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 include:

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

INTRODUCTION

The graying of America has the attention of many—not only older adults themselves, but public policy makers and health professionals. The current growth of the American population aged 65 years and older is one of the most stunning demographic trends in the history of the United States (Mather et al., 2015).
Individuals over 65 are the greatest consumers of healthcare services in the United States. Access to appropriate healthcare, caregivers, and supportive social services is becoming an even bigger issue as Baby Boomers (those born from 1946 to 1964) age into the system. Public health professionals and policy makers are thus seeking ways to prepare for a society in which the number of people over 65 will continue to grow ever larger.

Providing care for people age 65 and older can be complicated and requires specialized knowledge of this demographic group. Contemporary theories in aging recognize that environmental, genetic, and psychological processes of aging are complex and lifelong. Age-related changes affect the function of every body system, even in the healthiest older person:

- Heart output declines.
- Calcium migrates from bones and teeth into blood vessels.
- Cataracts may dim vision.
- Hearing fades.
- Lung, liver, and kidney functions slow.
- Wear and tear on joints makes pain an unwelcome companion.

These normal age-related changes may also be accompanied by chronic health problems such as diabetes or heart disease and increased use of prescription medications. Combined, these factors increase the complexity of care.

However, these changes do not automatically equate with poor health and disability. It is widely known that regular exercise, a healthy diet, and social and intellectual stimulation can help prevent or delay disease and disability. Likewise, early diagnosis and effective management of chronic conditions can enable older adults to enjoy their later years as functional, active, and independent members of the community.

With increased knowledge and attention to the unique needs of older adults, healthcare professionals can positively influence the well-being of both older adults and the communities that support them.

**Demographics of Aging**

It is estimated that by 2060 the number of Americans aged 65 and older will more than double, from 46 million to over 98 million, bringing their percentage of the total population to 24% from 15% in 2017. Approximately 10,000 Baby Boomers turned 65 each day in 2017 (U.S. Census Bureau, 2017; Mather et al., 2015; West Health, 2017).

The overall average life expectancy at birth in the United States increased from 68 years in 1950 to 78.8 years in 2014, but there are gender and ethnic disparities (CDC, 2017a).
Hispanics are outliving other ethnic groups by three years on average (81.8 years) despite having lower education and income levels. This has been called the “Hispanic Health Paradox” and has been studied widely by demographers as to why socioeconomic disadvantages are not linked to shorter lives as they are for other racial and ethnic groups. It is believed that this life expectancy advantage is driven by immigration dynamics (the tendency to be healthier than average when migrating to the United States) and showing lower rates of smoking (Scommegna, 2017).

In a gender and racial comparison, non-Hispanic white women have an average life expectancy of 83 years and African American women of 81 years, while non-Hispanic white men have an average life expectancy of 80 years and African American men of 77 years (Scommegna, 2017; Mather et al., 2015).

The United States has become increasingly diverse in the last century. Although young people in the U.S. currently reflect diversity more strikingly than their older counterparts, the racial and ethnic makeup of older adults is changing as well.

In 2010, 80% of adults aged 65 years or older in the United States were non-Hispanic whites. However, by 2050, the racial and ethnic diversity of older American adults is estimated to change profoundly. Non-Hispanic white adults will account for 58%, while the proportion of older Hispanics will almost triple, from 7% to nearly 20%; the proportion of African Americans will increase from 8.3% in 2010 to 11.2%; and the proportion of Asian Americans will more than double, from 3.3% to 8.5% (CDC, 2017b).

Aging and Chronic Diseases

Many people in their 60s, 70s, and beyond lead active, independent lives, enjoying sports, travel, and hobbies, many times in addition to part- or full-time employment. However, the health needs of older adults also become more multifaceted, for instance, with an increased risk of developing chronic diseases. One in every 4 Americans has multiple chronic conditions, defined as those conditions that last a year or more and require ongoing medical attention or that limit activities of daily life. That number increases to 3 in 4 Americans aged 65 and older. This high incidence is caused by rapid growth in the population of older adults, an increased life expectancy associated with advances in public health and clinical healthcare, and a high prevalence of some individual behavioral risk factors (CDC, 2016b).

Management of chronic conditions may include one or more medications prescribed for regular use. Although medications may relieve symptoms, improve the quality of life, and in some cases increase the lifespan, they are not without risk. For example, research has shown that taking four or more prescription drugs is an independent risk factor for a fall injury, which can catapult an independent older adult into the ranks of the frail elderly.

Today, more than 95% of all healthcare costs for older adults are for treating chronic illnesses. The varied nature of these chronic conditions leads to the need for multiple healthcare specialists, a variety of treatment regimens (i.e., home oxygen and frequent hospitalization), and newer, more expensive prescription medications. The U. S. Department of Health and Human Services has developed and implemented a framework to improve and coordinate care for people
with chronic conditions. This framework is used to utilize more effective self-care strategies and support the research to fill knowledge gaps. Effective programs, such as disease self-management of diabetes, have been shown to help individuals manage chronic diseases better and prevent or delay associated conditions (CDC, 2017b).

**BEHAVIORS TO PREVENT CHRONIC DISEASE**

The Behavioral Risk Factor Surveillance System (BRFSS), an ongoing survey of noninstitutionalized Americans, describes five key health-related behaviors identified to prevent chronic disease:

- Never smoking
- Getting regular physical activity
- Consuming no or only moderate amounts of alcohol
- Maintaining a normal body weight
- Obtaining daily sufficient sleep

Source: CDC, 2016c.

**Aging and Self-Care**

Aging and living with chronic diseases can affect a person’s ability to perform essential self-care activities. Older adults may have trouble with the instrumental activities of daily living, such as managing money, shopping, preparing meals, and taking medications as prescribed. As functional ability—physical, mental, or both—declines, people may also lose the ability to perform the more basic activities of daily living, such as taking care of personal hygiene, feeding themselves, getting dressed, and toileting.

Many health issues (e.g., falls) common to people over age 65 can be prevented, many (e.g., hypertension) can be effectively treated, and many (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 manage in the home or living environment at the highest possible level of independence and can also identify any environmental safety risks (such as loose rugs, uneven steps, clutter, etc.), appropriate adaptive equipment or durable medical equipment, or assistive devices that might be needed.

**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). It has been estimated by the Population Reference Bureau that the aging of the Baby Boom generation will lead to a 75% increase in the number of Americans requiring skilled nursing facility (nursing home) care, to about 2.3 million in 2030 (Mather et al., 2015). At any
given time, it is estimated that 25% of older adults will require nursing facility care (NIA, 2017; CDC, 2016).

Growing older does not always translate to living in a nursing facility, however. Today’s seniors have a range of choices for housing and care, depending on their socioeconomic status and their health. In the community, there are adult daycare service centers. In the home, services range from home health and hospice to family and friends. Institutions include residential facilities such as assisted living and senior living residences (CDC, 2016).

The National Institute of Aging (2017) reports there are approximately:

• 4.7 million older adults utilizing home health care
• 730,000 in assisted living facilities
• 1.4 million in skilled nursing facilities
• 1.2 million in hospices
• 713,300 in residential care facilities (i.e., assisted living)
• 273,200 at adult day service centers

Nursing home care has become very expensive, and many Americans may be financially unprepared for this type of expense (see table below).

<table>
<thead>
<tr>
<th>LONG-TERM CARE COSTS</th>
<th>2016</th>
<th>2046 (estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home healthcare:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homemaker services</td>
<td>$45,760</td>
<td>$111,072</td>
</tr>
<tr>
<td>Home health aide</td>
<td>46,332</td>
<td>112,460</td>
</tr>
<tr>
<td>Adult day healthcare</td>
<td>17,680</td>
<td>42,914</td>
</tr>
<tr>
<td>Assisted living facility (private, one-bedroom)</td>
<td>43,539</td>
<td>105,681</td>
</tr>
<tr>
<td>Skilled nursing facility:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-private room</td>
<td>82,125</td>
<td>199,339</td>
</tr>
<tr>
<td>Private room</td>
<td>92,378</td>
<td>224,226</td>
</tr>
</tbody>
</table>

Source: Genworth Financial, 2016.

Attitudes about Aging

An attitude is a feeling, value, or belief about something that determines behavior (Meiner, 2015). For example, if a nurse has the attitude that characterizes older adults as less healthy, less alert, and more dependent, then his or her initial assessment of the patient will reflect this attitude. Or if the occupational or physical therapist believes that dependence in self-care

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normally goes with the aging process, the older patient will likely not be questioned regarding their strengths and abilities.

Patients’ own beliefs and attitudes about aging can also directly affect their psychological well-being. Researchers found that if an older individual believes that illness is inevitable with increased age, he or she may fail to report changes in health or adopt health promotion strategies (Touhy & Jett, 2016). On the other hand, holding a positive self-perception of aging can contribute to a longer lifespan.

Ageism is the systematic stereotyping of and discrimination against people because they are older (Touhy & Jett, 2016). Ageist attitudes, as well as myths and stereotypes about aging, can be detrimental to the older adult population. A study by Rogers and colleagues (2015), reported that 1 in every 5 adults over the age of 50 years experiences discrimination in the healthcare setting. Discrimination contributes to substandard care, increasing the burden of poor health in older adults.

Unfortunately, most Americans hold deeply negative views about aging and go to great lengths to avoid serious conversations about what it means to grow old in a youth-centered society. Research shows that Americans do not identify themselves as older people even when in the later decades. This muted conversation has to do with one of the most remarkable transformations of time: the fact that over the last century, scientific and technological advances have extended the average life-expectancy at birth by two to three decades. It is believed that a “collective silence” around this unprecedented demographic phenomenon has led to “collective inaction” on the political and policy front (Callen, 2017).

GOALS AND MODELS OF CARE FOR THE OLDER ADULT

As described in the CDC (2016a) report “Healthy Aging in Action: A National Prevention Strategy,” public health officials and healthcare providers—in collaboration with federal, state, and local governments and aging service providers—have designed a wellness framework and goals to promote healthy aging in America and to advance a strategy for an aging society. That framework includes:

- Promotion of health
- Prevention of injury
- Management of chronic conditions
- Optimization of physical, cognitive, and mental health
- Facilitation of social engagement
HEALTH AND AGING POLICY ISSUES

The nation’s decision makers are confronting an enormous range of specific challenges in caring for the aging. These include:

- 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 Americans

- 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 Americans


Healthcare Goals for the Individual

Healthcare goals for the individual older adult are highly unique, and a patient’s engagement in setting goals has been demonstrated to enhance not only his or her participation in and adherence to treatment but also health outcomes and quality of life (NCQA, 2016). Studies have also shown that goal-setting discussions are most successful when the patient trusts the caregiver. Once this trust is established in the patient-caregiver relationship, there tends to be more open dialogue regarding the patient’s needs and values as they pertain to goal setting.

A study by Bell and colleagues (2016) looked at the priorities of older adults themselves and found that each older adult’s unique values and beliefs should be a first consideration when assisting a patient to reflect and set his or her goals of care. The study also found life prolongation and the ability to preserve functional capacity (including cognitive and physical) to be the overriding goal of older adults in America.

In addition, a study by Naik and colleagues (2016) revealed that older adults perceive “goals in healthcare” to be equal to “desired outcomes” of a particular service, therapy, or procedure and heavily reflect the individual’s value system (see table below).
### OLDER ADULTS' HEALTHCARE GOALS

<table>
<thead>
<tr>
<th>Goal</th>
<th>Anecdotal Statements from Study Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-sufficiency:</strong> Having or desiring the capacity to take care of oneself and not depend on others; functioning in one’s daily life</td>
<td>“I don’t want to be a burden. I want to contribute in some way.”</td>
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<td></td>
<td>“I want to be self-sufficient. I don’t want to be sick. Until I’m overwhelmed, I want to be able to deal with it on my own terms.”</td>
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<tr>
<td><strong>Life enjoyment:</strong> Maintaining or desiring a meaningful sense of physical and emotional health; activities associated with enjoyment of one’s life</td>
<td>“I have two books underway at this time, and this is the most important thing to me.”</td>
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<td></td>
<td>“I want to be able to engage in meaningful life activities.”</td>
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<tr>
<td><strong>Connectedness and legacy:</strong> Feelings regarding the importance (or lack thereof) of social or spiritual relationships in one’s life; conveying how one wants to be understood or remembered by the important people in one’s life</td>
<td>“I wish to leave the ones that I love economically stable.”</td>
</tr>
<tr>
<td></td>
<td>“I love Jesus more than anything. Nothing else matters. That’s all we have.”</td>
</tr>
<tr>
<td><strong>Balancing quality and length of life:</strong> Weighing one’s desire for quality of life with prolonging length of life when evaluating treatment preferences and goals</td>
<td>“I want to fight it with all I can get. No short cuts.”</td>
</tr>
<tr>
<td></td>
<td>“I want them to give me treatment only if it is going to extend my life and quality of life.”</td>
</tr>
<tr>
<td><strong>Engagement in care:</strong> Sentiments concerning extent an individual person and his or her family and healthcare providers participate in the individual’s medical, end-of-life, or postdeath care decisions</td>
<td>“Tell it to me straight; I will deal with it from there. Don’t try to cover it up or to avoid hurting my feelings.”</td>
</tr>
<tr>
<td></td>
<td>“This is something I have to think about. I haven’t discussed this with my wife or family. I don’t have a living will or advance directive.”</td>
</tr>
</tbody>
</table>

*Source: Naik et al., 2016.*

### SETTING UNIQUE AND INDIVIDUALIZED GOALS WITH OLDER ADULTS

1. Elicit goals: Identify what is important to the patient.
2. Negotiate goals: Break long-term goals into manageable, supportive goals.
3. Support goal attainment: Work together with the patient as a team to attain goals and overcome barriers.
4. Monitor goal attainment: Discuss how progress will be measured with the patient and document progress.

*Source: NCQA, 2016.*
INTERDISCIPLINARY APPROACH TO CARE

Older adults often have complex needs that require the coordinated effort of an interdisciplinary team approach. The team members necessary to serve the older adult may include:

- Physicians
- Nurses
- Family caregivers
- Occupational therapists
- Physical therapists
- Psychiatrists
- Psychologists
- Chaplains
- Palliative care specialists
- Pharmacists
- Dentists
- Social workers

Studies have shown that coordinated care results in higher-quality care without an increase in cost. There are convincing arguments that coordinated care may lead to a cost savings due to reduced hospitalizations, medication errors, and some common complications such as injuries from falls.

Source: Eldercare Workforce Alliance, 2017.

Models of Care

Healthcare and communication that value and respect the dignity and worth of each unique person plus the use of evidence-based models of caring for older adults will enhance the overall care of this vulnerable population. Several nursing care models for the elderly are helpful and useful in guiding nursing practice and in recognizing and understanding behaviors of individuals.

ACES MODEL

Best practices for nurses in translating their knowledge of individualized aging, complexity of care, and vulnerabilities during life’s transitions must be put into action that will promote high-quality care for older adults. The primary model utilized in today’s healthcare system is the ACES model (Advancing Care Excellence for Seniors), developed by the National League for Nursing (2017). (There are a number of evidence-based assessment tools available in the literature to provide assistance to the healthcare professional in performance of the ACES Care Model.)
## ACES Model of Care

<table>
<thead>
<tr>
<th>Mode</th>
<th>Nursing Actions</th>
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</table>
| **A** | Assess function and expectations  
• Assess, respond to, and respect an older adult’s functional status and strengths, wishes, and expectations.  
• Determine the older adult’s function and expectations, along with cognition, mood, culture, physiological status, and comfort, to obtain a comprehensive assessment of healthcare needs.  
• Use standardized assessment tools to assess the older adult’s individual aging pattern. |
| **C** | Coordinate and manage care  
• Manage chronic conditions, including atypical presentations, in daily life and during life transitions to maximize function and maintain independence.  
• Assist the older adult and families/caregivers to assess knowledge and evaluate resources.  
• Advocate during acute exacerbations of chronic conditions to prevent complications. |
| **E** | Evolving knowledge utilization  
• Understand geriatric syndromes and unique presentations of common diseases in older adults.  
• Access and use emerging information and research evidence about the special care needs of each older adult and appropriate treatment options.  
• Interpret findings and evaluate clinical situations in order to provide high-quality nursing care based on current knowledge and best practices. |
| **S** | Situational decision-making  
• Analyze risks and benefits of care decisions in collaboration with the interdisciplinary team and the older adult, family, and caregivers.  
• Evaluate situations where standard treatment recommendations need to be modified to manage care in the context of the older adult’s needs and life situations.  
• Consider the older adult’s wishes, expectations, resources, lived experiences, culture, and strengths when modifying care approaches. |

CASE: ACES Model of Care

Henry Jones is a 71-year-old African American retired rail system engineer who lives in a small apartment with his wife, Bertha. Henry and Bertha had one son, who was killed in the war ten years ago. Their surviving daughter-in-law, Betty, is a registered nurse, and their grandson is named Ty. Henry has been concerned lately about Bertha because she is experiencing frequent memory lapses.

Henry was admitted to the hospital last night after he called and told his doctor that he could not catch his breath. Henry has several medical problems, including COPD, hypertension, and high cholesterol.

Henry and his daughter-in-law, Betty, provide important details of how they view his current life situation (i.e., the stress Bertha has put on the family structure with constant observation being necessary for her safety). The registered nurse doing Henry’s initial history and assessment proceeds with the ACES Care Model:

- **Assess.** Physical parameters: BP, pulse, EKG, respiratory rate and difficulty, functional status, etc. Social parameters: Betty and Ty’s support and his deep religious faith.

- **Coordinate.** Psychological concerns: Bertha’s increasing memory lapses, loss of their son, sense of anxiety, possible depression, loss of sleep, caregiver strain.

- **Evolution.** Emerging information: Look at the “bigger picture”; evaluate situation; team formation of appropriate healthcare professionals for Henry’s case based on solid evidence and treatment options (i.e., social services, pharmacy, respiratory therapy).

- **Situational.** Cause of concern: Henry’s anxiety coupled with history of heart disease and COPD; frustration with wife’s current condition and increasing dependence on him. Transitional care: Explore available resources for Henry and Bertha (i.e., adult day care, assistance from Betty, senior citizen meals-on-wheels); determine Bertha’s degree of memory lapses and subsequent need for home care, nursing home, or assisted living; home oxygen teaching; assistance with decision-making by family and care team.


OTHER MODELS OF OLDER ADULT CARE

Other notable older adult care models include:

- **Geriatric Resource Nurse (GRN) Model.** Goal: Improving the geriatric knowledge and expertise of the bedside nurse. An educational and clinical intervention model that prepares the RN as the clinical resource person on geriatric issues to nurses on others.
units or other specialties (NICHE, 2016). Designed to improve outcomes for hospitalized older adults and offers many opportunities for new roles within the acute care nurse’s professional description (e.g., geriatric care nurse or geriatric care coordinator for interprofessional older adult care) (Touhy & Jett, 2016).

- **Transitional Care Model.** Goal: Continuity of care. A nurse-led intervention model targeting older adults at risk for poor outcomes as they maneuver the healthcare system and between healthcare professionals (Hirschman et al., 2017).

- **Care Coordination Model.** Goal: Unification of a team of providers to meet individual older adult needs. Improves healthcare access and outcomes and synchronizes the variety of long-term services and support by utilizing a care coordinator who works closely with the patient, family, primary care provider, and other healthcare professionals (Eldercare Workforce Alliance, 2017).

- **Community-Home-Hospice-Based Care Model.** Goal: Provision of opportunities of caring for patients within their own familiar environments along with integrating other components into the caring component (i.e., occupational therapy, physical therapy, dietitian, etc.) (Touhy & Jett, 2016).

- **Certified Nursing Facility Care Model.** Goal: Nursing care provided along a continuum within a facility (i.e., nursing homes). Has evolved around long-term care and postacute care (i.e., rehabilitation, restoration). Nursing facilities are no longer just a destination but a stage in the recovery process. Fewer physicians and other healthcare professionals on site at all times, so demands independent decision-making to guide the care given (Touhy & Jett, 2016).

**HEALTHCARE REFORM INITIATIVES**

Older adults have complex healthcare needs and occasionally need care within multiple settings across the health-wellness continuum. Each setting is seen as a distinct provider of services, and little collaboration may occur between the coordination team.

- **Bundled care payments:** Payment to a hospital for the entire “bundle of care,” which includes the hospital stay and the medical needs for a period of time after discharge (Touhy & Jett, 2016)

- **Accountable care organizations:** Groups of providers and hospitals that are accountable for the costs and quality of care provided to a population of patients based on predesignated standards for payment and performance (Bartels et al., 2015)

- **Independence at home:** Redesigning conventional home and community-based long-term care services to incorporate mental health services for older adults who may be at high risk of unnecessary and inappropriate institution-based care (Bartels et al., 2015)

It is estimated that 1 in 5 older patients are readmitted to the hospital within 30 days of discharge. Some readmissions are predictable, but many can and should be prevented. Ninety percent of the readmissions for Medicare patients are unplanned, resulting in annual costs of
more than $17 billion for return trips that would likely not happen has the appropriate care been
given initially (Touhy & Jett, 2016). Following are **key strategies to reduce readmission rates to hospitals**:

- Engage key stakeholders: Patient, caregivers, hospital and skilled nursing staff, primary care providers, rehabilitation specialists (i.e., occupational and physical therapies), and home health workers
- Assess risk and develop a comprehensive transition plan throughout the hospitalization
- Enhance the safe management of medications
- Place an emphasis on daily communication among the multidisciplinary team, focused on a coordinated transition
- Standardize transition plans, procedures, and forms
- Send discharge summaries directly to the primary care provider and/or the next care setting at discharge
- Provide easy-to-understand discharge plans to patients and caregivers and ensure patient understanding through teach-back methods
- Ensure timely follow-up and coordination of support after the patient leaves the care setting
  (Li et al., 2014)

For instance, researchers have found that additional spending on occupational therapy has a statistically significant association with lower readmission rates for three particular health conditions: heart failure, pneumonia, and acute myocardial infarction. It is believed that occupational therapy places a unique and immediate focus on patients’ functional and social needs, which can be an important driver of readmission if left unaddressed (Rogers et al., 2016).

Additional research has identified five key risk factors associated with hospital readmission in low-income older adults:

- Living alone
- Poor or low satisfaction with primary care provider
- Not having Medicaid
- Receiving a new assistive device within the past 6 months
- Having a nursing home stay in the preceding 6 months
  (Iloabuchi et al., 2014)
PHYSIOLOGIC CHANGES OF AGING

Aging is both universal and individual. The physiologic changes of aging are universal, but the pace at which they occur is highly individual, depending on genes, age, sex, race, environment, and lifestyle. Some people look and feel old at 60 years or younger, while others remain youthful in health, appearance, and outlook at 70 years and beyond. The challenge for health professionals is to distinguish between normal age-related changes and symptoms of a disease or disorder that requires preventive or therapeutic action.

Musculoskeletal Changes

The musculoskeletal system is affected in a number of different ways by the aging process. A pronounced decrease in muscle mass and muscle strength occurs gradually over time. The number of muscle cells decreases, and they are replaced by fibrous connective tissue, resulting in a decrease of muscle mass, tone, and strength. The elasticity of ligaments, tendons, and cartilage also decreases, as does bone mass, resulting in weaker bones.

Beginning by around the fifth decade of life, musculoskeletal changes may significantly alter the posture, overall appearance, and/or function of older adults. Thinning of intervertebral disks can lead to shortening of the trunk of the body, subtly alter the alignment of vertebrae, and diminish height over time by 1-1/2 to 3 inches (Meiner, 2015).

Calcium is progressively leached (resorbed) from bones, frequently resulting in osteopenia or osteoporosis—both much more common in women than in men—which may increase the risk of fracture. At the same time, muscles and cartilage atrophy and weaken, which may lead to postural deviations such as increased thoracic kyphosis (a pronounced outward curvature of the thoracic region of the spine that can further decrease stature and necessitate the adoption of a “chin-up” posture to make eye contact with others).

