital is a concern when community support is inadequate. (William-Roberts et al., 2018)

GOAL SETTING

Older adults are able to attain health-related goals through collaborative goal planning, which enables professionals, patients, and researchers to monitor effects of care and support and to quantify the impact of the interventions. The goals of community-living older adults mostly aim at improving health and managing problems concerning physical health, mobility, or support, and can be attained through patient-centered care that:

- Puts the person in the center
- Matches the person’s needs and preferences in a holistic way
- Involves assessment, goal-plan development, and goal-plan evaluation

The **SMART framework** is one means to help set patient-centered goals (see table).
**SMART FRAMEWORK**

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<thead>
<tr>
<th>Label</th>
<th>Characteristic</th>
<th>Description</th>
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<tbody>
<tr>
<td>S</td>
<td>Specific</td>
<td>State the goal clearly.</td>
</tr>
<tr>
<td>M</td>
<td>Measurable</td>
<td>Identify and quantify the observable markers of progress.</td>
</tr>
<tr>
<td>A</td>
<td>Achievable</td>
<td>Break the goal down into smaller, actionable steps. Identify expected barriers and make a plan to address them.</td>
</tr>
<tr>
<td>R</td>
<td>Realistic</td>
<td>Be certain the goal reflects what is important to the individual.</td>
</tr>
<tr>
<td>T</td>
<td>Time-bound</td>
<td>Define the period in which the goal is to be attained and agree when to check progress.</td>
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(Rietkerk et al., 2018; Thornberry Ltd., 2019)

**Key strategies** to ensure that older adults’ expressed goals and preferences are incorporated into the plan of care should include:

- Patient education as part of care planning. Education is necessary to discuss harms and benefits of various treatment and care options.

- Understanding the patient’s rejection of options or plans presented. In some cases, preferences may conflict with the clinician’s medical advice. Both clinician and older adult may need to re-evaluate perspectives and work together to find alternatives.

- Leveraging interdisciplinary resources that are outside the clinical sphere to address older adults’ needs, such as housing, food, or access to social services.

- Engaging with community resources for addressing needs beyond the health system that may include support for social determinants of health such as transportation, financial support, and behavioral health.

(IHI, 2019)

**COMMUNICATING EFFECTIVELY WITH THE OLDER ADULT**

For the older adult, the ability to communicate effectively is central to self-esteem, identity, and quality of life. For the healthcare provider, effective communication is essential for understanding and assessing older adults and promoting their health.

**Therapeutic communication** is a person-centered interaction that involves using eye contact, open body language, and active listening. There are three separate subcategories to communications:

- Seeing the individual
- Being respectful
- Showing empathy and compassion
Older adults often report being treated with lack of respect and negative attitudes and receiving insufficient information. It is important to remember that older people are not a homogeneous group but have a wide range of life experiences that influence their perception of illness and their ability to communicate with healthcare professionals. Ineffective communication can cause older people to feel inadequate, disempowered, and helpless. It is important for providers to treat older people as individuals and to monitor and adapt communication accordingly.

It is helpful for healthcare providers to recognize whether they are communicating by talking with the older adult or talking to them. Older people need and are entitled to be recognized when matters involve them. Even if a person has dementia or memory loss, attention and comments should be directed to the patient.

Following are examples of practices to enhance communication with the older patient:

- Addressing the patient by last name, using the title the patient prefers (e.g., Mr., Ms., Mrs.) until told otherwise
- Avoiding familiar terms such as “Dear” and “Hon”
- Introducing oneself and showing an interest in wanting to hear the person’s concerns
- Assessing and matching the person’s communication style by listening to the volume, pace, pitch, and tonality (expressive or reserved) of their speech
- Being alert to and compensating for deficits in hearing or vision
- Not rushing and speaking more slowly so that the person will have time to process what is being asked for or said, since feeling rushed often leads to people believing they are not being heard or understood
- Avoiding interrupting, since once interrupted, an older adult is less likely to reveal all of their concerns
- Using active listening skills by facing the patient, maintaining appropriate eye contact, and using brief responses to indicate one has been listening
- Demonstrating empathy by watching for opportunities to respond to the person’s emotions
- Avoiding medical jargon and using common language
- Introducing information by first asking patients what they already know about their condition
• Asking if clarification is needed, such as having something written down
• Asking patients to state what they understand about their presenting problem and what they think needs to be done
• Using family history to gain insight into an older patient’s social situation as well as risk of disease
• Asking about living arrangements, transportation, and lifestyle to help determine appropriate interventions
(Jack et al., 2019)

Healthcare Reform Initiatives

Healthcare initiatives are planning documents establishing strategic priorities for tackling the nation’s most pressing health problems. Initiatives that address issues of concern to older adults include:

• Restructuring healthcare delivery systems
• Regulation of nursing homes and long-term care facilities
• Improving quality through financial incentives
• Strategies for chronic care coordination
• Mental health and preventive healthcare Medicare benefits
• Providing care for aging U.S. veterans
• Addressing disparities among various populations
(HAPF, 2020)

NATIONAL PLAN TO ADDRESS ALZHEIMER’S DISEASE

This plan establishes five goals to prevent future cases of Alzheimer’s disease and related dementias:

• Prevent and effectively treat Alzheimer’s disease by 2025
• Optimize care quality and efficiency
• Expand supports for people with Alzheimer’s disease and their families
• Enhance public awareness and engagement
• Track progress and drive improvement
(CDC, 2020a)
HEALTHY AGING IN ACTION (HAIA)

This initiative’s aim is to increase the length of people’s lives and ensure their lives are healthy and productive. HAIA is an effort to call attention to existing policies and programs that reflect the National Prevention Strategy’s approach of targeting prevention and wellness efforts to promote healthy aging, and offers recommendations that could further the strategy for an aging society (CDC, 2020a).

AGE-FRIENDLY HEALTH SYSTEMS

The Age-Friendly Health Systems initiative recognizes that older adults in the United States deserve safe, effective, and patient-centered care that aims to follow an essential set of evidence-based practices, cause no harm, and align with what matters to the older adult and their family caregivers. Age-Friendly Health Systems include the “4 Ms”:

- **Matters**: Know what matters to the older adult concerning specific outcome goals and care preferences, and align care with them across settings of care, including end-of-life issues.
- **Medications**: If medications are necessary, prescribe age-friendly ones that do not interfere with what matters to the older adult, their mentation, or mobility across settings of care.
- **Mentation**: Prevent, identify, treat, and manage delirium across settings of care.
- **Mobility**: Ensure that each older adult moves safely and on a daily basis to maintain function and what matters to them.
  
  (IHI, 2020)

OLDER AMERICANS ACT (OAA) OF 2020

The OAA of 2020 provides policy direction, principles, and financial support for home- and community-based services for older adults through discretionary funding programs. Occupational therapy interventions, programs, and practices that target community-based interventions, health promotion, and disability prevention are suited to support the initiatives through the OAA (Marfeo, 2020).

PHYSICAL CHANGES OF AGING

Physiologic aging may be the most significant factor challenging quality of life. It is not known exactly how and why people change as they get older, and there are many theories about it. Most gerontologists believe that aging is due to the interaction of many lifelong influences, including heredity, environment, culture, diet, exercise, leisure, and past illnesses, to name a few.
Some body systems begin aging as early as age 30. Other aging processes are not common until much later in life. Some changes always occur with aging, but they occur at different rates and to different extents. There is no way to predict exactly how any given individual will age (CDC, 2020b).

**Musculoskeletal Changes**

The musculoskeletal system is comprised of bone, muscle, joints, tendons, ligaments, and cartilage. Musculoskeletal disorders that are common among older patients consist of the following triad: loss of muscle mass and function, tendinopathies, and arthritis. Their common shared trait is progressive loss of neuromuscular performance with a risk of adverse outcomes, including pain, mobility disorders, increased risk of falls and fractures, and disability or impaired ability or to perform activities of daily living.

**Bone** mass decline is approximately 0.5% per year in healthy older people, and age-related changes in women are compounded by menopausal changes in bone mass and function. The increased proinflammatory environment in healthy older adults promotes bone loss (osteoporosis). Vitamin D deficiency, common in older people, further accelerates this loss. Osteoporosis increases the risk for bone fractures and slows the rate of repair once a fracture occurs.

Height changes occur as the vertebrae lose some of their mineral content, making each bone thinner. Vertebral discs gradually lose fluid and become thinner. The spinal column becomes curved and compressed, making the middle of the torso shorter. Foot arches become less pronounced, and overall height decreases. Posture may become stooped, and postural hyperkyphosis may occur, creating what is referred to as a “Dowager’s hump.” Knees and hips become more flexed, and the neck may tilt backward. The shoulders may narrow, while the pelvis becomes wider. Bones in the arms and legs thin but do not change in length, making them appear longer in comparison with the shortened trunk.

Bone spurs caused by aging and overall use of the spine may form on the vertebrae, narrowing the space that contains the spinal cord. These may pinch the spinal cord or its nerve roots and cause weakness or numbness in the arms or legs. Compression fractures of the vertebrae can cause pain and reduce mobility (LibreTexts, 2020).

With aging, **muscle** mass decreases in relation to body weight by about 30% to 50% in both men and women. Loss is greater in the legs than the arms, and the loss accelerates with increasing age. Lost muscle tissue may be replaced with a tough, fibrous tissue, most noticeably in the hands, which may appear thin and bony.

The loss of muscle is associated with decreased strength, slower movement, and movement limitations. It also contributes to age-related insulin resistance, age-related changes in body composition, and volumes of distribution for water-soluble drugs.
Lipofuscin (an age-related pigment left over from breakdown and absorption of damaged blood cells) and fat are deposited in muscle tissue. Infiltration of fat (myosteatosis) and connective tissue decreases muscle quality.

Recovery of older muscle after injury is slowed and frequently incomplete, and muscle contractions may occur in those who are unable to move on their own or who do not stretch their muscles with exercise.

Tendons attaching muscle to bone begin to shrink and lose mass, and a decrease in water content results in tissue stiffness and less ability to tolerate stress (NIH, 2020a).

Joint changes may lead to inflammation, chronic pain, stiffness, and deformity and may result in functional disability. Joint changes affect almost all older people, ranging from minor stiffness to severe osteoarthritis.

As joints age, they become stiffer and less flexible. Joint fluid decreases, and cartilage may begin to rub together and wear away. Minerals may deposit in and around some joints, commonly in the shoulder. Degenerative changes occur in the hip and knee joints. Finger cartilage and bone thicken slightly. Changes in the finger joints are more common in women.

Ligaments tend to shorten and lose some flexibility, resulting in joint stiffness, which increases the probability of injuries including sprains and ruptures caused by low-energy trauma or joint use. Rate of ligament healing declines with aging.

Gait becomes slower and shorter. Walking may become unsteady and there is less arm swinging. Risk for injury increases from falls due to gait changes, instability, and loss of balance (NIH, 2020a).

Foot problems are common with aging, all of which may interfere with functioning and daily activities. Common age-related changes may include hallux valgus, also known as a bunion, in which the great toe moves out of alignment, deviates, and rotates. Other problems may include hammer toe (hyperflexion of the proximal interphalangeal joint) and claw toe (hyperflexion of the proximal and distal interphalangeal joints). Toe deformities may result from wearing ill-fitting shoes or from rheumatoid arthritis, diabetes, or neurologic disorders (Judge, 2019; Besdine, 2019).

ASSESSMENT

Assessment of the aging musculoskeletal system poses the challenge of distinguishing between the normal effects of aging and the first signs of disease. For example, a problem in one joint can mean trauma, while a problem in more than one can mean a systemic condition.

The joints are examined for tenderness, swelling, subluxation, crepitus, warmth, redness, and other abnormalities, which may be indicative of a disorder such as osteoarthritis or chronic rheumatoid arthritis.
Active and passive range of joint motion should be determined, and the presence of contractures should be noted. Variable resistance to passive manipulation of the extremities sometimes occurs with aging.

Older patients should be asked about gait-related issues such as difficulty with walking, balance, or both, including whether they have fallen or fear that they might fall. Specific capabilities should be assessed and patients asked whether they can:

- Go up and down stairs
- Get in and out of a chair, shower, or tub
- Walk as needed to purchase and prepare food and do household chores

Physical examination of the older adult should include:

- **Lower extremity strength**: Can the patient get out of a chair without using their arms?
- **Gait assessment** with and without assistive devices (if applicable) including:
  - Gait speed
  - Cadence
  - Step length, height, and swing
- **Balance assessment**

Gait speed, chair rise time, and ability to successfully maintain tandem stance (standing heel-to-toe without losing balance for 10 seconds) are independent predictors of the ability to perform instrumental activities of daily living as well the risk of nursing home admission and death (Judge, 2019). Other testing may sometimes be required, including a brain CT or MRI, if a patient presents with poor gait initiation, chaotic cadence, or a very stiff-appearing gait.

**MANAGEMENT AND PREVENTION**

Common management strategies for musculoskeletal disorders include physical exercise, either alone or in combination with nutritional intervention. High-intensity resistance training can improve strength and mass of skeletal muscles and may counteract age-related decline in muscle size and function. A balanced program of both endurance and strength exercises performed on a regular schedule is usually recommended. Nutritional supplements may be advised, including vitamin D.

- Management of **tendinopathies** includes exercise, corticosteroid or platelet-rich plasma injections, physical therapy evaluation/treatment, and topical glyceryl trinitrate (nitroglycerin).
- Management of **osteopenia or osteoporosis** involves obtaining bone density measurements, encouraging exercise, a diet high in calcium and vitamin D, and
bisphosphonate medications such as alendronate (Fosamax) orally or zoledronic acid (Reclast) IV infusions.

- **Arthritis** alters the joints biochemically, structurally, and physiologically. Recommendations include self-management, weight loss, and an exercise program to strengthen joints and supporting structures, as well as optimizing joint mobility. Physical therapy and supervised progressive exercise programs are often encouraged. Aquatic exercises may be beneficial as well as assistive devices for ambulation, braces, splints, and taping (if indicated) for comfort or to provide mechanical support.

Interventions for managing arthritis may also include physical modalities, such as heat and cold, techniques to manage or control edema and inflammation, therapeutic activities and exercises, or provision of custom or prefabricated orthotic devices.

Pharmacological treatment for arthritis varies, the most common being acetaminophen following by NSAIDs. Interventions for osteoarthritis typically begin with intra-articular injections and can escalate to total joint replacement.

**Falls** are the most common cause of fractures in older people. Most falls that occur are fragility fractures in those who have multiple comorbidities and functional impairments. Fragility fractures usually occur in the hip, spine, wrist, pelvis, humerus, rib, and ankle. These fractures can lead to functional decline, institutionalization, and death. Management depends upon the site of fracture, risks and benefits of nonsurgical versus surgical intervention, and the patient’s goals of care. Most older adults can benefit from targeted programs to prevent falls and optimize bone health (Minetto et al., 2020). (See also “Fall Prevention Interventions” later in this course.)

**Integumentary Changes**

The integumentary system, which includes the skin, hair, nails, and glands, is the largest organ of the body.

**Skin changes** are the most visible signs of aging. Growths such as skin tags, warts, rough patches (keratoses), and other blemishes are more common. More than 90% of all older people have some type of skin disorder, such as xerosis, pruritus, eczematous dermatitis, and purpura (NIH, 2020b).

As the skin ages, the epidermal layer thins; however, the number of cell layers remains unchanged. Decreased concentration of 7-dehydrocholesterol in the epidermis results in decreased synthesis of vitamin D necessary for bone health. Ability to sense touch, pressure, vibration, heat, and cold may decrease.

As the dermis ages, there is reduction in the ability to regenerate, leading to slower wound healing. Wrinkling of the skin results from weakening of muscles under the skin, decreased collagen and elastin production in the dermis, and decreased ability of skin to retain moisture. Blood vessels of the dermis become more fragile, leading to bruising, bleeding under the skin (senile purpura), cherry angiomas, and similar conditions. The activity of accessory structures in the dermis decreases, generating thinner hair and nails. Reduced sweating can lead to heat
intolerance. Sebaceous glands produce less sebum and cerumen, resulting in dryness and itchiness.

As the subcutaneous or hypodermal layer thins, less insulation and padding are provided, increasing the risk of skin injury and reducing the ability to maintain body temperature, which increases the risk of hypothermia. Loss in the fat layer also reduces absorption of medications by the skin. Pressure injuries (ulcers) may develop from reduced activity, poor nutrition, and illnesses.

Nails grow more slowly and become dull, brittle, yellowed, opaque, and thickened, and ingrown toenails become more common. Hair color changes due to decreased follicular production of melanin. Hair thickness changes, and rate of hair growth slows. Male-pattern and female-pattern baldness may develop (NIH, 2020b).

ASSESSMENT

The assessment of the skin of an older adult is the responsibility of all members of the team. Some providers may do a more in-depth assessment than others, but all should be aware of the need to protect the integrity of the skin.

Assessment begins with collecting data about patient concerns, such as rate of wound healing, bruising, falls, incontinence, ability to change position without assistance, and self-care abilities. Skin should be examined for:

- Impaired integrity (particularly of the skin covering bony prominences), roughness, sloughing, complaints of pruritis
- Suspicious lesions such as keratoses and moles. Suspicious lesions should be evaluated for possible premalignancy and malignancy using the ABCDE rule (see table below). (Fraser, 2020; Besdine, 2019; Nursecepts, 2018)

<table>
<thead>
<tr>
<th>Label</th>
<th>Characteristic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Asymmetry</td>
<td>When the shape differs from side to side</td>
</tr>
<tr>
<td>B</td>
<td>Border</td>
<td>Irregular or uneven</td>
</tr>
<tr>
<td>C</td>
<td>Color</td>
<td>Irregular, with patches of black, brown, red, blue, or white</td>
</tr>
<tr>
<td>D</td>
<td>Diameter</td>
<td>Larger than 1/4 inch (6 mm)</td>
</tr>
<tr>
<td>E</td>
<td>Evolving</td>
<td>Any change in size, shape, color, or texture, or any new symptoms such as itching, bleeding, or crusting</td>
</tr>
</tbody>
</table>

(Prevent Cancer Foundation, 2020)
MANAGEMENT AND PREVENTION

Maintaining skin integrity in the older adult is essential and requires a holistic and interdisciplinary approach. Skin basics include:

- Educating patients and caregivers
- Performing regular skin assessments
- Maintaining mobility
- Relieving pressure
- Using safe manual handling techniques
- Providing skin care, paying attention to high-risk areas
- Encouraging good nutrition and hydration

Older patients and caregivers should be encouraged to inspect feet daily for skin color, dryness, swelling or tenderness, blisters, cracks, sores, ulcers, corns, ingrown toenails, paresthesia, or pain. Other common foot problems in older individuals include calluses, foot deformity, fungal infection, and warts. Many of these are often the result of inappropriate or inadequate foot care, mechanical causes, infection, as well as underlying problems such as diabetic vascular disease, or congenital foot deformities. Podiatry consult may be recommended (Fraser, 2020; EHS, 2018).

Because many older adults had chicken pox as children, they are at risk for reactivation of the varicella zoster virus, which causes shingles, and should obtain a vaccine if there are no contraindications (Fraser, 2020; MSKL, 2020).

Dry skin, skin tears, moisture-related skin damage, and pressure injuries are the most common skin problems experienced by older people. Skin integrity assessment should be conducted on admission to any facility and at least daily depending on the individual’s circumstances. High-risk patients require skin inspection at least once per shift in addition to admission or transfer to another facility (Fraser, 2020; Todd, 2018).

Mobility is important for circulation and in reducing prolonged exposure to external forces such as pressure, shear, and friction that are implicated in pressure injury formation. Interventions may be required to limit exposure to such forces if the patient has reduced mobility, loss of protective sensation (e.g., diabetic neuropathy), is at nutritional risk or malnourished, acutely ill, or has any condition that decreases the capacity to respond to pressure and/or reduces tissue tolerance to pressure.

Pressure-relieving surfaces may be required, such as pressure-relieving mattresses and pressure-redistribution seating cushions. Other devices might include heel wedges and off-loading shoes or boots to reduce pressure to heels and free-standing self-help poles (“monkey bars”) and/or side bars to assist a person to reposition in bed.
Safe manual handling techniques and use of appropriate manual handling equipment facilitates safe patient/resident transfer, reducing risk of injury. Slide sheets, additional assistance, or a lifter aid (e.g., a Hoyer mechanical lift) can be used for the safe transfer of patients.

Skin is cleansed (avoiding hot water), dried thoroughly, and moisturized daily to reduce the risk of excoriation. Using non-soap cleansers and shampoos with a pH close to 5.5 helps protect the acid mantle and prevent skin from drying out, while moisturizers applied twice a day or more often hydrate the skin. If the person is incontinent, any continence aid is checked and changed regularly and exposed skin cleansed, carefully dried, and moisturized. Protective skin barriers may reduce associated dermatitis. In patients with high BMI, particular attention is paid to creases and skin folds.

Adequate fluids must be taken to avoid dehydration, which can put the person at risk for compromised skin integrity and reduced tissue tolerance to pressure. A referral to a dietitian may be ordered for determining appropriate nutrition.

Referral to a physical therapist and occupational therapist may also be ordered to ensured the best possible outcome for the patient (Fraser, 2020; Todd, 2018).

Cardiovascular Changes

Cardiac aging is associated with left ventricle hypertrophy, fibrosis, and diastolic dysfunction, resulting in reduced cardiac output. Hypertrophy is an adaptive mechanism to maintain cardiac function in response to age-induced structural changes, causing the heart to enlarge and develop thicker walls and slightly larger chambers mainly due to an increase in the size of individual muscle cells. These changes result in reduced left ventricular filling, which can lead to heart failure, especially in older people with other diseases such as hypertension, obesity, and diabetes.

The walls of the arteries and arterioles also become harder and thicker (arteriosclerosis). Deposits of yellowish plaque containing lipids and cholesterol (atherosclerosis) build up on the artery walls, narrowing the lumen. Since arteries and arterioles become less elastic, blood pressure cannot adjust quickly when people stand, putting them at risk for dizziness or fainting. And because blood vessels become less elastic with age, they do not relax quickly, causing blood pressure to increase during systole (Gupta & Shea, 2019; Fajemiroye et al., 2018).

Approximately 80% of deaths attributed to acute coronary syndromes occur in patients 65 years of age and older. Older adults are also at increased risk of major complications from therapeutic interventions. The prevalence of peripheral arterial disease increases progressively with age and is often predictive of the presence of coronary artery and cerebrovascular disease.

Heart rate at rest does not change significantly during the aging process but does not increase as much during physical activity as it did when younger. One reason for this is the depression of spontaneous electrical activity of the heart’s natural pacemaker, the sinoatrial node, that results from ischemia or necrosis of the pacemaker cells due to decreased perfusion.
The prevalence and complexity of cardiac arrhythmias also increases with age (Kyriazis & Saridi, 2020; Harper et al., 2019).

**ASSESSMENT**

Geriatric assessment of the cardiovascular system focuses on common problems among that population. Fatigue and breathlessness are signals that the heart is not functioning as well as it should. Most often heart failure is the result of coronary artery disease or heart attack, but faulty heart valves, long-standing high blood pressure, or genetic disease may also be the cause. The mnemonic **FACES** can be used to quickly spot symptoms of heart failure.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Fatigue</td>
</tr>
<tr>
<td>A</td>
<td>Activity limitation</td>
</tr>
<tr>
<td>C</td>
<td>Congestion resulting in coughing, wheezing, breathing difficulty</td>
</tr>
<tr>
<td>E</td>
<td>Edema or ankle swelling</td>
</tr>
<tr>
<td>S</td>
<td>Shortness of breath</td>
</tr>
</tbody>
</table>

Important tools for diagnosis include an echocardiogram, stress test, and blood test for B-type natriuretic peptide, which is released when the heart is under stress.

Atrial fibrillation (AF) is the most common sustained dysrhythmia in the geriatric population. Over 50% of all patients with AF are 75 years or older. Atrial fibrillation is correlated with an increased risk of thrombosis, resulting in a four-times greater risk of imminent stroke. ECG is the primary tool for diagnosing AF. Holter monitor may be used to assess heart rhythm for 24 hours. Echocardiogram may be used to diagnosis thrombosis.

Age-related changes in blood pressure regulation lead to greater variability in blood pressure and postural changes. Multiple blood pressure readings, including orthostatic measurements, may be part of the assessment to accurately diagnose and safely manage hypertension. Orthostatic blood pressures give clues about fluid status, medication effects, and causes of dizziness or falls.

Peripheral vascular disease is more common in the aging population. Symptoms of peripheral artery disease include pain, achiness, fatigue, burning, or discomfort in muscles of the feet, calves, or thighs which most often appear during walking or exercise, and diminish after several minutes of rest.

Chronic venous insufficiency is commonly due to malfunctioning valves in the veins resulting in stasis dermatitis, varicose veins, and ulcers that are slow to heal on legs or ankles (Harper et al., 2019; NIH, 2020c; Harvard Health Publishing, 2019).
MANAGEMENT AND PREVENTION

Management and prevention of cardiovascular issues in the older adult include patient education regarding modifying controllable risk factors such as diabetes, hypertension, overweight, diet, exercise, smoking, and alcohol intake. This includes instruction on signs and symptoms of acute myocardial infarction; routine exercise; and nutrition and low-fat, low-cholesterol, and low-sodium diets.

**Hypertension** management also requires lifestyle changes and pharmaceutical therapy, which is often started low and increased, if indicated. Education on stress management and encouragement of some form of relaxation technique are also recommended.

The goal of therapy for **atrial fibrillation** is the prevention of thromboembolism, which is often managed with anticoagulation therapy, such as warfarin (Coumadin) or apixaban (Eliquis). Education is provided regarding emergent issues and instructions are given for seeking treatment of anticoagulant side effects.

Management of **peripheral vascular disease** includes general prevention measures such as avoiding prolonged standing or sitting, exercising on a regular basis, other lifestyle recommendations, and strategies to better manage other chronic medical conditions that directly affect progression of peripheral vascular disease, including hypertension, diabetes, dyslipidemia, and obesity.

**Pharmaceutical therapy** includes antiplatelet or anticlotting agents, statins, and medications that increase blood supply. Nonpharmaceutical therapy includes extremity elevation, compression stockings, exercise, and wound care for ulcerations caused by chronic venous insufficiency (Cash & Glass, 2019).

**Thermoregulatory Changes**

Changes in thermoregulation control with aging are associated with a decreased physiologic ability to dissipate heat. This has been attributed to a combination of factors, including alterations in sweating, skin blood flow, body fat, and muscle mass, as well as age-related changes in cardiovascular function (Balmain et al., 2018; Abutair et al., 2018).

Older adults have an increased threshold for the onset of **sweating** and a diminished response when sweating occurs. Because the older body loses body fat and becomes less efficient at generating heat, resistance to cold temperatures is reduced, increasing the risk for hypothermia.

It is important to consider impaired regulatory response in older adults because it may contribute to heat-related illness or hypothermia and adversely affect outcomes during daily activities. Because of an altered response to hot environments and diminished perception of discomfort despite being physiologically challenged, older adults are more likely to have heat- and cold-related illnesses. Older adults report feeling cool or cold even in very warm environments and generally prefer environmental temperatures that are at least 75 °F. Half of the older people who
develop hypothermia die before or soon after being found (Balmain et al., 2018; Johns Hopkins Medicine, 2020).

Older people are also at high risk for hypothermia because they often have other illnesses or take medications that interfere with the body’s ability to regulate its temperature. Substandard living conditions and poor nutrition have been associated with hyperthermia and hypothermia. Social isolation increases risk, as older people are rarely able to self-report these conditions. Living alone and having dementia may increase risk if cognitive skills do not allow for adjustment of a thermostat, wearing of proper clothing, or the ability to recognize symptoms and call for help (Abutair et al., 2018).

Hyperthermia can be caused by excessively high environmental temperatures, cardiovascular disease, fluid or electrolyte imbalance, alcohol and medications, or increased heat production caused by exercise, infection, or hyperthyroidism. Individuals with chronic lung disease (e.g., asthma, COPD) may be particularly vulnerable to heat-related conditions. Those most prone to heat exhaustion are older adults, those with hypertension, and those who are active in a hot environment (CDC, 2018; Raza, 2020; Helman, 2019).

Urinary System Changes

KIDNEYS

Aging changes that occur in the kidneys include a decrease in the volume of kidney tissue. Over an average lifespan nephrons are reduced by half, and by age 75 atherosclerosis of renal arteries reduces renal blood flow by half. Glomerular filtration rate and maximum excretory capacity are reduced by the same proportion.

The kidneys can still maintain normal homeostatic mechanisms and waste disposal within limits, but they are less efficient, need more time, and their reserves may be minimal. Therefore, relatively minor degrees of dehydration, infection, or impaired cardiac output may lead to kidney failure. Loss of renal reserve increases the risk for toxic accumulation of renally cleared medications.

The kidneys have a central role in maintaining normal levels of most electrolytes. Reduced diluting capacity of the kidney increases the risk of hyponatremia in older patients, particularly those on a low-protein diet. Kidneys demonstrate impaired renal conservation of sodium in response to an acute reduction of sodium intake as well as impaired ability to rapidly excrete a large sodium load. Inability to remove potassium from the blood may lead to abnormal heart rhythms and sudden death (Physiopedia, 2021c).

The kidneys play a role in glucose homeostasis. Under normal circumstances, the kidneys filter and reabsorb 100% of glucose. In addition, they produce glucose by gluconeogenesis, contributing 20% to 25% of circulating glucose (Bhimma, 2018). Diabetes mellitus is the most common cause of chronic kidney disease. Hyperglycemia damages the glomeruli within each kidney, resulting in an increased glomerular filtration rate. About 10% to 40% of those with type 2 diabetes will eventually develop end-stage renal failure.
The kidneys also produce erythropoietin, a hormone that stimulates stem cells in bone marrow to produce red blood cells. Kidney disease leads to a decline in production of erythropoietin, which is one of the causes of unexplained anemia in older adults. Most people with kidney disease will develop anemia (NKF, 2020; Artz, 2019).

**Renal Function Assessment**

Physical assessment begins with the patient’s overall appearance. Chronic renal disease can cause yellowing of the skin, brown nail beds, excoriation from chronic pruritus, and volume excess resulting in edema and distention of vessels in the neck. Symptoms of kidney failure include weakness, shortness of breath, lethargy, edema, pruritis, loss of appetite, sleep disturbances, and confusion.

Laboratory tests may include electrolytes, complete blood count, serum creatinine (the end product of muscle and protein metabolism), and blood urea nitrogen (BUN) (which measures the renal excretion of urea nitrogen, a by-product of protein metabolism). Renal disease results in increased creatinine levels and does not increase until at least 50% of the renal function is lost.

When liver and kidney dysfunction are both present, BUN levels actually decrease, reflecting liver failure but not kidney failure. BUN level is not always elevated with kidney disease but is highly suggestive of kidney dysfunction (NKF, 2020; UM, 2020; Devu, 2018).

**BLADDER AND URETHRA**

Aging increases bladder dysfunction, including reduction in bladder capacity, uninhibited contractions, and decreased urinary flow rate. Urinary tract infections common in older people have more systemic effects. They are commonly seen in older adults admitted to hospital because of a fall or acute confusion.

The urethra can become blocked. In women this can be due to weakened muscles caused by bladder or vaginal prolapse, and in men by an enlarged prostate gland. Benign nodular hyperplasia (BPH) of the prostate is present in 75% of males over 80 years of age. Histological (latent) prostatic carcinoma is present in most males above the age of 90 (Physiopedia, 2021c).

Urinary incontinence is a significant health problem for older adults, both physically and psychologically. Women are disproportionately affected, with up to 50% over age 60 experiencing incontinence at least once per week. Common age-related physiologic changes predisposing to incontinence include decreased bladder capacity, benign prostatic hyperplasia in men, and menopausal loss of estrogen in women. Other risk factors include immobility, certain types of medications, obesity, smoking, malnutrition, delirium, depression, sensory impairment, and environmental barriers (NIH, 2020d; Dowling-Castronov & Spiro, 2020).
Bladder and Urethra Assessment

Assessment includes a history and physical. Urinalysis is done to check for infection or blood or other abnormalities.

Urinary tract infections (UTIs) can cause sudden confusion (delirium) in older people and people with dementia. If the person has a sudden and unexplained change in behavior, such as increased confusion, agitation, or withdrawal, it may be due to a UTI. Dehydration should also be ruled out as a cause for these changes.

Urethral irritation is suspected when the patient reports discomfort with urination. BPH is also common in older men and can cause uncomfortable symptoms such as frequency or urgency, difficulty initiating urine stream, weak or intermittent urine stream, dribbling at the end of urination, and inability to completely empty the bladder. Postvoid residual measurement may be done to determine the amount of urine remaining in the bladder after urination. If further information is necessary, urodynamic testing and ultrasound may be done (Devu, 2018).

Patients with a complaint of incontinence may be asked to maintain a bladder diary for several days that records fluid intake, urination times and amounts, urge to urinate, and number of urinary incontinence episodes. It is also important to determine whether the person is not self-dehydrating for fear of having an accident.

TYPES OF URINARY INCONTINENCE

Assessment of a patient with the complaint of incontinence involves determining the type of urinary incontinence that may be present.

- **Stress** incontinence: Urine leaks as pressure is put on the bladder, e.g., during exercise, coughing, sneezing, laughing, lifting heavy objects
- **Urge** incontinence: Sudden need to urinate with inability to hold urine long enough to get to the toilet
- **Overflow** incontinence: Small amounts of urine leak from a bladder that is always full
- **Functional** incontinence: Problem getting to the toilet because of mobility issues; may occur despite normal bladder control
- **Transient** incontinence: Incontinence due to reversible causes (see “DIAPPERS Mnemonic” table)
### DIAPPERS MNEMONIC

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Delirium or acute confusion</td>
</tr>
<tr>
<td>I</td>
<td>Infection (symptomatic UTI)</td>
</tr>
<tr>
<td>A</td>
<td>Atrophic vaginitis or urethritis</td>
</tr>
<tr>
<td>P</td>
<td>Pharmaceutical agents</td>
</tr>
<tr>
<td>P</td>
<td>Psychological disorders (depression, behavioral disturbances)</td>
</tr>
<tr>
<td>E</td>
<td>Excess urine output due to excess fluid intake, alcoholic or caffeinated</td>
</tr>
<tr>
<td></td>
<td>beverages, diuretics, peripheral edema, congestive heart failure, or metabolic</td>
</tr>
<tr>
<td></td>
<td>disorders such as hyperglycemia or hypercalcemia</td>
</tr>
<tr>
<td>R</td>
<td>Restricted mobility</td>
</tr>
<tr>
<td>S</td>
<td>Stool impaction</td>
</tr>
</tbody>
</table>

(Vasavada, 2019)

**Bladder and Urethra Dysfunction Management**

Patients presenting with symptoms of urinary tract infection should be placed on an appropriate antibiotic.

Urinary retention is most commonly caused by benign prostatic hypertrophy (BPH), whose main treatments include:

- Active surveillance by a urologist
- Medications: Alpha blocker tamsulosin (Flomax) and 5-alpha reductase inhibitor finasteride (Proscar)
- Less invasive procedures, such as a prostatic urethral lift (PUL) that lifts and compresses the prostate to prevent urethral blockage; water vapor thermal therapy and transurethral microwave therapy (TUMT) that destroys prostate cells; and catheterization, intermittent or indwelling
- Invasive surgical procedures, including transurethral resection of the prostate (TURP) (AUA, 2020)

Management of urinary incontinence depends on the type of incontinence, severity, and underlying cause, and a combination of treatments may be used (see table).
## INTERVENTIONS FOR URINARY INCONTINENCE

<table>
<thead>
<tr>
<th>Type</th>
<th>Interventions</th>
</tr>
</thead>
</table>
| Lifestyle changes           | • Weight loss  
• Smoking cessation  
• Alcohol avoidance  
• Decreased caffeine intake  
• Prevention of constipation  
• Avoiding heavy lifting |
| Behavioral techniques       | • Scheduled or delayed timed urination  
• Double voiding |
| Physical therapy            | • Pelvic floor exercises (e.g., Kegel’s)  
• Muscle-strengthening exercises  
• Electrical stimulation  
• Biofeedback |
| Occupational therapy        | • Bladder retraining  
• Modifications to food and fluids  
• Relaxation techniques  
• Support for integration of training |
| Medications                 | • Anticholinergics  
• Alpha blockers for men  
• Topical estrogen for women |
| Medical devices             | • Vaginal rings and urethral inserts |
| Surgery                     | • Single sling procedures  
• Bladder neck suspension  
• Prolapse surgery  
• Artificial urinary sphincter implants |
| Supportive interventions and devices | • Absorbent pads  
• Protective undergarments, modified clothing  
• Intermittent catheterization  
• Condom catheter for men  
• Urethral plugs and penile clamps |

(Mayo Clinic, 2019a; Cunningham & Valasak, 2019)
Respiratory Changes

Aging of the respiratory system reduces the capacity of all pulmonary functions, which may lead to decompensation when the system is stressed. The changes contribute somewhat to an older person’s reduced ability to do vigorous exercise, especially intense aerobics, but these changes seldom lead to symptoms. They are compounded, however, by the effects of heart and lung disease, especially those that result from smoking.

The effects of aging in other areas of the body affect the lungs. These include changes in the bones and muscles of the chest and spine. Bones become thinner and change shape and can alter the shape of the ribcage, resulting in decreased expansion and contraction while breathing. The diaphragm becomes weakened, and this may impair both inhalation and exhalation. These changes may lower the oxygen level in the body and raise carbon dioxide levels, resulting in tiredness and shortness of breath.

Muscles and other tissues adjacent to the airways may lose the ability to keep airways completely open, and progressive calcification of the walls of the trachea and bronchi causes increasing rigidity, resulting in a gradual decrease in maximum breathing capacity. Aging also causes the walls of the alveoli to deteriorate, lose shape, and become baggy. Dead space increases with age as larger airways increase in diameter. These changes can allow air to become trapped in the lungs, making it hard to breathe and impairing gas exchange.

The nervous system, which monitors respiratory volume and blood gas levels and regulates respiratory rate, may lose some of its function. Breathing may become more difficult and gas exchange impaired. Nerves in the airways that trigger the protective cough reflex become less sensitive, resulting in contamination of the lower airway through aspiration, silent or otherwise. Dysphagia or impaired esophageal motility, also common in old age, may exacerbate the tendency to aspirate.

Decline in effectiveness of the immune system means the body is less able to fight lung infections and less able to recover following exposure to smoke or other harmful substances (NIH, 2020e). The onset of pneumonia in the older patient can often be rapid, and prognosis is poor in severe pneumonia.

Normal aging results in a number of changes to the structure and function of the respiratory system (see table).
### AGE-RELATED CHANGES IN THE RESPIRATORY SYSTEM

<table>
<thead>
<tr>
<th>Respiratory Function</th>
<th>Pathophysiologial Changes</th>
<th>Clinical Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanics of breathing</td>
<td>• Increased chest wall compliance&lt;br&gt;• Loss of elastic recoil&lt;br&gt;• Decreased respiratory muscle mass and strength</td>
<td>• Decreased vital capacity&lt;br&gt;• Increased reserve volume&lt;br&gt;• Decreased expiratory flow rate</td>
</tr>
<tr>
<td>Oxygenation</td>
<td>• Increased ventilation-perfusion mismatch&lt;br&gt;• Decreased alveolar surface area for gas exchange&lt;br&gt;• Decreased CO₂ diffusion capacity</td>
<td>• Decreased PaO₂&lt;br&gt;• Increased A-a (alveolar-arterial) oxygen gradient</td>
</tr>
<tr>
<td>Control of ventilation</td>
<td>• Decreased responsiveness of central and peripheral chemoreceptors to hypoxemia and hypercapnia</td>
<td>• Decreased tidal volume (Vt)&lt;br&gt;• Increased respirator rate&lt;br&gt;• Increased minute ventilation</td>
</tr>
<tr>
<td>Lung defense mechanism</td>
<td>• Decreased number of cilia&lt;br&gt;• Decreased effectiveness of mucous clearance&lt;br&gt;• Decreased cough reflex&lt;br&gt;• Decreased cellular immunity&lt;br&gt;• Decreased immunoglobulin A (IgA), which neutralizes viruses</td>
<td>• Decreased ability to clear secretions&lt;br&gt;• Increased susceptibility to infections&lt;br&gt;• Increased risk of aspiration</td>
</tr>
<tr>
<td>Sleep and breathing</td>
<td>• Decreased ventilatory drive&lt;br&gt;• Decreased upper airway muscle tone&lt;br&gt;• Decreased arousal</td>
<td>• Increased frequency of apnea, hypoxemia, and arterial oxygen desaturation during sleep&lt;br&gt;• Increased risk of aspiration&lt;br&gt;• Snoring&lt;br&gt;• Obstructive sleep apnea</td>
</tr>
</tbody>
</table>
Exercise capacity

- Muscle deconditioning
- Decreased muscle mass
- Decreased efficiency of respiratory muscles
- Decreased reserves
- Decreased maximum O2 consumption

Breathing pattern

- Decreased responsiveness to hypoxemia and hypercapnia
- Change in respiratory mechanics
- Increased respiratory rate
- Decreased tidal volume (Vt)

(Meiner & Yeager, 2019)

ASSESSMENT

A history can reveal previous illnesses, occupational and environment exposures, family history, travel history, and symptoms of dyspnea, chest pain, wheezing, stridor, hemoptysis, and cough. When more than one symptom occurs concurrently, such as fever, weight loss, and night sweats, the focus is on the primary symptom.

Physical exam includes assessment of general appearance, presence of discomfort and anxiety, alterations in body shape, and chest wall deformities (CDC, 2020c).

When an older person has an infection, the body may not be able to produce a higher temperature, and it is therefore important to check other vital signs as well as look for any symptoms and signs of infection, such as confusion or productive cough. Respiratory infections in older adults include:

- Upper respiratory infections, including influenza
- Lower respiratory infections such as pneumonia and bronchitis
- Increased risk of becoming seriously ill from COVID-19 (older adults have the highest rate of fatalities from this virus) (CDC, 2020c)

MANAGEMENT AND PREVENTION

Because older people are at highest risk of developing pneumonia, influenza and pneumococcal pneumonia vaccines are highly recommended.

Common respiratory diseases experienced by older persons include chronic obstructive pulmonary disease (COPD) and emphysema. There is a greater prevalence of COPD in older adults as a result of smoking. Management can be difficult because of those coexisting medical problems, requiring geriatric care and attention from a team of providers.
Risk for COPD and emphysema can be reduced through lifestyle management that includes encouraging older adults to stop smoking, avoid air pollution, and reduce weight to improve diaphragm function. Pulmonary function does not respond to exercise training, however; aging, therefore, may become an increasingly important limiting factor for physical activity (NIH, 2020e).

COPD affects the well-being of the older adult both physically and socially, increasing disability and dependency. The main treatment for COPD is inhaled medications, including steroids. Impact of using long-term inhaled steroids must be considered in this population. Bone density, diabetes management, and increased risk of pneumonia are monitored and managed appropriately. Therapies that have a proven impact on mortality include smoking cessation and oxygen therapy (Gill, 2017).

Emphysema, a form of COPD, can be treated with the Zephyr valve, a one-way valve placed in 3 to 5 airways that reduces hyperinflation of a portion of the lung (Dransfield et al., 2020).

**Endocrine Changes**

The endocrine system consists of organs and tissues that produce hormones that control the function of target organs. Aging results in changes in the way body systems are controlled, with some target tissues becoming less sensitive to their controlling hormones. Also, the amounts of hormone production may change. Many of the organs that produce hormones are controlled by other hormones, and aging also changes this process (van den Beld et al., 2018).

The **thyroid gland** produces hormones that help control metabolism, and with aging, metabolism slows. This reduces body heat production and increases levels of body fat. There is an increased risk of hypothyroidism with aging, and hyperthyroidism may increase the risk of death due to cardiovascular disease.

The **parathyroid gland** hormone affects calcium and phosphate levels. This hormone’s level rises with age, contributing to osteoporosis (common in both older males and females), leads to kidney stones and renal failure, and can significantly decrease the quality of life.

**Insulin** is produced by the beta cells in the pancreas, and after age 50, cells become less and less sensitive to its effects. An increase in fibrosis and fatty deposits increases glucose intolerance and decreases sensitivity to insulin. Type 2 diabetes is the most common type of diabetes among this age group and is on the rise due to increasing obesity and failure to remain physically active, both of which contribute to insulin resistance.

Normal aging results in subtle changes in **adrenal secretion** of both ACTH and cortisol, most significantly an increase in cortisol levels. Glucocorticoid excess can have serious consequences in the integrity of both the structure and function of various areas in the brain, leading to impairment in normal memory, cognitive function, and sleep cycles. The increase also impinges on the normal stress response, leading to an impaired ability to recover from stressful stimuli. In addition to effects on the brain, cortisol excess is associated with other changes, including loss of muscle mass, hypertension, osteopenia, visceral obesity, and diabetes.
Melatonin is a hormone secreted by the **pineal gland** in response to darkness. A decline in melatonin level is believed to play a role in the loss of normal sleep-wake cycles with aging (NIH, 2020f).

**Gonads**, the main source of sex hormones, begin to secrete less estrogen in the female and less testosterone in the male, increasing the risk for atherosclerosis and osteoporosis in both genders. Less estrogen leads to menopause, the decline of ovarian function in the female, and changes in the uterus and vaginal tissues that may interfere with sexual satisfaction. For males, reduction in levels of testosterone occurs gradually during andropause. This decline in hormone may increase the risk of sexual dysfunction; however, age does not predict male fertility (Morley, 2019; NIH, 2020g).

Among other medical issues, older adults with the diagnosis of HIV/AIDS may develop endocrine problems specific to HIV infection and its treatment. These may include gonadal dysfunction, osteoporosis with increased fracture risk, and dyslipidemia with increased cardiovascular risk (Zaid & Greenman, 2019).

**ASSESSMENT**

Assessment for endocrine problems may be challenging because of the effects of aging. Manifestations of endocrine disorders in older persons are often atypical and present as nonspecific geriatric syndromes (e.g., weight loss, weakness, functional decline, falls, depression, confusion, and cognitive impairment) that are often attributed to “old age” by patients. These manifestations may also be mistakenly attributed to worsening of comorbid illnesses or medications by clinicians. Older patients with endocrine disorders often have multiple chronic medical conditions that can complicate and confound clinical manifestations, evaluation, and management.

Clinicians use the history, physical examination, and simple laboratory tests (e.g., blood glucose) to actively screen for endocrine-related disorders that occur more commonly in older patients.

**MANAGEMENT AND PREVENTION**

Taking a history and listening to the patient’s presenting complaints is important in guiding management. Treatment of endocrine disorders can be complicated, as changing one hormone level can affect another. Management takes into account coexisting medical illness, medications, alterations in clearance rate of hormones, and changes in target organ sensitivity with older age.

Patient-centered management and goals of care focus on improvement of function and quality of life within the patient’s social context and care setting. Interdisciplinary care models provide for optimal care and typically include an endocrinologist, pharmacist, physical therapist, and occupational therapist.
Hyperthyroidism and Hypothyroidism

Patients with hyperthyroidism may be started on antithyroid medications such as methimazole or beta blockers to help control symptoms. For those with hypothyroidism, thyroid replacement medication such as levothyroxine may be started (Cleveland Clinic, 2020).

Diabetes Mellitus

For patients with diabetes, guidelines stress the importance of considering overall health, comorbidities, cognitive and physical status, hypoglycemia risk, and life expectancy to guide glycemic goal setting. Lifestyle modification is important, including diet and exercise, and when such modifications alone are unable to maintain target treatment goals, antihyperglycemic pharmaceutical agents are considered (Leung et al., 2018).

Hyperparathyroidism

Hyperparathyroidism, the most common cause of hypercalcemia, increases with age. Older patients, however, are underdiagnosed and undertreated because hypercalcemia is often missed on routine labs, the diagnosis is not considered, and the diagnosis requires an ability to interpret the relationship between calcium and parathyroid hormone levels—a complex calculation requiring expert assistance. Surgical treatment substantially improves quality of life and is more cost-effective than medical management (Dombrowsky et al., 2018).

Excess Adrenal Cortisol Secretion

Management of excess adrenal secretion of cortisol involves recommending participation in physical activity that improves physical performance in order to attenuate the negative impact of chronic stress and normalize adrenal secretion of cortisol (Tortosa-Martinez et al., 2018).

Menopause and Andropause

Many older adults wish to maintain an active, healthy sex life. With the decline in sex hormones, both men and women face organic changes that can affect sexual functioning. For women it may include vaginal dryness, irritation/itching, inadequate lubrication, and dyspareunia (painful intercourse). For men, erectile dysfunction prevalence increases with age, and some men develop testosterone deficiency that can severely reduce libido.

Recommended treatments for the symptoms of menopause include vaginal moisturizers and lubricants, vaginal estrogens, and oral or transdermal hormone therapy.

The best way to manage and prevent erectile dysfunction (ED) is to recommend that older men make healthy lifestyle choices, manage any existing chronic health conditions, and be screened for depression or other possible psychological causes of ED. Exercise,
especially moderate to vigorous aerobic activity, has been found to improve ED. Other treatments may include oral, rectal, or injected drugs; testosterone replacement; penis pumps; and penile implants.

Testosterone replacement for men can be recommended as long as maintenance of fertility is not desired. Testosterone replacement can restore lean body mass, physical strength, erectile function, and libido as well as improve mood, bone mineral density, and quality of life (Jannini & Nappi, 2018; Mayo Clinic, 2020a).

Gastrointestinal Changes

Age-related changes in the digestive system begin in the mouth and can affect virtually all aspects of the digestive system.

- Taste buds become less sensitive, and food becomes less appetizing.
- Decreased salivary gland secretion results in xerostomia, which occurs in up to 40% of patients over 65, primarily due to adverse effects of medications.
- Dental conditions associated with aging may include root and coronal caries and periodontitis. Receding gums are common, exposing base or root of a tooth, making it easy for bacteria to build up and leading to inflammation and decay (ADA, 2019).

Contractions of the esophagus and tensions in the upper esophageal sphincter decreases, but the movement of food is not impaired. Some older adults, however, can be affected by diseases or disorders that interfere with esophageal contractions.

The stomach lining’s capacity to resist damage decreases, which in turn may increase risk of peptic ulcer disease, especially in those who use aspirin or NSAIDs. Mucus membrane thins, resulting in lower levels of mucus, hydrochloric acid, and digestive enzymes. With age, the stomach cannot accommodate as much food due to decreased elasticity, and the rate of emptying into the small intestine decreases. These changes, however, typically cause no noticeable symptoms.

Minor changes occur in the structure of the small intestine, so movement of contents and absorption of nutrients do not change. However, lactase levels decrease, leading to intolerance of dairy products by many older adults. Excessive growth of certain bacteria becomes more common with age and can lead to pain, bloating, and weight loss. This may also lead to decreased absorption of certain nutrients, such as vitamin B₁₂, iron, and calcium.

The large intestine does not undergo many changes with age. The rectum does enlarge somewhat, and constipation becomes more common related to a slight slowing in movements of contents through the large intestine, a modest decrease in contractions of the rectum when filled with stool, frequent use of drugs that can cause constipation, and less exercise or physical activity.
The number of secretory cells in the **pancreas** decreases with age, resulting in a decrease in the level of fat digestion. The **liver** reduces in size, and metabolism of many substances decreases. This is important when considering medications whose dosages often need to be decreased in older people. Production and flow of bile decreases, and as a result, gallstones are more common (Ruiz, 2020).