Wear and tear on cartilage (ligaments, tendons, and joints) reduces flexibility and increases the risk of tears. The synovial fluid that lubricates joints decreases with age, resulting in slower and sometimes painful movement. However, it is not exactly known if this is the result of the aging process or the result of wear and tear on the joints (Meiner, 2015).

Loss of muscle mass and muscle strength can ultimately contribute to a loss of balance and coordination and—if not effectively addressed—to the inability to perform activities of daily living, disability, and eventual loss of independence. Approximately one third of adults over age 65 have falls every year, and falls are the most common cause of accidental death in older adults (Meiner, 2015).

All of the changes mentioned above can cause pain, impaired mobility, self-care deficits, and increased risk of falling for older adults.
ASSESSMENT

Assessment of musculoskeletal function in an older adult includes general observation of posture, stance, and walking. Observations focus on whether a patient is favoring one side of the body or another while walking. The Timed Up-and-Go Test provides a quick assessment of an older adult’s overall mobility and function (see also “Balance and Fall Risk among Older Adults” later in this course). For patients with existing disabilities, an inquiry is made to assure the patient has been evaluated in physical and occupational therapy for the correct fitting and teaching of the proper use of assistive devices and gait-transfer training.

Osteoporosis can be assessed by additional questioning of the patient regarding any back pain, joint pain, and loss of height. Bone mineral density testing can also be completed, with results comparing the patient’s bone mass to individuals in their age range, or previous results if the patient has had a previous baseline bone mineral density test (Mauk, 2014).

Hip fractures are most often directly related to falls, and it is vital to examine the hips and lower extremities for evidence of fracture, such as shortening of the extremity, abnormal rotation, tenderness, swelling, or ecchymosis at the site of injury.

PLANNING AND EXPECTED OUTCOMES

Care of a patient with a musculoskeletal injury involves perioperative, postoperative, and rehabilitation periods. Each of these stages of recovery requires specific interdisciplinary team involvement in planning discharge and outcomes. Examples of expected outcomes may include:

- The older adult will report minimum discomfort and an adequate level of pain control.
- The older adult will remain free of postoperative complications (i.e., wound infection).
- The older adult will be able to participate in physical and occupational therapy regimens to regain function and independence.

INTERVENTION

Regular exercise such as walking and resistance training as well as doing household chores such as vacuuming, sweeping, gardening, and washing the car help preserve flexibility and strength and delay or prevent musculoskeletal deterioration. The current physical activity recommendations for adults consist of at least 30 minutes of moderate-intensity activity on most days of the week as well as strengthening exercises and activities that increase balance at least two days per week (Touhy & Jett, 2016).

Problems of the musculoskeletal system may have a considerable effect on the day-to-day life of the older adult. Conditions such as osteoarthritis, rheumatoid arthritis, osteoporosis, and fractures may result in functional disability, chronic pain, and a decreased quality-of-life of the individual. The role of the clinician working with these patients is to promote safe, optimal functioning with regard to mobility and self-care. Interventions to promote comfort and relieve pain are critical to
maintenance of function. To prevent serious disability, it is essential for the rehabilitative team members to have the patient resume activity as soon as feasible after an acute injury or diagnosed disease. A key function of the multidisciplinary healthcare team is to educate patients about the importance of musculoskeletal activity in maintaining function.

**Integumentary Changes**

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

- Serving as a barrier against harmful bacteria and other threatening agents
- Preventing fluid loss or dehydration
- Protecting the body from ultraviolet light and other external environmental hazards
- Protecting underlying organs from injury
- Revealing emotions such as anger, fear, or embarrassment through vasodilation
- Providing insulation and acting as a caloric reservoir through subcutaneous fat
- Providing body insulation through hair  
  (Meiner, 2015)

Some of the age-related skin changes include:

- Loss of elasticity, vascularity, thickness, and strength that may delay the healing process and increase the risk of skin tears and bruising
- Increased brown-pigmented spots or age spots (i.e., lentigines)
- Loss of subcutaneous tissue, causing wrinkling and sagging of the skin, which may affect self-esteem, temperature control, and drug efficacy
- Loss of hair follicles along with hair thinning and graying
- Increased hair density in the nose and the ears, particularly in older men, which may clog external ear canals and impair hearing
- Thicker nails with longitudinal lines
- Decreased sebaceous and sweat gland activity, which affects thermoregulation and decreases sweating
- Higher evidence of benign and malignant skin growths  
  (Meiner, 2015)

Due to the amount of sun exposure received by hands during normal daytime activities, concern has been raised about the increased use of UV or LED light to cure “gel” nails or nail polish,
either in a salon or at home. LED lights have been shown to pose less of a risk, but using either a
topical sunscreen or purpose-made protective gloves with only the nails exposed can provide a
barrier while the products are curing (Shipp et al., 2014).

Hair changes in older adults vary according to race, sex, and hormonal influences. Dark hair
turns gray or even white and becomes thinner as melanin production in hair follicles diminishes
and growth slows. The texture of hair may also change with age; fine, straight hair may become
ccoarser and somewhat curly. Hair loss is more noticeable in men and may begin well before age
40. Although women may lose hair, it occurs much later and more slowly. Body hair on both
men and women is also thinner and sparser with age.

Fingernails and toenails tend to harden and thicken with age and may develop vertical striations
in the nail plate. Yellowish or dark nails may also indicate a fungal infection.

**ASSESSMENT**

Skin assessment in older persons is focused on monitoring for dryness, pruritus, signs of skin
breakdown such as pressure ulcers, lesions such as bruising that could indicate abuse or
unreported falls, and possible skin cancers (basal or squamous cell carcinomas or melanoma).

Clinicians need to be vigilant in inspecting both the hands and feet of older adults, particularly
people who have diabetes or vision or mobility problems (including obesity), which may make
them unable to trim their nails and properly care for their feet. These individuals need regular
care by a podiatrist, who can prevent or treat irritations and infections.

Very thin patients, those who are poorly nourished, and those who are confined to bed or a
wheelchair are at greatest risk for developing **pressure ulcers/injuries** on bony prominences;
shoulders, lower back, heels, hips, and buttocks should be carefully inspected at least once a day.
In male patients, the underside of the scrotum should be examined for pressure and irritation. It is
not recommended to massage skin over bony prominences, as this can increase the risk of
pressure ulcers/injuries.

Assessment includes inspecting the skin for brown actinic keratosis **precancerous lesions**,
commonly found on the face, neck, and upper extremities. Untreated, these lesions may progress
to squamous cell carcinomas, which are reddish, dome-shaped lesions. They may be found
around the ear or on the head or neck. Basal cell carcinomas are the most common type of skin
cancer, particularly in light-skinned individuals, appearing as a pearly papule with an ulcerated
center; as an open sore that bleeds, oozes, or crusts for more than three weeks; or as a reddish
patch on the chest, shoulders, arms, or legs. These cancers can be successfully treated if
diagnosed early. Dark brown or black lesions may be melanoma, which can metastasize quickly
and may prove fatal. Any suspicious lesions should be referred to dermatology for diagnosis.

Clinicians also assess for skin abnormalities when conducting a physical examination for other
purposes. Skin cancers are seldom painful until they are very advanced, so older patients may be
unaware of lesions on their back or on other areas of the body not easily seen.
These ABCDE signs can be followed for assessing suspicious skin lesions:

<table>
<thead>
<tr>
<th>“ABCDE” SIGNS FOR SKIN LESIONS</th>
</tr>
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<tbody>
<tr>
<td><strong>A</strong></td>
</tr>
<tr>
<td><strong>B</strong></td>
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<tr>
<td><strong>C</strong></td>
</tr>
<tr>
<td><strong>D</strong></td>
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<tr>
<td><strong>E</strong></td>
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</tbody>
</table>

Source: Mayo Clinic, 2014.

**TREATMENT/INTERVENTION**

Adequate nutrition and hydration is essential to skin health. Older adults with skin conditions should be encouraged to see a dietitian for recommendations. (See also “Nutritional Changes” later in this course for additional recommendations.)

Skin ulcers and pressure sores should be evaluated and treated promptly, as skin breakdown can progress quickly. The skin should be well protected, moisturized, and inspected daily for any changes. Wound care and dressings for any pressure ulcer/injury care should be monitored by the healthcare team, with careful assessment for any infection and evidence of wound healing.

Any skin lesions that are larger than 6 mm or those with any of the “ABCDE” signs (see above) should be referred to a dermatologist for potential biopsy. Treatment of skin lesions varies and may include cryotherapy, radiotherapy, surgery, and topical treatment.

Older adults should be taught to inspect their feet on a regular basis. Corns, ingrown toenails, and fungus should be treated by a podiatrist. If existing foot or nail problems are present, a regular inspection by a podiatrist (annually or more frequent if needed) is recommended (Mauk, 2014).

**PREVENTION**

When assisting in strategies for self-care and bathing, patients should avoid hot water and use a mild cleansing agent that minimizes irritation and dryness of the skin. Patients should also use a gentle cleaning motion and minimize the force and friction applied to the skin. The frequency of bathing should be individualized according to need and/or patient preference.

Patients should also minimize environmental factors that may lead to skin drying, such as low humidity (less than 40%) and exposure to cold. Dry skin should be treated with gentle moisturizers that do not contain perfumes, dyes, or alcohol.
Patients and caregivers should be taught how to minimize skin exposure to moisture due to incontinence, perspiration, or wound drainage. When these sources of moisture cannot be controlled, underpads or briefs made of materials that absorb moisture and present a quick-drying surface to the skin can be recommended. Topical agents that act as barriers to moisture can also be used (e.g., Eucerin, Vanicream, Aquaphor).

The best treatment for skin cancer is prevention. All adults should protect themselves from sun exposure by wearing sunblock and protective clothing (e.g., long sleeves, hat, sunglasses) and by seeking shaded areas when outdoors. Most skin cancers, if detected early, are treatable. Regular full-body skin exams are recommended for all older adults on an annual basis (Mauk, 2014).

**Body Composition Changes**

Body composition changes over time. Weight and fat mass increase during middle age (the so-called middle-age spread) and continue to about age 74. After age 74, older adults generally lose weight, stature, fat-free mass (also called *lean body mass*), and body cell mass. As lean body mass declines, the proportion of body fat increases. Older adults also experience a decrease in total body water. This means, for example, that water-soluble drugs become more concentrated and fat-soluble drugs have a longer half-life (Tabloski, 2014).

Decreased body cell mass results in decreased total body potassium. Low potassium levels over time can result in confusion, fatigue, cardiovascular dysrhythmias, kidney damage, and other serious, even life-threatening effects (Meiner, 2015).

Tissue changes alter not only appearance but also the body’s response to temperature changes. With aging, subcutaneous fat decreases, particularly around the eyes and in the forearms, accentuating the bony structures. Without that insulating layer of subcutaneous fat, the older person has a heightened sensitivity to both heat and cold. Therefore, a room temperature that feels comfortable to a younger person may feel cold to an older person, particularly someone who is less active.

**HEAT STRESS**

Extreme heat poses a threat to older adults due to age-related impairment and loss of sweat glands, the principal component of the body’s normal evaporative cooling system. Even healthy older people are more prone to heat stress and heat stroke than younger people. Those with cardiovascular disease or hypertension are at the highest risk not only because of their disease but also because their medications impair the body’s ability to regulate its temperature. Overweight people are at higher risk for heat-related illness because they retain more body heat.
**Assessment**

**Heat stroke** is a serious heat-related illness and can cause death or permanent organ damage if immediate treatment is not provided. Body temperatures can rise to 104 °F within 10 or 15 minutes (CDC, 2017d). Warning signs of heat stroke may include the following:

- Extremely high body temperature (above 103 °F)
- Red, hot, and dry skin (no sweating)
- Rapid, strong pulse
- Throbbing headache
- Dizziness
- Nausea

**Heat exhaustion** is a milder form of heat-related illness that can develop after several days of exposure to high temperatures and inadequate or unbalanced replacement of fluids. Warning signs of heat exhaustion may include:

- Heavy sweating
- Paleness
- Muscle cramps
- Tiredness
- Weakness
- Headache
- Nausea or vomiting
- Fainting
- Cool and moist skin
- Fast and weak pulse
- Orthostatic hypotension
- Rapid and shallow breathing
  (CDC, 2017d)

**Heat cramps** are the mildest form of heat-related illness. Signs and symptoms of heat cramps usually include:

- Heavy sweating
- Fatigue
- Thirst
- Muscle cramps
Many of the symptoms of heat stress are similar to symptoms of age-associated diseases or may mimic the symptoms of drug-drug interactions. Careful assessment of symptoms, patient history, medications, and chronic conditions will help distinguish symptoms that are related to heat stroke or heat exhaustion. Blood tests may be taken to check for low sodium or potassium as well as muscle damage, and urine tests may be needed to check kidney function. Imaging tests may be indicated if organ damage is suspected (CDC, 2017d).

**Treatment**

Heat stroke should be recognized as an urgent and life-threatening condition. Older adults with signs and symptoms of heat stroke should immediately seek emergency care. The body temperature should be measured, with the goal of reducing the temperature until reaching between 101 °F and 102 °F. Cooling can be performed by specialized cooling blankets; cool, wet wraps; or immersion in a cool tub or shower. Intravenous fluids may also be administered in order to hydrate the patient and correct any electrolyte imbalances.

Milder forms of heat-related conditions such as heat cramps and heat exhaustion may be treated with self-care by recommending that the patient drink cool water or sports drinks (containing electrolytes), placing the patient in a cool or air-conditioned location, and promoting rest until symptoms subside. If symptoms do not subside within one hour, the patient should be advised to seek medical attention (CDC, 2017d).

**Prevention**

Older adults can take precautions to prevent heat-related illnesses with the following strategies:

- Wear loose-fitting, lightweight, light-colored clothing
- Stay out of the sun during peak hours (10 a.m.–2 p.m.) and use protective clothing, including hats
- Seek the shade or a cooler place indoors with air conditioning on high heat-index days (temperature above 91 °F)
- Rest and drink plenty of fluids (avoiding alcohol)
- Avoid strenuous activity when the temperature is hot
- Take breaks and stay well hydrated if activity is unavoidable (CDC, 2017d)
HYPOTHERMIA

Keeping older people warm is more than a comfort measure; it is essential to their health and well-being. Accidental or inadvertent hypothermia can lead to confusion and disorientation, amnesia, cardiac arrhythmias, loss of consciousness, irreversible coma, and death.

Those people who cannot generate enough heat to maintain normal core body temperature through shivering are at greatest risk for developing hypothermia. Patients who are confined to bed or a wheelchair are particularly vulnerable. According to the CDC (2016b), older persons with preexisting medical conditions such as congestive heart failure, diabetes, or gait disturbance are at increased risk of hypothermia because their bodies have a reduced ability to generate heat and because they are less likely to recognize symptoms of hypothermia and seek shelter from the cold.

Assessment

A clinical diagnosis of hypothermia may be apparent based on the patient’s symptoms and physical condition or exposure that caused the hypothermia. Rectal temperature readings may be needed in order to detect accurate body temperature. Blood tests may also be needed to check for any organ damage or to rule out other conditions (CDC, 2017d). Signs and symptoms of hypothermia include:

- Shivering
- Sensation of cold, exhaustion, and numbness
- Confusion, disorientation, and slurred speech
- Amnesia
- Pallor or flushed skin
- Decreased hand coordination

Older adults undergoing surgery are also at risk for hypothermia related to medications such as muscle relaxants, narcotics, vasodilators, anesthetics, and room-temperature parenteral fluids. Many of the symptoms of hypothermia are similar to symptoms of age-associated diseases or may mimic the symptoms of drug-drug interactions. Careful assessment of symptoms, patient history, medications, and chronic conditions will help distinguish symptoms that are related to hypothermia.

Treatment/Intervention

If an older adult is suspected of having hypothermia, self-care measures may include the following:

- Relocate to a warm environment
- Remove wet clothing
• Cover with warm blankets (paying close attention to covering the head)
• Drink warm beverages
• Apply warm compresses to the neck, chest, and groin areas (do not apply warm compresses to the extremities)

These measures can be taken in order to start warming the patient prior to professional medical attention.

Depending on the severity of the patient’s hypothermia, immediate medical interventions to treat hypothermia may include the following:

• Blood rewarming (using a dialysis or heart bypass machine)
• Infusion of warmed intravenous fluids
• Airway rewarming (using warmed, humidified oxygen by mask or nasal cannula)
• Warmed irrigation (peritoneal or lung)

Prevention

To prevent hypothermia, older adults should take the following precautions during cold weather exposure:

• Wear protective clothing, including a warm coat, hat, scarf, and gloves or mittens
• Avoid strenuous activities that would cause sweating while exposed to the cold
• Dress in layers and stay dry
• Take breaks from exposure to the cold to warm up

(CDC, 2017d)

Cardiovascular Changes

Age-related cardiovascular changes include a slight decrease in maximal heart rate (the number of beats per minute) and a decrease in stroke volume during maximal exercise (amount of blood pumped out of the heart with each beat). These changes reduce cardiac output (the total amount of blood pumped out of the heart each minute).

Illness, excitement, activity, or stress may cause a rapid heart rate (tachycardia), which in an older person takes longer to return to the baseline level than in a younger person.

As mentioned earlier, the migration of calcium from bone into blood vessels stiffens arteries, leading to atherosclerosis, some degree of which is present in most older adults. Atherosclerosis affects blood flow to the heart, liver, kidneys, and other organs. Vessel walls weaken and may swell under pressure, even in individuals without hypertension.
Several conditions related to the cardiovascular system are common in older adults. The most common include congestive heart failure (CHF), hypertension, coronary artery disease (CAD), stroke, myocardial infarction (MI), and peripheral vascular disease (Mauk, 2014).

While chest pain remains a common and important symptom of heart disease, dyspnea in the absence of chest pain is even more commonly reported in older adults. In a study by the Global Registry of Acute Coronary Events, dyspnea was the primary complaint of coronary heart disease in nearly 50% of the study’s older adult participants (Bell et al., 2016).

**ASSESSMENT**

Older adults should have regular assessments of blood pressure and heart function. As people age, the systolic blood pressure may have a tendency to rise. The American Heart Association and the American College of Cardiology have issued guidelines for preventing, detecting, and managing high blood pressure in adults, including the older adult, considering a blood pressure reading over 130/80 as indicating hypertension and requiring intervention. Because hypertension is highly prevalent in older adults, it is not only a leading cause of preventable morbidity and mortality but under-recognized as a major contributor to premature disability and institutionalization (AHA, 2017; Whelton & Carey, 2017).

The HYVET (Hypertension in the Very Elderly Trial) and SPRINT (Systolic Blood Pressure Intervention Trial) clinical trials studied people 50 and over who had been diagnosed with high blood pressure. Both studies were stopped early due to the evidence showing BP-lowering therapy as one of few interventions to reduce mortality risk in the more frail and vulnerable older individuals (Whelton & Carey, 2017).

It is important to note that no trial of BP lowering in persons older than 65 years of age has ever shown harm or less benefit for older versus younger adults. However, it is prudent for the healthcare team to be cautious in titrating BP lowering and monitoring of persons with high comorbidities, such as heart disease and diabetes (Whelton & Carey, 2017).

The following table provides an illustration of healthy and unhealthy blood pressure ranges for adults, including older adults:

<table>
<thead>
<tr>
<th>Blood Pressure Category</th>
<th>Systolic (mmHg)</th>
<th>And/Or</th>
<th>Diastolic (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;120</td>
<td>and</td>
<td>&lt;80</td>
</tr>
<tr>
<td>Prehypertension/Elevated BP</td>
<td>120–129</td>
<td>and</td>
<td>&lt;80</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>130–139</td>
<td>or</td>
<td>80–89</td>
</tr>
<tr>
<td>Stage 1 Hypertension</td>
<td>140–159</td>
<td>or</td>
<td>90–99</td>
</tr>
<tr>
<td>Stage 2 Hypertension</td>
<td>&gt;160</td>
<td>or</td>
<td>&gt;100</td>
</tr>
</tbody>
</table>

A cardiac stress test may be necessary to distinguish between normal age-related changes and the presence of cardiovascular disease. Additional testing may include electrocardiogram (ECG) and angiogram or cardiac catheterization to evaluate symptoms or if blockage is suspected.

Cardiovascular function helps determine the ability to live independently. A primary criterion in assessing cardiovascular function is VO2 max (the maximum amount of oxygen that can be consumed by the body per minute during physical activity). The minimum level of VO2 max for independent living is 18 ml/kg/min (milliliters per kilogram of body weight per minute) for men and 15 ml/kg/min for women. Regular aerobic exercise can help older adults increase their VO2 max as much as 10% to 20%, compensating for the loss of muscle mass and strength of normal aging (ACSM, 2014).

INTERVENTION

Lifestyle modifications (see below) may help control blood pressure and improve cardiac function. In addition, medications may be prescribed to treat hypertension and cardiovascular conditions in older adults. For hypertension, the goal of medical treatment for older adults is to lower the blood pressure to 120/80 mm Hg or below. Thiazide diuretics or beta-blockers are often used to control hypertension, however it is not uncommon for patients to need a combination of medications to achieve adequate control. For cardiovascular conditions, beta-blockers and calcium channel blockers are often prescribed to decrease the oxygen demands on the heart (Mauk, 2014).

HEALTH MAINTENANCE/PREVENTION

Lifestyle modifications may help older adults control blood pressure and prevent cardiovascular problems. Strategies that may help older adults include the following:

- Limit alcohol to one drink per day.
- Limit sodium intake.
- Stop smoking.
- Maintain a low-fat diet.
- Undertake regular exercise (recommendations differ for individual older adults due to specific conditions such as disabilities and chronic health conditions):
  - 150 minutes per week (i.e., 20 minutes per day for seven days/week; 30 minutes per day for five days/week; or 50 minutes per day for three days/week).
  - Some activity is better than none; there are therapeutic effects in moderate-intensity endurance activity in as little as 10 minutes. (ACSM, 2014; U.S. DHHS/USDA, 2015; NIA, 2017)
- Maintain (or lose) weight (even a 10-pound weight loss can decrease risk). (Traywick, 2017)

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Older adults are encouraged to work closely with their healthcare providers to achieve good control of their blood pressure, since it is a risk factor and contributes to many other serious cardiovascular conditions such as heart disease and stroke (Mauk, 2014).

Renal Changes

Renal changes associated with aging have major effects on the physical and psychosocial well-being of older adults. The kidneys are the major organs that regulate red blood cell production, blood pressure, fluid volume (intake and output of fluids), and electrolyte balance throughout the body. In addition, the kidneys filter waste products from the blood, which are then excreted in the urine. At the same time, the kidneys conserve nutrients such as glucose, amino acids, and electrolytes for resorption into the bloodstream.

The kidneys’ filtering process occurs within the nephrons (the functional units of the kidneys). In a young adult, each kidney contains more than a million nephrons, through which the body’s entire blood supply circulates approximately 12 times an hour. However, the number of nephrons decreases with age, and by age 70, a person may have only one third or one half as many nephrons. In the absence of illness, this number is still sufficient to maintain appropriate fluid balance, which is why some people are able to lead a normal life with only one functioning kidney.

Age-related vascular rigidity and decreased cardiac output reduce renal blood flow and the glomerular filtration rate (GFR), lengthening the time required to excrete waste products such as nitrogen. The biologic half-life of medications is affected by kidney function. This can translate into slower elimination of certain medications (such as streptomycin) and result in toxic effects for older patients.

Aging also reduces the resorption of glucose, leading to increased levels of glucose in the urine (glycosuria). Decreased resorption of bicarbonate and sodium can upset the sodium-potassium ratio, resulting in hyperkalemia (elevated potassium levels). Signs and symptoms of hyperkalemia include muscle weakness or paralysis, tingling of the lips and fingers, restlessness, intestinal cramping, and diarrhea.

Sudden or large changes in fluid volume increase the risk of hypervolemia (abnormal increase in blood volume) or hypovolemia (abnormal decrease in blood volume). Acute losses of fluid or chronic fluid deficits can result in renal insufficiency in older adults.

ASSESSMENT

Assessment of patient renal function is recommended on a regular basis but is most important to consider when adding new medications or prior to exposure to contrast media for diagnostic tests. Blood pressure should be monitored regularly as well as any medications used in the management of hypertension in older adults. Patients with diabetes are also at increased risk for kidney failure. Creatinine clearance is an important indicator of kidney function and should be assessed prior to making a decision about new medications or drugs that are cleared through the
kidneys. Additional blood tests that evaluate kidney function include GFR and blood urea nitrogen (Touhy & Jett, 2016).

Symptoms of kidney failure are due to the build-up of waste products in the body that may cause patients to experience weakness, shortness of breath, lethargy, and confusion. Inability to remove potassium from the bloodstream may lead to abnormal heart rhythms and sudden death. Initially, there may be no symptoms of kidney failure.

**INTERVENTION**

Treatment of the underlying cause of kidney failure may return kidney function to normal. In older adults especially, efforts to control blood pressure and diabetes may be the best way to prevent chronic kidney disease and progression to kidney failure. Kidney function may gradually decrease over time. If the kidneys fail completely, one option available for an older adult may be dialysis. However, no cure currently exists for chronic kidney disease. Following a regime prescribed by the healthcare provider is vitally important, as it helps with day-to-day living with kidney failure. A large number of older adults with kidney disease manage to live an active, productive life (Meiner, 2015).

**HEALTH MAINTENANCE/PREVENTION**

Preservation of kidney function can be maintained by carefully monitoring and treating any chronic condition, such as hypertension and diabetes. Older adults also need to carefully monitor their fluid intake and make adjustments in response to medication effects or other influences on the fluid and electrolyte balance. Patients who are on medications that are excreted by the kidney should have kidney function tests on an annual basis (or more frequently if needed) to monitor any side effects.

Those working with older adults in the healthcare setting should be aware that the stress from surgery, fever, or other acute illness can put an older adult at increased risk for kidney damage or kidney failure (Touhy & Jett, 2016).

**Urologic Changes and Incontinence**

Urologic changes are closely related to changes in the renal system. Age-related loss of muscle tone and decreased contractibility of the bladder can cause excessive urination at night (nocturia) and increased frequency of urination. These same factors may also cause urinary retention, thereby increasing the risk of bacterial growth and infection. Urinary tract infections are more common in women because of their shortened urethra and its proximity to the anus, which increases the risk of fecal contamination.

Some degree of age-related urinary incontinence (any involuntary leakage of urine) is common in older people, particularly among the frail elderly. There are five principal types of incontinence: urge, stress, overflow, functional, and mixed (Tabloski, 2014; Touhy & Jett, 2016).
• **Urge incontinence** is generally caused by uninhibited bladder contractions (detrusor overactivity) that lead to leakage of urine. In men, this condition often is accompanied by urethral obstruction from benign prostatic hyperplasia (BPH) (see below). Urethral obstruction is common in older men but rare in older women. Bladder stones or tumors can also cause bladder contractions and sudden-onset urge incontinence, especially if urination is painful or if there is blood in the urine (hematuria). Cystoscopic examination and urinalysis may be necessary to determine the cause.

• **Stress incontinence** is urinary loss related to laughing, standing, coughing, or lifting heavy objects.

• **Overflow incontinence** (urinary frequency, nocturia, and frequent dribbling) is related to detrusor underactivity, which may be caused by sacral lower motor nerve dysfunction (“neurogenic bladder”).

• **Functional incontinence** occurs when the patient has either physical or psychological factors that impair the ability to get to the toilet (e.g., a patient who is wheelchair-bound or has dementia).

• **Mixed incontinence** is a combination of more than one urinary incontinence problem, usually stress and urge.

  (Tabloski, 2014)

Urinary incontinence also may be caused by factors unrelated to the renal and urologic system. These include delirium, excess fluid intake, medications, psychological factors, restricted mobility, and stool impaction (Tabloski, 2014).

BPH is a male age-related enlargement of the prostate gland that constricts the urethra and obstructs the outflow of urine. Approximately 80% of men may be diagnosed with BPH by the age of 80 years. The development of BPH is due to structural, functional, and hormonal changes with aging. Symptoms that may be manifested with prostatic enlargement include hesitancy in starting a stream, a decrease in the force of the urinary system, terminal dribbling, a sensation of a full bladder after voiding, and urinary retention (Meiner, 2015). Applying suprapubic pressure while voiding may help empty the bladder. If that proves ineffective, intermittent catheterization is indicated.

Sometimes a PSA (prostate-specific antigen) test may be ordered to rule out prostate cancer even though BPH is not related to prostate cancer. Other tests such as abdominal ultrasonography or cystoscopy may be indicated in males with urinary retention, renal impairment, or suspected cancer. These tests are done to evaluate the extent of the obstruction (Meiner, 2015).

**ASSESSMENT**

Urinary incontinence becomes more prevalent among both men and women as they age. The precise incidence of incontinence is unknown because shame and embarrassment make patients hesitant to talk about it. Many clinicians do not screen for it, either sensing the patient’s
embarrassment or because of limited time. However, when a health professional asks, “Do you have any problems with leakage of urine?” those who experience incontinence will generally acknowledge it.

Screening for incontinence is essential because nonpharmacologic therapeutic measures can reduce or eliminate the condition, preventing complications such as skin breakdown, urinary tract infections, and withdrawal from social activities, which can lead to isolation.

Incontinence can be transient (potentially reversible) or chronic. Age-related changes in the urinary tract are only one of several factors contributing to incontinence. Potentially reversible factors include those summarized in the mnemonic **DIAPPERS**:

| D | Delirium, which is the primary cause of incontinence in hospitalized patients (Those affected may not recognize the need to urinate or be unable to find a toilet or urinal. Once the delirium is resolved, so is the incontinence.) |
| I | Infection in the urinary tract that leads to urgency and incontinence |
| A | Atrophic urethritis and vaginitis |
| P | Pharmaceuticals (as well as alcohol and caffeine) |
| P | Psychological factors (such as depression) |
| E | Excess urinary output (caused by diabetes, use of diuretics, or excess fluid intake, especially of alcohol and caffeinated beverages) |
| R | Restricted mobility, because the patient is unable to reach the toilet in time to avoid leakage (Restoring or improving mobility can resolve the incontinence. Otherwise, a bedside commode or urinal should be provided.) |
| S | Stool impaction (Can cause temporary confusion, leading to incontinence of both urine and stool. Removing the impaction generally restores continence.) |


People with diabetes are at high risk for incontinence due to neuropathy that affects pelvic nerves. Other high-risk groups include those with Parkinson’s or stroke-related neurologic problems, women with relaxed pelvic muscles, and men who have had prostate surgery. By observing how long it takes from intake to urinary output, caregivers can intervene at the appropriate time for toileting. Controlling urinary tract infections also helps prevent incontinence.

**INTERVENTION**

Selection of an intervention will depend on a comprehensive assessment, the type of incontinence, and whether the outcome is to cure or minimize the extent and complications of the incontinence (Touhy & Jett, 2016). Research indicates that behavioral modification should be the first-line therapy for incontinence in older patients. For instance, pelvic floor exercises are
helpful for stress incontinence, while bladder training is helpful for urge incontinence. Both modalities are helpful when the patient has both types of incontinence (Tabloski, 2014). Drug treatment for stress incontinence is limited, although some experts recommend a trial of topical estrogen for women with symptomatic atrophic urethritis.

### INTERVENTIONS FOR URINARY INCONTINENCE

| Lifestyle modifications                  | • Smoking cessation  
|                                         | • Weight reduction  
|                                         | • Bowel management  
|                                         | • Caffeine reduction  
|                                         | • Appropriate fluid reduction  
| Scheduled voiding regimens              | • Timed voiding  
|                                         | • Prompted voiding  
|                                         | • Bladder training  
| Pelvic floor muscle strengthening        | • Kegel exercises  
|                                         | • Biofeedback  
|                                         | • Electrical stimulation  
| Anti-incontinence devices                | • Pessaries (females)  
|                                         | • Condom catheter (males)  
|                                         | • External clamps or urethral plugs  
| Supportive interventions                 | • Elevated toilet seats  
|                                         | • Gait training  
|                                         | • Modified clothing  
|                                         | • Absorbent pads or undergarments  


Stress incontinence is a particular problem for any older woman with a cough, either chronic or temporary. The patient will likely need protection for her clothing to prevent the odor of stale urine. Wearing a panty liner or sanitary pad should be tried before selecting bulkier incontinence garments. Frequent, careful cleaning of the genital area can prevent odor and skin breakdown. If the patient is unable to clean herself, the care provider must do so.

When confusion and incontinence occur together, controlling the confusion may also help prevent incontinence. However, research suggests that patients who are taking medications for cognitive impairment such as dementia (i.e., cholinesterase inhibitors) should not take medications for incontinence (i.e., anticholinergic drugs) because they may become problematic for the older adult. The interaction of these two types of medications can hasten functional decline and complicate glaucoma (Touhy & Jett, 2016). This finding has major public health
implications because an estimated one third of people with dementia also take a drug for incontinence.

PREVENTION

Preventing incontinence is based on keeping the bladder empty by frequent toileting, bladder retraining, and in some cases, catheterization. However, limiting fluid intake (except in the evening) can cause dehydration, requiring other measures. Review of medications may identify one or more medications that contribute to incontinence (see table below); if it is not feasible to discontinue the medication(s), substituting another one may help reduce incontinence.

<table>
<thead>
<tr>
<th>MEDICATIONS AND SUBSTANCES ASSOCIATED WITH INCONTINENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
</tbody>
</table>
| ACE inhibitors | • Enalapril maleate (Vasotec)  
• Benazepril hydrochloride (Lotensin)  
• Lisinopril (Zestril)  
• Captopril (Capoten) | Drug-induced dry cough, which can exacerbate stress incontinence |
| Alcohol | Beer, liquor, wine | • Increases urine production, causing increase in frequency of urination  
• Slows ability to get to a bathroom |
| Alpha-agonists | Pseudoephedrine hydrochloride (Sudafed) | Cause urinary retention |
| Antianxiety and antidepressants | • Alprazolam (Xanax)  
• Amitriptyline (Elavil)  
• Desipramine (Norpramine)  
• Nortriptyline (Aventyl) | Impair ability of the bladder to contracting by slowing mobility, worsening symptoms of overflow and/or uncontrollable incontinence |
| Antipsychotics | • Haloperidol (Haldol)  
• Loxapine (Loxapac)  
• Risperidone (Risperdol)  
• Thioridazine (Mellaril)  
• Thiothixene (Navane) | May decrease awareness of the need to go to the bathroom, causing an abrupt urge to urinate |
| Caffeine | • Coffee, cola, tea  
• Some nonprescription headache remedies | Increases fluid output by increasing urine production |
Diuretics
- Furosemide (Lasix)
- Hydrochlorothiazide (HydroDiuril)
- Amiloride hydrochloride (Midamor)

Work in the kidney to reduce blood pressure by flushing excess water and salt from the body. May increase stress incontinence when coughing, sneezing, or laughing.

High blood pressure medications
- Prazosin (Minipress)
- Terazosin (Hytrin)
- Doxazosin maleate (Cardura)

Relax the urethral muscles, resulting in the leakage of urine.

Opioids
- Morphine

Slow mobility and worsen urge incontinence.

Sedatives
- Diazepam (Valium)
- Flurazepam (Dalmane)
- Lorazepam (Ativan)

Slow mobility and worsen urge incontinence.


Respiratory Changes

Normal aging results in a number of changes to the structure and function of the respiratory system. The table below outlines and summarizes these changes.

### AGE-RELATED CHANGES IN THE RESPIRATORY SYSTEM

<table>
<thead>
<tr>
<th>Respiratory Function</th>
<th>Pathophysiological 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>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>
</tbody>
</table>
### Control of ventilation
- Decreased responsiveness of central and peripheral chemoreceptors to hypoxemia and hypercapnia
- Decreased tidal volume (Vt)
- Increased respirator rate
- Increased minute ventilation

### Lung defense mechanism
- Decreased number of cilia
- Decreased effectiveness of mucous clearance
- Decreased cough reflex
- Decreased cellular immunity
- Decreased immunoglobulin A (IgA) that neutralizes viruses
- Decreased ability to clear secretions
- Increased susceptibility to infections
- Increased risk of aspiration

### Sleep and breathing
- Decreased ventilatory drive
- Decreased upper airway muscle tone
- Decreased arousal
- Increased frequency of apnea, hypoxemia, and arterial oxygen desaturation during sleep
- Increased risk of aspiration
- Snoring
- Obstructive sleep apnea

### 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)


Aging also impairs immune function, increasing asymptomatic low-grade inflammation and the risk of infection. These changes elevate the risk of pneumonia. In addition, older people are at increased risk for respiratory depression from medications, particularly from opioid analgesics. This risk is highest among patients with COPD, liver or renal failure, and adrenal insufficiency.
ASSESSMENT

Patients with respiratory illnesses such as pneumonia may experience new onset of symptoms such as:

- Chills
- Fever
- Chest pain
- Sweating
- Productive cough
- Dyspnea
- Confusion/delirium
- Weakness
- Shortness of breath

Assessment and diagnosis may be made through chest X-ray, blood tests, and sputum culture. A physical exam, swallow test, lung auscultation, and pulmonary function test are also common assessments for respiratory conditions (Mauk, 2014).

INTERVENTION

Interventions for patients with respiratory conditions include:

- Increasing fluid intake to 8 to 10 glasses of water a day (if not contraindicated) to soften lung secretions to ease removal (expectorate)
- Exercising within the patient’s capacity to promote thoracic muscle conditioning, utilizing pulmonary rehabilitation programs in the surrounding areas (generally managed by physical therapists or respiratory therapists)
- Avoiding smoking or second-hand smoke inhalation
- Practicing pursed-lip breathing to control breathlessness and improve oxygenation
- Monitoring pulse oximetry to assess oxygenation
- Eating frequent, small meals to reduce breathlessness associated with eating
- Assessing the home environment for potential safety hazards for those on oxygen
- Being alert for signs of confusion, headaches, and forgetfulness, as these may be indicative of carbon dioxide retention (Meiner, 2015)
Respiratory conditions such as COPD and pneumonia may be treated with oxygen therapy. In addition, a patient who has difficulty swallowing may need to take precautions when eating. Antibiotics may be needed to treat bacterial pneumonia. Adequate fluid intake is also important when faced with respiratory illnesses. Intravenous fluids may be indicated, depending on the condition of the patient (Mauk, 2014).

**PREVENTION**

Adults over the age of 65 are advised to receive a pneumonia vaccine as well as annual vaccination for influenza. Older adults at risk for aspiration should take precautions when eating to prevent aspiration pneumonia, and caregivers should watch for signs and symptoms of difficulty, including coughing while eating (Mauk, 2014).

**Endocrine Changes**

The endocrine system undergoes many changes during aging, and these changes affect other body systems and processes. This discussion is limited to the thyroid gland and the gonadal (sex) hormones.

Age-related changes in the thyroid gland affect almost all body functions and include the following:

- Decreased secretion and plasma levels of triiodothyronine (T₃), especially in men
- Increasingly common hypothyroidism
- Decreased secretion of thyroid-stimulating hormone (TSH)
- Decreased responsiveness of plasma TSH concentration to thyrotropin-releasing hormone (TRH), especially in men

**Hypothyroidism** is a common hypo-functioning endocrine state that results from an inadequate thyroid hormone release. The most sensitive indication of this disorder is based on the TSH and T₄ levels. Clinical symptoms of hypothyroidism in older adults are atypical as compared to those in younger individuals. Mild or early hypothyroidism may be underdiagnosed in older adults because the condition comes on insidiously and many of the clinical manifestations are also signs of aging: fatigue, cold intolerance, weight gain, muscle cramps, paresthesia, lethargy, and confusion (Meiner, 2015).

**Hyperthyroidism**, or thyrotoxicosis (abnormally high levels of T₄ or T₃), may be caused by Graves’ disease (an autoimmune disease) or by toxic multinodular goiter, thyroid adenomas, thyroid carcinoma, or amiodarone. Hyperthyroidism is characterized by a hypersecretion of thyroid hormones, which is usually associated with an enlarged thyroid gland. Some of the symptoms of this condition include heat intolerance, sweating, protruding eyeballs, irritability, restlessness, anxiety, tremors, and most notably, atrial fibrillation in the older adult population.
In fact, 27% of geriatric hyperthyroid patients present with atrial fibrillation that does not convert back to sinus rhythm even when a normal thyroid condition is achieved (Meiner, 2015).

The gonadal (or sex) hormones androgen and estrogen diminish with aging. Declining estrogen levels result in atrophy of the ovaries, uterus, and vaginal tissue in older women, which leads into menopause, a normal aging change for females, and also may make sexual intercourse painful. Older men may develop firmer testes and hypertrophy of the prostate gland, which then leads into andropause, a normal aging change for males (Meiner, 2015). These changes, together with other physical and psychosocial changes, may decrease sexual capacity. However, libido continues in both women and men. Although sexual activity may occur less often, it still can remain satisfying.

One of the ageist stereotypes that exists among care providers and institutions is that older people are no longer sexually active. Although serious illness or physical or mental health problems can take precedence over sexual needs, older adults typically do remain sexually active.

However, many barriers remain for the older male and/or female adult. A recent study found that 43% of female older adults actually experienced a low desire for sexual expression, 39% had a lack of vaginal lubrication, and 39% were unable to reach an orgasm. Among male older adults, erectile dysfunction was the most prevalent barriers and included 37% of the males studied (Meiner, 2015). Erectile dysfunction (ED) is defined as the inability to achieve and sustain a sufficient erection for sexual intercourse. The incidence of ED increases with age, but many options for treatment are available today (Mauk, 2014).

**SEXUALITY**

Society’s lack of understanding of sexuality of the older adult population and homosexuality is a double burden carried by aging homosexuals. As they age, compared with their heterosexual counterparts, lesbian, gay, bisexual, and transgender individuals tend to feel isolated, fear discrimination from healthcare providers, live alone, and do not have children to help with caregiving needs. Despite society’s prevailing stereotypes, it is important for nurses, physical therapists, occupational therapists, and other healthcare professionals to recognize that same-sex companionship is an acceptable expression of sexuality for both men and women (Meiner, 2015).

**ASSESSMENT**

Assessment of endocrine function includes a physical exam, patient history, blood tests to check hormonal levels, and assessment of patient symptoms. Sexual function may be assessed with a physical exam and patient-reported signs and symptoms (Mauk, 2014). In addition, libido may be affected by nonphysiologic causes including depression, stress, and other emotional concerns.
INTERVENTION

Endocrine conditions, such as hypothyroidism, may be treated with medications to replace the hormones that are deficient in the body. Correcting hypothyroidism in people over 60 requires a lower dose of replacement thyroid hormone than in younger people. Replacement should be initiated slowly, particularly in those with coronary artery disease, to prevent angina and myocardial infarction.

Treatment options for ED in men include oral medications, vacuum pump devices, penile implants, and drugs injected into the penis. Many oral medications are contraindicated in patients who have baseline cardiac conditions, since they can increase their risk for myocardial infarction. Women may want to explore vaginal creams, gels, and lubricants to increase comfort during intercourse (Mauk, 2014).

HEALTH MAINTENANCE

Patients who are experiencing changes in endocrine function should have regular assessments, especially with existing chronic conditions that involve glandular functions (e.g., diabetes, thyroid problems, and prostate changes). Maintaining a healthy lifestyle, good nutrition, and close monitoring of blood tests to be aware of any changes are important.

For men, causes of ED may be many, including diabetes, hypertension, thyroid disorders, alcoholism, and depression. Lifestyle changes to decrease risk factors for ED include the following:

- Smoking cessation
- Exercise
- Healthy weight
- Proper nutrition
- Alcohol in moderation
  (Mauk, 2014)

AGING AND HIV/AIDS

Stereotypes about aging and sexuality also may cause health professionals to overlook the possibility of HIV/AIDS among older patients and may put such patients at risk for transmission of the disease. The prevalence of HIV disease among older adults is increasing because more people are now living into their 60s with HIV managed as a chronic condition. HIV infection is an underrecognized problem among the older adult population: 31% of individuals living with HIV and 17% of newly diagnosed cases are in those over the age of 50.
In older adults, research has found that:

- A diagnosis of HIV infection is more likely to be followed by a diagnosis of AIDS within 12 months compared to younger persons.
- The estimated number of new diagnoses of HIV and AIDS has increased among those 65 years and older.
- Sexual activity is more prevalent among HIV-positive older adults who were not cognitively impaired and considered themselves to be in good health.
- 30% of HIV-infected older adults who were sexually active have unprotected sex. (CDC, 2017c; Meiner, 2016)

Many people believe that the incidence of acquired immunodeficiency syndrome (AIDS) in the older adult is attributed to blood transfusions. However, the spread of HIV and AIDS in the older adult population is attributed to heterosexual transmission and intravenous drug use. Only a small proportion of older adults participating in risky sexual behavior reported the use of condoms (Meiner, 2015).

This finding has major implications for healthcare professionals, especially in the area of patient education and assisting patients in creating and sustaining intimate relationships. It is vital that the healthcare professional conducting an initial assessment of an older adult patient complete a sexual history and discuss HIV and risk behaviors for acquiring HIV, the need for teaching and learning in the proper use of condoms, and how and when to get tested for HIV.

Medicare and Medicaid now reimburse for HIV infection screening for beneficiaries of any age who voluntarily request the service. However, physicians and other healthcare workers may fail to ask patients about unprotected sex or to offer voluntary HIV testing. The result can be delayed diagnosis of HIV/AIDS in older adults because symptoms can mimic those of normal aging, such as fatigue, weight loss, forgetfulness, and/or confusion.

**Gastrointestinal Changes**

Gastrointestinal (GI) changes begin in middle age and continue throughout life, affecting not only nutritional intake but also quality of life. Gastrointestinal function begins in the mouth, and aging takes its toll on teeth, gums, and salivary glands. Years of use wear down tooth enamel and dentin, increasing the risk of cavities. Periodontal (gum) disease leads to tooth loss and the need for dentures or dental implants. Dentures can limit the choice of food, and ill-fitting dentures make eating painful. Aging and some medications decrease salivary secretions, which makes food more difficult to chew and swallow.

Gastric motility and volume decrease with age. Secretion of bicarbonate and gastric mucus decline and the acidity of gastric juices diminishes, leading to insufficient hydrochloric acid and delayed gastric emptying. Nutrients such as proteins, fats, minerals, and carbohydrates
(particularly lactose) are absorbed more slowly. The effects of these changes can be offset by small frequent meals rather than “three square meals a day.”

Constipation is often deemed an age-related problem. However, several factors may contribute to constipation in older adults. These factors include long-established bowel habits, inadequate dietary fiber and/or fluid intake, and inactivity or immobility.

The liver, pancreas, gallbladder, and bile ducts are also part of the gastrointestinal system. In healthy older adults, the altered function of these organs generally does not interfere with digestion. Even though the liver decreases in size and weight, liver function remains within normal range. Decreases in liver blood flow can have a negative effect on the oxidative metabolism of certain medications. Although pancreatic secretion decreases with age, there is generally no obvious dysfunction. Gallbladder and bile duct function remain largely unchanged except in the presence of gallstones, the incidence of which increases in older people.

**ASSESSMENT**

Patients with GI symptoms may be evaluated with a variety of assessment techniques including physical exam, patient history, and blood and diagnostic tests. Upper and lower GI diagnostic exams with endoscopy can evaluate the esophagus, stomach, and duodenum. Patients should be encouraged to report any new GI symptoms to their healthcare team for early assessment and intervention (Mauk, 2014).