**ASSESSMENT**

Assessment begins with a thorough history of any abdominal or gastrointestinal complaints; assessment of nutritional status and elimination pattern; past history of previous disorders or abdominal surgeries; and a review of medications, including prescription, over-the-counter meds such as aspirin and NSAIDs, herbs or other supplements, and use of enemas and laxatives.

Patients with symptoms may be assessed using blood and diagnostic tests, including fecal occult blood test, lactose tolerance test, as well as GI diagnostic exams using endoscopy and ultrasound.

GI diseases and disorders can manifest with various signs and symptoms, including changes in appetite, weight gain or loss, dysphagia, intolerance to certain foods, nausea and vomiting, changes in bowel habits, and abdominal pain. Abdominal pain may be chronic or acute and related to inflammation, infection, allergy, or food intolerance. It can also result from trauma or obstruction.

Detailed history and video fluoroscopy help diagnose dysphagia, which is described as a sensation of difficulty chewing food or initiating swallowing. Common signs are cough with swallowing, food sticking in the throat, and nasal regurgitation, all of which increase the risk of aspiration (Maryniak, 2019).

**MANAGEMENT AND PREVENTION**

It is frequently confusing to know which changes in GI function represent a part of normal aging processes and which are pathological results of a disease process. Management is complicated by the frequent presence of comorbidities and polypharmacy, all of which predispose the older patient to a more complex clinical course and increased probability for development of complications.

The most commonly reported oral complaints, including xerostomia, taste disturbances, and burning mouth syndrome, can be managed by discontinuation of offending medications and salivary supplements.

Management of dysphagia with risk of aspiration may require artificial modes of feeding due to the irreversible nature of the underlying disease.

Stomach disorders can be managed by encouraging bland foods high in vitamins and iron. Decreased lipase results in decreased fat absorption and digestion. Small, frequent feedings are encouraged.
Decreased sensation to defecate can result in postponement of bowel movements, leading to constipation and impaction. Interventions that increase the sensation of the need to defecate include a high-fiber diet, 1,500 ml of fluid intake daily if not contraindicated, and as much activity as tolerated (Maryniak, 2019). Stool softeners may be indicated for patients who have limited mobility or are at risk for constipation due to medications.

**Sensory Changes**

Sensory changes in later life affect how people perceive and experience the world and can have enormous impact on independence, safety, and quality of life. All five senses—vision, hearing, taste, smell, and touch—diminish in acuity with age. Aging raises the threshold of the amount of stimulation necessary to become aware of a sensation, with stimulation required. Sensory changes can affect lifestyle by causing difficulties with communication, enjoyment of activities, and staying involved with others, which can lead to isolation (NIH, 2020h).

**VISION/EYES**

Vision is affected by changes in all of the eye structures. The cornea become less sensitive, making eye injuries less noticeable. By age 60, pupils may decrease to about one third the size they were at age 20. Pupils react more slowly to darkness and bright light. The lens becomes yellowed, less elastic, and slightly cloudy. Eye muscles become less able to fully rotate the eye.

Eyes become less able to tolerate glare, and problems with glare, brightness, and darkness may lead to impaired night vision and reduced color discrimination.

Visual acuity gradually declines, causing difficulty focusing on close-up objects (presbyopia). Reading glasses, bifocal glasses, or contact lenses are required to help correct acuity. Also, with aging, the vitreous starts to shrink, creating small particles called *floaters* that dart back and forth across the field of vision.

Aging eyes may fail to produce enough tears, leading to dry eyes, and if not treated, infection, inflammation, and scarring of the cornea can occur. Eye drops or artificial tears can alleviate this problem (NIH, 2020h).

Other common eye disorders affect older adults, although they are not considered normal effects of aging. These may include:

- **Cataracts** are cloudy areas in the lens of the eye that cause blurred or hazy vision and that may require surgical removal. Corneal diseases and conditions can present with redness, watery eyes, pain, problems with vision, or a halo effect. Complaints of burning, a sandy feeling as if something is in the eye, or other discomfort may be due to dry eye, especially in women (NIA, 2017a).

- **Glaucoma** is a group of eye conditions that damage the optic nerve by increasing ocular pressure. Many forms of glaucoma, one of the leading causes of blindness for those over 60, have no warning signs; the effect is so gradual the person may not notice any change.
in vision until the condition is at an advanced state. Patients also often have no early symptoms of pain. If glaucoma is recognized early, vision loss can be slowed or prevented. Patients with open-angle glaucoma may present with patchy blind spots in peripheral or central vision, often in both eyes, and tunnel vision in the advanced states. Acute-closure glaucoma presents with severe headache, eye pain, nausea and vomiting, blurred vision, halos around the eyes, and eye redness (Mayo Clinic, 2020b).

- **Age-related macular degeneration** (AMD) is caused by damage to the macula of the retina, leading to loss of central vision. It is the leading cause of severe and permanent vision loss in older adults. Early AMD is often asymptomatic, but patients may complain of a gradual loss of vision in one or both eyes, first noticed as difficulty reading or driving, or a need for brighter light or magnifying lens for fine visual acuity. Others may experience distortion of straight lines (Arroyo, 2020).

- **Retinopathies:** Hypertensive retinopathy is caused by chronic high blood pressure that damages the retina. Diabetic retinopathy occurs when too much glucose damages the blood vessels in the retina, stimulating the growth of scar tissue, which can pull the retina away from the back of the eye (NIH, 2020h).

**Assessment, Management, and Prevention**

It is important to remind older patients to follow the recommendation of the American Academy of Ophthalmology for a comprehensive vision exam every year or every other year, which can assure that the patient has the proper eyeglass or contact lens prescription and to check for common eye disorders (Boyd, 2020).

Vision assessment includes testing visual acuity, often by using a Snellen chart. Tonometry to test for ocular pressure is occasionally done in primary care, but normally is done by an ophthalmologist or optometrist as part of a routine eye exam or when a patient is referred for clinically suspected glaucoma. Ophthalmoscopy is performed to check for cataracts; optic nerve or macular degeneration; and evidence of glaucoma, hypertension, or diabetes (Besdine, 2019).

Regular eye exams include measurements of ocular pressure so that a diagnosis of glaucoma can be made in its early stages and treated appropriately. If left untreated, glaucoma will eventually cause blindness. Even with treatment, about 15% of people with glaucoma become blind in at least one eye within 20 years (CDC, 2020b).

Falls are linked to poor eyesight, so it is important to ensure that floors are kept free of clutter, rooms are well-lit, and night lights are installed in strategic locations. Assistive devices in addition to eyeglasses include magnifiers. It is important to ensure that eyeglasses are kept clean and that the person is wearing them.
HEARING/EARS

Aging results in changes in the structures inside the ear, causing a decline in function and causing a major impact on independence, safety, and quality of life. The ears have two functions: hearing and maintaining balance. With aging, the ability of the ear to pick up sounds decreases, and problems with maintaining balance may also occur.

Assessing and Managing Hearing Changes

Age-related hearing loss (presbycusis) affects both ears. Hearing, often the ability to hear high-frequency sounds, may decline. There may be problems in differentiating between certain sounds or with hearing a conversation in the presence of background noise.

Persistent abnormal ear noise (tinnitus) is another common problem in older adults; causes may include cerumen buildup or medications that damage structures in the ear (NIH, 2020g).

Hearing assessment includes observing and listening to the person for evidence of hearing problems, including tilting the head or leaning toward the speaker when listening. The person may also misinterpret questions or comments, or fail to respond at all, which might be interpreted by the examiner as cognitive impairment.

Assessment includes examination of the external auditory canal for an accumulation of cerumen, especially if a hearing problem was noted during interview. If the patient is wearing a hearing aid, it should be removed and examined to determine whether the ear mold or plastic tubing is plugged with wax or the battery is dead.

To evaluate for possible hearing problems, the whisper test (although not a standardized test) can be used to assess the functionality for one-on-one conversations. This test involves the examiner whispering 3 to 6 random words or letters into each of the patient’s ears while keeping their face out of the patient’s view. If the patient correctly repeats at least half of those words for each ear, hearing is considered functional for one-on-one conversations.

Patients with age-related hearing loss are more likely to report difficulty in understanding speech than in hearing sounds. Evaluation with a portable audiometer, if available, is recommended, as these testing sounds are standardized.

Assessment also includes a determination of how the patient’s hearing loss interferes with social or family functioning. This can be done by having the patient complete the Hearing Handicap Inventory for the Elderly (HHIE). If the test score is positive, the patient is referred for formal audiological testing (Besdine, 2019; NIH, 2020i).

While hearing loss in older adults is usually permanent, there are ways to manage the condition using adaptive techniques and assistive devices. Adaptive techniques include making sure to have the person’s attention by directly facing the person when speaking,
using a normal tone of voice, and enunciating clearly. The clinician rephrases sentences rather than repeats them and avoids covering the mouth with the hand (NIH, 2020h).

**Assistive devices** and other options include:

- **Hearing aid**: An adaptive device worn either behind or inside the ear that amplifies sound
- **Cochlear implant**: A device implanted surgically in the ear that sends sound directly to the acoustic nerve
- **Surgery**: Used for problems with the eardrum or in the bones of the middle ear

It is essential when caring for patients with hearing deficits that any hearing aid device be kept clean and functioning and to make certain the hearing device is being worn (NIH, 2020i).

Older adults with profound, uncorrectable hearing loss can benefit from a TTD/TTY phone line and other signaling devices (alarm clocks, smoke alarms, doorbells) that use flashing lights rather than sound. These adaptations not only help people with hearing loss stay connected with family and friends but are also critical safety measures for those living alone. Other assistive devices include amplifiers for telephones and earphones for watching TV.

**Prevention** measures include management of hypertension and diabetes; smoking cessation; limiting alcohol use; avoiding ototoxic drugs whenever possible; eating foods high in vitamins A, C, E, and especially B₁₂; and wearing hearing protection in noisy environments (NIH, 2020h).

**Vestibular Function**

Vestibular function requires reliable sensory input. The vestibular system is another sensory system that can also decline with age, leading to a diminished quality of life. The vestibular system constitutes part of the inner ear and detects position and movement of the head as well as the direction of gravity. This is important to the brain’s ability to control balance in standing and walking and also to control certain types of reflexive eye movements that make it possible to see clearly while walking or running (VEDA, 2021).

Both the number of nerve cells in the vestibular system and decreased blood flow to the inner ear decrease with age. Idiopathic bilateral vestibular loss becomes more severe as age progresses, which may first be noticed as difficulty walking and standing, and the person begins to experience dizziness and balance problems (VEDA, 2021).

Healthcare providers screen older adults for **symptoms** of vestibular changes and make a referral to a vestibular specialist (such as a physical or occupational therapist) if problems are suspected.
Symptoms may include:

- Staggering when walking
- Teetering or falling when standing up
- Dizziness or vertigo
- Falling or feeling as if falling
- Lightheadedness, faintness, or a floating sensation
- Blurred vision or bouncing vision
- Confusion or disorientation
- Problems with concentration and memory

Other symptoms may include nausea, vomiting, diarrhea, changes in heart rate and blood pressure, fear, and anxiety (VEDA, 2021).

TASTE AND SMELL

Taste and smell work together to detect the aesthetics and safety of the environment. The number of taste buds declines with age, and each remaining taste bud begins to shrink. In addition, salivary glands produce less saliva, causing dry mouth, which can affect the sense of taste. After age 70, the sense of smell may diminish, possibly due to loss of nerve endings and less mucus production in the nose. Mucus helps odors stay in the nose long enough to be detected and helps clear odors from the nerve endings.

The speed of loss of taste and smell can be increased as a result of certain diseases, smoking, and exposure to harmful particles in the air. Taste may be affected by infections and inflammatory causes; drugs; exposure to chemicals, toxins, and metals; nerve damage; vitamin and mineral deficiencies; metabolic and endocrine disorders; and neurological disorders such as Parkinson’s disease and Alzheimer’s disease.

Loss of the sense of smell disrupts almost every aspect of life, from concerns about personal hygiene, loss of ability to link smells to happy memories, and loss of interest and enjoyment in eating—subsequently impairing nutritional and immune status. In addition, it impairs ability to detect spoiled foods, gases, and smoke.

Alzheimer’s disease impairs olfactory function, including defective odor identification and discrimination and altered detection thresholds. As the disease progresses, odor detection typically becomes markedly impaired (NIH, 2020h). Sudden loss of taste and smell have been reported as presenting symptoms in some patients with COVID-19 (Lafreniere, 2020).

Assessment for taste and smell complaints can involve a variety of tests, including those that directly assess smell and taste as well as more general tests such as imaging and laboratory studies. The majority of patients with loss of smell may be unaware and therefore remain undiagnosed and untreated.
For patients with diminished or absent sense of taste or smell, treatments usually depend upon the cause; however, there is no treatment for loss due to the aging process.

Medication regimens are assessed for possible olfactory side effects, and alternative drugs or reduced dosages may preserve the sense of smell. Patients are encouraged to stop smoking.

To help enhance the dining experience, recipes can be altered to include more flavorful spices and herbs. Older adults can also be encouraged to make meals a social time whenever possible. Studies have shown that the presence of others during meals also increases the duration of the meal, resulting in increased intake (NIH, 2020h).

TOUCH

Sense of touch allows for awareness of pain, temperature, pressure, vibration, and body position. With aging, sensations may be reduced due to decreased blood flow to nerve endings or to the spinal cord or brain. Certain health conditions can affect the ability to sense touch, such as skin or nerve damage caused by diabetes, neurological disorders, mental illness, and brain disorders. Certain medications and treatments can also affect touch sensation.

With changes in temperature sensitivity, there is an increased risk of injury from frostbite, hypothermia, and burns. Reduced ability to detect vibration, touch, and pressure also increases the risk of injuries, including pressure ulcers. After age 50, many people have reduced sensitivity to pain, making it easy to ignore a severe injury. Problems may develop due to reduced ability to perceive where the body is in relation to the floor, increasing the risk of falling.

Peripheral neuropathies can prevent older people from noticing foot infections and injuries and can lead to falls and gait disorders, contributing to loss of autonomy and independence. Causes include physical injury, diabetes, vascular and blood problems, systemic autoimmune disease, hormonal imbalances, kidney and liver disorders, nutritional or vitamin imbalances, alcoholism, exposure to toxins, certain cancers and benign tumors, chemotherapy drugs, or infections (NIH, 2020h; NINDS, 2020).

Assessment, Management, and Prevention

Assessment of sensation includes touch (using a skin prick test), cortical sensory function (e.g., graphesthesia, stereognosis), temperature sense, proprioception (joint position sense), and vibration sense testing. Many patients report numbness, especially in the feet, and many older people lose vibratory sensation below the knees. Patients with numbness should be checked for systemic diseases that can cause nerve damage (such as diabetes) and tested to identify any neuropathic disorder that may be causing peripheral neuropathies. In many patients, no cause of numbness can be identified (Besdine, 2019).
Management of changes in sensation often focus on safety issues. The following are ways patients can be instructed to manage symptoms:

- Lower water heater temperature to no higher than 120 °F to avoid burns.
- Inspect skin, especially the feet, for injuries. If there is an injury, it should be treated and never assumed not to be serious because there is no pain.
- Wear socks and well-fitting, protective shoes and never go barefoot.
- Avoid sunburn.
- Protect hands in cold weather.

(Saint Luke’s, 2020)

**CASE**

Agnes Miller, age 86, is a widow who has lived alone successfully for years in her small apartment. One day, she slipped and fell in her kitchen, fracturing her hip. The fall also broke her glasses and dislodged her hearing aid, which slid out of reach under the kitchen table. Unable to reach the telephone, Agnes lay on the floor and shouted for help, hoping that a neighbor would hear her. It was a cold day and all windows were closed, so nearly 24 hours passed before someone heard her and dialed 911.

Paramedics whisked Agnes off to the hospital, leaving her broken glasses on the kitchen table and failing to notice her hearing aid underneath the table. Arriving in the emergency department, Agnes was weak, disoriented, and had difficulty hearing and responding to questions. She had been without food or water and was shivering and in pain. After her condition was stabilized with IV fluids and warm blankets, she was prepped for surgery to repair her hip.

A few days later she was moved to a long-term care facility, still without her glasses or her hearing aid. Her medical record indicated “confusion” and “disorientation.” Fortunately, a nurse at the long-term care facility was able to communicate with Agnes about her missing glasses and hearing aid. By contacting Agnes’s neighbor, the nurse was able to get the hearing aid and order new glasses. Over the next week or two, Agnes once again became alert, responsive, and communicative.

**THE NEED FOR TOUCH**

Although the sense of touch changes in later years, the human need for touch—for physical contact and a sense of closeness with another human being—remains throughout life. The need for touch can increase during times of stress and illness. Many older people, especially those who are institutionalized, suffer from touch deprivation. They experience impersonal touch during procedures but lack meaningful touch with others. Research has shown that simple interventions that include touch, such as back rubs, hand and foot massages, and touch therapy, can have a positive effect on the quality of life of older adults who have dementia.
The importance of touch is often undervalued by society. In fact, touch is sometimes thought of as an invasion of a person’s space, and it is important to note that healthcare providers should not assume that all people like and want to be touched. For legal as well as privacy reasons, many people have shied away from touching. However, to older individuals experiencing touch deprivation, the social rules that govern touch may have negative consequences. Therefore, understanding older adults’ attitudes and myths about aging will help the healthcare professional to assess and intervene to the sensitivity of the expression of touch and the intimacy that may be connected to it by the individual (Tabloski, 2014; Meiner, 2015).

Nutritional Changes

Older adults generally require fewer calories because they are not as physically active as they once were and their metabolic rate slows down. Nevertheless, their bodies still require the same or higher levels of nutrients for optimal health outcomes.

Changes that occur with aging that affect the nutrition of the older adult involve a combination of physical, social, and psychological issues, including:

- Increased likelihood of isolation at mealtimes
- Illnesses such as malignancy that contribute to decline in appetite
- Medicines that can change the taste of foods, make the mouth dry, take away appetite, or reduce the ability to absorb nutrients
- Financial limitations affecting food acquisition
- Age-related diminished sense of smell and taste, early satiety, and delayed gastric emptying
- Impaired ability to eat, including difficulty chewing or swallowing, poor dental health, or impaired ability to feed oneself
- Dementia, which can result in forgetting to eat, not buying groceries, or other irregular food habits
- Depression related to grief, loneliness, failing health, or lack of mobility
- Alcohol misuse, which can interfere with digestion and absorption of nutrients and contribute to poor decisions about nutrition

Malnutrition is not synonymous with thinness. Some obese persons are also malnourished; they consume more than enough calories but insufficient nutrients essential to good health. Obesity is the most common nutritional disorder in the older adult living in the community, and malnutrition is most common in those in acute and long-term care facilities.
Malnutrition in older adults can lead to various **health problems**, including:

- A weak immune system, which increases the risk of infections
- Poor wound healing
- Muscle weakness and decreased bone mass, which can lead to falls and fractures
- A higher risk of hospitalization and risk of death
  (Mayo Clinic, 2020c)

**ASSESSMENT**

There are four components of a nutritional assessment:

- Nutritional history and screening using a validated tool
- Food intake diary of 1 to 3 days
- Physical assessment, including anthropometric measurements and signs of nutritional deficiencies
- Biochemical markers, if applicable

**Nutritional History**

Nutritional history includes:

- Medical diagnoses
- Hospitalizations
- Changes in appetite
- Availability and preparation of food
- Medications
- Details regarding weight change
  (Hood, 2020)

Screening is done using a standardized tool. There are a number of **nutrition screening and assessment tools** available for use with older adults. The Nutrition Health Checklist and the Mini Nutritional Assessment Instrument (see table) are the two most often used. Others are:

- DETERMINE checklist: Helps identify a person at nutritional risk
- Malnutrition Screening Tool (MST): Suitable for residential care facilities
- Malnutrition Universal Screening Tool (MUST): Suitable for adults in acute and community settings
- Subjective Global Assessment (SGA): Useful in acute, rehab, residential care, and community settings
- Seniors in the Community: Risk Evaluation for Eating and Nutrition (SCREEN) (NCOA, 2020)

### MINI NUTRITIONAL ASSESSMENT INSTRUMENT

<table>
<thead>
<tr>
<th>Assessment Question</th>
<th>Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has food intake declined over past 3 months due to:</td>
<td>0 = Severe decrease</td>
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<tr>
<td>- Loss of appetite</td>
<td>1 = Moderate decrease</td>
</tr>
<tr>
<td>- Digestive problems</td>
<td>2 = No decrease</td>
</tr>
<tr>
<td>- Chewing or swallowing difficulties</td>
<td></td>
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<tr>
<td>Weight loss during the last 3 months</td>
<td>0 = Weight loss less than 6.6 lbs</td>
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<tr>
<td></td>
<td>1 = Does not know</td>
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<tr>
<td></td>
<td>2 = Weight loss between 2.2 and 6.6 lbs</td>
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<tr>
<td></td>
<td>3 = No weight loss</td>
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<tr>
<td>Mobility</td>
<td>0 = Bed or chair bound</td>
</tr>
<tr>
<td></td>
<td>1 = Able to get out of bed/chair but does not go out</td>
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<tr>
<td></td>
<td>2 = Goes out</td>
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<tr>
<td>Psychological stress or acute disease in past 3 months</td>
<td>0 = Yes</td>
</tr>
<tr>
<td></td>
<td>2 = No</td>
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<tr>
<td>Neuropsychological problems</td>
<td>0 = Severe dementia or depression</td>
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<td></td>
<td>1 = Mild dementia</td>
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<td></td>
<td>2 = No psychological problems</td>
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<td>Body mass index (BMI)</td>
<td>0 = Less than 19</td>
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<tr>
<td></td>
<td>1 = 19 to less than 21</td>
</tr>
<tr>
<td></td>
<td>2 = 21 to less than 23</td>
</tr>
<tr>
<td></td>
<td>3 = 23 or greater</td>
</tr>
<tr>
<td>If BMI not available, calf circumference</td>
<td>0 = Less than 31 cm</td>
</tr>
<tr>
<td></td>
<td>3 = 31 cm or greater</td>
</tr>
<tr>
<td><strong>Screening Score</strong> (maximum 14 points)</td>
<td>12–14: Normal nutritional status</td>
</tr>
<tr>
<td></td>
<td>8–11: At risk of malnutrition</td>
</tr>
<tr>
<td></td>
<td>0–7: Malnourished</td>
</tr>
</tbody>
</table>

(Hood, 2020)

**Food Diary**

A dietary assessment involves a three- or four-day food diary that contains a complete record of foods and beverages consumed over those days. A food diary allows the clinician to highlight foods that need to be changed in addition to any beneficial choices.
that should be continued. The diary can be an excellent tool to help patients increase awareness of eating habits and to encourage compliance with recommended dietary changes. Also, patients may alter what they consume and increase their awareness of intake because they were asked to write it down (Olendzki, 2019).

**Physical Assessment**

Physical assessment of nutrition involves a search for medical conditions that may be contributing to weight loss or other nutritional health conditions.

**Signs and symptoms of malnutrition** include:

- Unintended weight loss
- Loss of muscle mass and subcutaneous fat
- Loss of appetite
- Wounds that are slow to heal
- Memory issues or oncoming dementia
- Lack of energy
- Trouble chewing, swallowing or feeding oneself
- Muscle weakness
- Getting sick often
- Bruised or dry, cracked skin
- Weakness

Body mass index (BMI) measurement is not an accurate means to determine obesity in the older adult. The BMI may not change, but fat-stores increase. Also, with aging, people often become shorter due to osteoporosis and spinal vertebral issues. This alters the BMI, which is calculated using height and weight. Determining waist circumference, however, can be a valuable measurement, since aging increases abdominal fat accumulation while muscle mass deteriorates. Calf circumference and mid-upper-arm circumference have also been found to be more effective than BMI in predicting long-term mortality risk (Kennedy-Malone et al., 2019; Schaap et al., 2018).

**Biochemical Markers**

There is no gold standard for biomarkers of nutritional deficiencies in the older adult, but some indicators include:

- Prealbumin
- Transferrin
• Albumin
• Chemistries
• CBC
• Vitamin B₁₂
• Folate
• Vitamin D (25 OH)
• Thyroid panel

A C-reactive protein can help determine if malnutrition is the result of lack of intake or due to inflammation and hypercatabolism (excessive metabolic breakdown of substances such as protein) (Kennedy-Malone, 2019).

**MANAGEMENT AND PREVENTION**

Interventions for patients who are **malnourished** are directed at the underlying cause (e.g., treatment for depression) as well as dietary modification. Nutritional restrictions are lifted for patients with diabetes who may do well with a regular diet and adequate monitoring. High-calorie foods are recommended. Oral nutritional supplementation for patients who do not regain weight are also recommended, with adjustments in meal preparation and diet.

Advice regarding weight loss of the **overweight** older person is tailored to the individual, assessing the impact of excess weight on quality of life, and includes the need for regular exercise. It is not recommended that people over the age of 80 who are slightly obese be placed on calorie-restricted diets. The best option is to eat at least three meals a day that provide 30 grams of protein each, and to engage in two or three weekly sessions of resistance training that taxes all the large muscle groups in order to preserve muscle mass (Ritchie & Yukawa, 2020).

The Academy of Nutrition and Dietetics outlines special **nutrient needs**:

• Older adults require more **calcium** and **vitamin D** to help maintain bone health. Good sources for calcium include dark green leafy vegetables, canned fish with soft bones, and fortified cereals. Good sources of vitamin D include fatty fish, eggs, and fortified foods and beverages. Supplements may be recommended.

• Some adults older than 50 may not be able to absorb enough **vitamin B₁₂**. Fortified cereal, lean meat, and some fish and seafood are good sources. Supplements may be recommended.