**INTERVENTION**

Lifestyle and dietary modifications as well as medications may be indicated for treatment of constipation. Adequate fluid intake, routine bowel habits, good nutrition, and regular exercise can all contribute to improvement of constipation. Stool softeners may be indicated for patients who have limited mobility or are at risk for constipation due to medications.

**PREVENTION**

Older adults can prevent GI problems and constipation by maintaining a healthy diet and adequate fluid and fiber intake. Patients who are on medications that put them at higher risk for constipation (e.g., calcium and iron) may need to take countermeasures to prevent constipation (Mauk, 2014).

**Sensory Changes**

Sensory changes in later life affect how people perceive and experience the world and can have an enormous impact on independence, safety, and quality of life. All five senses—vision, hearing, taste, smell, and touch—diminish in acuity with age.

**Vision** changes generally begin in middle age, and most adults need glasses or contact lenses for reading because of presbyopia by age 50. Older adults also may experience increased sensitivity
to glare, dry eyes, impaired night vision, and reduced color discrimination. People age 40 or older are also at risk of serious eye conditions that can lead to low vision or blindness if not diagnosed or treated early.

The most common of these conditions are age-related macular degeneration (AMD), glaucoma, cataracts, and diabetic retinopathy (Tabloski, 2014). Approximately 2 million adults ages 40 and older have AMD, over 2.5 million have glaucoma, over 24 million adults have cataracts, and over 7 million have diabetic retinopathy. The incidence of serious eye diseases varies among racial groups. The leading cause of blindness among white older Americans is AMD, predominantly in women. Among African Americans, the leading causes of blindness are cataract and glaucoma. Among Hispanics, glaucoma is the most common cause of blindness (Meiner, 2015).

Adequate vision is essential to safety and quality of life. Visual problems can lead to a loss of ability to perform instrumental activities of daily living (e.g., self-care, driving, navigating in the home), social isolation, depression, and a decrease in quality of life. Visual impairment also increases the risk of falls, which in turn may cause fractures requiring hospitalization and rehabilitation (Tabloski, 2014).

**Hearing** changes can have a major impact on independence, safety, and quality of life. Approximately 17% (36 million) American adults have some degree of hearing loss, and 30% of adults 65 years and older have some type of hearing impairment. It is estimated that only 1 in 5 older adults who could benefit from a hearing device actually wears one. Even though a strong correlation exists between aging and hearing loss, the National Institutes of Health declare that hearing loss is not a normal part of the aging process and should be further evaluated for proper treatment (Meiner, 2015).

Diabetes appears to be an independent risk factor for hearing impairment (Tabloski, 2014). In later life the eardrum may thicken, decreasing its ability to transmit sounds.

Hearing impairment can limit social interaction, increase the risk of depression, and compromise safety. If the patient reports difficulty in hearing or understanding conversations, watching TV, or watching movies, use of the whisper test can quickly confirm the need for referral to an audiologist for more precise testing and prescription of an amplification device (hearing aid). To perform the whisper test, the clinician stands 6 to 12 inches behind the patient and whispers several short sentences. If the patient cannot hear and understand, an audiology referral may be recommended (Tabloski, 2014).

**Taste** and **smell** senses are there to detect the aesthetics and safety of the environment. The number of taste buds declines with age, as does the sense of smell, diluting the intensity of flavors and possibly leading to loss of appetite. Loss of taste and smell may affect an older person’s food choices and intake, subsequently impairing nutritional and immune status, which may exacerbate disease states. Taste and smell changes related to aging can reduce the pleasure of eating and can silence an early warning system. For example, taste allows individuals to detect sour milk, and smell serves as a warning sign for the smoke of a fire or a natural gas leak (Meiner, 2015).
The cause of taste changes in normal aging is not fully understood. Studies have shown that taste losses result from anatomic losses in the structures of the nervous and endocrine systems, nutritional and upper respiratory conditions, viral infections, and medications. Beginning in the early 60s, a decreased sense of taste is often noticed. By age 70, a severe loss is typical (Meiner, 2015). Loss of taste may also be due to head injury, middle ear surgery, or radiation therapy for cancers of the head and neck.

**Touch** is the most developed sense at birth and provides each individual with a fundamental means of contact with the external world. It is the oldest, most important, and most neglected of our senses. Studies have shown touch to be 10 times stronger than verbal or emotional contact. All other senses have an organ on which to focus, but touch is everywhere. It is known that people can survive without one or more of the other senses, but no one can survive and live in any degree of comfort without touch (Touhy & Jett, 2016).

However, as the aging process ensues, sensitivity to light touch diminishes in the older adult and may be related to a decreased density of cutaneous receptors for touch sensation. Changes during aging decrease an individual’s awareness of vibrations, pain, pressure, and temperature. These changes are caused by both internal and external factors and can affect both physical and mental health.

- **Internal factors** include circulatory and neurological deterioration, confusion or dementia, and immobility. The most common disorders affecting touch sensation in the aging include strokes (cerebral vascular accident), peripheral vascular disease, and diabetic neuropathy. The common thread among these disorders is the alteration of peripheral tissue perfusion (Meiner, 2015).

- **External factors** affecting touch include nutrition, medications, alcoholism, brain surgery, and personal losses. Older people who live alone and those with limited incomes may have more than one nutritional deficiency, either related to lack of appetite, mobility problems, or lack of financial resources. Excessive alcohol consumption also leads to deficiencies in thiamin and other nutrients.

Coupled with vision impairment, peripheral neuropathy can prevent older people from noticing foot infections or discolorations. Peripheral neuropathies also lead to falls and gait disorders, which can contribute to loss of autonomy and independence.

The inability to interpret temperature sensation increases the risk of thermal injuries (burns, hypothermia, and frost bite). Diminished pressure sensation can result in pressure ulcers in patients unable to change position frequently. Reduced hand sensitivity may cause older people to drop objects such as glassware or other breakable items, and cleaning up the breakage may lead to injury.

<table>
<thead>
<tr>
<th>CASE</th>
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<tbody>
<tr>
<td><strong>Agnes Miller</strong>, 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...</td>
</tr>
</tbody>
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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 and learned about the missing glasses and hearing aid. By contacting Agnes’s neighbor, she 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.

ASSESSMENT

Anyone with a family history of eye disease or who has diabetes and/or hypertension is at high risk of serious eye diseases. To prevent or delay serious eye disease, the American Academy of Ophthalmology recommends that people age 65 or older have an annual comprehensive eye examination.

AGE-RELATED MACULAR DEGENERATION (AMD)

Age is the primary risk factor for AMD. Because women live longer than men, AMD is more prevalent among women. Aside from age, gender, and race, other risk factors for AMD include smoking, obesity, increased exposure to ultraviolet light, light-colored eyes, hypertension or cardiovascular disease, poor intake of antioxidants and zinc, and family history.

Symptoms of AMD include:

- Difficulty performing tasks that require close central vision, such as reading and sewing
- Words on a page looking crooked
- Lines or edges that appear wavy or distorted
- Blurry faces or difficulty seeing colors
- Dark or empty spaces that block the center of vision
- Difficulty reading fine print or reading road signs from a moving vehicle
- Difficulty seeing at a distance or during twilight hours

INTERVENTION

Age-related visual impairment (presbyopia) is most often corrected by prescription eyeglasses or by contact lenses. Patients should be aware that eyeglasses need to be cleaned daily, rinsing with water or special eyeglass solution and wiping each lens with a soft cloth. Improved lighting (brighter, but using frosted bulbs and lampshades to reduce glare) can also compensate for visual impairment. For example, a 70-year-old needs twice as much light to read or sew as a 35-year-old.

The treatment of low vision can include conditions such as macular degeneration, glaucoma, diabetic retinopathy, and normal age-related vision loss. Dealing with visual loss can make it difficult to complete daily tasks. Some activity tips to promote productive aging with older adults with low vision may include:

- Color contrasting various areas for easier identification of transitions or hazards in the home
- Maintaining good lighting in pathways and stairways
- Using labels and various other organizational methods to identify small items
- Keeping commonly used items in easy-to-access locations
- Avoiding moving quickly into a dark room or lighted area; giving the eyes time to adjust to changing light levels
- Using large-print books, checkbooks, or magnifying glasses for reading
- Encouraging the use of low-vision aids (Meiner, 2015)

Some types of hearing loss can be corrected by hearing aids worn in or behind the ear. These devices amplify sounds but may prove to be a challenge in crowded rooms or public places because it can be difficult to separate what one wants to hear from other sounds. In most cases, hearing aids for both ears are advisable. If hearing loss cannot be corrected with conventional hearing aids, cochlear implants may be indicated for some patients (Tabloski, 2014).

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

Older adults should continue to practice health habits to preserve their sight and hearing. A few preventive measures include the following:
- Protecting the eyes from sunlight with sunglasses (wrap-around style)
- Eating a healthy balanced diet (especially high in fresh fruits, vegetables, and antioxidants)
- Protecting the ears from loud noises by wearing protective devices
- Participating in eye and hearing screening exams in order to monitor and detect any changes with early interventions
  (Mauk, 2014)

### 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 a person likes and wants to be touched. For legal as well as privacy reasons, many Americans have shied away from touching. However, to older individuals experiencing touch deprivation, the social rules that govern touch may be devastating. 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.


### Nutritional Changes

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

### ASSESSMENT

Functional assessment of nutrition in the older adult involves both physical and psychological factors as well as the type and quantity of food eaten. Is the patient able to bite, chew, and swallow properly? Edentulous patients may be greatly restricted in the types of food they can
chew, either because they do not or will not wear their dentures or because the dentures do not fit properly, perhaps because of recent weight loss. Infected teeth or missing teeth also interfere with eating well, particularly fresh fruits and vegetables (Tabloski, 2014).

Do patients have sufficient financial, educational, visual, and neurologic resources to shop and prepare nutritious, well-balanced meals? Have they lost interest in food because the meals at the long-term care facility are not appealing? Have they recently lost or gained a significant amount of weight (5% or more in 30 days, 10% or more in 180 days)?

Older adults at greatest risk for nutritional deficiencies are those with less education, low income, or who live alone or in long-term care facilities.

Chronic disease (including depression or dementia), use of three or more prescribed or over-the-counter medications, and age over 80 further increase the risk of nutritional deficiencies. Older adults who live alone or in long-term care are at particular risk for malnutrition, especially protein-calorie malnutrition. Malnutrition can also cause blood clots, pressure ulcers, and poor wound healing and can worsen mental confusion and dementia (Tabloski, 2014).

The warning signs for poor nutrition can be assessed using the mnemonic **DETERMINE**. They include:

<table>
<thead>
<tr>
<th>THE DETERMINE SCREEN</th>
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</thead>
<tbody>
<tr>
<td>D  Disease</td>
</tr>
<tr>
<td>E  Eating poorly</td>
</tr>
<tr>
<td>T  Tooth loss/mouth pain</td>
</tr>
<tr>
<td>E  Economic hardship</td>
</tr>
<tr>
<td>R  Reduced social contact</td>
</tr>
<tr>
<td>M  Multiple medicines</td>
</tr>
<tr>
<td>I  Involuntary weight loss/gain</td>
</tr>
<tr>
<td>N  Needs assistance in self-care</td>
</tr>
<tr>
<td>E  Elder years, above age 80</td>
</tr>
</tbody>
</table>


**PREVENTION/HEALTH MAINTENANCE**

Older people need more of certain nutrients, such as protein, calcium, and vitamin D, than younger adults in order to maintain muscle strength and bone health.

**Protein**

The USDA Dietary Guidelines (2015) recommend a protein intake of 46 grams for females over the age of 50 based on a 1,600-calorie diet, and of 56 grams for males over
the age of 50 based on a 2,000-calorie diet. Meat, fish, dairy, eggs, beans, and soy products are all good sources of protein. Protein is particularly important for women because it is more difficult for women than for men to replace age-related lost muscle mass (Tabloski, 2014).

Higher protein consumption, particularly animal protein, as a fraction of total caloric intake is associated with a decline in risk of frailty in older adults. Those older individuals who are ill are the most likely segment of society to experience protein deficiency, which may affect their ability to shop, cook, and consume food thereby put them at greater risk for protein deficiency and malnutrition (Touhy & Jett, 2016).

**Vitamin D and Calcium**

Calcium and vitamin D are essential for bone health and reducing the risk of falls. Many older adults do not get enough of either in their diets. Vitamin D insufficiency is highly prevalent among older adults and is associated with increased risk of bone loss, fracture risk, and other chronic conditions (Tabloski, 2014).

A primary source of vitamin D is from exposure to sunlight, but in northern climates, especially in the winter, sun exposure is limited. Food sources of vitamin D include vitamin D–fortified dairy milk or soy milk; fish such as salmon, mackerel, and sardines; and some fortified cereals. However, it may be difficult to get enough vitamin D from food, so supplements are recommended.

The National Institute of Health (NIH, 2017) provides the following recommendations for vitamin D:

- Ages 50–71: At least 600 IU but not more than 4,000 IU daily
- Ages 70 and older: At least 800 IU but not more than 4,000 IU daily

Calcium deficiency in older adults is not uncommon because many have lactose intolerance and thus avoid milk and other dairy products as sources of calcium. The NIH (2017) provides the following recommendations for calcium:

- Women ages 51 years and older: 1,200 mg daily
- Men ages 51–70 years: 1,000 mg daily
- Men ages 71 and older: 1,200 mg daily

Sources of calcium other than dairy products include tofu; dark green leafy vegetables (i.e., collard greens and kale); and fortified foods (i.e., tomato, orange, and other fruit juices and certain cereals). However, calcium supplements may be necessary to reach the recommended amount in the diet. Caffeine interferes with the absorption of calcium, so calcium supplements should be taken at least two hours before or after consuming caffeinated food or beverages (chocolate, coffee, tea, soft drinks).
A study conducted for the NIH (Bolland et al., 2015) concluded that over the past decade, recommendations have changed from encouraging the widespread use of calcium supplements to recommending that they not be used for primary prevention of fractures in particular. This shift has occurred as a result of only marginal antifracture efficacy due to calcium supplements versus important adverse effects such as cardiovascular risk, especially in the older adult population.

Folate, Niacin, and Zinc

Malnourished older adults may also be deficient in folate, niacin (vitamin B3), and zinc (Tabloski, 2014). Folate is essential to the synthesis of new cells. Gastrointestinal problems such as irritable bowel syndrome may interfere with folate absorption. Alcoholics have a high risk of folate deficiency because alcohol damages the gastrointestinal tract. The recommended dietary allowance (RDA) of folate for older adults is 400 micrograms daily. Food sources include dark green leafy vegetables (i.e., spinach), beans and peas, fruit such as oranges or orange juice, and fortified flour and cereals (NIH, 2017).

Niacin promotes nervous system function and acts as a coenzyme in energy metabolism. It is sometimes used to treat high cholesterol. Deficiency in niacin can cause skin flushing. Another more serious condition caused by niacin deficiency is pellagra, characterized by dermatitis, diarrhea, and dementia; untreated, it can result in death. Excess niacin can cause liver damage, gastric ulcers, low blood pressure, nausea, and vomiting. Therefore, niacin should only be used under a physician’s care because of the potential for severe side effects.

The RDA for niacin is 14 mg for women and 16 mg for men. Food sources for niacin include all protein foods (i.e., meat, fish, poultry, and eggs), whole grains, enriched breads, and cereals (NIH, 2017).

Zinc is a trace metal that promotes tissue growth and wound healing, protects immune function, provides vitamin A transport, and supports the sense of taste. Zinc deficiency can cause hair loss, diarrhea, delayed wound healing, taste abnormalities, and mental lethargy. Too much zinc can cause anemia, elevated LDL cholesterol, lowered HDL cholesterol, diarrhea, vomiting, impaired calcium absorption, fever, renal failure, muscle pain, and dizziness.

Many people take zinc to ease the symptoms of a common cold, but its efficacy is controversial, with some studies suggesting zinc can speed recovery from colds and yet others concluding it does not work at all. Some studies show that combining antioxidants and zinc reduces the risk of advanced age-related macular degeneration, however this has not yet been universally accepted.

The RDA for zinc is 11 mg for older men and 8 mg for older women. Food sources for zinc include oysters and other seafood, red meat, poultry, eggs, dried peas and beans, nuts, whole grains, fortified breakfast cereals, and dairy products (NIH, 2017).
Vitamins B6, B12, and E

Vitamins B6 (pyridoxine) and B12 protect the nervous system, including memory and reasoning ability. They also decrease levels of homocysteine, which may reduce the risk of heart disease and Alzheimer’s disease. The vital part B6 plays in healthy body maintenance is in the manufacture of red blood cells and strengthening of the immune system. Vitamin B12 is essential for keeping nerves and red blood cells healthy. These two vitamins work in synergy to maintain the health of the body (NIH, 2017).

Absorption of B6 and B12 is impaired in older people due to age-related changes in the digestive system. With B12 as many as 35% of individuals over 50 do not absorb enough of the vitamin from diet alone, and this can lead to neurological and balance problems, including unsteady gate, muscle weakness, slurred speech, and psychosis (Tabloski, 2014). Therefore, supplementation is generally necessary. However, too-high doses of these two supplements may cause nerve damage, numbness, and difficulty walking.

The RDA for vitamin B6 is 1.7 mg for older men and 1.5 mg for older women. The RDA for B12 is 2.4 micrograms for women and men. Food sources for B6 include beans, nuts, eggs, and whole grains; and for B12 include fish, shellfish, meat, and dairy products (NIH, 2017).

Vitamin E includes a family of eight antioxidants, but alpha-tocopherol is the only form of vitamin E considered active in the body. Vitamin E protects cells from damage and may also have a role in anti-inflammatory processes, inhibition of platelet aggregation, and immune enhancement. Other benefits include visual benefits, such as decreasing the risk of cataract formation and macular degeneration (NIH, 2017). Research on vitamin E’s benefits has produced conflicting results, however some studies have shown that vitamin E may reduce the risk of developing cancer, heart disease, and other chronic illnesses; eye disorders; and cognitive decline. Further research is needed.

Vitamin E deficiency is linked with immune system dysfunction and physical decline in older adults, including impaired balance and coordination (ataxia), peripheral neuropathy, and muscle weakness. Older adults with these symptoms should be screened for vitamin E deficiency. Food sources of vitamin E include vegetable oils (walnut, sunflower, cottonseed, safflower, and canola), nuts, fruits, and green leafy vegetables.

The RDA for vitamin E is 15 mg for both men and women. The upper tolerable limit of vitamin E is 1,000 mg per day. Care should be taken if older adults are taking high-dose supplements of vitamin E (>1,000 mg/day), since this can put them at risk for bleeding, stroke, and prostate cancer (NIH, 2016). The effects are even stronger if the patient is taking anticoagulants or the herb ginkgo biloba (Tabloski, 2014).
MYPLATE FOR OLDER ADULTS

The 2016 MyPlate for Older Adults was introduced by the U.S. Department of Agriculture Human Nutrition Research Center on Aging at Tufts University, with support from AARP Foundation. This version of MyPlate represents and emphasizes the unique nutritional and physical needs of older adults in a framework illustration of the 2015–2020 Dietary Guidelines for Americans from the U.S. Department of Health and Human Services and the U.S. Department of Agriculture (Gallagher, 2016; U.S. DHHS/USDA, 2015).

MyPlate for Older Adults features images of fruits and vegetables, healthy oils, herbs and spices, grains, dairy, protein, and fluids that are convenient, affordable, and readily available for older adults. Its colorful plate images are designed to encourage older Americans to follow a healthy eating pattern bolstered with physical activity. The plate is composed of approximately:

- 50% fruits and vegetables
- 25% grains, many of which are whole grains
- 25% protein-rich foods such as nuts, beans, fish, lean meat, poultry, and fat-free and low-fat dairy products such as milk, cheeses, and yogurt

(See also “Resources” at the end of this course.)

Source: Gallagher, 2016.

Sleep Changes

Sleep alterations are common among older adults. Age related changes in sleep include:

- Increased sleep latency (a delay in the onset of sleep)
- Reduced sleep efficiency (the relative time in bed actually asleep; the percentage of time for younger adults is 90% asleep and for older adults, 75%)
- Increased nocturnal awakening (trips to the bathroom, dyspnea, arthritic pain, coughing, snoring, leg cramps, restless leg syndrome, and noise)
- Increased early morning awakenings (due to inability to fall back asleep or to changes to the circadian rhythm or to any of the reasons listed in nocturnal awakening)
- Increased daytime sleepiness (may be caused by awakenings at night, cognitive dysfunction, or may not indicate anything pathological, just tired)

(Meiner, 2015)

Older adults tend to sleep more lightly and for shorter time spans, but they generally need about the same amount of sleep as they needed as a young adult (7 to 8 hours a night), although it may not be as efficient (Tabloski, 2014). Sleep deprivation is a more serious problem for older adults...
than for younger people. Experimental research shows that sleep deprivation may impair immune function, memory, and physical performance. Extreme sleep deprivation can cause hallucinations and mood swings.

There are five phases (stages) of sleep: 1) dozing, 2) light sleep, 3) deep sleep, 4) deepest sleep, and 5) periods of deep sleep with rapid eye movements (REM), during which people dream. A normal sleep cycle includes four or five REM periods during the night, which together account for about one fourth of the total night’s sleep. With age, the percentage of REM sleep remains about the same, but there is a marked reduction in stages 3 and 4 sleep, plus an increase in wakeful periods (Tabloski, 2014).

Other factors that can interfere with sleep in older people include:

- Sleep apnea
- Anxiety
- Medications
- Caffeine
- Alcohol
- Smoking
- Thyroid disorders

**ASSESSMENT**

Assessment of sleep is important to the overall care of older adults. Assessment of the onset, duration, and severity of symptoms along with any previous treatments for sleep issues should be determined. Risk factors for sleep disturbances should be identified, including the following:

- Personal or family history of sleep issues (e.g., sleep apnea)
- Obesity
- Smoking
- Hypertension
- Depression
- Pain
- Equipment (i.e., Foley catheter, CPAP)

Older adults may want to keep a sleep diary to record their evening activities, nighttime routine, and quality of sleep. Assessment of the sleep diary may indicate areas that can be addressed in order to improve sleep habits and quality of sleep. A review of medications, herbal supplements,
caffeine, nicotine, and alcohol intake is also important, since some medications and substances can interfere with sleep routines (see above). A diagnostic sleep study may also be indicated if the patient has symptoms of obstructive or central sleep apnea (Mauk, 2014).

INTERVENTION

A regular nighttime routine is important to maintaining adequate sleep. Healthy sleep hygiene includes keeping a regular sleep and wake schedule, limiting exercise and stimulants in the early evening, and keeping a quiet, comfortable sleep environment.

Medications prescribed to promote sleep (e.g., benzodiazepines) increase sleep time and decrease the time needed to fall asleep and the periods of wakefulness. When sleep medications are stopped, however, individuals may experience withdrawal symptoms, including nightmares.

The increased use of electronic devices on a regular basis may also have an effect on sleep. The use of electronic readers, smartphones, and computers in the evening hours exposes people to artificial light and stimulates mental activity that affects the brain’s ability to “shut down” for sleep.

Antidepressants decrease REM sleep, which may improve symptoms of some depressions and worsen others. However, antidepressants increase the risks of falls. Therefore, interventions to relieve insomnia in older adults should begin with nonpharmacologic measures such as regular exercise, exposure to bright light in the morning, and avoiding caffeinated beverages.

Patients diagnosed with sleep apnea may need to sleep with a continuous positive airway pressure (CPAP) device and should keep a regular routine of use. Regular maintenance of the machine and evaluation of its effectiveness are also important considerations.

HEALTH MAINTENANCE

Adequate sleep can be maintained with good sleep habits and a healthy lifestyle. Attention to new medications and changes in daily routine are important to consider if the patient notices changes or a new onset of insomnia. Older adults may want to also explore mind-body techniques such as guided imagery or other relaxation techniques to promote onset of sleep.

COGNITIVE CHANGES OF AGING

The brain and nervous system comprise a network of complex structures that undergo many neurophysiological changes over a lifetime. Each unique individual’s lifestyle, nutritional intake, genetic makeup, and tissue perfusion are some of the many factors that affect the neurologic system.
Reversible Forms of Confusion

It is not uncommon to have fleeting moments of confusion at one time or another. People may lose sense of direction when traveling in an unfamiliar city, be confused when waking up in the hospital after a serious car accident, or become disoriented after hearing the news of a death in the family.

Most times, at a young age, or even when middle-aged, confusion is considered temporary and reversible. 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. Careful assessment is needed to avoid misdiagnosis and thereby perpetuate the state of confusion. Health professionals need to assume that confusion may be reversible, particularly confusion of sudden onset, and seek the possible causes (Tabloski, 2014).

<table>
<thead>
<tr>
<th>CAUSES OF REVERSIBLE CONFUSION</th>
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<tbody>
<tr>
<td><strong>Systemic problems</strong></td>
</tr>
<tr>
<td>• Hypoxia</td>
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<tr>
<td>• Hypoglycemia</td>
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<tr>
<td>• Hyperglycemia</td>
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<tr>
<td>• Dehydration and fluid/electrolyte imbalance</td>
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<td>• Hypercalcemia</td>
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<td>• Hypocalcemia</td>
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<td>• Hyperthermia</td>
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<td>• Hypotension</td>
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<tr>
<td>• Drug-related intoxications</td>
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<tr>
<td>• Ethanol intoxication or withdrawal</td>
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<tr>
<td>• Pernicious anemia</td>
</tr>
<tr>
<td>• Pellagra (niacin deficiency)</td>
</tr>
<tr>
<td>• Stress</td>
</tr>
<tr>
<td>• Fecal impaction</td>
</tr>
<tr>
<td>• Febrile status from urinary tract infection</td>
</tr>
<tr>
<td>• Vitamin B_{12} deficiency</td>
</tr>
</tbody>
</table>
Mechanical problems

- Obstruction to cerebral blood flow
- Increased intracranial pressure
- Brain cell death or loss
- Metabolic changes (e.g., high temperature, kidney failure)

Sensori-perceptual problems

- Sensory deprivation related to vision or hearing impairment
- Sensory overload in noisy, crowded settings
- Lack of variety, lack of personal contacts, and lack of meaning, especially in institutional settings
- Relocation/transfer from familiar surroundings to unfamiliar surroundings

Sources: Tabloski, 2014; Meiner, 2015.

Delirium is an acute or subacute state of confusion with rapid onset (usually hours to days) characterized by inability to focus, clouding of consciousness, disorientation, memory impairment, incoherent speech, and perceptual disturbance with a worsening of symptoms at night. Delirium can be caused by serious illness such as an infection, sleep deprivation, coronary ischemia, hypoxemia, fever, hypothermia, toxic-metabolic conditions, medication interactions, use of restraints, use of intravenous lines or urinary catheters, intracranial lesions, trauma, sensory deprivation, alcoholism, or stress. It is believed that delirium most often results from the interaction of predisposing factors as have been mentioned. Delirium is not unusual in older adult hospitalized patients, especially patients who have had anesthesia with surgery or who have an existing diagnosis of dementia (Touhy & Jett, 2016).

ASSESSMENT

The Mini–Mental State Examination (MMSE) is one of a number of screening tools for cognitive status (impairment and dementias). It measures an individual’s mental functions: orientation, attention and focus, recall, and language. The tool has been revised into a brief 16-item instrument and takes between 10 and 15 minutes (Touhy & Jett, 2016).

The highest possible score is 30 points. Those who score less than 25 need further evaluation for possible AD or other dementias, depression, delirium, or schizophrenia. A score of 21 or less generally indicates cognitive impairment requiring further investigation (Meiner, 2015).

MINI–MENTAL STATE EXAMINATION

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Orientation to</td>
<td>10</td>
<td>• The patient is asked to provide information on the time (e.g., year,</td>
</tr>
<tr>
<td>time and place</td>
<td></td>
<td>season, month, date, and day of week). (1 point each)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The patient is asked to provide information on the present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>location (e.g., state, county, city, hospital, and floor). (1 point</td>
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<td></td>
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<td>each)</td>
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</table>
### Mild Cognitive Impairment (MCI)

Mild cognitive impairment is a transitional state between the normal cognitive changes of aging and the development of Alzheimer’s disease or other dementias. Two subtypes of MCI have been established: amnestic MCI is characterized by memory problems; nonamnestic MCI affects cognitive functions other than memory, such as language, attention, critical thinking, reading, and writing. Experts estimate that MCI may affect more than 18% of the population over age 65. People diagnosed with MCI are at increased risk of developing AD or other dementias (Petersen et al., 2014).

Researchers at the Mayo Clinic found that MCI was more prevalent in men than in women, and more than twice as many of the study participants had the amnestic form of MCI. Prevalence of MCI was higher among those with the APOE e4 gene, a known risk factor for late-onset Alzheimer’s. More years of education was associated with decreased prevalence of MCI. Being single was associated with higher prevalence of MCI compared with being currently or formerly married (Petersen et al., 2014).

The American Academy of Neurology established the following criteria for an MCI diagnosis:

- An individual’s self-report of memory problems, preferably confirmed by another person
- Measurable, greater-than-normal memory impairment detected with standard memory assessment tests
- Normal general thinking and reasoning skills
- Ability to perform normal daily activities

Ongoing research on MCI suggests that earlier treatment with drugs approved for AD may slow its progression to AD. A three-year, placebo-controlled clinical trial of more than 750 patients with amnestic MCI showed that donepezil (Aricept) reduced the risk of developing AD during

<table>
<thead>
<tr>
<th>2. Registration</th>
<th>3</th>
<th>The patient is asked to repeat three named prompts (apple, table, penny). (1 point each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Attention and calculation</td>
<td>5</td>
<td>The patient is asked to spell <em>WORLD</em> backwards. (Points given up to first misplaced letter, e.g., 2 points for “DLORW”)</td>
</tr>
<tr>
<td>4. Recall</td>
<td>3</td>
<td>The patient is asked to recall the three objects memorized in “registration” above. (1 point each)</td>
</tr>
<tr>
<td>5. Language</td>
<td>2</td>
<td>The patient is asked to name two objects when they are displayed (pencil and watch). (1 point each)</td>
</tr>
<tr>
<td>6. Repetition</td>
<td>1</td>
<td>The patient is asked to speak back a phrase (“No ifs, ands, or buts”). (1 point)</td>
</tr>
<tr>
<td>7. Complex commands</td>
<td>6</td>
<td>The patient is asked to follow complex commands, which may involve drawing a shown figure. (6 points)</td>
</tr>
</tbody>
</table>
the first year (Petersen et al., 2014). However, by the end of the three-year study, the risk was the same as those in the placebo group. Nevertheless, delaying the progression to AD by a year represents a significant reprieve for both patients and caregivers in terms of maintaining function and quality of life as well as reducing healthcare costs.

Additional nonpharmacologic strategies that have been studied and shown to be helpful include cognitive training and aerobic exercise. However, to date the studies have involved small sample sizes and need to be replicated (Petersen et al., 2014).

**Alzheimer’s Disease (AD)**

Alzheimer’s disease was first described by Dr. Alois Alzheimer in 1906. Alzheimer’s disease is an irreversible brain disorder that gradually erases memory, thinking, understanding, and sense of self. Over time, as neurons die in widespread areas of the brain’s cerebral cortex, mild sporadic memory loss evolves into severe cognitive dysfunction as well as behavior and personality changes and, eventually, loss of physical function. The course of the disease and the rate of decline vary from person to person. On average, clients with AD live for 8 to 10 years after diagnosis but may live as long as 20 years.

Approximately 5 million older adults in the United States have a type of dementia or neurocognitive disorder, the majority of which are due to AD. By 2050 this number is expected to rise to 16 million. The incidence of AD increases dramatically with age—from 5% of those between 65 and 75 to 50% of those 85 and older (Touhy & Jett, 2016).

Research has found distinct ethnic and racial differences among persons with AD. A genetic connection has been identified, linking African Americans to about twice the risk of developing AD as compared to their white American counterparts. Individuals that self-identify as Hispanic are 1-1/2 times more likely to develop AD as white Americans, but no genetic link has yet been identified to explain this (Touhy & Jett, 2016).

Although the risk of developing AD increases with age, AD and other dementia symptoms are not a part of normal aging but the result of diseases that affect the brain. In the absence of disease, the human brain can function well into the tenth decade of life.

Alzheimer’s disease is just one of a group of disorders called neurocognitive disorders or dementias (Touhy & Jett, 2016), which are characterized by progressive cognitive and behavioral changes. Symptoms commonly appear after age 60, beginning with loss of recent memory, followed by faulty judgment and personality changes. People in the early stages of AD often think less clearly and may be easily confused.

In progressive stages of the disease, people with AD may forget how to manage activities of daily life. In the late stages, people with AD are unable to function on their own and become completely dependent on others for their everyday care. Finally, they become bedfast and succumb to other illnesses and infections. Pneumonia is the most common cause of death in AD (Touhy & Jett, 2016).
CAUSES AND PREVENTION

Alzheimer’s disease has no single, clear-cut cause and therefore no sure means of prevention. Scientists believe that AD results from the interaction of genetic, environmental, and lifestyle factors over many years, causing changes in brain structure and function.

Risk factors for AD include the following:

- Advanced age
- Family history of dementia (genetic makeup)
- Hypertension
- Diabetes
- Stroke or transient ischemic attacks (TIAs)
- Presence of infarcts or white-matter lesions
- Low mood (depression)
- Higher body mass index (BMI)
- Traumatic brain injury
- Head injury in early adulthood
- Chronic stress
- Smoking more than two packs of cigarettes per day
- Lack of physical activity
- Dyslipidemia
- Sleep apnea
- Low levels of vitamin D
  (Touhy & Jett, 2016)

Factors that protect cognitive function across the lifespan include:

- Avoiding parenteral or second-hand smoke
- Avoiding smoking
- Detecting and treating ADHD
- Higher levels of education
- Higher socioeconomic status
- Optimal diet and nutrition
- Managing hypertension
- Detecting and treating depression, thyroid disease, and hormone and vitamin imbalances
• Intellectually challenging activities
• Active social lifestyle
• Regular physical exercise
  (Touhy & Jett, 2016)

Preventing AD would save untold suffering of patients and families and billions of dollars for the healthcare system. Research studies to identify factors that increase or decrease the risk of developing AD are a first step toward making primary prevention a reality. For example, lifestyle choices related to diet and exercise that reduce the risk of diabetes, hypertension, stroke, and obesity could reduce the risk of AD.

DIAGNOSIS

Alzheimer’s disease remains a diagnosis of exclusion, ruling out other conditions that may cause similar symptoms, such as stroke, hypothyroidism, depression, nutritional deficiency, brain tumor, Parkinson’s disease, or inappropriate medications. A diagnosis of AD requires the following:

• A decline in the individual from a previous level of functioning
• Insidious onset
• A gradual regression in cognitive abilities
  (Touhy & Jett, 2016)

It is important that the changes noted during assessment be greater than expected for a person’s age and educational background and that these changes can be quantified by standardized neuropsychological testing (i.e., Mini–Mental State Exam) (Touhy & Jett, 2016).

Conclusive diagnosis of AD is still only possible at autopsy. However, researchers have reported some success in identifying proteins called biomarkers in the blood and spinal fluid that can provide earlier probable diagnosis of the disease. Combined with more accurate neuropsychological testing and neuroimaging techniques such as positive emission tomography (PET) scans and magnetic resonance imaging (MRI), these advances enable clinicians to more accurately predict who will develop AD.

CARE AND TREATMENT

Care and treatment of the person with AD changes over time as the disease progresses. Care planning should begin at the time of diagnosis and involve the patient and the family. In light of the current inability to enact a cure for any of the dementias (neurocognitive disorders), the overarching healthcare goals are to:

• Maximize quality of life for the patient and family
• Promote self-esteem
• Maintain independent function for as long as possible (i.e., self-care activities)
• Prevent complications
  (Touhy & Jett, 2016)

Treatment for AD includes several options to slow the progression of the disease, such as:

• Cholinesterase inhibitor therapy to delay or prevent symptoms from becoming worse
  (plus, they have been known to help with behavior changes)
• Management of comorbid conditions, especially sensory deficits
• Treatment of behavioral symptoms and mood disorders
• Support and resources for patient and caregiver
• Compliance with state-mandated reporting requirements for driving impairment
  and elder abuse
  (Meiner, 2015; Touhy & Jett, 2016)

The objectives of nursing care are twofold:

• Focus on maintaining cognitive and global functioning early in the disease process to postpone the need for institutionalized care.
• Assist patients and their families through progression of the disorder while allowing them as much dignity and independence as possible.
  (Meiner, 2015)

A team approach also includes multidisciplinary management, working along with the patient’s family:

• Occupational therapy can assist with educational aspects of using adaptive equipment and focusing on what patients can do to enhance engagement in activity, promote safety, and improve quality of life, all while reducing caregiver burden (AOTA, 2017a).

• Physical therapy can support increasing functional ability, prevent excess disability and the risk of falls and injury, and delay decline with the ability to carry out activities of daily living (APTA, 2015).

• Speech therapy can address dysarthria and dysphagia (teaching facial exercises and swallowing techniques to lower risk of aspiration pneumonia); practice learning important information (i.e., phone number, address); and work on attention, memory, problem solving, and higher thinking skills (ASHA, n.d.).
PROGRESSIVELY LOWERED STRESS (PLST) MODEL

The progressively lowered stress model presents one option for creating and maintaining a supportive environment when caring for a person who has a neurocognitive disorder.

1. Evaluate for any loss of functional abilities and support by assistive devices as needed.
2. Establish a caring and respectful relationship with the patient and family.
3. Assess and respond to patient cues of anxiety and avoidance when faced with stimuli and overwhelming activities.
4. Provide education and feedback to caregivers to understand primary cause of behaviors and to observe for both verbal and nonverbal cues.
5. Identify any triggers related to patient discomfort or stress.
6. Make environmental modifications to address the safety of the patient.
7. Evaluate and make changes to care routines as the patient experiences functional changes.
8. Encourage as much patient control as possible (i.e., offer choices, do not force activities).
9. Maintain a predictable daily routine and stable environment (daily activities and caregivers should be familiar).
10. Provide ongoing support, care, and resources for caregivers and family members.

Source: Adapted from Touhy & Jett, 2016.

Until it becomes necessary to institutionalize the patient, the primary caregiver will most likely be the spouse or a child. The caregiver and other family members involved need education and support to help manage care as the patient’s symptoms and needs change.

Patients receiving collaborative care from an interdisciplinary healthcare team—including physicians, nurses, social workers, and rehabilitation specialists working with the patient’s family caregiver—have been shown to exhibit fewer behavioral and psychological symptoms of dementia than those receiving traditional care. Family caregivers also benefited, showing significant reduction in distress and improvement in depression.

COMMUNICATING WITH PATIENTS WITH COGNITIVE IMPAIRMENT

When talking with older adult patients, especially those with dementia, health professionals and family caregivers should use a respectful, adult communication style. The quality, not the quantity, of the interaction is basic to therapeutic communication. Always remember: there is a person behind the disease.

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Suggestions for communicating with patients who have cognitive impairment include the following:

**Establish Rapport**
- Make an introduction by stating your name and why you are there; shake hands.
- Find common ground.
- Be personal.
- Use humor (if appropriate).
- Allow the patient to choose the topic of conversation.
- Use a general opening (i.e., “How is your day today?”).
- Follow the patient’s lead.
- Use eye contact.
- Use touch sensitively.

**Simplify**
- Give instructions one step at a time.
- Speak slowly while facing the person.
- Allow time for response.
- Reduce other distractions.
- Provide clues to the instructions (e.g., if asking the patient to sit, have the chair in front of them and pat the seat of the chair).

**Clarify Comprehension**
- Clarify time orientation of the patient (i.e., get into the place and time of the patient).
- Recognize any themes to what the patient is saying (fear, sadness, happiness).

**Support Continued Communication**
- Treat the patient with respect and dignity.
- Limit making corrections (do not try to bring the person into reality; go to where they are).
- Use multiple ways of communicating (touch, gestures, images).
- Understand the life history and experiences of the patient (career, family, hobbies).
- Adjust for hearing or vision loss.
Cognitively impaired individuals who are approaching life’s end may experience hallucinations and delusions. Attempts to reorient these patients are usually unsuccessful. A better strategy is to ignore the delusional statements and divert the conversation in another direction. The technique of validation, based on the understanding of empathy of the emotion and messages behind the confusion is most effective in communicating with the dying AD patient. Certainly, an aspect of the nurse’s approach to the end of life for these individuals is to educate the family on the process of imminent death.


FUNCTIONAL ASSESSMENT OF AD

The Reisberg Functional Assessment Staging (FAST) Scale is a 16-item scale designed to parallel the progressive activity limitations associated with AD. Stage 7 identifies the threshold of activity limitation and indicates a life expectancy of 6 months or less.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Function or Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>No difficulty in function reported by patient or others</td>
</tr>
<tr>
<td>Stage 2</td>
<td>Complains of forgetting location of objects; subjective work difficulties</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Decreased job functioning evident to coworkers; difficulty in traveling to new locations</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Decreased ability to perform complex tasks (e.g., following a recipe) or handling finances</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Requires assistance in making self-care decisions, (e.g., choosing proper clothing)</td>
</tr>
<tr>
<td>Stage 6</td>
<td>Decreased ability in ADLs (e.g., dressing, bathing)</td>
</tr>
<tr>
<td>Substage 6a</td>
<td>Difficulty understanding how to put on clothing</td>
</tr>
<tr>
<td>Substage 6b</td>
<td>Unable to bathe properly; may develop fear of bathing</td>
</tr>
<tr>
<td>Substage 6c</td>
<td>Inability to handle mechanics of toileting (i.e., forgets to flush, does not wipe properly)</td>
</tr>
<tr>
<td>Substage 6d</td>
<td>Urinary incontinence present</td>
</tr>
<tr>
<td>Stage 7</td>
<td>Loss of speech, locomotion, and consciousness</td>
</tr>
<tr>
<td>Substage 7a</td>
<td>Ability to speak only limited vocabulary (1–5 words a day)</td>
</tr>
<tr>
<td>Substage 7b</td>
<td>All intelligible vocabulary lost</td>
</tr>
<tr>
<td>Substage 7c</td>
<td>Not able to ambulate</td>
</tr>
<tr>
<td>Substage 7d</td>
<td>Unable to smile</td>
</tr>
<tr>
<td>Substage 7e</td>
<td>Unable to hold head up</td>
</tr>
</tbody>
</table>

Source: Adapted from AGS, 2014.
Other Dementias

Additional forms of dementia include vascular dementia, Parkinson’s dementia, dementia with Lewy bodies, and frontotemporal dementias. The various forms of dementia have different symptom patterns and brain abnormalities. Accurate diagnosis of the type of dementia is important, as each one is treated and managed differently (Touhy & Jett, 2016).

VASCULAR DEMENTIA

Vascular dementia is the second most common type of dementia. This type of dementia is typically caused by decreased blood flow to parts of the brain due to a series of small strokes or infarcts that block arterial blood flow to the brain. Symptoms of this type of dementia may be very similar to AD, with memory less affected (Touhy & Jett, 2016).

PARKINSON’S DEMENTIA

Parkinson’s dementia occurs at least one year after the onset of Parkinson’s symptoms. Lewy bodies (abnormal protein deposits) form inside the nerve cells of the brain and cause cognitive symptoms (Touhy & Jett, 2016).

DEMENTIA WITH LEWY BODIES

Lewy body dementia has a pattern of decline similar to AD, including loss of memory and judgment. Unusual behaviors may be the presenting symptom (i.e., hallucinations, suspiciousness). Patients with Lewy body dementia may experience fluctuations in cognitive symptoms on a daily basis. Muscle rigidity and tremors are also common (Touhy & Jett, 2016).

FRONTOTEMPORAL DEMENTIA

Frontotemporal dementia involves damage to the frontal and parietal parts of the brain. Symptoms include a change in the patient’s personality, unusual behaviors (impulse control), and difficulty with language skills. Pick’s disease (characterized by Pick’s bodies in the brain) is one form of frontotemporal dementia (Touhy & Jett, 2016).

PSYCHOSOCIAL CHANGES OF 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. For example, death, injury, or serious illness of a partner can alter living circumstances, social support, and economic security. These changes can lead to isolation, depression, and suicide among vulnerable elders.
Loss

Aging involves a succession of losses, concluding with the ultimate loss—loss of self. Losses can include:

- Loss of physical strength and abilities
- Loss of mental abilities (confusion, dementia)
- Loss of relationships when companions or friends die
- Loss of self-esteem
- Loss of body image
- Loss of independence
- Loss of control over life plans and lifestyle

Moving to a long-term care facility involves multiple losses: loss of independence, self-esteem, familiar surroundings and social networks, and control over life plans and lifestyles. Experiencing multiple losses can also cause depression and isolation. Care providers and family caregivers need to be alert for signs of depression in older adults so that therapeutic measures can be implemented.

Changes in Life Roles

Death or sudden illness in a spouse can result in a dramatic role change for the other spouse. For example, one partner’s illness may shift the burden of managing family finances to the other, who must also take on the role of caregiver. Many family caregivers are older adults themselves, which puts them at risk for developing both physical and mental health problems in addition to any ongoing conditions.

Isolation

Social isolation can be hazardous to health, particularly in older adults. One in 3 Americans lives alone, and 1 in 4 of those are typically older women who live in poverty and report poor health. These women are at higher risk for institutionalization and loss of independence—as well as heart disease, memory problems, depression, and suicide—than someone living with a spouse or other companion.

Living alone does not always mean being lonely or isolated, but health professionals need to be aware of the possibility. Risk factors for social isolation include:

- Low self-esteem
- History of abuse or homelessness
Measures to increase social engagement include referral to wellness programs (offering physical activities, social outings, and nutrition support) and other support groups, telephoning or emailing friends, or adopting a pet.

Institutionalized older adults may also be socially isolated because of their health problems or because they have no family to visit them. Volunteer visitation and pet therapy can also help reduce isolation among these individuals.

**Depression and Suicide**

Clinical depression is not considered a normal part of aging, and studies show that most older Americans are satisfied with their lives, despite physical problems. However, as individuals age, the rate of depression increases. The percentage of men older than 85 reporting depressive symptoms is almost double that of men aged 65 to 74. Depression in the older adult is also associated with higher suicide rates (Touhy & Jett, 2016; Meiner, 2015).

Depression can be immobilizing and can interfere with normal sleep, nutritional intake, thinking and concentration, and overall quality of life. Therefore, depression contributes indirectly to a decline in physical and mental health. In fact, a number of studies have shown that depression is an independent risk factor for falls.

**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:

- Sleep disturbance and fatigue
- Changes in physical activity, ranging from slowing down to agitation or hyperactivity
- Loss of interest in favorite activities
- Hopelessness about the future
- Changes in appetite and/or weight
- Inability to concentrate or make decisions
- Complaints about poor memory and concentration
- Thoughts of suicide
  (NIMH, 2014; Tabloski, 2014)

One tool to assess for depression is the Geriatric Depression Scale (GDS). It was first developed in 1983 as a 30-question scale to screen for depression in the older adult. Today’s version of the GDS includes 15 questions from the original version. The short-form GDS appears below.

### 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.

Another depression scale used frequently with the older adult population is the Beck Depression Inventory, which includes 13 items describing a variety of symptoms and attitudes associated with depression. The tool is self-administered or given by a nurse in about five minutes. In this scale, the scoring cutoff points aid in estimating the severity of the depression (Meiner, 2015; APA, 2017). (See also “Resources” at the end of this course.)