• **Dietary fiber** helps with maintaining bowel regularity and may also reduce risk of heart disease and type 2 diabetes. Whole-grain breads, cereals, beans and peas, along with fruits and vegetables provide fiber.
• Consuming adequate **potassium**, along with limiting **sodium** intake, lowers risk of hypertension. Good sources of potassium include fruits, vegetables, beans, and lower-fat dairy products. Flavor can be added to food with herbs and spices rather than salt.

• **Other minerals** include phosphorus, magnesium, sodium, chloride, and a small amount of trace minerals, including iron, manganese, copper, iodine, zinc, cobalt, fluoride, and selenium.

(AND, 2020)

The National Institutes of Health (2020j) offers the following recommendations for those who are having difficulty meeting nutritional needs:

• For those who eat alone, organize potluck meals or cook with a friend. Older adults can also look into having some meals at a nearby senior center, community center, or religious facility.

• See a dentist to check for oral problems and solutions.

• If having trouble swallowing, drink plenty of liquids with meals.

• If having trouble smelling and tasting food, add color and texture to make food more interesting.

• If not eating enough, add healthy snacks throughout the day to help get more nutrients and calories.

• If illness is making it hard to cook or feed oneself, consider obtaining an occupational therapy referral.

Sleep Changes

Older adults need about the same amount of sleep as younger adults, which ranges from 7 to 9 hours daily (Olson, 2019). Sleep normally occurs in several stages. The sleep cycle includes periods of light sleep, deep sleep, and active dreaming (REM) sleep. This cycle is repeated several times during the night. Sleep architecture (how people cycle through the different stages of sleep) often changes with aging. Alterations in sleep architecture are common among older adults, who may experience:

• Increased sleep latency (a delay in the onset of sleep)

• Waking more often during the night

• Waking earlier in the morning

• Total sleep time that remains the same (7 to 9 hours) or is slightly decreased (6.5 to 7 hours per night)

• A more abrupt transition between sleep and waking, making older people feel like they are a lighter sleeper than when they were younger
- Spending less time in deep, dreamless sleep (NIH, 2020k)

Because older adults sleep more lightly and wake up more often, they may feel deprived of sleep even when their total sleep time has not changed. **Sleep deprivation** can eventually cause confusion and other mental changes.

**Insomnia** is one of the more common sleep problems in older people, which may be caused by a variety of overlapping factors, but can improve with treatment.

**Sleep apnea** can cause pauses in breathing during sleep. These pauses are related to a repeated collapse or partial collapse of the upper airway. Sleep apnea causes fragmented sleep and can affect oxygen levels in the body, leading to headaches, daytime sleepiness, and difficulty thinking clearly.

**Restless leg syndrome** results in an urge to move the legs while resting or sleeping, causing involuntary movements, mostly commonly in the feet.

**REM sleep behavior disorder** (RBD) primarily affects older people. RBD decreases or stops the temporary paralysis of muscles during REM sleep and can cause people to act out their dreams, sometimes violently.

Mental and physical health conditions may also interfere with sleep, including depression, anxiety, heart disease, diabetes, and conditions that cause pain, such as arthritis. Sleep issues may also be related to the side effects of medications, and taking multiple medications may cause unanticipated effects on sleep (NIH, 2020k).

**ASSESSMENT**

Evaluation of sleep in older adults begins with a complete sleep history. A good sleep history includes questions relating to:

- Typical sleep pattern
- Daytime functioning
- Presence of medical conditions
- Intake of caffeine, alcohol, drugs, or food before bedtime
- History of psychiatric and mood disorders

It is also important to investigate sleep-related problems patients may have, including disorientation, delirium, impaired intellect, decreased cognition, psychomotor complaints, and increased accidents and falls. The most frequent sleep-related complaints in older patients are problems initiating or staying asleep.
Whenever possible, it is advisable for the patient to maintain a sleep diary for several weeks before arriving for assessment and to interview the patient’s bed partner, who may notice problems of which the patient is unaware.

A physical exam, neurological exam, and mental status exam may provide clues to the causes of sleep disturbance (Xiong, 2019).

**Review of Medications**

The geriatric population is the largest age group to use hypnotic drugs. The use of these medications has been associated with falls, hip fractures, and daytime carryover symptoms. When evaluating a patient for sleep problems, a review of medications is performed to help determine causes of insomnia. Such medications can include:

- Alpha blockers
- Beta blockers
- Corticosteroids
- SSRI antidepressants
- ACE inhibitors
- H1 antagonists
- Glucosamine/chondroitin
- Statins

A ferritin blood level may be drawn for patients with restless leg syndrome. A low level has been found to be associated with this complaint (Xiong, 2019).

**Sleep Apnea**

Signs and symptoms that may be present in those with obstructive sleep apnea include:

- Excessive daytime sleepiness
- Loud snoring
- Observed period of apnea during sleep
- Abrupt awakenings accompanied by gasping or choking
- Dry mouth or sore throat on awakening
- Morning headache
- Difficulty concentrating during the day
- Mood changes, e.g., depression or irritability
- Hypertension
- Night-time sweating
Following initial assessment, it may be necessary to refer the patient to a sleep disorders center for evaluation of sleep apnea. Portable recorders may be used as screening tools. These devices are placed on the patient in the afternoon, who is then sent home to sleep at night (Mayo Clinic, 2019b).

**MANAGEMENT AND PREVENTION**

If initial history and physical exam do not reveal a serious underlying cause, a trial of improved *sleep hygiene* is recommended:

- Maintain a regular bedtime and wake-up time; avoid sudden changes in sleep schedules.
- Decrease or eliminate daytime naps.
- Exercise daily but not immediately before bedtime. (Those who exercise regularly fall asleep faster, sleep longer, and report better quality of sleep.)
- Use the bed only for sleeping and sexual activity.
- Reduce bedroom distractions such as television, cellphones, and bright light; move electronics out of the bedroom.
- Do not use bedtime as “worry time.”
- Avoid heavy meals at bedtime, and eat dinner at least four hours before bedtime.
- Limit or eliminate alcohol, caffeine, and nicotine before bedtime.
- Develop and maintain a bedtime routine that helps with relaxation.
- Control environment with comfortable temperature, quietness, and darkness.
- If unable to sleep within 30 minutes, get out of bed and perform a soothing activity, but avoid exposure to bright light.
  (Xiong, 2019)

Those who are overweight and snore loudly may improve with weight loss and should avoid sleeping supine.

Psychiatric consultation for severe depression and pulmonary or surgical consultation for obstructive sleep apnea may be helpful.

Older people respond differently to medications, and it is best to avoid sleep medicines if possible. However, antidepressant medicines can be very helpful if depression affects sleep. Medication on a short-term basis together with sleep hygiene is appropriate for transient insomnia (e.g., secondary to bereavement) (Xiong, 2019).
Patients diagnosed with sleep apnea may need to sleep with a continuous positive airway pressure (CPAP) device and are advised to keep a regular routine of use. Regular maintenance of the machine and evaluation of its effectiveness are also important considerations. Common problems include a leaky mask, trouble falling asleep, stuffy nose, and dry mouth. When patients are first introduced to this device, it is helpful for them to wear it for short periods while awake. Once the patient is used to how it feels, the device is worn for sleeping, including naps (Mayo Clinic, 2018).

COGNITIVE CHANGES OF AGING

Normal age-related cognitive declines affect mainly the speed of thinking and attention. In abnormal aging, declines in cognition are more severe and may include other thinking abilities, such as confusion, rapid forgetting or difficulties navigating, solving common problems, expressing oneself in conversation, or behaving outside of social rules (UCSF, 2020).

In older adults, some forms of confusion may be temporary or reversible, while others may be irreversible or indicative of chronic confusion and dementia, including Alzheimer’s disease. Gradual onset of confusion may be reversible if it is related to a treatable or correctible condition such as nutritional deficiency, hypothyroidism, vision or hearing impairment, urinary tract infections (febrile), or depression. Health professionals need to assume that confusion may be reversible, particularly confusion of sudden onset, and seek the possible causes.

Medical conditions and lifestyle factors have been linked to an increased risk of cognitive changes as the individual ages, including:

- Diabetes
- Smoking
- Hypertension
- Elevated cholesterol
- Obesity
- Depression
- Lack of physical exercise
- Low education level
- Infrequent participation in mentally or socially stimulating activities
  (Mayo Clinic, 2020d)

Normal Age-Related Changes

Some changes in the ability to think are considered a normal part of the aging process. Many thinking abilities appear to peak around age 30 and very subtly decline with age in most people. These declines most commonly include overall slowness in thinking and difficulties sustaining
attention, multitasking, holding information in mind, and word-finding. Age-related changes in brain structure are a common aspect of aging, contributing to some of the changes in thinking. However, not all thinking abilities decline with age. Vocabulary, reading, and verbal reasoning remain unchanged or even improve during the aging process.

Normal age-associated changes include difficulties with memory, but:

- They do not noticeably disrupt daily life.
- They do not affect ability to complete tasks as usual.
- There is no difficulty learning and remembering new things.
- There is no underlying medical condition causing the difficulties.

(USCF, 2020)

**Delirium**

Delirium is a reversible acute state of confusion. It is an organically caused decline from a previous baseline level of mental function that develops quickly, within hours or days, and is a medical emergency associated with increased morbidity and mortality rates. It should not be assumed that acute confusion in an older person is due to dementia.

Delirium is more common in older adults and can be traced to one or more contributing factors, including severe or chronic illness, changes in metabolic balance, medications, infection, surgery, alcohol or drug intoxication or withdrawal. If the underlying disorder is not corrected, irreversible neuronal damage can occur.

Perceptual disturbances are common with delirium. The stimulus is real, but the person misinterprets it, and it often becomes the object of projected fear. Unlike delusions or hallucinations, however, these can be explained and clarified for the person. Visual and tactile hallucinations are also common in delirium (Cooper, 2020; Mayo Clinic, 2020e).

**ASSESSMENT AND DIAGNOSIS OF DELIRIUM**

Delirium should be considered when a person abruptly demonstrates reduction in awareness of the environment. The person may have difficulty with orientation: first to time, then to place, and last to person, although orientation to person usually remains intact. The person’s level of consciousness may range from lethargy to stupor or from semicoma to hypervigilance.

When assessing an older adult for possible delirium, it is helpful to establish the person’s usual level of cognition by interviewing family or other caregivers. This can include inquiring about past cognitive impairments, especially if the individual has an existing dementia diagnosis.

Delirium usually presents with disorientation and confusion that is most often worse at night and during the early morning. Some individuals, however, may only be confused at night and be lucid during the day. A person with delirium may display agitation or appear to be calm and settled.
Making a diagnosis involves assessments of vital signs, level of consciousness, neurological signs, and signs of infection, hypoxia, or pain. Autonomic signs such as tachycardia, sweating, flushed face, dilated pupils, and elevated blood pressure are often present in delirium.

**Common causes** of delirium include:

- Infections (meningitis, encephalitis, HIV-related, septicemia, pneumonia, UTI)
- Metabolic abnormalities (acid-base disturbances, hypoxia, fluid and electrolyte abnormalities, hypoglycemia, vitamin deficiency states, endocrinopathies)
- Hepatic or renal failure
- Structural lesions of the brain (primary or metastatic brain tumors, brain abscess)
- Postoperative states
- Miscellaneous causes (sensory deprivation, sleep deprivation, fecal impaction, urinary retention, change of environment)
- Vitamin deficiency states (especially thiamine and vitamin B₁₂)
- Medications at therapeutic doses and levels

**MEDICATIONS AND DELIRIUM**

Medications must be suspected as a potential cause of delirium, and this is especially true when there is polypharmacy and/or use of psychoactive agents. The risk of anticholinergic toxicity is greater in older persons, and the risk of inducing delirium by medications is high in frail persons and in those with dementia.

There are also important **independent risk factors** for the development of delirium, including:

- Use of physical restraints
- Malnutrition
- Presence of an indwelling catheter
- Any iatrogenic event
- Use of three or more medications
- Underlying dementia

**Diagnostic criteria** for delirium include:

- Disturbance in attention
- Change in cognition
• Disturbance that develops over a short period and tends to fluctuate during the day
• Evidence from history, physical exam, or laboratory findings that the disturbance is caused by the effects of a general medical condition and/or intoxicating substance or medication use

Mental status assessment may be done informally through conversation or by using an assessment instrument to screen for suspected delirium. These may include:

• Confusion Assessment Method (CAM) or CAM Intensive Care Unit (CAM-ICU)
• Delirium Symptom Interview (DSI)

Delirium symptom severity can be assessed using the Delirium Detection Scale (DDS) or the Memorial Delirium Assessment Scale (MDAS).

**Laboratory studies** that may be done include:

• CBC
• Electrolytes
• Glucose
• Renal and liver function tests
• Thyroid function studies
• Urinalysis
• Urine and blood drug screen
• Thiamine and vitamin B₁₂ levels
• Tests for bacterial and viral etiologies, including syphilis
• Sedimentation rate
• Drug screen including alcohol level
• HIV tests
• Tests for other infectious causes if clinically indicated

**Other testing** may include:

• CT scan or MRI of the head
• EEG
• Chest X-ray
• Lumbar puncture for suspected CNS infection
• Pulse oximetry to diagnose hypoxia
• ECG to diagnose ischemia and arrhythmic causes

(Alagiakrishnan, 2019)
MANAGEMENT OF DELIRIUM

Medical management of a patient with delirium involves treating the underlying organic cause, and the goal of management is to keep the patient safe and free from falls and injury while attempting to identify the cause.

An individual experiencing delirium has difficulty processing stimuli in the environment, and confusion magnifies the inability to recognize reality. It is helpful to make the physical environment as simple and clear as possible.

Supportive care is aimed at preventing complications. Such measures may include:

- Protecting the airway
- Providing fluids and nutrition
- Assisting with movement
- Treating pain
- Addressing incontinence
- Avoiding use of physical restraints and urinary catheters
- Avoiding change in surroundings and caregiver whenever possible
- Encouraging the involvement of family members or familiar people

Medications such as antipsychotics and benzodiazepines may be used when certain behaviors prevent performance of a medical exam or treatment, when they endanger the person or threaten the safety of others, or when they do not lessen with nondrug treatments (Halter, 2018).

<table>
<thead>
<tr>
<th>CAUSES OF REVERSIBLE CONFUSION</th>
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<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>Systemic problems</td>
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<td>Mechanical problems</td>
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<thead>
<tr>
<th>Sensori-perceptual problems</th>
<th>Sensory deprivation related to vision or hearing impairment</th>
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<tbody>
<tr>
<td></td>
<td>Sensory overload in noisy, crowded settings</td>
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<tr>
<td></td>
<td>Lack of variety, lack of personal contacts, and lack of meaning, especially in institutional settings</td>
</tr>
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<td></td>
<td>Relocation/transfer from familiar surroundings to unfamiliar surroundings</td>
</tr>
</tbody>
</table>

(Tabloski, 2014; Meiner, 2015)

**Mild Cognitive Impairment**

Mild cognitive impairment (MCI) is the stage between expected cognitive decline due to aging and dementia. It is characterized by problems with memory, language, thinking, or judgment. These changes, however, are not severe enough to significantly interfere with daily living and one’s usual activities (Mayo Clinic, 2020d).

There is no single cause of MCI and no single outcome for the disorder. MCI may increase the chances of later development of dementia, but some people never get worse and a few eventually improve. People with MCI may experience:

- Forgetting things more often
- Forgetting important events such as appointments or social engagements
- Losing the train of thought or the thread of conversations, books, or movies
• Being increasingly overwhelmed by making decisions, planning steps to accomplish a task, or understanding instructions
• Difficulty finding one’s way around familiar environments
• Becoming more impulsive or showing increasingly poor judgment

People may also experience:

• Depression
• Irritability and aggression
• Anxiety
• Apathy
(Mayo Clinic, 2020d)

Experts classify mild cognitive impairment based on the thinking skills affected:

• **Amnestic MCI** primarily affects memory. A person may start to forget important information that they would previously have recalled easily.

• **Nonamnestic MCI** affects thinking skills other than memory, including ability to make sound decisions, judge the time or sequence of steps needed to complete a complex task, or visual perception.
(AA, 2021)

**PREVALENCE OF MCI**

MCI is common in older adult populations. Based on a meta-analysis of 34 studies conducted by the American Academy of Neurology, the estimated prevalences by age are:

- 60–64 years: 6.7%
- 65–69 years: 8.4%
- 70–74 years: 10.1%
- 75–79 years: 14.8%
- 80–84 years: 25.2%
(Petersen, 2020)

**ASSESSMENT OF MCI**

There is no specific way to confirm a diagnosis of mild cognitive impairment. The information provided by the patient and the results of various tests can help determine the diagnosis.
Careful medical **history** may reveal a decline from a higher level, which ideally is confirmed by family or close friend. History shows that, overall, daily activities generally are not affected.

As part of the **physical**, basic neurological testing may be done to rule out signs of Parkinson’s disease, stroke, tumors, or other medical conditions.

Review of the patient’s **medications** is an essential part of the assessment, as certain medications may contribute to the risk of cognitive impairment and development of dementia. These may include:

- Benzodiazepines
- Anticholinergics
- Antihistamines
- Opioids
- Proton pump inhibitors

**Lab tests** that help rule out physical problems that can affect memory are done, including vitamin B₁₂ deficiency or hypothyroidism. An MRI or CT scan may be ordered to rule out brain tumor, stroke, or bleeding.

**Mental status testing** shows a mild level of impairment for age and education. Brief tests such as the Short Test of Mental Status, the Montreal Cognitive Assessment (MoCA), or the Mini-Mental State Examination (MMSE) may be used (see table). Neuropsychological testing may help to determine degree of impairment, which types of memory are most affected, and whether other mental skills are also impaired (Mayo Clinic, 2020d).

<table>
<thead>
<tr>
<th>MINI–MENTAL STATE EXAMINATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
</tr>
</tbody>
</table>
| 1. Orientation to time and place | 10         | • The patient is asked to provide information on the time (e.g., year, season, month, date, and day of week). (1 point each)  
• The patient is asked to provide information on the present location (e.g., state, county, city, hospital, and floor). (1 point each) |
| 2. Registration               | 3          | The patient is asked to repeat three named prompts (apple, table, penny). (1 point each) |
| 3. Attention and calculation  | 5          | The patient is asked to spell the word WORLD backwards. (Points given up to first misplaced letter, e.g., 2 points for “DLORW”) |
| 4. Recall                     | 3          | The patient is asked to recall the three objects memorized in “registration” above. (1 point each) |
| 5. Language                   | 2          | The patient is asked to name two objects when they are displayed (pencil and watch). (1 point each) |
6. Repetition 1 The patient is asked to speak back a phrase (“No ifs, ands, or buts”). (1 point)

7. Complex commands 6 The patient is asked to follow complex commands, which may involve drawing a shown figure. (6 points)

MANAGEMENT AND PREVENTION OF MCI

Currently there are no drugs or other treatments approved specifically for mild cognitive impairment. Cholinesterase inhibitors approved for Alzheimer’s disease may be prescribed, but they are not routinely recommended for MCI.

Research has found certain factors that may reduce the risk of cognitive impairment, including:

- Avoiding excessive alcohol use
- Limiting exposure to air pollution
- Reducing risk of head injury
- Not smoking
- Managing diabetes, cholesterol, hypertension, obesity, and depression
- Practicing good sleep hygiene and managing sleep disturbances
- Eating a nutrient-rich diet low in saturated fats
- Engaging socially with others
- Exercising regularly at moderate to vigorous intensity
- Wearing a hearing aid if hearing loss is present
- Engaging in mentally stimulating activities
  (Mayo Clinic, 2020d)

OCCUPATIONAL THERAPY AND COGNITIVE DECLINE

Occupational therapists are skilled in working with older people in various settings to address functional implications of cognitive decline. Occupational therapists also assist caregivers with coping strategies. Although remediation of cognitive performance is unlikely, improved function through compensation or adaptation can occur. Occupational therapists focus interventions on the effects of cognitive deficits on daily life. These usually begin with basic activities of daily living and may progress to more difficult tasks such as preparing meals, doing laundry, or driving. They may use one or more of the following strategies:
• Global strategy learning and awareness approaches that focus on improving awareness of cognitive processes and helping patients develop their own compensatory approaches
• Domain-specific strategy training that focuses on teaching patients various strategies to manage specific perceptual or cognitive deficits, versus being taught the task itself
• Specific functional skills training for clients with more severe cognitive impairments to work around the cognitive impairment to address the needed self-care or community living skill
• Environmental modifications and use of assistive technology

(AOTA, 2020a, 2021a)

PHYSICAL THERAPY AND COGNITIVE DECLINE

Physical therapists can play a key role in improving brain function and memory. Therapists work with healthy older adults or those with mild cognitive problems by designing exercise programs to help them stay mobile. As cognition declines, physical therapists can help people remain capable of performing daily activities for as long as possible and may delay the decline in the ability to perform tasks in those who have dementia by improving strength, balance, and mobility (APTA, 2019).

Dementia

Dementia is an umbrella term for a collection of symptoms of cognitive decline including disruptions in short-term memory, learning new information, planning, problem-solving, decision-making, language, orientation, visual perceptual skills, mood, and behavior, all of which interfere with daily activities. Dementia, however, is not a result of normal aging of the brain (CDC, 2020b).

NORMAL VERSUS DEMENTIA-RELATED COGNITIVE CHANGES

<table>
<thead>
<tr>
<th>Ability</th>
<th>Changes Related To:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal Aging</td>
</tr>
<tr>
<td>Short-term memory and learning new information</td>
<td>• Sometimes forgetting people’s names or appointments but remembering them later</td>
</tr>
<tr>
<td></td>
<td>• Occasionally forgetting something you were told</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning, problem-solving, and decision-making</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>• Misplacing things from time to time (e.g., mobile phone, glasses, or the TV remote) but retracing steps to find them</td>
<td>• Putting objects in unusual places (e.g., putting house keys in the bathroom cabinet)</td>
</tr>
<tr>
<td>• Being a bit slower to react or think things through</td>
<td>• Becoming less able to juggle multiple tasks, especially when distracted</td>
</tr>
<tr>
<td>• Making a bad decision once in a while</td>
<td>• Occasionally making a mistake when doing family finances</td>
</tr>
<tr>
<td>• Putting objects in unusual places (e.g., putting house keys in the bathroom cabinet)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Language</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sometimes having a bit of trouble finding the right word</td>
<td>• Having frequent problems finding the right word or frequently referring to objects as “that thing”</td>
</tr>
<tr>
<td>• Needing to concentrate harder to keep up with a conversation</td>
<td>• Having trouble following or joining a conversation</td>
</tr>
<tr>
<td>• Losing the thread if distracted or if many people are speaking at once</td>
<td>• Regularly losing the thread of what someone is saying</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Getting confused about the day or the week but figuring it out later</td>
<td>• Losing track of the date, season, and passage of time</td>
</tr>
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<table>
<thead>
<tr>
<th>Visual perceptual skills</th>
<th>Visual perceptual skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Vision changes related to cataracts or other changes in the eyes</td>
<td>• Problems interpreting visual information (e.g., having difficulty judging distances on stairs, misinterpreting patterns such as a carpet, or reflections)</td>
</tr>
<tr>
<td>• Recognizing an object but being unable to remember what it is used for</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Mood and behavior</th>
<th>Mood and behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sometimes being weary of work, family, and social obligations</td>
<td>• Becoming withdrawn and losing interest in work, socializing, or hobbies</td>
</tr>
<tr>
<td>• Sometimes feeling a bit low or anxious</td>
<td></td>
</tr>
</tbody>
</table>
Problems that may develop later in the dementia disease process include:

- Mobility issues, which may result in serious or life-threatening injuries
- Decline in managing self-care activities (e.g., dressing, bathing, eating)
- Incontinence of bowel and/or bladder
- Inappropriate or aggressive behaviors
- Wandering
- Hallucinating or having delusions

In general, the more severe the symptoms, the shorter the life expectancy (AGS, 2020).

Causes of dementia in older adults include:

- Alzheimer’s disease, which destroys brain cells
- Blockages in blood vessels to the brain, which limit blood flow or triggers mini-strokes (multi-infarct dementia or vascular dementia)
- Other diseases such as Parkinson’s disease, which affects movement and, later, mental abilities and mood
- Serious head injuries
- Some brain tumors
- Heavy alcohol use for more than 10 years
- Hypo- or hyperthyroidism
- Vitamin B₁₂ deficiency
- Certain brain infections (e.g., HIV encephalopathy)
- Certain drugs and reactions to combinations of drugs
- Growth of abnormal structures in the brain (e.g., Lewy body dementia)
• Shrinking of certain parts of the brain causing frontotemporal dementia (also known as Pick’s disease)

Dementia often has more than one cause. Those with Alzheimer’s disease may also have vascular dementia. Alzheimer’s disease and vascular dementia are the most common forms of dementia in older adults. Alzheimer’s accounts for nearly 70% of all cases of dementia, and vascular dementia accounts for greater than 10% (AGS, 2020).

ASSESSMENT

Assessment begins with a medical and social history. A review of prescription and OTC medications, supplements, herbals, and other remedies may also indicate causes of dementia. Clinicians also assess for signs of depression and other physical and mental health problems that can cause dementia-like symptoms.

If family or caregiver is present, it is helpful to ask about noticeable changes in the person’s physical and mental abilities, mood, personality, decision-making, behavior, and possible delusions or hallucinations the person may have experienced.

Mental status can be evaluated using the Mini-Mental State Exam. Complete neurological and physical examinations are done, including blood and other lab tests to rule out underlying problems and reversible causes. A brain scan may be requested if indicated (AGS, 2020).