Treatment for depression may include the following recommendations:

- Behavioral therapy
- Cognitive-behavioral therapy
- Problem-solving therapy
- Brief psychodynamic therapy (also called insight-oriented therapy)
- Life review (also called reminiscence therapy)
- Light therapy
  (NIMH, 2014; Tabloski, 2014)

A pharmacologic approach can also be used, but medication choices depend on comorbidities, drug side effects, and the type of effect desired. This decision is one for the physician and pharmacist on the interdisciplinary team to decide after evaluating the assessment findings from the other team members (Touhy & Jett, 2016). Antidepressant medications may be used but should be accompanied by psychotherapy, and they may not be effective.

Selective serotonin reuptake inhibitors (SSRIs) in particular (which are the most common antidepressant used), increase the risk of falls (Tabloski, 2014; Touhy & Jett, 2016). If antidepressant medications are prescribed, care providers may need to take extra safety measures in order to prevent falls from occurring, including removing/minimizing trip hazards in the home, installing safety bars in bathrooms and/or near the bed, and increasing the level of direct supervision and/or physical assistance as needed. If falls or balance issues become a concern, consultation with a physical therapist may be indicated.

SUICIDES AND DEPRESSION

Depression is one of the conditions most commonly associated with suicide. According to the National Institute of Mental Health (2014), older Americans are disproportionately likely to die by suicide. The rate of suicide among people age 65 and older is higher than the national average. The incidence of suicide is highest among non-Hispanic white men, and guns are the most frequently used method. Among females, the incidence of suicide is highest among Asians/Pacific Islanders. Suicide is most common among older adults who are divorced or widowed.

The American Association of Suicidology (2014) provides additional statistics, based on 2012 data released in 2014, on suicide rates among older adults (ages 65 and older):
• Older adults comprise 13.75% of the U.S. population but account for 16.37% of all suicides.

• The rate of suicides for the older adult is 15.4% per 100,000.

• There is approximately one older adult suicide every 80 minutes.

• Older adult white men have the highest risk of suicide, with a rate of approximately 32.24 suicides per 100,000.

• White men over the age of 85 are at the greatest risk of all age-gender-race groups, with a rate of 50.67 per 100,000; this is approximately 2.5 times the current rate for men of all ages.

It is vitally important for all the members of the interdisciplinary team to inquire about recent life events, implement depression screening for older individuals, and recognize warning signs and risk factors for suicide. Risk factors for suicide in people age 65 or older include:

• Male gender
• Chronic or terminal illness
• Social isolation/loneliness
• Financial strain
• Bereavement
• Depression
• Alcohol or drug abuse
• History of other suicide attempts
• Family history of suicide
• Preoccupation with suicidal talk and plans
• Uncontrollable pain or fear of a prolonged illness

Feeling helpless, hopeless, and worthless can lead to thoughts of suicide and, in some cases, dying by suicide. Preventing suicide depends on early recognition of suicidal intent and treating physical and psychiatric conditions, reducing social isolation, enhancing self-esteem, and helping people find meaning or satisfaction in life. Health professionals and family caregivers can pay attention for statements such as “I’d be better off dead” or “I don’t want to live.” These suggest a need for counseling by a mental health professional.

However, in older adults, typical behavioral clues such as putting personal affairs in order, giving away possessions, and making wills and funeral plans are also indications of maturity and good judgment in late life and should not be construed as indicative of suicidal behavior or
intent. Such statements as “I won’t be around long” or “I am ready to die” may just be realistic appraisals of the situation of old age (Touhy & Jett, 2016).

FUNCTIONAL ASSESSMENT AND ACTIVITIES OF DAILY LIVING

Many people over age 65 have difficulties caring for themselves, managing their living environment, and moving about in the world. This impacts their functional performance in what are referred to as activities of daily living (ADLs) or instrumental activities of daily living (IADLs) (see box below). Difficulties with ADLs, or basic self-care tasks, may indicate the need for long-term care either at home or in a residential care facility. Those who have problems with IADLs, or the complex skills needed to live independently, are more likely to have cognitive impairment than those who can still perform IADLs independently (Tabloski, 2014).

### ADLs AND IADLs

**Activities of Daily Living (ADLs)**

- Bathing
- Dressing
- Eating
- Transferring from bed to chair
- Continence
- Toileting

**Instrumental Activities of Daily Living (IADLs)**

- Driving or managing other transportation
- Shopping
- Cooking
- Using the telephone
- Managing finances
- Taking medications
- Housecleaning
- Laundry
Functional status is considered a significant component of an older adult’s quality of life. It is the measurement of the older adult’s ability to perform basic self-care activities and tasks that require more complex activities of daily living. Determination of the degree of functional independence in these areas assists the interdisciplinary team to identify abilities and limitations, leading to coordinated interventions by the appropriate team members.

Patient assessment and evaluation of functional performance includes a review of comorbid diseases, medications, weight-bearing status, and cardiac limitations. Assessment of home safety, self-care abilities, and driving abilities are also important considerations for any frail older adult.

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
- Decrease readmission rates
- Maintaining access to rehabilitative therapies (i.e., occupational, physical, speech, etc.)

**Elements of the Assessment**

Assessment of physical function in the older adult includes some of the same elements of any assessment, including the following:

- Weight and height
- Vital signs
- Body mass index (BMI)
- Vision and hearing screening tests
- Balance and gait assessment
- Oral health
• Assessment of skin for bruises, wounds, and other signs of skin breakdown
• Nutrition
• Bowel and bladder function

FANCAPES ASSESSMENT MODEL
FANCAPES is a model for the comprehensive physical assessment of the frail older adult. It stands for fluids, aeration, nutrition, communication, activity, pain, elimination, and socialization. This model of assessment focuses on the patient’s basic needs and ability to function independently. Assessment questions may include:

F—Fluids (team member: registered nurse)
• What is the patient’s current fluid status?
• Is the patient able to drink adequate fluids throughout the day?
• Does the patient have barriers or circumstances that would affect fluid intake or balance (e.g., swallowing problems, diuretic use, cognitive impairments, kidney function)?

A—Aeration (team member: respiratory therapist)
• What is the patient’s oxygen exchange (goal is O₂ saturation of at least 96%)?
• What is the patient’s respiratory rate at rest, while talking, and during activity?
• Do breath sounds indicate any signs of pneumonia?

N—Nutrition (team member: dietitian or nutritionist)
• What is the patient’s usual food intake?
• Is the patient able to chew and swallow well?
• Is the patient on any special diet?

C—Communication (team member: speech therapist)
• Can the patient communicate their needs well?
• Does their caregiver understand them well?
• What is the patient’s level of hearing?
• Is the patient able to speak and be understood (any aphasia)?
• What is the patient’s literacy level?
A—**Activity** (team member: physical therapist)

- 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?

**P—Pain** (team member: palliative care nurse)

- 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?

**E—Elimination** (team member: nurse/occupational therapist)

- 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)?

**S—Socialization and Social Skills** (team member: social worker)

- 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?


The first step in assessment is to **establish a trusting relationship** with the patient. It is important to ensure the patient is comfortable and to take time to get acquainted before launching into the assessment questions. The room should be well-lit, quiet, and warm. Other family members, friends, or caregivers should be acknowledged, but the main focus should be on the patient rather than the companion. Although a companion may assist in communication during the assessment, it is important that the patient is the primary person being addressed in the discussion.
BEST PRACTICES FOR COMMUNICATION WITH OLDER ADULTS

The following recommendations are essential for communicating effectively with older patients:

- Providers should make the assessment face-to-face, allowing the patient to see their lip movement when speaking; this is particularly important if the patient has a hearing problem.

- Voice tone should be clear, slow, lower pitch, and slightly louder than usual.

- The provider should verify understanding by asking for questions from the patient and, if present, a caregiver or companion.

- One question should be asked at a time, allowing sufficient time for patient responses. Even healthy older adults may take a little longer to process a question and frame a response.

- Communication should be modified to match the individual’s learning style and incorporate language the patient uses, avoiding complex medical terminology, acronyms, and abbreviations.

- If the patient has cognitive impairment, assessment questions should be verified with the assistance of the healthcare proxy or primary caregiver.


During the initial conversation and history taking, it is important to assess the patient’s current knowledge and attitudes about healthcare and health behaviors. For example: How do they rate their own health? What do they do to maintain or improve their health? Do they think that feeling sick is just part of getting old, or do they believe that their health problems can be treated successfully?

People often continue health habits and practices adopted years earlier that may no longer be effective or adequate to deal with age-related changes or chronic disease. Those without symptoms may tend to ignore recommendations for screening exams such as mammography and colonoscopy.

The patient’s ability to adapt to behavior changes should also be assessed. Some people are inflexible in their attitudes and beliefs. Are patients receptive to changing their way of life to adapt to age-related problems they may not yet have recognized? Are they able to see well enough to make self-assessments of their feet? Have they modified their home environment for safety? Do they realize that it may be time to surrender their driver’s license?

Failure to admit problems such as these may indicate an unwillingness and/or inability to make needed changes. This is where a trusted health professional may be able to assist them in making changes, whereas a relative or friend might be considered a “meddler.” Once trust is established, patients are more amenable to changes that will help ensure their safety and health.
Assessment should address whether patients have the **necessary resources** to self-manage health. The social worker is a valuable team member regarding this issue and can provide a number of resources to assist the patient with inquiries such as: Can they afford the medications their primary care provider has prescribed, or do they need financial assistance? Are they socially engaged with other seniors who can share health information? Are they sufficiently mobile to participate in an exercise class? How are they coping in today’s world? For example, do they use a computer (or are they willing to learn) to access health information?

### CASE

Alice is a widowed 83-year-old still living in her own home. She is in to the clinic today to have her blood pressure checked after starting a new medication for hypertension. She has been prescribed atenolol 50 mg daily, with original instructions to start by taking 25 mg in the evening for the first week, followed by 25 mg in the morning and evening on the second week. She has been taking the atenolol for three weeks now and is here for an evaluation.

Her nurse is Molly, who greets her with a smile and a warm handshake in the lobby of the clinic. Molly then introduces herself and asks how Alice is today. Alice responds that she is fine. As Alice and Molly walk together into the exam room, Molly notices that Alice seems a little unsteady on her feet, reaching out to the wall as she walks. Once they arrive to the exam room, Molly has Alice sit for a few minutes prior to taking her blood pressure reading. This is the perfect time to establish rapport and make a few observations.

Molly notices that Alice seems winded as she sits and has a couple of bruises on her legs that look fresh. Molly asks to see Alice’s medication bottle and goes on to ask how things are going with taking the new medication. Alice states that things are “going OK” and that she is “hoping to get used to the medication.” Molly picks up on the fact that she does not seem sure of herself and adds the question, “What has been happening since you started the atenolol?” Alice says that she is “more tired, has less energy, and has even felt a little faint.” Remembering the bruises, Molly goes on to inquire if Alice has had a fall recently? Alice states, “Well, it was nothing. I am clumsy and fell after getting up from a nap one afternoon.”

Molly suspects that perhaps Alice’s blood pressure and pulse are too low as a result of the medication. When she takes Alice’s blood pressure, the reading is 88/52 and her pulse is 56. Molly asks Alice how many pills she is taking, and Alice replies two pills in the morning and one pill in the evening.

Molly then goes on to verify the dose of medication, and says to Alice, “The atenolol dose that you should be taking is one pill in the morning and one a night.” Alice looks confused and says, “I thought I was supposed to start with one pill in the morning and then add a second pill the next week in the morning and at night. Did I make a mistake?”

Molly reassures Alice and says, “It’s okay. Taking a new medication is confusing sometimes, but the extra medication is probably why you are feeling tired, weak, and have had a fall recently.” Alice nods in understanding and asks, “Oh, well what do I need to do now?” Molly goes over the schedule of taking one pill in the morning and one pill at night and asks if she has a family member who can help organize her pills and check her blood pressure two to three
times a week at home. Alice replies that her daughter lives close to her and that she could come over and help her with this.

Molly also suggests that perhaps Alice’s daughter can pick her up today and give her a ride home, since her blood pressure is quite low. Molly instructs her to drink adequate fluids and have someone check on her later in the day. Alice should not take her evening dose of atenolol this evening and should then check her blood pressure in the morning. Molly also discusses Alice’s risk for falls and instructs her to take care when going from a lying or sitting position to standing, since she may experience dizziness.

As Alice leaves her appointment, Molly walks out with her to meet her daughter and to make sure that she is safe to transfer home. She also schedules a phone call for the next day to check on Alice’s status as well as a re-check in one week to learn the status of her blood pressure and pulse.

Ambulation and Mobility

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 (i.e., 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 (Oh, 2013).

The Functional Independence Measure (FIM) was designed to assess an individual’s need for assistance with ADLs during the inpatient stay and used for discharge planning, especially after a stroke. The FIM is a highly sensitive functional assessment tool and includes measures of ADLs, mobility, cognition, and social functioning. The tasks are rated using a 7-point scale from totally independent to totally dependent. This tool is widely used in acute rehabilitation and Veteran’s Administration hospitals across the nation (Touhy & Jett, 2016; UDSMR, 2012).

COMMON ASSISTIVE DEVICES FOR AMBULATION

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 can 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.

• **Talking cane**: A cane that “talks” provides feedback to the user through the use of sensors that detect when falls have occurred or when risk of falling is increasing. Other canes in the research phase also have the promise of improving functional ability, safety, and independence for the aging population (Touhy & Jett, 2016).

• **Crutches**: Useful for 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. If crutches are indicated:
  
  o Axillary crutches are cost-effective but can be difficult to use and may cause brachial plexus and/or axillary artery compression if fitted or used incorrectly.
  
  o Lofstrand (forearm) crutches have proximal forearm cuffs and distal hand grips, allowing bilateral upper extremity support with occasional weight bearing. This allows the patient’s hands to be free without needing to drop the crutch during certain functional activities.
  
  o Platform crutches provide a horizontal platform on which the forearms rests and bears weight (instead of the hand). Platform crutches are potentially beneficial for patients with elbow contractures or with weak/painful hands or wrists.

• **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 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. They often come with seats 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.

Referrals to a physical therapist and occupational therapist can be helpful in the process of assessing each patient’s needs and determining which assistive device or environmental modifications would be most appropriate. 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 (Touhy & Jett, 2016).

Safe Driving and Transportation

Available transportation is a critical link in the ability of older adults to remain independent and functional. A “crisis in mobility” exists today for many older adults due to the lack of a car, an inability to drive, limited access to public transportation, health factors, geographic location, and economic factors (Touhy & Jett, 2016).

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. Whether the problem is vision impairment, dementia, or some other health condition, there often comes a time when an older adult is no longer a safe driver.

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 needs to intervene.

Although many states encourage physicians and other healthcare professionals to report people with conditions that may affect their ability to drive safely, only a small number of states have mandatory reporting requirements for physicians to report specific conditions such as seizure disorders and AD, among other disorders. These states include California, Delaware, Nevada, New Jersey, Oregon, and Pennsylvania (Nevada, ADSD, n.d.).

Other criteria noted throughout the United States concerning age-related driving restrictions include:

- 50% of the remaining states (not mentioned above) encourage physician reporting but do not make it mandatory.
- 40% of states require a decreased time between license renewals once an individual reaches a certain age.
• 30% of states require the addition of a vision test once reaching a certain age.
• 5% of states require an in-person license renewal once reaching a specific age.
• Only the District of Columbia requires a road test when reaching a specific age (75 years). Other states require this if impairment is suspected by a Department of Motor Vehicles agent, physician note, or referral (anonymous or nonanonymous).
  (NIA, 2017; ADSD, n.d.)

The following are considerations when making decisions on whether an older adult should relinquish driving:

• Stiff joints and muscles
• Trouble with vision and/or hearing
• Cognitive changes (i.e., Alzheimer’s disease/dementia)
• Slower reaction time and reflexes
• Medications (i.e., drowsiness or less alert)
  (NIA, 2017)

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 (carpool)
• Utilizing religious and civic groups who arrange for volunteers to provide transportation
• Visiting a local driver’s licensing agency for an evaluation of driving skills
• Using taxis and public transportation
• Attending a CarFit event (national safety education program that assesses how well a personal vehicle “fits” a driver)
• Avoiding driving during the evenings or rush hour
  (AOTA, 2017b; NIA, 2017)

Among the interdisciplinary healthcare team, occupational therapy practitioners have specialized training in driver rehabilitation and are most knowledgeable to administer a driving evaluation. This type of driving evaluation typically has two parts: 1) within the office or clinic for the physical, visual, functioning, and mental abilities phase; and 2) behind the wheel of a car (or simulation/adaptive equipment) with safety features in place to evaluate the older driver’s strengths and weaknesses and ways to keep driving safe (AOTA, 2017b).
The occupational therapist then can make recommendations about strategies, specialized equipment, and further training that may be needed to improve driving safety and overall health and well-being of the older adult. Otherwise, if the evaluation results indicate the need for the individual to stop driving, the therapist will assist him or her with understanding why this is the most important option for the safety of oneself and others. This decision will then be shared with the interdisciplinary team leaders, such as the physician, for follow-through and follow-up (AOTA, 2017b).

**Home Safety**

Adapting or modifying the home environment of older adults may be required in order to enhance mobility (particularly balance, strength, and gait training) and promote the safe performance of daily activities. The occupational therapist also plays an important role in home safety, which may include physical interventions, environmental modifications, and behavioral adaptations.

With a growing number of older adults living independently, it is vitally important to make sure that safety measures are in place within the home environment. Falls, burns, and poisoning are among the most frequent accidents that involve older adults. Specific interventions that promote independence and safety for the older adult are described below:

### HOME SAFETY TIPS FOR OLDER ADULTS

**Preventing falls**

- If balance or walking is difficult, a special risks assessment should be completed and evaluated.
- Use special alarms, such as a bracelet or necklace that can be worn continually, to call for help after a fall.
- Do not rush to answer the phone; let the answering machine or voicemail activate if needed.
- When walking on smooth floors, wear rubber, non-slip 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.

**Protecting against fire and related dangers**

- If a fire occurs, escape the area and then call 911.
• Do not wear loose clothes or long sleeves when cooking.
• Replace appliances that have frayed or loose cords.
• Install a smoke detector and replace the battery twice a year.
• Never smoke in bed.

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.
• Consider a tub chair or toilet extender.

Preventing poisoning
• Never use a stove or oven to heat the home.
• Make sure there is a working carbon monoxide detector near all bedrooms and replace batteries twice yearly.
• Keep medications in the original containers.
• Ask the pharmacist to use large print on medication containers.
• Never mix bleach, ammonia, or other cleaning liquids together, as they can form deadly gases.

Protecting against abuse
• Keep windows and doors locked.
• Never let a stranger into the home when you are alone.
• Do not accept offers or give credit card numbers over the phone.
• Do not let someone pressure you into making purchases or donations over the phone; it is never rude to wait to discuss such decisions with a family member or friend.

Keeping emergency numbers handy
• Call 911 in an emergency.
• Poison control can be reached at 800-222-1222.
• Have a list of family members’ and friends’ numbers.
• Have a list of all healthcare providers’ phone numbers.

Source: Health in Aging, 2016.
BALANCE AND FALL RISK AMONG OLDER ADULTS

Falls are one of the greatest threats to the health of older adults, and they can be life threatening. Every second of every day an older adult falls. In 2014 alone, more than 1 in 4 older adults reported falling, and more than 27,000 older adults died as a result of a fall (i.e., 74 older adults every day) (CDC, 2016d). Fall-related injuries, particularly those requiring hospitalization, are the most frequent cause of developing a new or worsening disability (Touhy & Jett, 2016).

Screening and Assessment

Screening for potential balance impairments and risk of falls is an important component of the functional screening of an older adult, particularly if a patient has a prior history of falls, medications, or comorbid conditions that may affect balance or equilibrium.

Older adults should be assessed for any factors that may place them at greater risk for falls, including:

- Females 80 years of age or more
- Taking four or more medications
- Sedative and/or alcohol use
- Acute or recent illness
- Cognitive impairment
- Chronic pain
- Dehydration
- Weakness of lower extremities
- History of unsteadiness, dizziness, or syncope
- Decreased vision or hearing
- Urinary incontinence with urgency
- Environmental hazards (i.e., clutter, throw rugs, electrical cords)
- Improper use of assistive devices
- Missing safety rails
- Inappropriate footwear
  (Touhy & Jett, 2016)

Fall risk assessments are still commonly used in fall prevention interventions and should be used by practitioners (e.g., physical therapists) who have been educated in their use. However, recent
literature suggests that fall risk assessment instruments are becoming outdated and used infrequently. It has been determined that the instruments used in the past may not be adequate due to the fact they lacked an assessment and knowledge of the individual’s fall history.

The Institute for Clinical Systems Improvement suggests that current available literature supports using the following three questions to determine fall risk:

1. Has the patient fallen in the past year?
2. Does the patient look like he or she is going to fall (i.e., does the patient have clinically detected gait/balance abnormalities)?
3. Does the patient have additional risk factors for injurious falls (i.e. osteoporosis, anticoagulant therapy)?
   (Touhy & Jett, 2016)

Assessing mobility, strength, and gait is essential in determining the older patient’s risk for falling and experiencing difficulty in meeting other physical needs. The speed of walking, length of stride, and type of gait are also indicators of increased fall risk. Slower gait, smaller steps, and irregular gait can signal neurologic disorders that predispose the patient to falls. For example, slow gait may be caused by muscle weakness, inactivity, peripheral vascular disease, chronic obstructive pulmonary disease (COPD), or angina. Short, rapid, and shuffling steps may be a sign of Parkinson’s disease (Touhy & Jett, 2016).

At least 20% of older adults living in the community have problems with walking, and this increases to approximately 50% for those 85 and older. The Timed Up-and-Go Test is a practical assessment tool for older individuals and can be conducted by the practitioner in any setting. The older adult is asked to rise from a straight-back chair, stand briefly, walk forward 10 feet, turn, walk back to the chair, turn around, and sit down. Performance is graded on a 5-point scale, with 1 being normal to 5 being severely abnormal. A score of 3 or higher suggests a high risk of falling (Touhy & Jett, 2016).

**Fall Prevention and Intervention**

Educating the patient is the cornerstone of fall prevention. Falls are not a normal part of the aging process; they are preventable, and there are some simple steps one can take to stay independent longer:

- **Speak up:** Talk openly with healthcare providers about fall risks and prevention; review medications for side effects linked to falls.
- **Keep moving:** Engage in activities that strengthen legs and assist with balance (i.e., tai chi).
- **Eye check-up:** Undergo an eye exam annually and update glasses as needed.
- **Make a safe home:** Address fall risks at home, where most falls happen (see “Home Safety Tips for Older Adults” above).
   (CDC, 2016d)
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 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:

- Range of motion, gait, and strength are assessed. Violet states that she has not been wearing her AFO as often as she should because it has been hurting her leg lately.
- Violet’s straight cane is too long for her height, causing her to hold her arm at an unnatural angle to grasp the cane.
- Violet is able to maintain balance with her feet together on a foam surface for ~3 seconds without wearing her AFO and for ~10 seconds while wearing her AFO.
- Violet displays mild to moderate difficulty ascending stairs, mild difficulty descending stairs, and use of one handrail for support.

Together, the physical therapist and Violet develop the following goals in order to address both her current functional deficits and her long-term personal objectives:

**Short-Term Objectives**

- Violet will be independent and compliant with a home program that addresses static and dynamic balance, gait training, proper use of assistive devices, lower extremity strengthening, and safety awareness.
• Violet’s cane will be readjusted to the proper length for her height in order to allow more comfortable and safe use.

• Violet will wear her L-sided AFO with 100% compliance during the day in order to normalize her gait pattern and to optimize her safety with ambulation and when negotiating stairs.