MANAGEMENT

There is no cure for dementia, but there are medications, treatments, and strategies that can slow decline and help patients with dementia utilize their abilities to function as well as possible in order to have the highest possible quality of life. These involve:

• Identifying, treating, and monitoring underlying problems that increase the risk of dementia and can worsen symptoms (e.g., heart disease and diabetes)

• Checking for and treating problems that can contribute to mental health changes (e.g., depression, pain, hearing or vision loss)

• Monitoring for development of new medical problems

• Monitoring for medication side effects

• Teaching caregivers how best to manage symptoms and behavioral problems and to find caregiving, financial, and legal support (AGS, 2020)
Medications

Medications that are often prescribed for those with dementia include cholinesterase inhibitors such as donepezil (Aricept), galantamine (Razadyne), and rivastigmine (Excelon).

Memantine (Namenda) is approved by the Food and Drug Administration for treatment of moderate to severe Alzheimer’s disease. Memantine is in a class of medications called MNDA receptor antagonists and works by decreasing abnormal activity in the brain. It is not effective in earlier stages, and there is no information on its effectiveness for other dementias. The most common side effects are constipation, dizziness, headache, and agitation.

Antipsychotic drugs, antidepressants, and mood stabilizers may help control specific behaviors that may present in the patient diagnosed with dementia, but effectiveness is limited and they are associated with an increased risk of death (AGS, 2020).

Nonpharmaceutical Treatments

Nondrug interventions are tailored to the person’s symptoms and needs in collaboration with the patient and caregiver and may include:

- **Exercise programs** that include both aerobics and strength training may improve memory and slow down mental decline.

- **Occupational therapy**, including ADL training and environmental adaptation can improve function through compensation or adaptation.

- **Pet therapy** promotes improved mood and behaviors.

- **Aromatherapy** uses fragrant plant oils to stimulate olfactory receptors that in turn stimulate the part of the brain linked to regulation of emotions. It is widely used to relieve symptoms of anxiety and depression.

- **Massage therapy** may help manage symptoms such as anxiety, agitation, and depression.

- **Music therapy** may improve cognitive function and quality of life.

- **Art therapy** and artistic engagement may help to ease common behavioral symptoms of dementia such as anxiety, agitation and depression. It may also boost mood and self-esteem and possibly help stimulate memory. (Mayo Clinic, 2019c; Alzheimer’s Society, 2021a, 2021b; AOTA, 2021a; Laguipo, 2021; Moreno-Morales et al., 2020; Fisher Center, 2021)
Inconsistent evidence has been reported about the benefits of cognitive training, cognitive stimulation, and cognitive rehabilitation (group or individual) (Lee et al., 2019).

**Communicating with the Patient with Dementia**

It can be difficult and challenging to care for patients with dementia. It is helpful to remember that every behavior being expressed is the patient’s way of trying to communicate experiences, fears, prejudices, feelings, values, and beliefs that need further assessment (Koch, 2020).

It is important not to patronize older people with dementia. People with dementia retain the ability to interpret tone and body language, which is very important for them in making sense of the world. If a caregiver talks to them as if they were children, they will likely know they are being talked down to. It is best to avoid using baby talk, calling them “Dear” or “Sweetie,” or speaking in a high-pitched, sing-song voice. This is likely to result in irritation and contribute to aggressive and uncooperative behavior and to the patient being labeled as “difficult.” It is always best to call the person by name.

**Recommendations for effective communication** include:

- Communicate in a dignified adult manner, using short sentences and speaking slightly more slowly and clearly.
- Do not resort to simple or easier words by assuming the patient has lost a more sophisticated vocabulary.
- Allow a period of silence for the person to think before answering.
- Try to communicate in a conversational way.
- Avoid asking ask question after question. As the disease progresses, ask questions that require a yes or no answer, and break down requests into single steps.
- Offer choices when making a request for which the patient might resist. For example, “Do you want to take a shower before breakfast or after breakfast?” instead of, “It’s time to take a shower.”
- Whenever possible, avoid distractions such as background noise that can make it difficult to hear, listen attentively, or concentrate.
- Avoid criticizing, correcting, and arguing. When listening to someone with dementia, it is pointless and counterproductive to argue about what the person is saying.
- **Avoid** the following, which require concentration and memory:
  - Asking “Remember when…?” questions
Individuals with dementia are often living in an alternate reality, and it may do more harm than good to attempt to orient them to the current reality. The caregiver must enter the patient’s reality and work on that level. For example:

- With a patient who repeatedly asks for his wife who has been dead for several years, rather than trying to remind him of that fact, it is more helpful to redirect the conversation by asking him to talk about his wife. If the patient will not remember what he is told, say, “She called and said she would be here later for a visit.” Although it appears to be a fib, this statement is really a way of reassuring instead of distressing the patient.

- With a patient who resists an activity, saying “I have to go to the barn and feed the chickens,” telling her she does not have chickens can result in a distressed response and feelings of anger, defiance, or frustration. Instead say, “Tell me about your chickens.” This distraction allows for a more positive outcome, as the person diverts attention from the task she believes must be accomplished to a more pleasant discussion about her long-gone chickens (Quinn-Szcesuil, 2020).

**Physical Therapy**

Aggression and depression are common traits throughout the course of Alzheimer’s disease. Physical therapy helps stabilize aggression through regular exercise by assisting patients with active movements and stretches that release endorphins, which trigger a positive feeling that can alleviate depression.

Alzheimer’s disease often affects balance, which can lead to a higher risk for falls. Physical therapists work with patients to build muscle memory so that muscles will continue to know how to respond even when the brain is not able to register obstacles such as an unstable surface.

Physical therapy can provide opportunities to practice and strengthen the ability to keep doing daily activities and can help in setting up a safe environment.

Physical therapy also helps slow the loss of memory by encouraging physical activity that improves the flow of blood to the brain. One study found that regular physical activity,
40 minutes, four times a week over one year led to an increase in volume of the hippocampus, the part of the brain responsible for memory (Jo, 2018).

**PSYCHOSOCIAL ISSUES IN AGING**

The physiologic changes of aging can also have major effects on an individual’s psychological and social well-being. Whether life changes are slow or sudden, the result often affects both physical and mental health.

**Transitions**

People in later life must navigate through many transitions including:

- Retirement
- Changing family structures
- Relocation or downsizing and moving from one’s home
- Losses, grief, and bereavement
- Isolation

These transitions can result in profound changes to routines, roles, and responsibilities, leading to mental health challenges (MHF, 2021).

**RETIREMENT**

Retirement is often the first major transition for the older adult, and about one third have problems adjusting to different aspects of retirement, including loss of professional identity, altered social roles, and reduced income. Also, some people choose to retire while others may be forced to retire (Kaplan & Berkman, 2019).

**CHANGING FAMILY STRUCTURES**

Family members have traditionally played a major role in the delay and prevention of institutionalization of chronically ill older adults. About 80% of help in the home (physical, emotional, social, economic) is provided by family caregivers.

However, changing family structures have altered the intergenerational structure of society. Relationships in families have become more fluid and less predictable. Reduced fertility and increased rates of divorce, remarriage, cohabitation, and stepfamily formation have also altered the context in which intergenerational, spousal, and sibling relationships function.

This increasing diversity of family forms raises issues about societal and individual responsibility for the care and well-being of older family members. More and more adults have
not had children, which means there are fewer family members to provide company and care as they age (Kaplan & Berkman, 2019).

RELOCATION

Relocation may happen several times during old age, including moving to smaller quarters to reduce burden of upkeep, moving to the homes of adult children, or moving into one of several types of residential facilities, such as senior housing, assisted living, or a nursing care facility. People who adapt poorly to these changes are more likely to live alone, be socially isolated, be poor, and be depressed. Men respond less well than women.

When people perceive a loss of control over a move, the greater their stress around relocation. For the cognitively impaired, a move away from familiar surroundings may exacerbate functional dependence and disruptive behaviors (Kaplan & Berkman, 2019).

LOSSES, GRIEF, AND BEREAVEMENT

Losses, grief, and bereavement bring a decline in social interactions and companionship. The death of a spouse affects men and women differently. In the two years following the death of a wife, the mortality rate for men increases, especially if the wife’s death was unexpected. The same is not true, however, for women.

When people experience many losses, grief can be overwhelming. This cumulative grief is often an under-recognized problem in older adults (Kaplan & Berkman, 2019).

LONELINESS AND ISOLATION

Loneliness and isolation impact physical and mental well-being, bringing more risk for heart disease and stroke as well as Alzheimer’s disease, depression, anxiety, and fearfulness.

While living alone does not necessary result in loneliness in all older adults, it is the biggest single contributing factor. It is typical for older persons to have less contact with others and to become more isolated. While joining groups, volunteering, exercising, and taking lessons or classes are all good ideas for socialization, they are not always possible for the older person. A big roadblock to socialization is a lack of mobility and freedom to move about (Kaplan & Berkman, 2019).

For some, chronic loneliness can become a side effect of a medical or psychological problem, including:

- Substance use
- Depression and bipolar disorder
- Serious illness or disease
- Dementias
Sexual orientation and gender identity issues may also contribute to loneliness or isolation. Research indicates that a large portion of older adults who identify as LGBT (lesbian, gay, bisexual, or transgender) report a high degree of life satisfaction, yet over half report a lack of companionship and feel isolated. More than half are diagnosed with depression, and a third report having suicidal ideation. Over 50% of LGBT adults with HIV live alone. Social isolation arises from the death of partners and disconnection from family. HIV stigma is associated with depression, poorer quality of life, lack of disclosure to others, and loneliness (Emlet & Brennan-Ing, 2020; Kaplan & Berkman, 2019).

Older people in nonheterosexual relationships or who are gender nonconforming face special caregiving challenges. The healthcare system may not be aware of their sexual preference or gender identity and may not recognize their partners as having a role in caregiving decisions or as being part of the patient’s family (Wenker & Liebzeit, 2019).

**Depression**

Depression is the most common mental health condition in adults ages 65 and older. More than 2 million of the 34 million Americans age 65 and older suffer from some form of depression (MHA, 2021). Negative effects of depression are far-reaching, further complicating existing conditions common among older adults.

Depression in older adults can be difficult to recognize. They may have less obvious symptoms of depression or they may not be willing to talk about their feelings. Often depression in the older adult is confused with the effects of multiple illnesses and the medications used to treat them. Also, due to the belief that the older adult is expected to slow down, family and healthcare practitioners may miss the signs of depression, and effective treatment is often delayed (Wenker & Liebzeit, 2019).

Some of the most common **risk factors** for depression in this age group include:

- Being female
- Being single, unmarried, divorced, or widowed
- Lack of supportive social network
- Certain medicines or combinations of medicines
- Damage to body image (e.g., amputation, cancer surgery)
- Fear of death
- Social isolation
- Presence of chronic or severe pain
- Recent loss of a loved one
  (Wenker & Liebzeit, 2019; NIA, 2017b)
ASSESSING DEPRESSION

Recognizing the symptoms and screening for depression in older people and referring them for appropriate diagnosis and treatment may greatly improve their quality of life. Symptoms include:

- Persistent sad, anxious, or “empty” mood
- Feelings of hopelessness, guilt, worthlessness, or helplessness
- Irritability, restlessness, or having trouble sitting still
- Loss of interest in once pleasurable activities
- Decreased energy or fatigue
- Appetite and/or unintended weight changes
- Sleep disturbance, insomnia, early morning awakening
- Moving or talking more slowly
- Difficulty concentrating, remembering, making decisions
- Thoughts of suicide or suicide attempts
  (NIA, 2017b)

Currently, the Geriatric Depression Scale and Geriatric Depression Scale-15 are the preferred instruments to use when screening for depression in the older adult (Galsamo et al., 2018).

GERIATRIC DEPRESSION SCALE (SHORT FORM)

Choose the best answer for how you felt over the past week.

1. Are you basically satisfied with your life? yes/no
2. Have you dropped many of your activities and interests? yes/no
3. Do you feel that your life is empty? yes/no
4. Do you often get bored? yes/no
5. Are you in good spirits most of the time? yes/no
6. Are you afraid that something bad is going to happen to you? yes/no
7. Do you feel happy most of the time? yes/no
8. Do you often feel helpless? yes/no
9. Do you prefer to stay at home, rather than going out and doing new things? yes/no
10. Do you feel you have more problems with memory than most? **yes/no**
11. Do you think it is wonderful to be alive now? **yes/no**
12. Do you feel pretty worthless the way you are now? **yes/no**
13. Do you feel full of energy? **yes/no**
14. Do you feel that your situation is hopeless? **yes/no**
15. Do you think that most people are better off than you are? **yes/no**

Score 1 point for each response that matches the bolded **yes** or **no** answer after the question. A score of 5 or more may indicate depression.

**MANAGEMENT OF DEPRESSION**

Treatment for depression may include the following:

- **Antidepressants**
  - Selective serotonin reuptake inhibitors (SSRIs)
  - Serotonin and norepinephrine reuptake inhibitors (SNRIs)
- **Psychotherapy**
  - Cognitive Behavioral Therapy (CBT), including a version called problem-solving therapy that may be especially useful for treating older adults and improving quality of life
  - Interpersonal psychotherapy
  - Self-management or self-control therapy
- **Complementary therapies**
  - Yoga
  - Exercise
  - Omega 3 fatty acids
  - St. John’s wort in mild to moderate, but not severe, depression
- **Electroconvulsive therapy (ECT)** for severe depression that is very difficult to treat and does not respond to medication or psychotherapy
- **Stimulation techniques**, including transcranial magnetic stimulation (TMS), which is approved by the FDA for use in adult patients who have failed to respond to medications and/or ECT treatment (NIMH, 2020)
Depressed patients may require assistance with self-care and personal hygiene. Medication compliance is stressed, and close monitoring for warning signs of suicide is important during treatment, as risk of suicide increases with lifting of depressed mood. Patients are also advised to work with their providers when discontinuing medications to avoid antidepressant withdrawal, sometimes called *antidepressant discontinuation syndrome* (Hall-Flavin, 2019).

**Suicide**

Suicide is the 17th leading cause of death among people ages 65 and older. Rates tend to increase over time, and risk of suicide tends to follow birth cohorts. Baby boomers have had the highest rate. White older males have a higher suicide rate than females, and white males aged 85 and older have a four times higher rate than the nation’s overall rate. Suicidal ideation is more commonly openly endorsed by persons in the oldest-old age group (Wenker & Liebzeit, 2019).

Compared to younger people, older adults tend to be more deliberate in their planning of suicide, with the top three means of dying by suicide being firearms, suffocation, and poisoning. Although older adults attempt suicide less often, they are more successful.

It is important to recognize that older adults also may use less aggressive and less visible methods referred to as *passive suicide*. These may include:

- Refusal to eat, leading to malnutrition
- Refusal of fluids, leading to dehydration
- Refusal to take maintenance medications
- Refusal to accept care in emergent situations

**Risk factors** for suicide among older persons often differ from those among the young. In addition to a higher prevalence of depression, suicidal risk factors and warning signs in older persons include:

- Depression
- Prior suicide attempts
- Marked feelings of hopelessness, lack of interest in future plans
- Feelings of loss of independence or sense of purpose
- History of military service
- Medical conditions that significantly limit functioning or life expectancy
- Chronic pain
- Impulsivity due to cognitive impairment
- Social isolation
- Family discord or losses
- Inflexible personality or marked difficulty in adapting to change
- Access to lethal means
- Sudden personality changes
- Alcohol or medication misuse or abuse
- Verbal suicide threats (e.g., “You’ll be better off without me.”) (Wenker & Liebzeit, 2019; MHA, 2020)

Suicide **protective factors** include:

- Family and community support
- Support from ongoing medical and mental healthcare relationships
- Skills in problem solving, conflict resolution, and nonviolent ways of handling disputes and coping with stress
- Cultural and religious beliefs that discourage suicide and support instincts for self-preservation (CDC, 2019a)

**ASSESSMENT OF SUICIDE RISK**

The goal of suicide risk assessment is not to predict whether or not an older person will die by suicide but to determine the most appropriate actions to take to keep the person safe. It is also important to remember that older adults are less likely to spontaneously report suicide ideation, and it is up to clinicians to ask. Healthcare providers have a great number of opportunities to identify and intervene with suicidal patients; it is helpful to remember that a majority of people who die by suicide had visited a healthcare provider in the month prior to their suicide (Van Orden, 2020).

The **Columbia Suicide Severity Rating Scale (C-SSRS)** is becoming the gold standard for suicide risk assessment. This tool asks the following six questions:

1. Have you wished you were dead or wished you could go to sleep and not wake up?
2. Have you had any actual thoughts of killing yourself?
3. Have you been thinking about how you might do this?
4. Have you had these thoughts and had some intention of acting on them?
5. Have you started to work out or worked out the details of how to kill yourself? Do you intend to carry out this plan?
6. Have you ever done anything, started to do anything, or prepared to do anything to end your life?

Positive responses to all 6 questions indicate the need for behavioral health referral, and positive responses to question 3, 4, 5, and 6 indicate the need for taking patient safety precautions.

Tools for assessing both passive and active ideation also include the **Patient Health Questionnaire-9 (PHQ-9)** depression screening tool, which assesses nine symptoms of depression and how often persons have had thoughts that they would be better off dead or wish to hurt themselves in some way. The **Geriatric Suicide Ideation Scale (GSIS)** can be used to monitor changes in suicide risk across the course of treatment (Van Orden, 2020; Columbia Lighthouse Project, 2016).

### DETERMINING LEVEL OF SUICIDE RISK

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Risk and Protective Factors</th>
<th>Suicide Screening Results</th>
</tr>
</thead>
</table>
| Low        | • Few and/or modifiable risk factors  
             • Strong protective factors | • Thoughts of death with no plan, intent, or behavior |
| Moderate   | • Multiple risk factors  
             • Few protective factors | • Suicidal ideation with a plan, but no intent or behavior |
| High       | • Multiple risk factors  
             • Lacks protective factors | • Has made a potentially lethal suicide attempt, or  
             • Has persistent ideation with strong intent or suicide rehearsal |

(MNDH, 2019)

### MANAGEMENT OF SUICIDE RISK

If an individual reports having passive or active suicide ideation, it is important to follow up to determine whether the individual has current intent to act on their thoughts. **Passive** suicidal thoughts include thinking that one would be “better off dead.” These thoughts are not necessarily associated with increased risk for suicide but are a sign of significant distress and should be addressed immediately.

In contrast, **active** suicidal thoughts include thinking of taking actions toward hurting or killing oneself. These thoughts require immediate clinical assessment and intervention by a mental health professional.
For those categorized as **low risk**, intervention should include:

- Outpatient referral
- Creating a safety plan
- Urging removal of means for suicide from the home
- Providing emergency/crisis numbers (e.g., 800-273-TALK)

For those with **moderate risk**:

- Possible hospitalization
- Developing a crisis plan
- Taking suicide precautions
- Providing emergency/crisis numbers

For those at **high risk**, the appropriate intervention is hospitalization. It is necessary to remain with the patient until appropriate actions have been taken and emergency services are in place. These actions may include calling 911 to obtain emergency department care or contacting a mobile crisis team (Van Orden, 2020).

**Sexuality**

Aging introduces issues that affect sexual activity. (See also “Endocrine Changes” earlier in this course.) Providers must also recognize that changes affecting the sexual health of one member of a couple also affect the other partner. Taking a couple-oriented approach to management can be helpful in improving sexual satisfaction and intimacy.

Sexuality remains an important part of life into older age, but older people are often challenged by **ageist attitudes and perceptions** that interfere with sexual expression. Older adults are stereotyped as nonsexual beings who should not, cannot, and do not want to have sexual relationships. These myths of ageism include:

- Older adults lack sexual desire
- Older people, particularly women, are physically unattractive and undesirable
- Engaging in sexual activity is shameful and perverted
- There are no older lesbian, gay, bisexual, transgender, queer (LGBTQ) people

Ageist attitudes are not uncommon among healthcare providers, and they have a large impact on the legitimacy of expressing sexuality later in life. A particularly significant indication of internalizing ageism is the reluctance of older people to discuss sexual issues with their primary care physicians due to fear that sex in later life does not meet with societal expectations and will, therefore, be disapproved of by healthcare providers. It has also been found that sexual issues are not raised by healthcare providers during routine healthcare visits or other interactions with older
people. A survey of providers found that only 40% of providers routinely ask questions of all patients to assess for sexual problems or dysfunction and fewer than a third (28%) routinely confirm a patient’s sexual orientation (ASHS, 2020).

Attitudes toward sexuality in later life among staff in long-term care facilities defines the institutional stance on this issue, which can range from restricting sexual expression to being responsive to or even promoting residents’ sexual needs.

Prior to entering care facilities, prospective residents are not provided with information about how their sexual and intimacy needs will be respected, nor do nurses routinely inquire about sexual practices or conduct sexual health assessments among older residents.

In general, staff knowledge regarding later-life sexuality is limited. Simple circumstances required for sexual expression, such as privacy, are not facilitated. Sexual expression among LGBTQ individuals can be even more difficult in long-term care facilities, where any kind of sexual expression is censored or where judgments are made about those who are not in long-term relationships or have multiple sexual partners. When a person also has dementia, sexual disinhibition might be quickly labeled as deviant (Gewirtz-Meydan et al., 2018).

### AGING AND HIV/AIDS

Today, due to improvements in treatment for HIV, people who are diagnosed early and who receive and stay on antiretroviral therapy (ART) can live long and healthy lives. As a result, nearly half of all people living with diagnosed HIV in the United States are ages 50 and older. Though new HIV diagnoses are declining among people ages 50 and older, around 1 in 6 new diagnoses in 2018 were among this age group (CDC, 2020d).

Although older people see healthcare providers more frequently, it is less likely a discussion will occur regarding sexual or drug use behaviors. Healthcare providers may not ask about these issues or test for HIV. Also, older people may not consider themselves to be at risk for HIV, may be too embarrassed to discuss sex, or may mistake HIV symptoms for those of normal aging.

For those older adults living with HIV, stigma is of particular concern, as well as greater social isolation and loneliness. It is important for older people to be linked to HIV care and to have access to mental health and other support services (HIV.gov, 2020; CDC, 2020d; Zaid & Greenman, 2019).

### Substance Use in Older Adults

While illicit drug use typically is much lower in older adults than younger adults, it is currently increasing. Nearly 1 million older adults are living with a substance use disorder. Aging can lead to social and physical changes that may increase vulnerability to substance misuse.

Many older adults may use alcohol simply because it is a long-term habit that is part of their lifestyle. Some may take substances to cope with big life changes such as retirement, grief and
loss, declining health, or a change in living situation. Others may take them to relieve chronic pain. Some people may unintentionally misuse prescription or OTC medications by forgetting to take them, taking them too often, or taking the wrong amount.

Older adults may be more likely to experience mood disorders, lung and heart problems, or memory issues, and drug and alcohol use can worsen these conditions. Additionally, some drugs can impair judgment, coordination, or reaction, which can result in accidents, including falls and auto crashes. Little is known, however, about the effects of drugs and alcohol on the older brain. Older adults typically metabolize substances more slowly, and their brains can be more sensitive to drugs.

Regular marijuana use for medical or recreational reasons at any age is associated with chronic respiratory conditions, depression, impaired memory, adverse cardiovascular function, and altered judgment and motor skills. Marijuana can interact with a number of prescription drugs and complicate existing health issues.

Regular nicotine use via smoking increases the risk for heart disease and cancer. About 8 in 100 adults ages 65 and older smoke cigarettes. Older people who smoke have an increased risk of becoming frail, though smokers who have quit do not appear to be at higher risk (NIDA, 2020).

Alcohol is the most frequently used substance among older adults, with approximately 65% reporting high-risk drinking, defined as exceeding daily guidelines at least weekly in the past year (NIDA, 2020). The National Institute on Alcohol Abuse and Alcoholism guidelines recommend adults over the age of 65 who do not take medications to limit their alcohol consumption to seven drinks a week, while not drinking more than three drinks on a given day (AAC, 2020).

More than one tenth of older adults currently binge drink, defined as five or more drinks on the same occasion for men and four or more for women. Alcohol use disorder increases the risk for a range of health problems, including diabetes, hypertension, congestive heart failure, liver and bone problems, memory issues, and mood disorders.

Between 4% and 9% of adults ages 65 and older use prescription opioid pain medications for pain relief. The proportion of older adults using heroin (an illicit opioid) has more than doubled since 2013 in part due to the fact that some people who misuse prescription opioids switch to this less costly drug (NIDA, 2020).

Physical risk factors for substance use disorders can include:

- Chronic pain
- Physical disability or reduced mobility
- Transitions in living or care situations
- Change in income
- Chronic illness
Psychiatric risk factors include:

- Avoidance coping style
- Bereavement
- History of substance use disorders
- Previous or current mental illness
- Feeling socially isolated

(NIDA, 2020)

ASSESSMENT FOR SUBSTANCE USE

Despite the increasing prevalence of substance use among older adults, they are less likely to be screened compared to younger adults. Screening for substance use faces many barriers including challenges of integrating screening in primary care and inpatient settings, as well as the lack of assessment guidelines for older adults who may be using. Another barrier is the discomfort experienced by both patients and providers discussing and reporting this stigmatized behavior. Also, the signs and symptoms of substance use may be mistaken for manifestations of chronic disease (Han & Moore, 2018).

Signs of drug abuse in the older adult may include:

- Memory problems
- Changes in sleep habits
- Unexplained bruises
- Irritability, sadness, depression
- Unexplained chronic pain
- Changes in eating habits
- Wanting to be left alone
- Self-neglect
- Losing touch with loved ones
- Lack of interest in usual activities

(Juergens, 2020)

When assessing individuals about substance use, it is important to use language that does not further stigmatize. It is recommended to use wording such as substance use disorder, unhealthy use, and harmful use.
Several screening instruments for substance use are available for a range of substances (alcohol, tobacco, illicit drugs, and prescription drugs), but only a few are designed specifically for and validated in older adults.

One example of a validated screening tool that is commonly used with older adults in the primary care setting is the **Substance Use Brief Screen (SUBS)**, a self-administered brief screen for tobacco, alcohol, and drug use (illegal and prescription). Screening positive with this tool would lead to further screening with longer, more reliable tools (Han & Moore, 2018).