• Violet will successfully ascend and descend eight stairs with one handrail, using a step-to gait pattern with no losses of balance.

Long-Term Objectives

• Violet will demonstrate consistently safe ambulation over all surfaces (including soft, uneven, or sloped surfaces) without loss of balance, using her AFO and cane 100% of the time.

• Violet will successfully navigate her home and community environment without loss of balance or falls for a period of 30 days, using her straight cane correctly and with 100% compliance.

• While wearing her AFO and using her straight cane, Violet will successfully ascend/descend 12–14 stairs using one handrail with no hesitation or loss of balance.

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

Falls and Traumatic Brain Injury

Fractures—of the hip, arm, leg, and ankle bones—are the most common injuries sustained in falls, but some falls result in traumatic brain injury (TBI). Adults aged 65 years or older have the highest rates of hospitalization due to TBI, with a high risk of death as a result of the injury (CDC, 2014).

A sudden bump or jolt to the head of an older person can easily tear cerebral blood vessels and lead to long-term cognitive, emotional, and/or functional impairments. Any older person taking medications that reduce the ability of the blood to clot—such as an anticoagulant (i.e.,
warfarin/Coumadin); a factor Xa inhibitor (i.e., Xarelto, Eliquis); or a thrombin inhibitor (i.e., Pradaxa)—should be seen immediately by a healthcare provider if they have incurred a head injury, no matter how minor it is thought to be (Mayo Clinic, 2017).

Studies have also shown that aspirin plays a part in avoiding blood clotting in the body and decreases the mortality rate of acute myocardial infarction (i.e., heart attack). Aspirin inhibits platelet aggregation and facilitates fibrinolysis, which is the body’s way of breaking down the clot formation and preventing further blood clots from forming or expanding the current blood clot to do more tissue damage (USC, 2014).

**SYMPTOMS OF MILD TBI**

- Low-grade headache that will not go away
- Having more trouble than usual remembering things, paying attention or concentrating, organizing daily tasks, or making decisions and solving problems
- Slowness in thinking, speaking, acting, or reading
- Getting lost or easily confused
- Feeling tired all of the time, lack of energy or motivation
- Change in sleep pattern (sleeping much longer than before, having trouble sleeping)
- Loss of balance, feeling light-headed or dizzy
- Increased sensitivity to sounds, lights, distractions
- Blurred vision or eyes that tire easily
- Loss of sense of taste or smell
- Ringing in the ears
- Change in sexual drive
- Mood changes such as feeling sad, anxious, or listless, or becoming easily irritated or angry for little or no reason

**SYMPTOMS OF MODERATE OR SEVERE TBI**

- A headache that gets worse or does not go away
- Repeated vomiting or nausea
- Convulsions or seizures
- Inability to wake up from sleep
- Dilation of one or both pupils
- Slurred speech
- Weakness or numbness in the arms or legs
- Loss of coordination
- Increased confusion, restlessness, or agitation
  (CDC, 2014; Touhy & Jett, 2016)

**MEDICATION USE AND MISUSE**

In the United States, persons over 65 years of age and older are prescribed more medications than any other age group. Although medications may improve quality of life and health, they also hold the potential for misuse, overuse, and life-threatening complications (Touhy & Jett, 2016).

Physician-prescribed drugs are only one component of medication use by older people. Self-prescribed OTC medications and/or vitamin and herbal supplements also play a part, and alcohol use can further complicate the situation. Patients self-prescribe with OTC products and/or alcohol because they seek relief from symptoms that physician-prescribed medications do not offer—relief from chronic pain, stress, anxiety, depression, loneliness, or all of the above (Touhy & Jett, 2016).

**Drug Interactions and Adverse Events**

*Polypharmacy* is defined as the use of five or more medications or the use of multiple medications at the same time. This often includes using too many forms of medication or the inappropriate use of multiple medications, which creates a significant risk for adverse drug events. For instance, when an older individual takes five or more medications, there is an increase for risks of developing frailty, disability, death, and falls and a significant decrease in quality of life. Patients who see several physicians for different ailments are at higher risk for adverse drug events related to drug interaction, as are those who use multiple pharmacies to fill their prescriptions or who order their prescriptions by mail. About 1 in 3 older persons taking at least five medications will experience an adverse drug event each year, and about two thirds of these patients will require medical attention (Touhy & Jett, 2016).

Chronic health conditions such as heart disease, hypertension, and diabetes among older people affect the number of medications they are prescribed. For example, because diabetes increases the risk of heart disease, many people are being treated for both conditions. These same people may also take OTC nonsteroidal anti-inflammatory drugs (NSAIDs) to relieve their arthritis pain, antacids for indigestion, and antihistamines for allergies. The potential for interaction among these various drugs is significant, and patients and caregivers need to be aware of this risk.
Managing Drug Regimens

Medication management is an important daily function that should be assessed regularly. If a patient is managing multiple medications (especially new medications), assessment should include a review of dosage, timing, and side effects. Ideally, each patient’s complete medication profile is monitored by a single health professional such as a clinical pharmacist or registered nurse.

MEDICATION REVIEW

Experts recommend periodic review of all medications that an older patient is taking, using the “brown-bag” approach. This means that the patient brings all medications—prescription, herbal, supplements, and OTC—to the care provider’s office and reviews with the physician or nurse the purpose of each drug, any side effects experienced, what it is used for, and whether it is necessary to continue taking each one (Touhy & Jett, 2016). This type of review can sometimes mean dropping one or more medications from the regimen.

Medication review is also an opportunity to evaluate how well the patient (or family caregiver) is managing the regimen and whether he or she understands the potential for interactions among drugs and between drugs and food and/or alcohol. For example, older adult patients taking warfarin need to know that food containing high levels of vitamin K (broccoli, spinach, cabbage, and other green vegetables) can interfere with the blood-thinning effects of warfarin. Vitamin E and the popular herbal supplement ginkgo biloba also act to enhance the effects of warfarin.

STATINS AND GRAPEFRUIT JUICE

Patients who are taking statins (especially simvastatin, lovastatin, or atorvastatin) to lower cholesterol may not know that the consumption of grapefruit and grapefruit juice can raise circulating levels of the drug to potentially toxic levels. Studies have shown a daily glass of grapefruit juice increases blood levels of simvastatin and lovastatin by approximately 260%. However, studies have also come to the conclusion that the increased risk from the grapefruit juice consumption due to the increased effective statin dose is minimal compared with the greater effect in preventing heart disease that was found. Therefore, grapefruit juice should not be contraindicated in individuals taking statins.

Source: Lee et al., 2016.

AIDS TO MANAGING DRUG REGIMENS

Older adults frequently have arthritis, cognitive changes, or vision impairment; therefore, special aids or strategies may be needed, such as a hand-held magnifier, easy-open caps, larger organizer boxes, and instructions or reminders written in large print. Occupational therapists can assist patients to formulate a plan to organize and find the best medication aids to meet each individual’s needs.
There are various forms, calendars, and other devices to help older patients and/or their caregivers manage their drug regimens. Day-of-the-week pill boxes can also be helpful if the regimen is not too complex. 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.

**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 feels 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 of 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, with 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.

Inappropriate Medications

Potentially inappropriate medications may be prescribed for older adults, leading to drug-related problems and adverse drug events. The American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults is a leading source of information regarding prescribing medications for older individuals. It includes medications newly created and new research that provides information to prescribers on the safety of existing pharmaceutical treatments. The goal of the Beers update expert panel (i.e., physicians, healthcare professionals, pharmacists) is to assist in the effort to prevent medication side effects and other related medication problems of the older population (AGS, 2017).

The AGS Beers Criteria (2015), following the recommendations of the Institute of Medicine and based on the latest research (i.e., 6,700 high-quality studies), includes:

- Medications and types of medications that are “potentially inappropriate” for older individuals
- Medications that are potentially inappropriate for older adults with certain common health problems.
- Medication types that should be used with caution in the older adult
- Medication listings of combinations that may result in harmful “drug-drug” interactions
- Medications that should be avoided or have their dose changed in people with poor kidney function
Prescribing physicians and pharmacists must consider the slowed metabolism and excretion of drugs in older patients—not only in the choice of drugs but in the dosage and timing of administration. Because older adults experience a decrease in total body water and a relative increase in body fat, water-soluble drugs become more concentrated and fat-soluble drugs have a longer half-life.

**Physical and Mental Impairments**

Sensory and motor impairments can affect an older adult patient’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 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. An 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, where 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, 2015).

**Alcohol Abuse and Illicit Drug Use**

In a recent national epidemiologic study, among those aged 65 years or older, 2.36% of men and 0.38% of women met the criteria for alcohol abuse. It is estimated that up to 11% of older women misuse prescription medications (benzodiazepines, opioids) and that the numbers of users of nonprescription drugs (i.e., marijuana, cocaine) among older individuals will increase to 2.7 million by 2020. Overall, current figures indicate that 1% of older adults use illicit drugs (Meiner, 2015).

**ASSESSING PATIENTS FOR ALCOHOL ABUSE**

Alcohol abuse by older adults may cause symptoms of anxiety, nervousness, memory impairment, depression, blackouts, confusion, weight loss, and falls. Assessing alcohol abuse in this population can be quite complex, since these symptoms mimic some of the aging changes already discussed.
However, during the nursing assessment there may be other distinguishing symptoms: scent of alcohol on the breath, slurred speech, lack of coordination, unsteady gait, nystagmus, impairment of attention or memory, and even stupor or coma. Other indications of alcohol withdrawal may be present: elevated pulse and blood pressure, autonomic hyperactivity, fever, hand tremors, nausea, vomiting, and/or hallucinations/illusions.

Patients should be cautioned to avoid alcohol when taking medications because it can interfere with drug metabolism and potentiate the effects of many drugs (e.g., benzodiazepines).

Signs of an alcohol or medication-related problem can include memory problems after having a drink or taking medicine, loss of coordination, changes in sleeping habits, unexplained bruises, irritability, sadness, depression, failing to bathe or wear clean clothes, difficulty concentrating, and unexplained chronic pain (Touhy & Jett, 2016; Tabloski, 2014).

Some experts recommend that all older patients be screened for possible alcohol abuse. The SMAST (Short Michigan Alcoholism Screening Test) assessment tool is simple to use and has been modified into a geriatric version (see below).

### SHORT MICHIGAN ALCOHOLISM SCREENING TEST—GERIATRIC VERSION (SMAST-G)

1. When talking with others, do you ever underestimate how much you drink? (Yes or 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 or No)
3. Does having a few drinks help decrease your shakiness or tremors? (Yes or No)
4. Does alcohol sometimes make it hard for you to remember parts of the day or night? (Yes or No)
5. Do you usually drink to relax or calm your nerves? (Yes or No)
6. Do you usually take a drink to take your mind off your problems? (Yes or No)
7. Have you ever increased your drinking after experiencing a loss in your life? (Yes or No)
8. Has your doctor or nurse ever said they were worried or concerned about your drinking? (Yes or No)
9. Have you ever made rules to manage your drinking? (Yes or No)
10. When you feel lonely, does having a drink help? (Yes or No)

Scoring 2 or more yes responses is indicative of an alcohol problem.

Source: Regents of the University of Michigan, University of Michigan Alcohol Research Center. Adapted from Tabloski, 2014; Touhy & Jett, 2016.
ASSESSING PATIENTS FOR DRUG ABUSE

A contemporary concern seen among older individuals is the misuse and abuse of prescription psychoactive medications and pain medications (e.g., opioids). Dependence on sedative, hypnotic, or anxiolytic medications, often prescribed for insomnia and anxiety and taken for many years by the older individual, may result in dependence and abuse. Opioids are ranked second only to benzodiazepines among abused prescription medications by the older population (Touhy & Jett, 2016).

Use of illicit drugs such as cocaine, opiates, and marijuana—previously thought to be just a problem among the younger generations—has become more prevalent among older adults as Baby Boomers, with a history of being more tolerant of such practices, reach retirement age.

Currently, very few validated tools have been created to assess and screen older adults for medication or drug abuse. Signs and symptoms may be subtle, atypical, or mimic other age-related illnesses, thereby leading to misdiagnosis.

The patient’s presenting symptoms may include:

- Erratic changes in affect, mood, or behavior
- Malnutrition
- Bladder and/or bowel incontinence
- Gait disturbances
- Recurring falls, burns, and/or head trauma
  (Meiner, 2015)

Denial is more intense in older adults’ due to cognitive and memory problems and shame. Prescription medication abuse in older adults is two to three times higher than in the general population. Some effective patient outcomes to be used for prescription and nonprescription abuse include:

- Safe detoxification
- Rehabilitation treatment plan
- Behavior modification in the area of drug seeking
  (Meiner, 2015)

Health Literacy and Older Adults

Health literacy—the degree to which individuals have the capacity to obtain, process, and understand basic health information—is a critical element in self-management of medications for patients of all ages. One of the most vulnerable populations at risk for low health literacy is the
elderly. As the U.S. population ages, understanding how age and health literacy are related will be of increased importance within the healthcare system.

It is known through research that health literacy:

- Is linked to increased health disparities, poor health outcomes, inadequate preventive care, increased use of healthcare services, higher healthcare costs, higher risk of mortality for older adults, and several other healthcare safety issues, including medical and medication errors

- Plays a major role in improving health and healthcare quality for all Americans

- Involves more than basic reading and writing skills, even though these are deemed necessary to influence health literacy (e.g., anyone can have low health literacy, including people with good general literacy skills)

- May include the ability to obtain and apply relevant information, understand visual information, operate computers, search the Internet and evaluate health websites, calculate or reason numerically, and subsequently interact with a healthcare professional (Touhy & Jett, 2016)

Effectively assessing health literacy within the clinical setting can be a challenge. The Health Literacy Universal Precautions Toolkit was developed to assist in structuring the delivery of healthcare as if every patient may have limited health literacy. This strategy was designed to benefit everyone regardless of health literacy levels due to the fact it improves understanding (AHRQ, 2015).

**Cost of Medications**

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 (Tabloski, 2014).

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 should 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).

SUPPORTING FAMILY CAREGIVERS

An estimated 25 million family caregivers in the United States provide care for a frail elderly person (spouse, parent, or sibling), ranging from help with daily activities to 24-hour care. Such caregivers may experience added stress, anxiety, and depression from the heavy responsibilities and isolation of caregiving. Asking for respite care, attending support groups, continuing hobbies, and participating in regular exercise are helpful strategies that caregivers can employ to address the stress of caregiving (Tabloski, 2014).

Two thirds of older people who need long-term and end-of-life care rely on family and friends for assistance. Almost one third supplement family care with help from paid providers. Family caregivers also bear an enormous burden in caring for a loved one at the end of life. They play a major role in actual care and in decision-making about care provided by others.

Care provided by family and friends can make the difference between an older adult remaining at home and going to a nursing home or other long-term care facility. Likewise, reducing the burdens on caregivers can delay the need for nursing home care. An important consideration is to educate caregivers about community resources available to help balance the stress of caregiving. Connecting family caregivers to local senior centers, facilities offering respite care, churches, caregiver support groups, and skills training interventions can further reduce caregiver burden. Resources can be located by working with the local Area Agency on Aging, Family Caregiver Alliance, or Eldercare Locator (see “Resources” at the end of this course).

The caregiver experience holds a host of emotions, ranging from sadness, resentment, anger, and a sense of inadequacy to deep gratitude for being able to care for the loved one. Physical exhaustion, inadequate sleep, disrupted routines, and seemingless endless responsibility can lead to mental health problems such as anxiety and depression. Healthcare providers need to be aware of signs of depression or other mental health problems in family caregivers and recommend that they take time to seek treatment.
Demands on caregivers’ time are significant. Most caregivers are women—wives, daughters, or other women, many of whom are juggling childcare, jobs, and other responsibilities. Many women are forced to work fewer hours outside the home, pass up a job promotion, switch from full-time to part-time employment, or even quit their jobs or retire early to provide care for an older loved one. These changes can affect women’s lifetime income, retirement security, and their own needs for long-term care.

Physical and emotional health is also impaired by caregiving. Problems such as depression, anxiety, poor physical health, poor immune function, and increased risk of mortality can result (Touhy & Jett, 2016). Risk factors for caregiver burden include the following:

- Advanced age of the caregiver
- Insufficient resources
- Poor baseline health of the caregiver
- Caring for a loved one with dementia
- History of a difficult relationship between the caregiver and patient

(Touhy & Jett, 2016)

Caring for an older person at home inflicts financial stress on families of even moderate means. Paying for medications, purchasing consumable supplies, or modifying the home environment to prevent falls or to accommodate a wheelchair can create a financial hardship for families. Some may spend as much as 10% of their annual income on caregiving as well as sacrificing their savings. Minority and low-income caregivers bear the greatest burden because they are less likely to be able to afford paid home care assistance or to enjoy a respite from their caregiving responsibilities. Even though the Medicare hospice benefit relieves some of the financial burden of end-of-life care, families can still face severe economic consequences and personal sacrifices.

**BEST PRACTICES FOR REDUCING CAREGIVER STRESS**

Healthcare professionals can support family caregivers by offering these recommendations on reducing stress:

- Seek education and support about the disease or medical condition of your loved one.
- Find a healthcare provider who specializes in the condition.
- Find a healthcare professional who understands the disease process.
- Plan for the future (i.e., legal and financial planning).
- Ask for help from friends and other family members when needed.
- Tap social resources for assistance (i.e., social workers, religious volunteers, etc.).
- Talk about your needs with someone you trust.
• Take time to focus on stress relief and relaxation strategies (i.e., hobbies, exercise, meditation).
• Maintain a sense of humor (when appropriate).
• Find support in religious or spiritual beliefs.
• Set realistic goals.
• Attend to one’s own self-care needs.


LEGAL AND ETHICAL CONSIDERATIONS FOR ELDER CARE

Informed Consent

Giving consent is a concept arising from the ethical principle of self-determination or autonomy. In healthcare, self-determination is expressed through informed consent. Some consent is implied (i.e., as when a patient accepts and cooperates with a dressing change), but some consent becomes complex (i.e., the patient must be free of sedation when making a choice in the emergency department).

Informed consent in healthcare is only possible with the assumption that adults have the capacity for decision-making. Some other complex health-related situations that may affect informed consent include:

• Impaired sensory function
• Low educational level
• Low or limited health literacy
• Low literacy of any kind
• Questionable cognitive status
• Complexity of the procedure
• Participation in a research project
  (Touhy & Jett, 2016)

Legal Proxies

There are a variety of modes of protection that can be provided, including powers of attorney, healthcare proxy, conservatorship, and guardianship. The guiding principle behind these modes of protection is to provide protection in those with questionable capacity and ensure the older
individual’s needs are met and personal rights are protected all at the same time (Touhy & Jett, 2016).

A **power of attorney** designates a person as legally appointed to act on behalf of another individual in ways that are specifically indicated in a legal document. A durable power of attorney for healthcare designates a person responsible to make medical decisions for another person who is unable to do so for him- or herself. However, as soon as the individual regains abilities or chooses to end the authority of the power of attorney, it is no longer in force unless requested.

**Healthcare proxies** (surrogates and/or proxies) provide a hierarchy of those individuals who have the authority to act on a person’s behalf or when the person has lost (either temporarily or permanently) the capacity to make decisions and may not have documented his or her preference. There is a legal responsibility to follow an “order of decision maker” that proceeds down a list until a willing proxy is obtained. For example:

- Guardian
- Spouse
- Majority of adult children
- Parents
- Majority of adult siblings reasonably available for consultation
- Adult relative who has exhibited special care and has regular contact
- Close friend
- Licensed clinical social worker
  (Touhy & Jett, 2016)

**Guardians** (responsible for health and safety) and **conservators** (responsible for financial issues) are individuals, agencies, or corporations that have been appointed to take care of, custody of, and control of an incapacitated person to ensure that his or her needs are met and handled responsibly. Such appointments can be made only at court hearings in which the older adult has been demonstrated to be incapacitated (Touhy & Jett, 2016).

Health professionals who see evidence of cognitive impairment in a patient should ask the spouse, partner, or other family members whether anyone has been designated to act on the patient’s behalf in managing his or her financial affairs, such as paying bills. This requires a general power of attorney or power of attorney for finances, which does not include healthcare decisions. Designating a trusted family member or friend as a general power of attorney helps ensure that the patient’s financial affairs will be handled appropriately rather than exploited, a common type of elder abuse.
If the patient has no family or friends, an attorney or an officer of a bank may serve in this role (Tabloski, 2014). A patient who has no spouse, partner, or other family member to fulfill this role may also need a guardian and a conservator, both of whom are appointed by the court.

**Advance Directives**

An advance directive specifies a person’s preferences for care in the event that he or she is unable to communicate those wishes—for example, in the advanced stages of AD. A **living will** is a type of advance directive that provides a written expression of the patient’s wishes regarding the use of medical treatments in the event of a terminal illness or condition. In an advance directive known as a durable power of attorney (see above), the person can also name a representative to see that his or her wishes concerning care are carried out.

Physicians should have copies of advance directives available or be able to refer families to a source for the appropriate forms. Federal law requires hospitals to inform patients that they have a right to complete an advance directive (Patient Self-Determination Act), but advance directives are regulated by state law and may differ from state to state.

Having an advance directive in place is important for all adults, young or old. An advance directive outlines the person who is responsible for making healthcare decisions (only in the case that the patient is unable) as well as the kind of medical treatment the patient wishes or does not wish to have. Advance directives can also outline specific instructions for end-of-life care and organ donation. Once the advance directive is outlined, copies should be placed in the medical record. It is also advised for the patient to give a copy to family members as well as others who may be involved in the care of the patient. A person who is named in an advanced directive should also have a copy.

*(See also Family Caregiver Alliance in “Resources” at the end of this course to access state-specific information and appropriate forms for advance directives.)*

**CPR Versus DNAR Orders**

Do-not-attempt-resuscitation orders (DNAR) (also known as *do-not-resuscitate [DNR] orders*) have been renamed to emphasize the minimal likelihood of successful cardiopulmonary resuscitation (CPR). Patients and families need to understand not only the unlikely success of resuscitation 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 need to explain that withholding CPR does not equate with letting someone die. Rather, a DNAR order should be 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 the resulting quality of life.
The DNAR order should be readily available in the event of an emergency to ensure that the patient’s wishes will be honored. It should be posted prominently, either on the head or foot of the bed, or if the patient is at home, on the refrigerator. The specifics of the order should also be carefully documented in the patient’s chart. Some patients prefer the additional safeguard of wearing a bracelet or necklace to alert care providers that a DNAR order is in force (Tabloski, 2014).

**Physician Orders for Life-Sustaining Treatment (POLST)**

Several states have adopted an advance directive form developed in Oregon and known as POLST, which stands for “Physician Orders for Life-Sustaining Treatment.” This simple form, to be completed and signed by both patient and a physician, specifies the patient’s preferences concerning measures such as antibiotics, artificial nutrition (including tube feeding) and hydration, CPR, comfort measures, and mechanical ventilation/respiration. This document is not considered an advance directive but rather it is the physician’s order to healthcare facilities or healthcare personnel (Touhy & Jett, 2016).

The form is printed on bright-colored paper and stays with the patient during transfers from one care setting to another. Patients at home keep the POLST form on the refrigerator or where emergency responders can easily find it. Long-term care facilities retain POLST forms in residents’ charts.

**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 wills. 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 generally occurs when harm or distress is caused to an older person within the context of a relationship where there is an expectation of trust. A perpetrator of abuse may include children, other family members, spouses, staff at nursing facilities, assisted living, or any person with a propensity to do harm, physical or otherwise (e.g., financial/banker). However, in 60% of elder abuse and neglect cases, perpetrators are adult children or spouses of the victim (NCOA, 2017).
Elder abuse is difficult to track. There is no national reporting system, and statistics can be unreliable and outdated. In addition, older adults may be hesitant to report abuse out of fear. However, estimates indicate that 1 in 10 Americans aged 60 and over have experienced some form of elder abuse. Some estimates range as high as 5 million elders being abused annually. However, it is also estimated that only 1 in 14 cases of elder abuse are reported to authorities (NCOA, 2017).