Another screening tool validated for the older adult is the **Short Michigan Alcoholism Screening Test-Geriatric Version (SMAST-G)**, which asks the following 10 questions:

1. When talking with others, do you ever underestimate how much you drink? (yes/no)
2. After a few drinks, have you sometimes not eaten or been able to skip a meal because you did not feel hungry? (yes/no)
3. Does having a few drinks help decrease your shakiness or tremors? (yes/no)
4. Does alcohol sometimes make it hard for you to remember parts of the day or night? (yes/no)
5. Do you usually drink to relax or calm your nerves? (yes/no)
6. Do you usually take a drink to take your mind off your problems? (yes/no)
7. Have you ever increased your drinking after experiencing a loss in your life? (yes/no)
8. Has your doctor or nurse ever said they were worried or concerned about your drinking? (yes/no)
9. Have you ever made rules to manage your drinking? (yes/no)
10. When you feel lonely, does having a drink help? (yes/no)

A score of 2 or more yes responses to this screening is an indication of a problem with alcohol (Medscape, 2020).

More comprehensive and reliable assessment tools may include:

- **Quantity-Frequency Index** asks about the quantity and frequency of use and the social and health consequences of drug use, including nicotine, prescription, over-the-counter, herbal and food supplements, recreational drugs, and alcohol.

- **Alcohol, Smoking, and Substance Involvement Screening Tests (ASSIST)** screens across all substances, including tobacco, alcohol, and illegal drug use. The ASSIST is widely used in clinical practice after a screening has been done and found positive.
• The longer Michigan Alcohol Screening Test-Geriatric Version (MAST-G) is the first instrument specifically designed to identify alcohol use problems in older adults. The MAST-G has 24 yes/no questions, with five or more positive responses indicating problematic alcohol use. The questions focus more on potential stressor and behaviors that are common among older adults. The MAST-G has a high sensitivity and specificity and generally has strong psychometric properties. (Han & Moore, 2018; NIDA, 2020; Naegle, 2020)

MANAGEMENT AND PREVENTION OF SUBSTANCE USE

The misuse and abuse of substances by the older adult presents unique challenges for recognizing the problem and determining the most appropriate treatment interventions. Misuse is the intentional use, for therapeutic purposes, of a drug by an individual in a way other than prescribed by the healthcare provider or for whom it was not prescribed. Abuse is the intentional nontherapeutic use of a drug, even once, for its desirable psychological or physiologic effects (U.S. FDA, 2019).

The majority of older adults at risk for problem substance use do not need formal, specialized substance abuse treatment. However, many can benefit from prevention messages, screening, and brief interventions.

A brief intervention involves talking with the person about the results of screening and risks associated with substance use and providing educational materials. During this intervention, the clinician can advise the patient to make a behavior change. Advising includes listening to the patient’s concerns about change and attempting to understand alcohol and drug use from the patient’s perspective. Readiness for change can be assessed using the Readiness Ruler rating scale to determine how the patient rates their readiness to change on a scale from 1 to 10 (see “Resources” at the end of this course).

In some instances, a clinician may refer a patient for specialty substance abuse assessment and care. However, treatment options specifically tailored for older adults are limited. Unfortunately, too few older adults who need treatment obtain it, as there are too few addiction providers effectively trained to work with older adults and not enough geriatric specialists with training in addressing substance abuse among this population (Fulmer & Chernof, 2019).

FUNCTIONAL CHANGES WITH AGING

Physical functioning, to a great degree, is a requirement for many facets of day-to-day life. For older adults, physical functioning may impact the ability to live alone, where they are able to live, and what amount of assistance is required regardless of living setting. Older adults often define their level of health in terms of how they are physically functioning, i.e., their ability to carry out their normal daily functions.

Alterations in coordination (the ability to execute smooth, accurate, controlled motor responses) occur with aging, including:

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• Diminished strength, with greater loss in the muscles of the back and lower extremities and greater loss in the proximal rather than distal muscles
• Slowed reaction time and speed decreases in order to ensure greater accuracy
• Decreased range of motion for multiple joints
• Postural changes that are involved in fall avoidance and successful task engagement

Age-related sensory changes also include altered postural stability and control, diminished response to tactile stimuli, and proprioceptive acuity. These may create a variety of activity limitations in older adults due to:

• Postural instability
• Exaggerated body sway
• Balance problems
• Wide-based gait
• Diminished fine-motor coordination
• Tendency to drop items
• Difficulty in recognizing body position in space

Activity limitations are difficulties an individual may have executing tasks or actions. These can include:

• Cognitive and learning skills
• Communication skills
• Functional mobility skills
• Activities of daily living (ADLs) that include basic self-care (O’Sullivan et al., 2019)

Participation restrictions are problems with being involved in daily life situations and societal interactions, including those referred to as instrumental activities of daily living (IADLs), and may include:

• Home management
• Work
• Community/leisure

Performance restrictions involve what a person is able to do in their current living environment, which may require the use of assistive devices or personal assistance (O’Sullivan et al., 2019).
LEVELS OF FUNCTIONAL STATUS

Activities of Daily Living (ADLs)
- Bathing/showering
- Dressing
- Eating and swallowing
- Feeding
- Functional mobility
- Personal hygiene and grooming
- Sexual activity
- Toileting and toilet hygiene

Instrumental Activities of Daily Living (IADLs)
- Care of others
- Care of pets and animals
- Child rearing
- Communication management
- Driving and community mobility
- Financial management
- Home establishment and management
- Meal preparation and cleanup
- Religious and spiritual expression
- Safety and emergency maintenance
- Shopping

Health Management Occupations
- Social and emotional health promotion and maintenance
- Symptom and condition management
- Communication with the healthcare system
- Medication management
- Physical activity
- Nutrition management
- Personal care and device management

(OTA, 2020b)
**Functional Assessment**

Functional assessment is a vital part of a comprehensive geriatric assessment, and various components of the evaluation are completed by different members of the healthcare team. A complete geriatric functional assessment includes:

- Assessing the patient’s physical ability to perform daily activities required to meet basic needs, fulfill usual roles, and maintain health and well-being
- Screening for cognitive impairment
- Screening for depression
- Evaluating gait instability and/or fall risk
- Evaluating for communication barriers
- Assessing urinary and fecal continence
- Assessing oral health
- Assessing skin for bruises, wounds, and other signs of skin breakdown
- Assessing nutritional status
- Evaluating for pain
- Addressing polypharmacy
- Assessing social and financial support
- Evaluating for vision or hearing difficulties (Ward & Reuben, 2020)

**PHYSICAL ASSESSMENT TOOLS**

SPICES and FANCAPES are two assessment tools that are part of a comprehensive geriatric physical assessment.

The acronym **SPICES** refers to six common geriatric syndromes that require interventions (see table).
**S**PICES PHYSICAL ASSESSMENT

<table>
<thead>
<tr>
<th>Geriatric Syndrome</th>
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**FANCAPES** is a model for the comprehensive physical assessment of the older adult. This model of assessment focuses on the patient’s basic needs and ability to function independently and is designed for use by various members of the healthcare team (see table).

<table>
<thead>
<tr>
<th>FANCAPES PHYSICAL ASSESSMENT</th>
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<tbody>
<tr>
<td>Area</td>
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</table>
| (A) Activity | Physical therapist | • Is the patient able to speak and be understood (any aphasia)?  
|             |                  | • What is the patient’s literacy level?  
| (P) Pain    | Palliative care nurse | • Is the patient able to meet their basic needs (ADLs)?  
|             |                  | • How much assistance do they need and with what activities?  
|             |                  | • Is the patient able to meet higher level needs for activities (e.g., social outings, attending church)?  
|             |                  | • What is the patient’s level of coordination, balance, dexterity, and strength?  
| (E) Elimination | Nurse/occupational therapist | • Is the patient experiencing any level of pain (physical, psychological, or spiritual)?  
|             |                  | • Is the patient able to express pain and their needs for pain relief?  
|             |                  | • How does the patient normally treat their pain?  
|             |                  | • Does the patient have cultural barriers to pain expression?  
| (S) Socialization and social skills | Social worker | • Is the patient having any problems with bladder or bowel function?  
|             |                  | • Are their environmental barriers to adequate toileting (e.g., location of bathroom from bedroom)?  
|             |                  | • Does the patient need any assistive devices in the bathroom (e.g., toilet seat riser, bedside commode)?  
|             |                  | • Is the patient able to negotiate relationships within their family and social circles?  
|             |                  | • Does the patient have a sense of self-worth within their world?  
|             |                  | • Is the patient involved in hobbies or interests outside of their home environment?  

(Devney, 2018)
FUNCTIONAL ASSESSMENT TOOLS

Whereas the emphasis in FANCAPES and SPICES is on physical criteria and those associated with geriatric syndromes, a full functional assessment is broader and evaluates the person’s ability to carry out basic tasks for self-care and tasks needed to support independent living. The purpose of functional assessment is to focus on identification of pertinent activities and measurement of the person’s ability to successfully engage in them. It is important to know the person’s baseline functional status and to make comparisons over time.

Functional testing is used to measure how a person does certain tasks or fulfills certain roles. It includes performance-based tests that involve observing the patient performing an activity and self-reports in which the patient is asked directly.

The Functional Status Questionnaire (FSQ) is a functional assessment tool that provides information about the patient’s physical, psychological, social, and role functions. Areas of assessment include:

- Activities of daily living
- Mental health
- Negative affect
- Depression
- Stress and coping
- Occupational performance
- Social support
- Social relationships
- Life participation
- General health
- Quality of life

(Abilitylab, 2020)

The Functional Independence Measure (FIM) is an 18-item performance instrument used to assess a person’s level of disability as well as changes in patient status in response to rehabilitation or medical intervention (see table).
<table>
<thead>
<tr>
<th>Category</th>
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<td>Self-care</td>
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<td>• Dressing (upper)</td>
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<td>Locomotion</td>
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<td>• Stairs</td>
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<td>Communication</td>
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<td>• Verbal expression</td>
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<td>• Problem solving</td>
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<td>• Memory</td>
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(Physiopedia, 2021b)

Examples of **performance tests** include:

- 6-Minute Walk Test, an exercise test used to assess aerobic capacity and endurance
- Functional Reach Test, a single-item test developed as a quick screen for balance problems in older adults
- Timed Up and Go (TUG) Test, an assessment conducted as part of a routine evaluation of older persons in order to assess mobility and both static and dynamic balance
• Berg Balance Scale, an assessment that determines a patient’s ability or inability to safely balance during a series of predetermined tasks
(Physiopedia, 2021a)

Examples of self-reports include:

• Functional Independence Measure Self-Report (FIM-SR)
• Functional Status Questionnaire
• Activity Measure for Post and Acute Care (AM-PAC), a measure of difficulty, assistance, and limitation in ADLs
• Life Space Questionnaire, a measure of the extent of mobility of older adults
• Late-Life Function and Disability Instrument (LLFDI), an evaluative outcome instrument for community-dwelling older adults that assesses function and disability

It has been shown that physical performance and self-report measures of mobility/function do not provide equivalent information about a patient’s functional status. Consequently, it has been overwhelmingly recommended that both types of assessment be completed, as they provide complementary information that allows for a more accurate account of mobility/function (Fulmer & Chernof, 2019).

PLAN OF CARE

The plan of care is an essential element of the functional assessment process. Once an assessment is completed, a plan of care can be developed that specifies the type of support services and equipment that might be appropriate, including home care and/or modification of the home (i.e., occupational therapy) or possible placement in assisted living or other long-term care facility (i.e., social work). Those who need assistance only with IADLs may continue to live independently with the help of family caregivers; a financial/legal consultant (accountant, attorney, or family member with durable power of attorney); a cleaning service; and/or someone to drive, shop, and run errands.

The entire team brings coordinated efforts to reducing the morbidity and mortality associated with caring for the aging patient. Some expected patient outcomes include:

• Maintaining a safe level of ADLs and ambulation in their particular environment
• Making necessary adaptations to maintain safety and independence, including assistive devices
• Decreasing the incidence and prevalence of functional decline
• Decreasing readmission rates
• Maintaining access to rehabilitative therapies (i.e., occupational, physical, speech, etc.)
(Fulmer & Chernof, 2019)
CASE

George is an 85-year-old man with chronic health problems that include hypertension, bilateral cataracts, osteoarthritis, and mild cognitive impairment. He has been living on his own in an apartment since the death of his wife of five years ago. He has attentive family and friends but no formal support services. He is brought to the clinic by his son, who feels that George is “struggling to cope around the house.” His nurse practitioner recognizes the need for a basic functional assessment.

George’s son reports that he takes two medications for hypertension each day and that he prepares his pill box for his father. He reports that George occasionally misses a dose or two on a weekly basis.

George reports that he has family members who do his shopping. He states that his appetite is not what it used to be and that he eats only two small frozen meals a day. The son reports that George does not use the stove, only his microwave, since he sometimes forgets to turn burners off. He snacks on crackers, cheese, and peanut butter in between meals. George reports he is able to shower on his own and dress himself, with some difficulty bending to put on his pants, shoes, and socks. He has no difficulties with toileting, and he is continent of both bowel and bladder. However, he says he sometimes misses the toilet bowl because his eyesight “is not so good.”

George indicates that he has been experiencing pains in his knees and hands for quite some time and that his joints feel stiff and achy. Sometimes the pain keeps him awake at night.

When asked about any difficulties transferring from a chair to a bed, he says he sometimes has problems rising and tends to pitch forward when trying to get out of his favorite living room chair. George states that he is afraid he might “fall someday,” but he doesn’t remember if he has had any recent falls. The nurse notices that he needed to use both hands to assist himself from the chair in the examination room and required assistance and support to stand on the scale.

George’s son indicates that he has a great deal of trouble climbing the few stairs to the entrance to his home and that he avoids steps whenever possible. He is having more and more difficulty keeping his apartment clean and is no longer able to do his own laundry. His family members help him as much as they are able to.

George says he does not use a cane or a walker, but the nurse noted that he moved quite slowly and needed to hang on to furniture and walls when entering the exam room. He walks with an antalgic gait as a result of his osteoarthritis. His son reports there are no grab bars installed in his home. “He always says he doesn’t need those things.”

George states he is no longer able to comfortably read anymore, saying, “I can’t see very well these days.” He does not show any indication of hearing loss and states he is able to hear what people are saying without any difficulty. He says, “It would be nice to get out more, but I can’t see worth a darn, and I don’t walk so good now.” His son reports that George refused to go to the eye doctor the past year and said, “I can’t afford new glasses.”
George is unable to give the correct date and day of week when asked and answers many questions with “I don’t remember.” He is unable to recall what he had eaten that morning. He is cheerful and cooperative throughout the assessment.

The nurse practitioner creates a problem list that includes:

- Visual impairment affecting reading and socialization
- Pain from osteoarthritis impairing mobility, socialization, and sleep
- Impaired ADLs and IADLs related to vision, mobility, and cognitive problems
- Impaired locomotion due to osteoarthritis
- Memory loss affecting medication adherence

A plan of care is developed along with George and his son that includes:

- Referral to both physical and occupational therapies for comprehensive functional evaluations and treatment guidance
- Prescription for appropriate analgesic
- Referral for complete visual examination
- Referral to the local Area Agency on Aging to enlist assistance that will help George remain in his home and to assess George’s financial status and available benefits

Management of Functional Deficits

Management of older adults with functional deficits requires knowledge and input from a team of practitioners, with a focus on maintaining functional status and intervening when signs of decline become evident.

The intent of management is primarily centered on the person’s specific functional deficits, with additional aims such as reducing the need for premature placement into residential care or delaying or reducing the need for community support services. Management can also address the broader social and psychological needs of the older adult through group-based programs and opportunities to connect with the community.

A function-focused approach looks holistically at the nature of, and contributors to, an older person’s functional decline and then applies strategies to improve functional ability by maximizing intrinsic capacity and using environmental modifiers when necessary and available. A systematic approach includes these elements:

1. Clinical assessment and optimal disease management
2. Functional assessment looking at physical, mental, and social domains
3. Collaborative goal setting, with goals that are meaningful to the person and achievable
4. Evidence-based, goal-oriented allied health and nursing therapeutic and lifestyle interventions targeted at improving intrinsic capacity and functional ability

5. Use of assistive technologies and/or environmental modifications to compensate for remaining deficits

6. Provision of community support services to address persisting deficits that affect daily living

7. Supporting the health and wellness of family caregivers

8. Provision of alternative or supported accommodation when living at home remains unsafe or too difficult

(Poulos & Poulos, 2019)

**OCCUPATIONAL THERAPY AND FUNCTIONAL DEFICITS**

Occupational therapists play a primary role in helping patients restore their ability to perform activities of daily living. This may include:

- Making recommendations for necessary assistive devices that can make completing daily tasks easier, such as weighted utensils and plates to assist with coordination problems or devices to assist with dressing, changing clothes, or putting on shoes

- Assessing the patient’s home and making recommendations to ensure home safety and to prevent falls (see below for more details)

- Enhancing emotional well-being by providing positive emotional support and by helping patients see beyond their dysfunctions and to focus on what they still can do

- Collaborating with the patient, family, and friends to find out what goals are important, what obstacles are in place, and what the person needs in order to feel supported and to be successful

(AOTA, 2020a; Moroz, 2017; Franciscan Ministries, 2018a)

**PHYSICAL THERAPY AND FUNCTIONAL DEFICITS**

Physical therapy aims to maximize functional mobility across a number of areas (range of motion/joint mobility, strength, coordination, static and dynamic balance, gait, etc.). Interventions may include active, active-assistive, and passive range-of-motion exercises as well as transfer training, gait training, and training in the safe and correct use of assistive devices such as walkers or canes. Physical therapists also perform home safety evaluations and make recommendations for environmental modifications to improve home safety (Franciscan Ministries, 2018b).
AMBULATION AND MOBILITY INTERVENTIONS

Being able to ambulate safely within their homes and communities is often a crucial factor in older adults’ ability to continue living an independent lifestyle. Community ambulation refers to an individual’s ability to successfully walk at least 300 meters (984 feet) independently without a rest. To walk within the community for shopping or leisure and to ambulate around the home environment is vital to the socialization and quality of life of the older adult.

Mobility is the capacity one has for movement within the personally available environment. While many mobility issues in older adults cannot be treated medically or surgically, they sometimes can be compensated for by the use of ambulatory assistive devices. There are a number of assistive devices available that may be of assistance to older adults with mobility impairments. Physical therapists provide selection of and training on the use of appropriate assistive devices, and nurses supervise the correct use.

Assistive mobility devices offer a wide range of levels of support based on a patient’s individual needs. When fitted correctly and used properly, assistive devices may increase base of support, improve stability with standing or walking, and increase activity and independence level.

- Standard/straight cane: Lightweight and inexpensive, generally crafted from wood or aluminum. A cane may help improve stability in a patient who does not need the upper extremity to bear weight.

- Offset cane: This type of cane distributes the patient’s weight over the cane’s shaft. An offset cane is often indicated for patients who require their upper extremity to bear weight at times (i.e., due to gait problems caused by pain from knee or hip osteoarthritis).

- Quadripod cane (“quad” cane): A four-legged cane that provides a larger base of support. This type of cane can stand freely if the patient needs to use upper extremities for other tasks momentarily and may be useful for some patients with hemiplegia. For safe and proper use, all four points of the cane must contact the ground at the same time.

- “Smart” canes: A cane that is capable of sensing movement, position, orientation, and force that provides feedback to the user through the use of electronic sensors (Arefin et al., 2020).

- Crutches: Useful for a patient who must use their upper extremities for purposes of both weight bearing and propulsion. Due to the significant energy requirements for their use, as well as the level of arm and/or shoulder strength needed, crutches are infrequently indicated for the majority of older adults, particularly frail elders.

- Standard walker: The most stable walker. However, since the patient must completely lift the walker off ground with each step, it results in a slower gait. This may be challenging for frail older patients with decreased upper body strength.
• Front-wheeled walker (two-wheeled walker): Less stable than a standard walker but maintains a more natural gait pattern. This is an alternative for older adults who cannot lift a standard walker.

• Four-wheeled walker (rollator): Potentially useful for higher-functioning patients who do not require a walker to serve weight-bearing purposes. This type of walker is easy to propel but not generally appropriate for patients with significant balance or cognitive impairment because it may roll forward unexpectedly. May include a seat and baskets but must be used with caution. Brakes should always be engaged and the rollator positioned against a wall or other solid object before the patient sits.

Selection of an appropriate assistive device for mobility is contingent on a patient’s strength, endurance, balance, cognitive status, and environmental demands. All ambulatory assistive devices should be fitted to the individual patient, who will likely need training in using the device. However, not all older adults are candidates for ambulatory assistive devices. For example, those with serious impairments in cognition, judgment, vision, or upper body strength may not be able to use one of these devices safely.

It is important to bear in mind that a wheelchair may be the safest mobility option for patients who can no longer ambulate safely or who have severe lower extremity weakness that does not respond to therapeutic interventions (Odebiyi & Adeagbo, 2020).

FALL PREVENTION INTERVENTIONS

A comprehensive geriatric assessment for older adults includes assessment of risk for falls. More than 1 of 4 older people fall each year, but less than half inform their healthcare provider. One out of five falls causes a serious injury such as broken bones or head injury, and over 800,000 patients a year are hospitalized because of a fall injury, mostly due to head injury or hip fracture. The greatest majority of hip fractures are caused by falling, usually by falling sideways and falls are the most common cause of traumatic brain injuries (CDC, 2020f).

Many factors—both intrinsic and extrinsic—contribute to the risk of falls. Most of them can be changed or modified to help prevent falls. These include:

• Age 65 and older
• Lower body weakness
• Vitamin D deficiency
• Dehydration
• Difficulties with walking and balance, gait disorders
• Use of medicines, such as tranquilizers, sedatives, or antidepressants
• Polypharmacy
• Postural hypotension

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• Chronic conditions (arthritis, CVA, incontinence, neurologic conditions, etc.)
• Dementia
• Vision problems
• Fear of falling
• Foot pain or poor footwear
• Improper use of an assistive device
• Alcohol or substance use
• Home hazards or dangers, such as:
  o Broken or uneven steps
  o Lack of stair handrails
  o Lack of bathroom grab bars
  o Dim lighting or glare
  o Obstacles and tripping hazards
  o Slippery or uneven surfaces

Most falls are caused by a combination of these risk factors. The more risk factors, the greater the chances of falling (CDC, 2020e).

**Falls Assessment**

The CDC and the American Geriatric Society recommend yearly fall assessment screening for all adults 65 years of age and older. A person may also need additional assessments if at higher risk due to:

• Dizziness
• Light-headedness
• Tachycardia or arrhythmia

A fall assessment is done to determine how likely the risk is for a patient to fall. It includes:

• An initial screening that includes a series of questions about overall health, if the patient has had previous falls or problems with balance, standing, and/or walking
• A set of tasks (fall assessment tools) that test strength, balance, and gait, which may include:
  o Timed Up and Go (TUG) Test to assess risk for falling
  o 30-second chair stand test to test leg strength and endurance
- 4-stage balance test to evaluate static balance based on the ability to hold four progressively more challenging positions

Many providers use an approach developed by the CDC called **STEADI** (Stopping Elderly Accidents, Deaths, and Injuries). STEADI includes screening, assessment of modifiable risk factors, and interventions using effective clinical and community strategies. Some interventions that may be recommended include:

- Referral to physical therapist for evaluation and treatment to improve strength and balance
- Changing or reducing the dosage of medications
- Prescribing vitamin D
- Prescribing medications such as bisphosphonates (e.g., Fosamax) for osteopenia and osteoporosis
- Recommending a vision examination
- Assessing footwear
- Reviewing the home for potential hazards

(NIH, 2020j; CDC, 2020f; Godfrey et al., 2019)

**Falls and Traumatic Brain Injury (TBI)**

Adults ages 75 and older have the highest incidence of TBI. Falls, largely from standing height, are the leading mechanism of TBI in older adults, with more women than men being affected. Intracranial changes occurring with aging and the increasing use of anticoagulant medications (e.g., warfarin/Coumadin, aspirin) put older adults at increased risk of intracranial bleeding, even with TBIs that would otherwise be classified as mild.

Pre-existing medical conditions are associated with worse outcomes after TBI in older adults. Older adults with TBI experience higher morbidity and mortality, slower recovery trajectories, and worse functional, cognitive, and psychosocial outcomes than younger individuals. TBI also significantly increases the risk of new onset depression, anxiety, and/or PTSD in older adults, with evidence of under-recognition and under-treatment (Narapareddy et al., 2019).

Traumatic brain injuries have physical, sensory, and cognitive or mental signs and symptoms that appear immediately after a traumatic event, but some may appear days or weeks later.

**Symptoms of mild TBI** may include:

- Loss of consciousness for a few seconds to a few minutes
- No loss of consciousness but a state of being dazed, confused, or disoriented
- Headache
- Nausea or vomiting
- Fatigue or drowsiness
- Problems with speech
- Difficulty sleeping or sleeping more than usual
- Dizziness or loss of balance
- Sensory problems, such as blurred vision, ringing in the ears, a bad taste in the mouth, or changes in the ability to smell
- Sensitivity to light or sound
- Memory or concentration problems
- Mood changes or mood swings
- Feeling depressed or anxious
(Mayo Clinic, 2019d)

Signs and symptoms of **moderate to severe TBI** include any of the signs and symptoms of mild injury, as well as these symptoms that may appear within the first hours to days after head injury:

- Loss of consciousness from several minutes to hours
- Persistent headache or headache that worsens
- Repeated vomiting or nausea
- Convulsions or seizures
- Dilation of one or both pupils of the eyes
- Clear fluid draining from the nose or ears
- Inability to awaken from sleep
- Weakness or numbness in fingers and toes
- Loss of coordination
- Profound confusion
- Agitation, combativeness or other unusual behavior
- Slurred speech
- Coma and other disorders of consciousness
(Mayo Clinic, 2019d)

The **Glasgow Coma Scale** is the most widely used clinical assessment tool to determine TBI severity at the time of initial presentation, but it may not be able to accurately assign
TBI severity in older adults. Older adults with pre-existing dementia may have an abnormal GCS at baseline, and others may have comorbid medical conditions or medication side effects that may complicate accurate diagnosis.

Following a blunt head trauma, older adults may produce a completely normal neurological examination yet still have evidence of intracranial trauma on head CT scan. Age-related atrophy may provide space for an intracranial hemorrhage to expand substantially before it leads to clinically apparent signs or symptoms that would be detected by the GCS (Gardner et al., 2018).

Studies have assessed but not validated the use of various acute neurosurgical interventions, including intracranial pressure monitoring, craniotomy, and decompression craniectomy in older adults with moderate to severe TBI. There is, however, substantial evidence that intensive inpatient rehabilitation greatly benefits older adults with TBI, with the majority showing functional gains and achieving discharge to home. Although gains are slower, necessitating longer lengths of stay, overall functional gains did not significantly differ between older versus younger patients after accounting for TBI severity (Gardner et al, 2018).

**CASE**

Violet is an 82-year-old retired professor who lives independently in her own home. Violet has a prior history of spinal stenosis and underwent a lumbar fusion five years ago. As a consequence of the surgery, she has residual L-sided foot drop (for which she wears an ankle-foot orthosis [AFO] during the day) and persistent pain. She underwent postoperative physical and occupational therapy and currently walks with a single-point cane. Since her surgery, Violet has required assistance with cleaning her house and gardening but has remained independent in ADLs, including bathing, dressing, and light meal preparation. Violet is able to drive independently.

In the past six months, Violet has fallen several times in her home. One of these incidents resulted in a fractured rib. Today, she is seeing her primary care provider, who is concerned about her increased incidence of falls and their potential consequences to Violet’s independence. Violet wears glasses and does not report any dizziness, lightheadedness, or other cardiac-related symptoms. Her medications include atenolol, trazodone, and aspirin.

In the initial interview, Violet states that she sometimes has problems climbing the eight steps into the main level of her house and is sometimes not able to ascend the stairs without holding on to the rail for support. She states that she generally uses her cane when she goes out but does not always do so when she is at home. Violet states that she would like to feel steadier on her feet and stop having falls so that she can continue to live independently in her home. The primary care provider makes a referral to physical therapy for a functional mobility evaluation.

The physical therapist completes an initial evaluation of Violet’s functional status, which reveals the following pertinent information:
Together, the physical therapist and Violet develop a set of goals to address both her current functional deficits and her long-term personal objectives. Additionally, the physical therapist recommends a plan of care to address Violet’s current deficits and to allow her to return to the highest possible level of physical function. The plan includes:

- Outpatient physical therapy twice weekly for a period of six to eight weeks
- Assistive device fitting and compliance training
- Static and dynamic balance training
- Household and community safety awareness training
- Structuring and tailoring of an overall, long-term functional mobility plan
- Recommendation for a follow up with the orthotist to have Violet’s AFO checked and re-fitted

**HOME SAFETY INTERVENTIONS**

Older adults are at greater risk for various home safety issues. In comparison to the population-at-large, people from the ages of 65 to 74 are nearly twice as likely to die in a fire, those between 75 and 84 nearly four times, and those ages 85 and older more than five times as likely. Cooking fires are the number one cause of home fires, and smoking is the leading cause of home fire deaths for adults 65 and over (Age Safe America, 2020).

Older adults are also at a higher risk for accidental poisoning. Most (>90%) happen in the home, specifically the kitchen, bathroom, and bedroom. Medication mishaps are a major cause of poisonings, and older adults are twice as likely to visit the emergency department for problems related to their medicines and seven times more likely to be hospitalized after such a visit. Other sources of accidental poisoning include chemicals, household cleaners, and sprays (Pathways, 2020).

Home safety interventions to address a variety of risks are described below:
Keeping emergency numbers handy:

- Call 911 for emergencies.
- Call poison control at 800-222-1222.
- Keep a list of family members’ and friends’ numbers.
- Keep a list of all healthcare providers’ phone numbers.

Preventing falls:

- If balance or walking is difficult, complete a risk assessment and evaluation.
- Use special alarms, such as a bracelet or necklace that can be worn continually, to call for emergency services after a fall.
- Do not rush to answer the phone; let the answering machine or voicemail answer, or carry a cordless or cell phone.
- When walking on smooth floors, wear rubber, nonslip footwear that fits well.
- If using a cane or walker, employ it at all times instead of hanging on to walls or furniture.
- Remove throw rugs, decrease clutter, and keep electrical cords out of pathways.
- Assure hallways, stairs, and pathways are well lit and clear of objects.
- Have rails and banisters installed on all stairways.
- Tape area rugs to the floor so they do not move when walked upon.

Protecting against fire and related dangers:

- If a fire occurs, escape the area and then call 911.
- Know at least two ways to get out of the apartment or home.
- For those who smoke, smoke outside and extinguish butts in a can of water or sand.
- Check furniture and places where people smoke before leaving home or going to bed.
- Do not wear loose clothes or long sleeves when cooking.
- Replace appliances that have frayed or damaged cords.
- Do not put too many electric cords into one socket or extension cord.
- Install a smoke detector and replace the battery twice a year.
- Never smoke in bed or leave candles burning in an empty room, even for a short time.
- Make sure heaters are at least 3 feet away from anything that can burn; turn off space heaters when leaving the room.

Avoiding bathroom hazards:

- Set the water heater to 120 °F to prevent scalding.
• Install grab bars in the shower and near the toilet.
• Use rubber-backed rugs to prevent slipping.
• Place nonslip mats in the shower.
• For those having trouble getting in and out of the tub, install a special tub chair or bench.
• For those having trouble getting on or off the toilet, install a raised toilet seat.

Preventing poisoning:
• Never use a stove, oven, or grill to heat the home since these can give off carbon monoxide.
• Make sure there is a working carbon monoxide detector near all bedrooms and replace batteries twice yearly.
• Keep medications in the original containers and make sure they are labeled properly.
• Store medicines and household products in a different place than food.
• Ask the pharmacist to use large print on medication containers.
• Take medications in a well-lit room in order to see the labels clearly.
• Bring all pill bottles to healthcare appointments for verification that they are being taken correctly.
• If forgetful, set alarms as medication reminders.
• Use pill separators and containers to keep track of daily doses.
• Never mix bleach, ammonia, or other cleaning liquids together, as they can form deadly gases.

Protecting against victimization:
• Keep windows and doors locked.
• Never let a stranger into the home when alone.
• Talk over offers made by telephone salespeople with a friend or family member.
• Do not share personal information, such as Social Security number, credit card numbers, bank information, or account passwords, with unknown people.
• Always ask for written information about any offers, prizes, or charities and wait to respond until reviewing the information thoroughly.
• Do not succumb to pressure to make purchases or donations over the phone; it is never rude to wait to discuss such decisions with a family member or friend.
• Keep phone numbers for consumer resources, the local police, bank (if money has been taken from your accounts), etc.

(Health in Aging Foundation, 2019)
FINANCIAL SCAMS TARGETING OLDER ADULTS

Financial scams targeting seniors are prevalent, often go unreported, and are difficult to prosecute. They are, however, devastating to many older adults and can leave them in a very vulnerable position. Such scams may include:

- Medicare/health insurance scams
- Funeral and cemetery scams
- Telemarketing/phone scams for charity
- Internet fraud such as email/phishing scams
- Investment schemes
- Sweepstake and lottery scams
- “Grandparent” phone scam (in which scammer pretends to be a grandchild in need of money) (NCOA, 2021)

SAFE DRIVING AND TRANSPORTATION INTERVENTIONS

Age-related physical, vision, and cognitive decline negatively impact functional ability and some older adults’ driving abilities. Determining when driving is a risk and whether driver retraining is indicated is best done by occupational therapists with specialized training. This training helps to optimize and prolong an older driver’s ability to drive safely, but also can ease the emotional transition to other forms of transportation if limiting or stopping driving becomes necessary (AOTA, 2021b).

Families are usually the first to notice unsafe driving behaviors in their older loved one but often find it difficult to convince the person to stop driving. Some patients willingly stop driving; others are reluctant to give up the independence that driving represents, thereby creating a significant threat to personal and public safety. Those who refuse to quit driving even though they pose a hazard must be prevented from driving by other means, either by hiding the car keys or disabling the car. If family members cannot convince the impaired driver to stop driving, their physician must intervene.

Patient and family strategies for managing the older adult’s transportation and driving needs include:

- Seeking a referral to occupational therapy for a comprehensive driving examination
- Asking a friend or neighbor for a ride and/or carpooling
- Utilizing religious and civic groups who arrange for volunteers to provide transportation
- Visiting a local drivers licensing agency for an evaluation of driving skills
- Using taxis and public transportation
• Attending a CarFit event (see box below)
• Avoiding driving during evenings or rush hour
  (NIA, 2018)

OLDER DRIVER STATE LICENSING POLICIES

Licensing policies for older adults vary from state to state. Almost every state has a process for reporting a potentially unsafe driver to its licensing office or the Department of Motor Vehicles. Law enforcement officers and physicians represent the majority of individuals submitting reports, although concerned citizens may also do so.

In some states, physicians are mandated to report patients who have specific medical conditions such as dementia, and other states require physicians to report “unsafe” drivers with varying guidelines for defining “unsafe.” The physician may need to provide the patient’s diagnosis and any evidence of a functional impairment that can affect driving, to prove the patient is an unsafe driver. This may be done by screening for red flags such as medical conditions and potentially driving-impairing medications.

Some states also have programs for senior drivers such as AAA Mature Operators Driver Improvement class and the CarFit educational program that offers older adults an opportunity to check how well their personal vehicles “fit” them, and that offer specific, practical community resources to help older drivers maintain and strengthen their ability to extend their safe, independent driving years (AAA, 2020; NHTSA, n.d.).

MEDICATION USE IN OLDER ADULTS

Prescription and over-the-counter medications and herbal preparations are widely used by older adults. Surveys show at least one prescription medication is used by 87% of older adults, five or more medications by 36%, and over-the-counter medications by 38%. A sample of Medicare patients discharged from an acute hospital to a skilled nursing facility found that patients were prescribed an average of 14 medications, including over one third with side effects that could exacerbate underlying geriatric syndromes (Rochon, 2020).

Many older adults take herbal preparations; however, they often do not inform their healthcare provider, and many clinicians do not ask. Herbal medicines may interact with prescribed medications, leading to adverse events (e.g., ginkgo biloba taken along with warfarin [Coumadin] can increase risk of bleeding; St. John’s wort taken with SSRI antidepressants can increase the risk of serotonin syndrome).

Prescribing medications for older patients is challenging for several reasons:

• Premarketing drug trials often exclude geriatric patients, and approved doses may not be appropriate for them.
Many medications must be used with caution due to age-related changes in pharmacokinetics (absorption, distribution, metabolism, and excretion) and pharmacodynamics (physiological effects of the drug).

Hepatic function also declines with advancing age and may account for great variability in metabolism of a drug, especially when taking multiple medications. (Rochon, 2020)

**Polypharmacy and Medication Assessment**

*Polypharmacy* refers to receiving five or more appropriate medications for treatment of various chronic conditions. Medication-related adverse effects associated with polypharmacy may include falls, cognitive decline, and increased healthcare utilization. Drug-associated admissions to the hospital are prevalent in older adults.

Polypharmacy increases the risk for “prescribing cascade,” which develops when an adverse drug event is misinterpreted as a new medical condition and additional drug therapy is prescribed to treat it. Use of multiple medications can also lead to problems with adherence, especially in the presence of visual or cognitive impairment.

The goal of medication assessment is to reduce inappropriate polypharmacy and create an up-to-date and accurate list of medications that can be shared from patient to provider regardless of healthcare setting. This list should include prescribed medications, OTC medications, herbal therapies, dietary supplements, directions for use, and how the patient is currently taking each of them. The most direct and simplest form of assessment is *medication reconciliation*, which involves comparing all medications a patient is taking to the prescription orders or a medication list maintained by the healthcare provider (Fulmer & Chernof, 2019).

**MEDICATION RECONCILIATION PROCESS**

1. Obtain a list of all current medications, including prescription, OTC, herbal therapy, and dietary supplements.
2. Develop a list of medications currently prescribed by all healthcare providers.
3. Compare the list from Steps 1 and 2.
4. Make clinical decisions to continue, modify, or stop each medication based on the comparison from Step 3.
5. Communicate the recommendations and revised medical plan to the patient, caregivers, and other healthcare providers. (Fulmer & Chernof, 2019)

Determining the appropriateness of prescribed medication is a more complex form of assessment. The American Geriatrics Society *Beers Criteria* for Potentially Inappropriate Medication Use in Older Adults includes 30 individual medications or medication classes to
Avoid for most older people and 40 medications/medication classes to use with caution or to avoid when living with certain disease/conditions. (See “Resources” at the end of this course.)

Other available tools include:

- Screening Tool of Older People’s Prescriptions (STOPP)
- Screening Tool to Alert to Right Treatment (START)
- Medication Appropriateness Index (MAI)

Medication deprescribing (removal of inappropriate medications) is another important approach to medication management. This process includes:

- Determining which medications are being taken and how they are taken
- Considering the potential harm of each medication in order to determine priority
- Assessing whether a medication should be discontinued
- Prioritizing medications for discontinuation
- Implementing the deprescribing plan
- Monitoring the patient for adverse effects
  (Fulmer & Chernof, 2019)

Medication adherence

Older adults may face many obstacles that make it difficult to adhere to a medication regimen. The consequences of nonadherence can be detrimental and even fatal. Thirty percent of hospital admissions and 23% of nursing home admissions have been found to be attributed to medication nonadherence.

Adherence can be compromised by many factors, including:

- Voluntarily interrupting or modifying therapy
- Mistakenly believing one is adhering properly to the regimen as laid out by the prescribing individual
- Socio-economic factors
- Perceptions and motivations
- Physical or cognitive impairments
- Complexity of the regimen
- Ability to read and understand medication instructions

Prescription labels can often be difficult to read or understand due to lack of knowledge about medical abbreviations (e.g., BID, QD, TID, QHS) and routes of administration (e.g., rectal,
intramuscular, ophthalmic, oral, buccal). Prescription pamphlets often contain an overwhelming amount of information about uses, cautions, and side effects in small-to-read font sizes.

Clinicians, often occupational therapists, help patients to manage their medications appropriately. Approaches may include:

- Patient/caregiver education
- Simplifying patients’ medication therapy routines
- Using aids/assistive devices, such as weekly pill containers or a pill map visual pill planner that shows which pill and how often to place each pill into a weekly pill box (Fulmer & Chernof, 2019)

Electronic aids and services for self-management of medication by older adults include pill reminder applications (apps) available for use with mobile devices; however, these require that either the patient or the caregiver have a mobile device and the skills required to use it.

Sensory and motor impairments can affect an older adult’s ability to self-manage a complex drug regimen. Impaired vision increases the risk of errors in drug use or timing of administration or in noting expiration dates. Joint pain or weakness may make it difficult for patients to handle small tablets, open child-proof caps on medication containers, or administer eye drops. Large capsules or tablets can be difficult for older adults to swallow and may cause choking.

Cognitive problems such as Alzheimer’s disease, other dementias, and traumatic head injury also contribute to mismanagement of medication regimens. Responsibility for managing medications often falls to family caregivers when the patient is at home. However, if the patient goes to adult daycare, the medication list and instructions must go along. Some medications, such as anticholinergics, are contraindicated in people with cognitive deficits because they can increase confusion and make memory problems worse.

Sometimes there is a combination of physical issues that cause cognitive or mental issues. One example might be an older adult with head trauma who reveals a number of cognitive deficits (physical-to-cognitive). An older individual with personality changes caused by hypothyroidism is another example, in which a mental illness may be caused by a physical disorder (cognitive-to-physical). The complexity of these diagnoses with resulting symptoms are difficult at best for the diagnostician and those who care for the older adult (Meiner & Yeager, 2019).

**Cost of Medications**

The ability for older adults to self-administer their medications and whether they can afford them are also important considerations in the medication assessment process. The ability to pay for medications is directly related to medication adherence and may vary throughout the year based on Medicare Part D coverage or seasonal incomes. Medication costs may be lessened through state Medicaid programs and manufacturers’ prescription drug plans for low-income patients.
The soaring cost of medications for older patients with chronic health conditions is a major reason for nonadherence to prescription drug regimens. Even with Medicare Part D reimbursement, the high cost-sharing expense makes medications unaffordable for some individuals.

To cope with high out-of-pocket costs for drugs, many older adults use such cost-cutting measures as skipping doses, going off their medication for a time, or purchasing their medications from unreliable sources online or abroad. Others take less than the recommended dosage (e.g., cutting pills in half) to make the medications last longer (Tabloski, 2014).

Prescribing physicians must be aware of medication costs and design drug regimens that carry the lowest possible out-of-pocket costs without compromising treatment effectiveness. Social workers, nurses, and clinical pharmacists can often assist in designing these regimens to reduce the financial hardship on older adult patients who need medications.

The Centers for Medicare and Medicaid (2014) provide the following recommendations on how healthcare professionals can help older adults with limited or low income to manage the cost of drugs:

- Discuss switching to less-expensive brands or generic brands.
- Help search for a medication assistance program for the specific drug needed.
- Inquire about government programs that offer assistance with premiums and other drug costs.
- Determine whether patients qualify for extra help through Medicare and the Social Security system.
- Provide resources for national and community-based charitable programs (such as the National Patient Advocate Foundation).

**CASE**

Carol is an 80-year-old widowed woman who currently takes prescribed medications, including low-dose aspirin, a beta-blocker, a thiazide diuretic, and warfarin. Her over-the-counter medications include a multivitamin, vitamin C, vitamin E, calcium tablets, and Bayer PM for sleep. She occasionally takes Tums for an upset stomach and either aspirin or acetaminophen for a headache. She reports that she has recently developed constipation and has also been taking a laxative.

She arrives to see her primary care provider for her annual exam. The nurse, Sharon, has asked Carol to bring in all of her medications so that they can review all of her prescriptions, supplements, and OTC medications together. As the nurse greets her and asks how she is doing, Carol states that she is “feeling washed out, very tired, but not sleeping well lately.” Because of the fatigue, she has not been able to do her daily 30-minute walk.

During her visit with Sharon, Carol has her medication bottles as well as OTC and supplement bottles with her. For each medication, Carol is asked to identify what the medicine is, how she
takes it, and the reason she is taking it. Carol is able to recall all medications and indications. She can’t remember exactly when she started taking the vitamin E, but states that a friend of hers told her that it was good for her heart, so she decided to start taking it. After all, she says, “It’s just a vitamin.”

Sharon also asks Carol about her usual diet for a day. Carol states that she ate the following items the previous day:

- **Breakfast:** tomato juice, blueberry muffin, coffee with cream
- **Lunch:** grilled cheese and tea
- **Snack:** glass of milk with two cookies
- **Dinner:** cheese with crackers, a glass of wine, broiled chicken, peas, carrots, mashed potato with butter, chocolate ice cream
- **Bedtime snack:** coffee-flavored yogurt

Sharon reviews all of this information and goes on to provide feedback and education with Carol based on her nursing assessment. Sharon suspects that Carol’s recent symptoms of constipation may be a side effect of the beta-blockers as well as her intake of calcium (from her diet of cheese, yogurt, and ice cream as well as taking Tums). Long-term use of beta-blockers can also cause depression and may be affecting Carol’s ability to exercise.

Carol’s use of the sleep aid may be causing a hangover effect, causing her symptoms of lack of energy. She may also be experiencing hypokalemia from the thiazide diuretic. Sharon reinforces eating foods that contain potassium, such as bananas, oranges, apricots, or prune juice.

Because Carol is taking an anticoagulant, they discuss when she last had her international normalized ratio (INR) checked. They review symptoms of bleeding, such as blood in the urine or stool. Sharon spends time educating Carol on the interactions of other supplements and OTC items that should be avoided in patients who take warfarin. This includes items that contain aspirin (the Bayer PM) and vitamin E (which prolongs bleeding).

Regarding sleep, Sharon discusses Carol’s caffeine intake and recommends that she avoid caffeine in the afternoon and evening hours. They talk about drinking decaffeinated tea and coffee instead, as well as trying a warm glass of milk prior to bedtime to induce a sleep effect.

Sharon discusses all of these factors with Carol’s primary care provider. Carol is scheduled for an INR as well as a check of her electrolytes, with a follow-up visit to go over results scheduled in a week.
SUPPORTING FAMILY CAREGIVERS

Informal or unpaid family caregivers are the primary source of support for older adults and people with disabilities in the United States. Approximately 25% of U.S. adults 18 years of age and older provide care or assistance to a person with a chronic illness or disability. As the number of older Americans increases, so will the number of caregivers needed to provide care. It is expected there will be 71 million people ages 65 years and older in 2030 (CDC, 2019b).

While some aspects of caregiving may be rewarding, caregivers can also be at increased risk for negative health consequences. These may include:

- Increased risk of depression and anxiety
- Higher use of psychoactive medications
- Worse self-reported physical health
- Compromised immune function
- Increased risk of early death

In addition, caregivers and their families often experience economic hardships through lost wages and additional medical expenses (CDC, 2019b).

**Caregiver Stress**

Caregiver stress—the emotional and physical stress of caregiving—is common. **Risk factors** for caregiver stress include:

- Being female (highest risk)
- Having fewer years of formal education
- Living with the person being cared for
- Presence of difficult family dynamics
- Competing responsibilities between work and caregiving
- Being socially isolated
- Having depression
- Having financial difficulties
- Spending a higher number of hours caregiving
- Lacking coping and problem-solving skills
- Lack of choice about being a caregiver

(Mayo Clinic, 2020f)
Caregiving roles and demands are further impacted by factors such as:

- Caring for a person with a dementia (e.g., Alzheimer’s disease) or brain-impairing disorder
- Long-distance caregiving requiring coordinating services and putting together a team of unpaid and paid help
- Being in rural settings with fewer available healthcare services
- Cultural expectations (e.g., daughters or daughters-in-law are expected to assume the primary caregiver role)
  
  (Mayo Clinic, 2020f)

**TIPS FOR MANAGING CAREGIVER STRESS**

- Accept help from others.
- Focus on what you can provide.
- Set realistic goals.
- Get connected to resources in the community.
- Join a support group.
- Seek social support from family and friends.
- Set personal health goals.
- Get recommended vaccinations and screenings.
- Consider in-home respite care.
- Consider short-term nursing homes.
  
  (Mayo Clinic, 2020f)

**Assessing Caregivers**

Most caregivers are ill-prepared for their role and provide care with little or no support. Evidence indicates that the most effective support begins with an assessment of caregivers’ risks, needs, strengths, and preferences. However, most healthcare and long-term care providers do not assess the health, skills, employment, and willingness of family caregivers and provide them little, if any, training to carry out medical procedures, personal care, and care coordination tasks they are expected to perform.

Caregivers must be identified in both the care recipient’s and the caregiver’s medical record. This acknowledges their role as part of a care team and sensitizes providers to the importance of engaging the caregiver when making patient treatment plans (Schulz et al., 2018).
Caregiver Education and Training

Education and skills training improve caregiver confidence and ability to manage daily care challenges. Training strategies that involve active participation of the caregiver are particularly effective in achieving positive outcomes.

Counseling, self-care, relaxation training, and respite programs can improve caregivers’ and patients’ quality of life.

Technology-based caregiver support, education, and skills training can be an effective and efficient alternative for enhancing caregiver knowledge and skills (Schulz et al., 2018).

Healthcare providers can connect family caregivers to support services and resources through the National Family Caregiver Support Program. To access these services, the caregiver can contact the local Area Agency on Aging through the Eldercare Locator (see “Resources” at end of this course).

LEGAL AND ETHICAL CONSIDERATIONS FOR ELDER CARE

Legal issues in healthcare are set by federal and state laws, and ethical issues are concerned with what is the “right” thing to do. Primary ethical principles in healthcare include:

- Autonomy: The right to control one’s destiny
- Beneficence: The duty to do good for others and avoid harm
- Nonmaleficence: Doing no harm and avoiding negligence that leads to harm
- Justice: Fairness in the treatment of others

Acknowledging and acting on the wishes of an older adult are a critical component of legal and ethical care (Shah et al., 2020).

Informed Consent

One of the main legal and ethical issues is that of informed consent. Informed consent is a routine and fundamental part of provider-patient interactions and includes the process of educating a patient about risks, benefits, and alternatives of a given intervention. Informed consent originates from the patient’s right to autonomy, and the patient must be competent to make a voluntary decision about whether to undergo the intervention.

Age-related factors of concern in obtaining informed consent may include

- Hearing and visual impairments
- Impaired communication (written and verbal)
• Values and beliefs
• Fluctuating or diminished decision-making capacity

Implicit in providing informed consent is an assessment of the patient’s understanding, rendering an actual recommendation, and documentation of the process. The following are the required elements for documentation of the informed consent discussion:

1. Nature of the intervention
2. Risks and benefit of the intervention
3. Reasonable alternatives
4. Risks and benefits of alternatives
5. Assessment of the patient’s understanding of elements 1 through 4

Exceptions to the requirement include:

• The patient is incapacitated
• Life-threatening emergencies with inadequate time to obtain consent
• Voluntary waived consent
  (Shah et al., 2020)

**Healthcare Proxies**

A healthcare proxy is a document that names someone to act as a substitute for another person (proxy). This individual is granted the legal authority to express a patient’s wishes and make healthcare decisions if the patient is unable to do so for themselves. A proxy may also be called a *durable medical power of attorney, healthcare agent, or healthcare surrogate.*

In a situation where a patient is unable to make an independent decision but has not designated a decision maker, state law hierarchy must be consulted to determine who should be the legally authorized representative. Many states have ordered lists, such as: parents of minors, spouse, adult child of senior, next-of-kin, even down to “close friend.” Some states designate an ethics committee to serve as a proxy. If the search for a legally authorized representative is unsuccessful, a legal guardian may be appointed by the court (Medicare Interactive, 2020).