Elder abuse can take many forms, including physical, sexual, emotional, financial, caregiver neglect, and abandonment. Healthcare providers should regularly screen for elder abuse and recognize any unusual symptoms or patient responses that may indicate abuse.

### TYPES OF ELDER ABUSE

**Physical**  
Inflicting physical pain or injury on an elder (e.g., slapping, bruising), assault, threatening with a weapon, or inappropriately restraining by physical or chemical means

**Emotional or Psychological**  
Exposure to threatening acts or coercive tactics (i.e., humiliation or embarrassment, controlling behavior, social isolation, disregarding needs, or destroying property)

**Sexual**  
Sexual contact against an older adults’ will (i.e., intentional touching directly or through clothing of the genitalia, anus, groin, breast, mouth, inner thigh, or buttocks)

**Neglect**  
Failure or refusal of a caregiver or other responsible person to provide for an older adult’s basic physical, emotional, or social needs (i.e., nutrition, hygiene, clothing, shelter, access to healthcare) or failure to protect them from harm (i.e., exposure to unsafe activities or environments)

**Exploitation or Financial Exploitation**  
Unauthorized or improper use of the resources of an older adult for monetary or personal benefit, profit, or gain (i.e., forgery, misuse or theft of money or possessions, use of coercion or deception to surrender finances or property, improper use of guardianship or power of attorney)

**Abandonment**  
The willful desertion of an older adult by a caregiver or other responsible person

**Self-neglect**  
Failure of a person to perform essential self-care tasks, which failure threatens his/her own health or safety

Abuse of the older adult is intentional, and many states have reporting statutes that require certain persons, including nurses and other healthcare professionals, who become aware of the abuse, neglect, or exploitation to report it to the appropriate authorities. Most elderly abuse (90%) occurs in the home setting and is committed by adult children or spousal caregivers. It is further complicated by cultural perspectives and an undue influence by the perpetrator (Touhy & Jett, 2016).

Financial abuse is the most common form of elder abuse reported in the United States. Many older people have lost their homes and their life savings because of financial exploitation. The Internet has increased the opportunity for scam artists to prey on elders who may be cognitively impaired (Touhy & Jett, 2016).

As a consequence of abuse, posttraumatic stress syndrome and self-efficacy may never be resolved. Studies have shown that even older individuals subjected to minimal abuse have been found to have a 300% higher risk for death than those who have never been abused (Touhy & Jett, 2016).

Risk Factors

Risk factors for becoming an abuse victim include:

- Lack of social support and isolation
- Cognitive impairment, especially those with aggressive behaviors (including Alzheimer’s or other dementias)
- Mentally frail
- Physically frail
- Women living alone or in a household with family members
- Having been abused in the past
- Behavior considered aggressive, demanding, or inappropriate
- Living in an institutional setting
- Feeling deserving of the abuse

Risk factors for becoming an abuser include:

- Family member
- Someone with emotional or mental issues
- Someone who is abusing alcohol or other substances
- History of family violence
• Cultural acceptance of interpersonal violence
• Caregiver frustration
• Social isolation
• Impaired impulse control or rage of the caregiver
  (Touhy & Jett, 2016)

People with Alzheimer’s disease or other cognitive impairment as well as people with disabilities are at higher risk than other older adults. Caring for a person with AD can cause stress, depression, feelings of isolation, financial worries, and substance abuse, any or all of which can lead to elder abuse. Violent behavior by the patient may also lead to physical abuse by the caregiver. Respite care for the patient and caregiver—with counseling and supportive, professional assistance for the caregiver—can help prevent elder abuse. In severe cases, it is usually necessary to separate the patient from the caregiver, initiate legal action, and find a safe facility for the patient.

Assessment and Screening

Health professionals should be alert to any indication of elder abuse. During the physical examination, it is important to look for physical signs of possible abuse or neglect. These may include bruising, malnutrition, burns, scars, and fractures. Signs of sexual abuse may include trauma to the vulva or rectum or any unexplained vaginal or anal bleeding. Clinical findings of neglect may include dehydration, malnutrition, decubitus ulcers, and contractures.

Assessment and interview of the patient separate from the caregiver may be needed to confirm any suspicion of abuse or neglect (Tabloski, 2014). Office or emergency department visits provide a safe and confidential environment. Patients should have the opportunity to respond to the questions in a confidential setting outside the presence of the patient’s family, caregiver, or the person who brings the patient to the appointment.

Screening questions for elder abuse may be used with patients. Questions for routine screening include the following:

• Do you feel safe where you live?
• Who prepares your food?
• Does someone help with your medications?
• Who takes care of your checkbook?
• Does anyone at home hurt you?
• Do they scold or threaten you?
• Do they touch you without your consent?
• Are you afraid of anyone in your life?
• Are you alone a lot?
• Are you able to use the telephone any time you want to?
• Has anyone forced you to do things you did not want to do?
• Has anyone taken things or money that belong to you without your permission?
• Has anyone ever failed to help you take care of yourself when you needed help?

(Stanford School of Medicine, 2014)

Nurses, physicians, and other clinical providers in all settings where older people receive care also need to be aware of their legal requirements for reporting abuse to the appropriate government agencies. Anyone can and should report suspected elder abuse to the local Adult Protective Services agency. State reporting numbers are available at the National Center on Elder Abuse website (see “Resources” at the end of this course).

END-OF-LIFE CARE

The process of dying has changed over the past century due to technological and medical health advances. An increased lifespan has also created complex medical choices and shaped an entirely new generation of individuals with chronic illnesses. Many in society deny death, believing that somehow medical science will cure any patient. Death is also perceived as a failure of the healthcare system rather than a natural aspect of life.

But death is inevitable, and 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 her- or himself. 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 power of attorney (see also above under “Legal and Ethical Considerations”).

Palliative and Hospice Care

At the center of palliative and hospice care is the belief that each individual has the right to die pain-free and with dignity, and that families receive the necessary support to allow them to do so. Today, palliative care is the overarching concept, with hospice care incorporated as one of its specialties (NHPCO, 2017b).

Palliative care is defined as “patient and family-centered care that optimizes quality of life by anticipating, preventing, and treating suffering. Palliative care throughout the continuum of illness involves addressing physical, intellectual, emotional, social, and spiritual needs and to facilitate patient autonomy, access to information, and choice” (NHPCO, 2017b).
The **palliative care philosophy** is characterized by the following guidelines:

- Palliative care is focused on managing suffering, whether it be physical, psychological, emotional, or spiritual.
- Care is provided and services are coordinated by an interdisciplinary team.
- Patients, families, and palliative and nonpalliative healthcare providers collaborate and communicate about care needs.
- Services are available concurrently with or independent of curative or life-prolonging care.
- Patient and family hopes for peace and dignity are supported throughout the course of illness, during the dying process, and after death.  
  (NHPCO, 2017b)

**Hospice** is a concept of care and not a building where care is given. The hospice care concept is considered to be the model for quality, compassionate care for individuals facing life-limiting illness or injury. This means that given the patient’s disease and current status, doctors expect that he or she will die within six months. (Data show that most patients enrolled in hospice care live less than two months.)

Terminal patients enrolling in hospice care sign a consent agreeing to accept care that focuses on comfort rather than on cure or treatments that prolong life. Hospice care involves a team-oriented, holistic approach of expert healthcare professionals, pain management, and emotional and spiritual support designed to meet the needs and wishes of each unique individual patient and family (Touhy & Jett, 2016; NHPCO, 2017a).

The **hospice care philosophy** is characterized by the following guidelines, in addition to the palliative care guidelines described above:

- Hospice is a philosophy of care, not a facility, with the primary focus on keeping the patient comfortable at the end of life.
- Hospice affirms life, not death.
- Hospice attempts to maximize the patient’s quality of life.
- Hospice approach offers care to the dying patient and their family as one unit.
- Hospice is holistic care.

A highly qualified, professional team of healthcare professionals and volunteers work together to meet the physiological, psychological, spiritual, social, and economic needs of the patient and family facing terminal illness and bereavement. Hospice offers a coordinated program of palliative and supportive care (i.e., speech, occupational, physical therapies, etc.) with the focus of keeping the terminal patient in his or her home as long as possible. Hospice is accountable for the appropriate allocations and utilization of its resources to providing optimum, culturally
competent care consistent with the patient and family’s desires and needs (Touhy & Jett, 2016; NHPCO, 2017a).

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. 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.

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.

End-of-Life Care Team

When caring for the older adult and their family on a day-to-day basis, whether it be in a hospital, care facility, hospice respite facility, or the patient’s home, the focus of care requires knowledge of the grieving and dying processes as well as providing relief of symptoms, managing or improving the cognitive and functional limitations, and supporting the caregiver(s) (i.e., family, friend, coworker) who are coping with multiple issues simultaneously (Touhy & Jett, 2016).

Interdisciplinary team members play a primary and essential role in the palliative/end-of-life journey for patients and their families. They provide a variety of services based on the desires and needs of both the patient and the family.

Nursing skills needed for the practice of gerontologic palliative/end-of-life care include:

- Ability to communicate to patients and families regarding the dying process
- Being knowledgeable about symptom management control and pain control techniques
- Having the ability to provide comfort-oriented nursing interventions
- Being able to take care of oneself
• Recognizing changes that precede imminent death
• Working with patients and families who are angry and stressed
• Being knowledgeable in ethical and legal issues while administering end-of-life palliative therapies
• Being knowledgeable regarding advance directives in order to educate patients and families
• Being adaptable and sensitive to religious, cultural, and spiritual issues
• Being knowledgeable of when to refer issues to other team members, such as social workers, chaplains, bereavement counselors, community resources, and other identified needs
  (Touhy & Jett, 2016)

Other interdisciplinary team members may include:

• **Physicians (personal and hospice):** Focus on treatment and management of the symptoms of providing comfort, relieving pain, and improving the patient’s quality of life

• **Social workers:** Provide support through social, emotional, and financial counseling

• **Home health aides:** Provide needed assistance with the patient’s hygiene and ADLs (i.e., bathing, oral care to prevent infection), along with some household chores and companionship

• **Chaplains, clergy, or other counselors:** Provide support through spiritual and religious counseling (may notify patient’s own religious counselor for further assistance)

• **Bereavement counselors:** Support family, friends, and others after the patient’s death and through the beginning of the grieving process; in hospice this service extends for up to 13 months or beyond (per family wishes) to cover the anniversary of the death

• **Physical therapists:** Assist in managing pain and discomfort by increasing mobility and other issues associated with inactivity, with the goal to extend an older adult’s physical independence and enhance quality of life

• **Occupational therapists:** Focus on functional ability that can be concluded within a relatively short time frame; tasks could include activities of daily living (i.e., dressing, toileting, repositioning); the use of orthotic devices that can extend caregiving at home (i.e., if this is the patient’s wish); these services help the patient to maintain a balanced level of activity while providing meaningful sense of worth to patient, family, others

• **Speech-language therapists:** Assist with direct speech problems, offer alternative communication strategies, or work with swallowing issues
• **Massage therapists:** Provide comfort and relaxation while also improving flexibility and mobility

• **Art and music therapists:** Assist in restoring comfort through self-awareness and communication of feelings and experiences; provides a means for patients to express themselves and can assist in emotional stability and some cognitive abilities

• **Dietitians/nutritionists:** Evaluate eating habits for patterns and consequences of the dying process

• **Trained volunteers:** Carry out chores such as shopping, cleaning, reading to the patient, being “present” for the patient and family, etc.

(AFTD, 2017; Russell & Bahle-Lampe, 2016; NHPCO, 2017a)

**Veterans and End-of-Life Care**

Veterans comprise up to 20% of the Americans who die in any given year. The literature shows that military basic training and subsequent service as young adults may have profound effects on how veterans cope with pain and suffering, interact with family and healthcare professionals, and manifest emotional and spiritual distress as older adults. Even though palliative care and hospice care are part of the required Veterans Administration (VA) health benefit package for veterans, many veterans continue to receive their palliative and end-of-life care outside the VA system. Wherever they elect to receive this care, it is important that healthcare personnel inquire about a patient’s veteran status and explore their current status as it pertains to being a veteran (NHPCO, 2017c).

As a major aspect of military training, men and women are prepared to be soldiers with the bravery to face hardship and danger and to win battles. Thus, veterans, as a group, are known to show incredible stoicism in the face of devastating injury, illness, and even death. This is important for the healthcare professional to understand, as it may subtly manifest in the veteran patient as not reporting pain and other symptoms of suffering (NHPCO, 2017c).

Some veterans (especially those who are older adults) have learned to cope over the years. However, others may be unable to accommodate for their profound responses or experiences. This must be taken into account when providing culturally competent palliative/end-of-life care to patients who are veterans.

The Veteran’s Administration Health System (VAHS) addresses two specific problems that veterans may have faced and need to be taken into consideration when they receive palliative/end-of-life care: 1) posttraumatic stress disorder, and 2) military sexual trauma. It is important for healthcare professionals both within and outside the Department of Veteran’s Affairs to be aware of and to explore the impact of these two issues as they apply to patients who are veterans (NHPCO, 2017c).
In collaboration with the National Hospice and Palliative Care Organization, the VAHS has established the **We Honor Veterans** campaign to assist in connecting veterans with existing hospice or palliative care services.

Nursing’s veteran-related standards of practices for this cohort of the older adult population include:

- **Veteran and family-centered care:** Eg., assess the special needs of older veterans and their families.

- **Bereavement:** Eg., assess veterans’ past military experience, service-connected trauma, and effects of war.

- **Clinical excellence and safety:** Eg., offer age-appropriate education that includes posttraumatic stress disorder and other issues faced by veterans.

- **Workforce excellence:** Eg., provide all hospice and/or palliative care staff with orientation, training, development opportunities, and continuing education appropriate to the lives and experiences of older veterans (i.e., patients).

- **Compliance with laws and regulations:** Eg., use the military history checklist to assist in identifying veteran patients, evaluate the impact of the military experience, and determine if the patient and surviving dependents may be entitled to certain veterans’ benefits.
  (NHPCO, 2017c)

**CONCLUSION**

Caring for America’s aging population presents unique challenges to healthcare providers and the entire healthcare system. The healthcare needs of older adults are every bit as specialized as those of America’s children. Given the uncertainty of what the healthcare system will look like over the next decades, it is impossible to predict just how those needs will be met.

Three fourths of Americans over age 65 have two or more chronic illnesses. Graying Baby Boomers will only intensify this burden. Chronic illness and the ongoing epidemics of cancer and HIV/AIDS point to exponential escalation in the demand for geriatric care. Knowledge, skills, and tools to assist in the assessment and management of the multiple aspects of caring for older adults are important considerations for the various healthcare provider roles.

As the healthcare system continues to change, self-care and prevention remain paramount in the health of older people. Nurses, rehabilitation therapists, and other healthcare providers have a critical role in educating patients and their caregivers about what they can do to improve or maintain their health and independence and to achieve the highest possible quality of life.
RESOURCES

Administration on Aging (U.S. DHHS)
https://www.acl.gov/about-acl/administration-aging

Beck Depression Inventory
https://www.bmc.org/sites/default/files/For_Medical_Professionals/Pediatric_Resources/Pediatrics__MA_Center__for_Sudden_Infant_Death_Syndrome__SIDS_/Beck-Depression-Inventory-BDI.pdf

Eldercare locator (U.S. DHHS)
https://eldercare.acl.gov/Public/Index.aspx

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

MyPlate for Older Adults

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

National Center on Elder Abuse State Resources

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

POLST programs by state
http://polst.org/programs-in-your-state/

We Honor Veterans (Hospice resources for veterans)
https://www.wehonorveterans.org/

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1. Life expectancy in the United States is highest among:
   b. African American men.
   c. Non-Hispanic white men.
   d. Non-Hispanic white women.

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

3. Which is a typical goal of the older adult patient in regard to his or her healthcare?
   a. Following their doctor’s prescribed plan
   b. Letting go of the activities they previously enjoyed
   c. Balancing quality and length of life
   d. Being protected from bad news about the prognosis

4. According to research by Iloabuchi and colleagues, key risk factors associated with hospital readmission in low-income older adults include:
   a. Living alone and not having Medicaid.
   b. Living in a retirement community and not having a primary care provider.
   c. Hypertension and not having Medicare.
   d. Diabetes and not receiving regular eye care.

5. The warning signs of heat stroke include:
   a. Low body temperature, bradycardia, and confusion.
   b. Blurred vision, oliguria, and increased hunger.
   c. Headache, dizziness, and nausea.
   d. Normal pulse, polyuria, and thirst.
6. What are the signs and symptoms of hypothermia?
   a. Delusions, nausea, and vomiting
   b. Ruddy complexion, thirst, and drooling
   c. Confusion, disorientation, and lack of hand coordination
   d. Loss of bowel and bladder function, syncope, and irritation

7. A blood pressure of 148/98 mmHg falls into which blood pressure category?
   a. Normal
   b. Prehypertension
   c. Stage 1 hypertension
   d. Emergent care

8. Which imaging means is used to distinguish between normal age-related cardiovascular changes and the presence of cardiovascular disease?
   a. A cardiac stress test
   b. An X-ray of the chest
   c. A cardiac CT scan
   d. An MRI scan of the heart

9. The recommendation for regular exercise for older adults, taking into account each individual’s specific health conditions, is:
   a. 50 minutes daily for five days a week.
   b. 20 minutes daily for three days a week.
   c. 15 minutes daily for seven days a week.
   d. 30 minutes daily for five days a week.

10. A result of age-related decreased renal blood flow is:
   a. Slow heart rate recovery after exercise.
   b. Slower elimination of certain medications.
   c. Muscle atrophy.
   d. Urinary incontinence.

11. Which treatment is considered first-line therapy for stress incontinence in older adult patients?
   a. Catheterization to avoid social isolation
   b. Anticholinergic drugs, except for patients with dementia
   c. Behavioral modifications
   d. Topical estrogen for female patients
12. Hypothyroidism is characterized by which symptoms?
   a. Tachycardia, hot flashes, and mood swings
   b. Hypernatremia, thirst, and high body temperature
   c. Tremors, elevated temperature, and anxiety
   d. Lethargy, fatigue, and lack of mental alertness

13. Stereotyping older adult patients as sexually inactive may cause healthcare providers to overlook symptoms of:
   a. Hypothyroidism.
   b. Breast cancer.
   c. Prostate enlargement.
   d. HIV/AIDS.

14. The healthcare provider assessing an older adult patient does **not** anticipate finding:
   a. A loss of taste buds.
   b. A sharper sense of smell.
   c. Thickening of the eardrums.
   d. Decreased visual acuity.

15. Higher protein consumption is especially important for older women due to the fact that:
   a. Women exercise more than men.
   b. Women do most of the cooking and shopping.
   c. Women have a more difficult time replacing age-related muscle loss.
   d. Women are frailer than older adult men.

16. Which is **not** a source of calcium?
   a. Tofu
   b. Yogurt
   c. Caffeine
   d. Dark green leafy vegetables

17. The B vitamins are particularly important to the function of the:
   a. Nervous system.
   b. Gastrointestinal system.
   c. Respiratory system.
   d. Renal system.
18. Compared with the sleep of younger people, older adults generally need:
   a. More sleep.
   b. Less sleep.
   c. About the same amount of sleep.
   d. More stage 5 (REM) sleep.

19. The gradual onset of confusion in older adults may be reversible when related to:
   a. Febrile urinary tract infection.
   b. Alzheimer’s disease.
   c. Electrolyte balance.
   d. Decreased intracranial pressure.

20. 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

21. Which comorbid condition increases the risk of Alzheimer’s disease?
   a. Diabetes
   b. Hypothyroidism
   c. Sarcoidosis
   d. Chronic obstructive pulmonary disease

22. A factor shown to protect cognitive function across the lifespan is:
   a. A low-carbohydrate diet.
   b. A high body mass index.
   c. Regular physical exercise.
   d. A high school education.

23. Which action helps to support a lower-stress environment for the patient with dementia?
   a. Varying the patient’s daily routine
   b. Keeping a predictable patient daily routine
   c. Providing stimulating conversation in a group setting
   d. Providing all activities of daily living for the patient
24. When providing instructions to a patient with Alzheimer’s disease, it is best to:
   a. Raise your voice automatically to compensate for distractions.
   b. Use only verbal instructions.
   c. Focus the instructions only on the desired end result.
   d. Give the instructions one step at a time.

25. Risk factors for social isolation in older adults include living alone, low self-esteem, and:
   a. Obesity.
   b. Depression.
   c. Vision impairment.
   d. Heart disease.

26. Which is a correct statement describing depression and aging?
   a. As individuals age, the rate of depression decreases.
   b. The prevalence of depression is highest in men ages 65 to 74.
   c. Most older Americans report being depressed due to physical ailments.
   d. Depression is not considered a normal part of the aging process.

27. During an assessment, an older adult patient tells the nurse, “I feel as though I am ready to die.” The nurse recognizes this statement as:
   a. The normal feelings of an older adult realistically appraising old age.
   b. The normal feelings of an older adult who is disappointed with life.
   c. A red flag usually indicating cognitive impairment.
   d. A red flag indicating depression or suicide risk.

28. Which pair of activities represents instrumental activities of daily living?
   a. Dressing and eating
   b. Driving and managing finances
   c. Toileting and maintaining continence
   d. Getting out of bed and bathing

29. A physical therapist reviews the use of a new type of walker with an older adult patient and his or her caregiver by:
   a. Skipping questions on understanding because the patient has used a walker in the past.
   b. Incorporating language in his or her explanation that is targeted to the patient’s caregiver.
   c. Sitting face-to-face with the patient and caregiver while discussing the new walker.
   d. Asking multiple questions together about the new walker’s functional features.
30. 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

31. What are the two most essential issues to assess when determining the older patient’s risk for falling?
   a. The neighborhood and traffic
   b. The rug placement and railings
   c. The patient’s mobility and gait
   d. The patient’s ability to use a walker correctly and strength

32. An occupational therapist is meeting with a patient with a high fall risk. The therapist reviews strategies to improve home safety and reduce falls, including:
   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.

33. 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.

34. Older adult patients taking five or more drugs are at higher risk for:
   a. Hypertension.
   b. Memory loss.
   c. Diabetes.
   d. Falling.
35. Which medication or drug class is often implicated in adverse drug events in older adult patients?
   a. Albuterol
   b. Warfarin
   c. Calcium channel blockers
   d. Testosterone

36. Which characteristic is a risk for increased levels of caregiver burden?
   a. Having adequate resources
   b. Being of younger age
   c. Maintaining optimal health
   d. Being of advanced age

37. Which is a type of advance directive that specifies in writing an individual’s healthcare preferences?
   a. A living will
   b. A conservatorship
   c. A charitable trust
   d. A general power of attorney

38. Which is a true statement about do-not-attempt-resuscitation (DNAR) orders?
   a. DNAR orders can be implemented by a physician or nurse when the family fails to do so.
   b. DNAR orders must be documented in the patient chart or the orders can be ignored.
   c. DNAR orders should be readily available in the event of an emergency.
   d. DNAR orders are equivalent to letting someone die.

39. 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
40. As defined by the National Hospice and Palliative Care Organization, palliative care is described as:
   a. Compassionate care for individuals facing life-limiting illness or injury.
   b. Patient and family-centered care that optimizes quality of life.
   c. Treatment that begins once the patient begins the dying process.
   d. Treatment that begins once the patient’s pain becomes intractable.

41. Hospice is a model or concept of care that:
   a. Offers palliative care to patients recovering from cancer.
   b. Is available to patients with terminal illness.
   c. Is provided most frequently in nursing homes.
   d. Aims to shorten the survival of patients with unmanageable pain.