**Advance Directives and Living Wills**

Advance directives and living wills are written legal documents giving instructions to family members, healthcare providers, and others about the kind of care the person may want if incapacitated by a temporary or permanent injury or illness. The federal Patient Self-Determination Act requires hospitals to inform patients that they have a right to complete an advance directive, but specific requirements for advance directives are covered under state law and may differ from state to state.
It cannot be assumed that family members would automatically be able to make decisions, and rules vary greatly from state to state. In some cases, decisions are left up to the healthcare providers and institutions unless someone has been appointed legal representative. To avoid disagreements, advance directives and living wills help ensure that decisions made meet the person’s needs and preferences.

In general, state laws do not require physicians to obey living wills; instead, they relieve physicians of all liability if they obey them. Some states, however, have found common-law damages flowing from harmful failure to obey living wills (Medicare Interactive, 2020).

Advance directives should address possible end-of-life care decisions and may include any of the following medical decisions:

- Cardiopulmonary resuscitation (CPR)
- Intubation/mechanical ventilation (do not intubate, or DNI)
- Artificial nutrition/hydration (ANH)
- Dialysis
- Antibiotic or antiviral medications
- Comfort care (palliative care)
- Organ and tissue donations

It is not necessary to have an advance directive or living will to have do not resuscitate (DNR)/do not attempt resuscitation (DNAR) and do not intubate (DNI) orders. To establish these preferences, the patient must inform the provider, who will write the orders and put them in the patient’s medical record.

Once advance directives or living wills are completed, people are advised to:

- Put the original in a safe but easily accessible place.
- Give a copy to their provider.
- Give a copy to their healthcare representative.
- Keep a record of who has the advance directives.
- Carry a wallet-sized card that indicates advance directives have been made and where a copy can be found.
- Carry a copy when traveling.

(Mayo Clinic, 2020g)

**Orders for Life-Sustaining Treatment**

In some states, advance healthcare planning includes documents referred to as Physician Orders for Life-Sustaining Treatment (POLST). POLST programs in each state choose their own names,
but for simplicity POLST is commonly used to refer to such programs in general. Examples of other names include MOLST (Medical Orders for Life Sustaining Treatment), COLST (Clinician Order for Life Sustaining Treatment), etc.

Such a document is intended for those who have already been diagnosed with a serious illness; however, it does not replace other directives. Instead, it serves as physician-ordered instructions (similar to a prescription) to ensure that, in case of an emergency, the patient receives the treatment preferred.

The POLST remains with the person and is prominently displayed in the person’s home or the facility in which the patient is receiving care or residing. Such a document may address:

- Cardiopulmonary resuscitation (DNR)
- Intubation/mechanical ventilation (do not intubate, DNI)
- Artificial nutrition/hydration (ANH)
- Use of antibiotics
- Requests not to transfer to an emergency room
- Requests not to be admitted to the hospital
- Pain management

The document also indicates what advance directives have been created and who is the legal healthcare representative (House & Ogilvie, 2020).

**CPR VERSUS DNAR ORDERS**

Do not attempt resuscitation orders (DNAR) (as differentiated from similar do not resuscitate [DNR] orders) include the term *attempt* in order to emphasize the minimal likelihood of successful cardiopulmonary resuscitation (CPR). Patient and family education addresses not only the unlikely success of resuscitation attempts but also the risks involved, which include fractured ribs, damaged internal organs, and neurologic impairment.

Although the patient (or family) must ultimately decide whether to attempt CPR, healthcare providers explain that withholding CPR does not equate with letting someone die. Rather, a DNAR order is best considered in the context of the complex medical situations that can occur. A decision to withhold CPR should take into consideration the patient’s wishes (as outlined in the living will) and their resulting quality of life.

**Artificial Nutrition and Hydration (ANH)**

People with advanced age, multiple comorbidities, progressing or life-limiting illness, Alzheimer’s disease, or other dementias may eventually experience a loss of interest in eating or drinking or forget how to feed themselves or even how to eat. These changes may cause distress,
especially for family members and caregivers, and may lead to a discussion about artificial nutrition and hydration.

ANH should be discussed with the patient’s wishes and expected outcomes in mind. Older adults who feel strongly that they do not want to have tube feedings should specify this wish in their living will. ANH is considered a medical treatment and can be accepted or rejected as a patient decision. Evidence no longer supports the use of ANH for patients who are at end of life or in advanced stages of dementia (Tabloski, 2014).

ELDER ABUSE

Elder abuse (also referred to as vulnerable adult abuse or older adult abuse) is defined as an intentional or neglectful act by a caregiver or trusted individual that leads to or may lead to harm of a vulnerable older adult. Elder abuse is a problem estimated to affect up to 1.2 million older adults annually in the United States. Only 1 in 10 cases of elder abuse, however, are ever reported (Kane et al., 2018).

Various types of elder abuse include:

- **Physical abuse:** Use of force to threaten or physically injure an older person, including acts such as hitting, kicking, pushing, slapping, and burning

- **Emotional/psychological abuse:** Verbal or nonverbal attacks, threats, rejection, isolation, or belittling acts that cause mental anguish, fear, or distress

- **Sexual abuse:** Sexual contact that is forced, tricked, threatened, or otherwise coerced, including sexual harassment

- **Exploitation:** Theft, fraud, misuse or neglect of authority, and use of undue influence as a lever to gain control over an older person’s money or property

- **Neglect:** Failure or refusal to provide for an older person’s basic needs of food, water, shelter, clothing, hygiene, essential medical care, safety, or emotional needs

- **Abandonment:** Leaving an older adult who needs help alone without planning for their care

  (NCEA, 2020)

Elder abuse can lead to early death, harm one’s physical and psychological health, destroy social and family ties, and cause devastating financial loss (CDC, 2020g).
Risk Factors

Factors that may increase an older adult’s risk of being an abuse victim include:

- Low social support and social isolation
- Cognitive impairment
- Experience of previous traumatic events
- Functional impairment and poor physical health
- Being female
- Living with a large number of household members other than a spouse
- Lower income or poverty

Factors associated with financial exploitation include:

- Lack of access for public assistance and resources
- Need for ADL assistance
- Poor self-rated health
- Lack of spouse/partner
  (NCEA, 2020)

A combination of individual, relational, community, and societal factors contribute to the risk of becoming a perpetrator of elder abuse.

- Individual level:
  - Current diagnosis of mental illness
  - Current abuse of alcohol
  - High levels of hostility
  - Poor or inadequate preparation or training for caregiving responsibilities
  - Assumption of caregiving responsibilities at an early age
  - Inadequate coping skills
  - Exposure to abuse as a child

- Relationship level:
  - High financial and emotional dependence upon a vulnerable adult
  - Past exposure of disruptive behavior
  - Lack of social and/or formal support
• Community level:
  o Limited, inaccessible, or unavailable formal services such as respite care
• Societal level:
  o High tolerance and acceptance of aggressive behavior
  o Family members are expected to care for elders without seeking help from others
  o Persons are encouraged to endure suffering and remain silent
  o Negative beliefs about aging and elders

Specific characteristics of institutional settings that increase the risk include:

• Unsympathetic or negative attitudes towards residents
• Chronic staffing problems
• Lack of administrative oversight, staff burnout, and stressful working conditions
  (CDC, 2020g)

Assessment for Elder Abuse

Routine screening for elder abuse is not recommended by the U.S. Preventive Services Task Force, but it is recommended that ongoing awareness of this growing problem be considered during all patient care interactions.

SCREENING QUESTIONS

Office or emergency room visits may be the only time the patient can have safe, confidential contact with someone other than the abuser. If the patient is able to understand and respond to questions, the patient can be interviewed alone in a quiet, private location. Interviewing can be difficult if the patient is cognitively impaired or if the caregiver is the suspected abuser. It is best performed by someone with expertise in geriatrics and/or a social worker or other mental health professional.

Examples of indirect screening questions include:

• Do you feel safe where you live?
• Who prepares your food?
• Does someone help you with your medication?
• Who takes care of your checkbook?
Examples of **direct screening questions** include:

- Does anyone at home hurt you?
- Do they scold or threaten you?
- Do they touch you without your consent?
- Do they make you do things you don’t want to do?
- Do they take anything that’s yours without asking?
- Have you signed documents that you did not understand?
- Are you afraid of anyone at home?
- Are you alone a lot?
- Has anyone ever failed to help you take care of yourself when you needed help?

**Follow-up questions** assess safety issues and explore mistreatment, asking what, how, when, how often, etc.:

- Who is the perpetrator?
- How do you (the patient) cope?
- What are your alternative living options?
- Who are alternative caregivers?
- What can be done to prevent future abuse?  
  (Stanford Medicine, 2020)

In cases of suspected or known abuse, further screening can be done with validated tools such as the **Elder Assessment Instrument (EAI)**, a 41-item tool comprised of seven sections that reviews signs, symptoms, and subjective complaints of elder abuse, neglect, exploitation, and abandonment. There is no actual scoring done, but the person is referred to social services for the following:

- Evidence of mistreatment
- Subjective complaint of mistreatment by the older adult
- Clinician belief there is a high risk for probable abuse

Many older adults are reluctant and/or ashamed to report mistreatment, or they are afraid if they do, it will get back to the abuser and make the situation worse (Fulmer, 2020).
RED FLAGS FOR ABUSE

Clinicians must be aware of the signs and symptoms that signal an older adult may be experiencing abuse. Such red flags include:

Physical abuse clues (especially if there has been a delay in seeking treatment):

- Unexplained or implausible injuries
- Multiple ED visits; healthcare “shopping”
- Broken bones, dislocations, sprains
- Multiple injuries in various stages of healing
- Traumatic, patchy hair loss
- Broken glasses
- Swelling, pinch marks, hand slap or finger marks
- Bruises, especially when not over bony prominences
- Scratches, cuts, lacerations, punctures
- Burns from a cigarette, immersion line, or in the shape of hot object such as an iron
- Restraint marks on axilla, wrists, or ankles
- Aspiration/choking from forced feeding

Sexual abuse clues:

- Bruises on breasts or genital area
- Genital infections or venereal disease
- Vaginal or anal bleeding

Possible signs of neglect (also self-neglect):

- Pressure injuries, especially if not cared for
- Signs of suboptimal living conditions, such as poor hygiene, torn or dirty clothes, inappropriate or inadequate clothing
- Poor state of dentition
- Malnutrition, weight loss, temporal wasting, low serum albumin and cholesterol
- Dehydration, cracked lips, sunken eyes, impaction (water withheld to decrease incontinence episodes), poor skin turgor, elevated BUN and sodium
- Contractures
- General deterioration in health
• Failure to keep medical appointments
• Physical or laboratory evidence of over- or underdosing
• Lack of needed healthcare appliances or supplies
• Lack of physical aids such as dentures, glasses, or hearing aids
• Failure to address issues of safety
• Inability to manage activities of daily living

Possible indicators of economic abuse include:

• Caregiver refusal to spend money on care items or services
• Lack of appropriate clothing or grooming for the level of income
• Patient complains of missing clothing, jewelry, or valuable items
• Lonely patient with new “best friend” at office visits
• Sudden appearance of previously uninvolved relatives
• Unpaid medical bills when caregiver is supposed to be handling them
• Checks, new will, power of attorney, or healthcare directives “signed” by a patient who is incapable of doing so
  (Stanford Medicine, 2020)

Reporting

The laws in most states mandate healthcare professionals to report suspected abuse or neglect of vulnerable elders. Additionally, under the laws of some states, “any person” is required to report a suspicion of mistreatment. All healthcare professionals are advised to familiarize themselves with reporting laws and procedures applicable to their state and/or local area.

If an older adult is in immediate, life-threatening danger, call 911. Anyone who suspects that an older adult is being mistreated should also contact the long-term care ombudsman, police, or Adult Protective Services (APS) office in their jurisdiction to report the suspected abuse.

While federal law does not specifically address elder abuse, all 50 states and the District of Columbia provide APS programs. The National Center on Elder Abuse (NCEA) offers resources, and more information is also available from Eldercare Locator (see “Resources” at the end of this course).

Punishments for elder abuse range widely between states. In some states, elder abuse is considered a first-degree felony (NHAC, 2020).
END-OF-LIFE CARE

End-of-life care describes the support and medical care given during the time surrounding death. Older people often live with one or more chronic illnesses and may need care for days, weeks, and even months before death. The goals are to prevent or relieve suffering as much as possible and to improve quality of life while respecting the dying person’s wishes.

Physicians are obligated to comply with the refusal of life-sustaining treatment by a competent patient who has been adequately informed of the consequences of referral and has applied their own values in making a decision to refuse or who have prepared an advance directive or living will. Likewise, clinicians may refuse to provide care if:

- There is no medical rationale for the treatment
- The treatment has proven ineffective for the person
- Expectation of survival is low
- The person is unconscious and will likely die in a matter of hours or days even if treatment is given

Treatments that have been started can also be stopped. This is appropriate if the treatments are not beneficial or are not consistent with an individual’s wishes and priorities. Even if life-sustaining treatments have been refused or stopped, the individual can still receive medical care to treat symptoms such as pain or shortness of breath (Health in Aging Foundation, 2020; Olejarczyk & Young, 2020).

Preparing older adults and their families to plan and anticipate making decisions regarding end-of-life care and treatment is important, especially in the event that the older adult is not able to make decisions for themselves. Older adults should plan and discuss their preferences with significant others, family, and healthcare providers to communicate their wishes through planning advance directives, a living will, and appointing a healthcare proxy (see also above under “Legal and Ethical Considerations”).

Palliative Care

Palliative care is an interprofessional team-based approach to patient care for the management of the discomfort, symptoms, and stress of serious illness and is appropriate for any person with a serious illness, regardless of the stage of the illness or how long the person is expected to live. Palliative care does not replace primary treatment but works together with the primary treatment being given.

The goals of palliative care are to:

- Provide relief from pain and other physical symptoms
- Maximize the quality of life
• Provide psychosocial and spiritual care
• Provide support to help family during the patient’s illness and in their subsequent bereavement

The ideal core palliative clinical team consists of:

• Physician(s)
• Nurses (inpatient and community care)
• Home health aides
• Social worker
• Physical therapist
• Occupational therapist
• Speech-language therapist
• Chaplain or pastoral care counselors
• Dietitians/nutritionists

Other professionals may include:

• Clinical psychologists
• Clinical pharmacists
• Massage therapists
• Music and/or art therapists

(IAHPC, 2020)

Hospice Care

Hospice care begins after treatment is discontinued and is normally provided to patients with a life expectancy of six months or less. The goal of hospice care is to ensure that the remaining time the person has left is as comfortable and as meaningful as possible. Hospice provides expert medical care, pain management, and emotional and spiritual support tailored to the patient’s needs and wishes.

In 2018, 1.1 million Medicare beneficiaries died while enrolled in hospital care. Over 50% of the deaths occurred in the home and more than one third between nursing facilities, hospice inpatient facilities, and assisted-living facilities. The average spending per Medicare hospice patient was $12,200 (NHPCO, 2021).

Typically, a family member serves as the primary caregiver and, when appropriate, helps make decisions for the terminally ill individual. Hospice services assist these family caregivers by
making regular visits to assess the patient and provide additional care or other services. Hospice staff is on-call 24 hours a day, seven days a week.

The **interdisciplinary hospice team** usually consists of the patient’s personal physician, hospice physician or medical director, nurses, hospice aides, social workers, bereavement counselors, clergy or other spiritual counselors, trained volunteers, and speech, physical, and occupational therapists, if needed. The interdisciplinary team:

- Manages the patient’s pain and other symptoms
- Assists the patient and family members with the emotional, psychosocial, and spiritual aspects of dying
- Provides medications and medical equipment
- Instructs the family on how to care for the patient
- Provides grief support and counseling
- Makes short-term inpatient care available when pain or symptoms become too difficult to manage at home or the caregiver needs respite time
- Delivers special services like speech, occupational, and physical therapy when needed
- Provides grief support and counseling to surviving family and friends

Bereavement services for the patient and significant others is an essential part of hospice care and is offered to families for at least one year, either through hospice or a referral to a community resource.

The U.S. hospice movement was founded by volunteers, and hospice is the only provider with Medicare Conditions of Participation requiring volunteers to provide at least 5% of total patient care hours. Hospice volunteers spend time with families offering direct support and provide clerical and other services that support patient care and clinical services (Center for Hospice Care, 2018; NHPCO, 2021).

**HOSPICE AND VETERANS**

Hospice is a benefit that the Veteran’s Administration offers to qualified veterans who are in the final phase of their lives, typically the last six months or less. This multidisciplinary team approach helps veterans live fully until they die. The VA also works very closely with community and home hospice agencies to provide care in the home.

The VA offers a self-assessment for caregivers that can be used in discussions with the Veteran’s social worker and care team about the home and community services and supports that will work best for both the caregiver and the Veteran. (See “Resources” at the end of this course.)

The National Hospice and Palliative Care Organization in collaboration with the Department of Veterans Affairs offers a program called We Honor Veterans that will benefit the vast majority of Veterans who are not enrolled in VA and may not be aware of end-of-life services and
benefits available to them. We Honor Veterans collaborates with the VA to engage hospices in delivering quality end-of-life care for Vietnam-era and other combat veterans and those that have been impacted by trauma.

Men and women who have served in the military often carry experiences from their military service that present unique challenges at the end of life. We Honor Veterans is essential in helping hospices to:

- Education staff and communities about the end-of-life needs of veterans
- Coordinate care with VA and other healthcare organizations
- Provide veteran-to-veteran volunteer programs
- Connect veterans and their families with community resources
- Offer the services of staff and volunteers who are trained to meet the unique challenges faced by veterans and their families

(WHV, 2020)

CASE

Robert is a 76-year-old man who lives independently with his wife, 74-year-old Ella. Robert suffered a stroke a week ago and is currently hospitalized on a neurology floor and is minimally conscious. In accordance with Robert’s wishes, Ella and their two adult children have chosen not to pursue aggressive medical treatment for Robert and have declined the insertion of a feeding tube.

Knowing that Robert’s diagnosis is terminal, the family asks the nurse, “What should we do now?” The nurse replies, “What do you know about hospice care?”

Ella looks concerned and says, “Robert did not want to be put someplace like a hospice or nursing home. He always wanted to be at home.” The nurse then explains that hospice is not a place but a type of care, and that hospice services can assist Ella and her family in taking Robert home in order to receive care for him there. Ella is relieved to learn this.

The nurse explains to the physician that Robert’s family would like to care for the patient at home and obtains an order for hospice care from both the geriatrician and the neurologist. The nurse then makes arrangements for a conference with the family, social worker, and a hospice coordinator of Ella’s choice to discuss discharge plans.

CONCLUSION

As America ages, healthcare organizations and healthcare professionals must rethink approaches to healthcare in general, since caring for the older population will soon take up a bigger portion of healthcare resources than caring for the health needs of the young. At the same time, there
is a major deficit in adequately prepared healthcare professionals involved in providing geriatric care.

Healthcare professionals today must recognize that older people are a diverse group with different values, functional levels, and illnesses. They must begin to appreciate the need for improving and optimizing the older adult’s functioning rather than just focusing on diseases. This is, of course, challenging.

Effective management that engages older adults, family caregivers, and clinicians in collaboratively identifying the older adult patient’s needs and goals is necessary in order to implement an individualized care plan, while recognizing that health changes due to aging together with multiple chronic illnesses can make creating a personalized health strategy more complex.

RESOURCES
AGS Beers Criteria (American Geriatric Society)

Administration on Aging
https://www.acl.gov/about-acl/administration-aging

Caregiver Self-Assessment (Veterans Affairs)
https://www.va.gov/geriatrics/docs/Caregiver_Self_Assessment.pdf

Eldercare locator (Administration on Aging)
https://eldercare.acl.gov/Public/Index.aspx

Family Caregiver Alliance
http://www.caregiver.org

National Association of Area Agencies on Aging
https://www.n4a.org/

National Center on Elder Abuse State Resources
https://ncea.acl.gov/Resources/State.aspx

National Institute on Aging
https://www.nia.nih.gov/health

POLST participating programs (by state)
http://polst.org/programs-in-your-state/
Readiness Ruler (for change) (Indiana University)
https://iprc.iu.edu/sbirtapp/mi/ruler.php#

We Honor Veterans (National Hospice and Palliative Care Organization)
https://www.wehonorveterans.org/

REFERENCES


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1. Which term is used to describe the systematic stereotyping of and discrimination against individuals because they are older?
   a. Elderism
   b. Racism
   c. Ageism
   d. Sexism

2. Which model of care involves a hospital unit modified to promote safe mobility and cognitive simulation?
   a. Geriatric Resources for Assessment and Care of Elders (GRACE)
   b. Acute Care for Elders (ACE)
   c. Program of All-inclusive Care for the Elderly (PACE)
   d. Nurses Improving Care for Health System Elders (NICHE)

3. Recommended clinician practices to enhance communicating with an older adult include:
   a. Calling the person by their first name.
   b. Encouraging the person to speak more rapidly.
   c. Interrupting when the person talks too much.
   d. Avoiding using medical jargon.

4. Aging of the integumentary system affects bone health due to:
   a. Inactivity and immobility.
   b. Decreased muscle mass and function.
   c. Poor nutrition and dehydration.
   d. Decreased vitamin D synthesis.

5. Which is the most common sustained dysrhythmia in the geriatric population?
   a. Premature atrial contractions
   b. Sick sinus rhythm
   c. Atrial fibrillation
   d. Premature ventricular contractions
6. Loss of renal reserve in older adults increases the risk for:
   a. Increased erythropoietin production.
   b. Hypernatremia.
   c. Hyperkalemia.
   d. Toxic accumulation of medications.

7. Which is a correct statement about aging of the respiratory system?
   a. The lungs are not affected by aging changes in other areas of the body.
   b. Aging reduces the capacity of all pulmonary functions.
   c. Larger airways decrease in diameter and trap air in the lungs.
   d. The cough reflex becomes more sensitive.

8. The sensory system disorder that is the leading cause of severe and permanent vision loss in older adults is:
   a. Glaucoma.
   b. Cataracts.
   c. Age-related macular degeneration.
   d. Retinopathies.

9. Which sleep disorder primarily affects older people and causes a decrease or absence of muscle paralysis?
   a. REM sleep behavior disorder
   b. Sleep apnea disorder
   c. Insomnia
   d. Restless leg syndrome

10. Which cognitive change is not considered a normal part of the aging process?
    a. Difficulty sustaining attention.
    b. Slow thinking process.
    c. Slowed word finding.
    d. Abrupt reduction in awareness.

11. Which assessment is included in the Mini–Mental State Examination?
    a. Orientation to place
    b. Normal spelling of a word
    c. Activities of daily living
    d. Puzzle solving
12. When communicating with patients with dementia, it is important to:
   a. Remind them of details they have forgotten.
   b. Enter the person’s reality.
   c. Call them by affectionate names such as “Dear.”
   d. Use simple vocabulary and ask many questions.

13. Which is a correct statement concerning suicide among older adults?
   a. Members of the “baby boom” generation have the lowest suicide rate.
   b. Risks for suicide in older adults is the same as in younger people.
   c. Older adults attempt suicide less but are more successful than younger adults.
   d. Females ages 85 and older have the highest rate of dying by suicide.

14. Which is a correct statement regarding assessment of substance use in the older adult?
   a. There are no screening instruments for substance use designed for older adults.
   b. There are no barriers to screening in primary and inpatient settings.
   c. Older adults are less likely to be screened compared to younger adults.
   d. Patients and providers do not experience discomfort when discussing substance use.

15. Which is an 18-item performance instrument used to assess a person’s level of disability and changes in status in response to rehabilitation or medical intervention?
   a. Functional Independence Measure (FIM)
   b. Life Space Questionnaire
   c. Functional Reach Test
   d. Timed Up and Go (TUG) Test

16. A patient with acute and severe loss of bilateral lower extremity strength and inability to functionally bear weight due to a stroke is being evaluated for an assistive device. Which recommendation by the physical therapist is most appropriate at this time?
   a. A wheelchair
   b. A standard cane
   c. A standard walker
   d. A front-wheeled walker
17. Any patient who is taking warfarin (Coumadin) and experiences a fall should be checked immediately for:
   a. Diabetes.
   b. A vision disorder.
   c. Traumatic brain injury.
   d. An adverse medication reaction.

18. Which is a recommended strategy to improve home safety and reduce falls for a patient with a high fall risk?
   a. Placing rugs in the kitchen near the sink
   b. Wearing slippers instead of shoes in the home
   c. Placing nonslip mats in the shower
   d. Using a step stool to reach items on an upper shelf

19. The most direct and simplest form of medication assessment is:
   a. A pill count.
   b. The Beers Criteria.
   c. The Medication Appropriateness Index.
   d. Medication reconciliation.

20. Which factor puts a caregiver at highest risk for experiencing stress?
   a. Being female
   b. Having adequate resources
   c. Being of younger age
   c. Maintaining social obligations

21. A document that names someone else as an agent to express a patient’s wishes is called:
   a. An advance directive.
   b. A healthcare proxy.
   c. A do not resuscitate order.
   d. Informed consent.

22. Which risk factors are associated with a potential for becoming a victim of elder abuse?
   a. Having adequate social support and good health
   b. Having access to public assistance and resources
   c. Being cognitively impaired and socially isolated
   d. Being physically active and staying strong and fit
23. Palliative care is an interprofessional team-based approach that:
   a. Is provided once a patient is determined to have six months or less to live.
   b. Focuses on managing pain, symptoms, and quality of life.
   c. Replaces primary treatment modalities.
   d. Does not support the family in their subsequent bereavement.