

CONTINUING EDUCATION for Occupational Therapists

OCCUPATIONAL THERAPY AND HEALTHY AGING IN PLACE

PDH Academy Course #OT-1802 | 4 CE HOURS



This course is offered for 0.4 CEUs (Intermediate level; Category 2 – Occupational Therapy Process: Evaluation; Category 2 – Occupational Therapy Process: Intervention; Category 2 – Occupational Therapy Process: Outcomes).

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Course Abstract

This course provides an overview of Occupational Therapy's role in healthy aging in place, with attention to diagnoses, terminology and procedures, and process. It concludes with case studies.

Target audience: Occupational Therapists, Occupational Therapy Assistants (no prerequisites).

NOTE: Links provided within the course material are for informational purposes only. No endorsement of processes or products is intended or implied.

Learning Objectives

At the end of this course, learners will be able to:

- Differentiate between common chronic diseases associated with aging
- Identify terminology and procedures pertaining to aging
- Recognize roles of occupational therapy in healthy aging in place
- Recall elements of three aging-focused case studies

Timed Topic Outline

- I. Common Chronic Diseases Associated with Aging (90 minutes)
Type 2 Diabetes Mellitus (DMII), Arthritis, Dementia / Alzheimer's, Urinary Tract Infection (UTI) and Sepsis, Respiratory Disorders, Cardiovascular Disease, Low Vision, Osteoporosis, Mental / Behavioral Health
- II. Common Terminology (10 minutes)
- III. Role of Occupational Therapy in Healthy Aging in Place (45 minutes)
Overview, Settings, Areas Addressed, Process
- IV. Case Studies (75 minutes)
- V. Conclusion, Additional Resources, References, and Exam (20 minutes)

Delivery & Instructional Method

Distance Learning – Independent. Correspondence/internet text-based self-study, including a provider-graded multiple choice final exam. *To earn continuing education credit for this course, you must achieve a passing score of 80% on the final exam.*

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Course Author Bio & Disclosure

Midge (Annamaria) Hobbs, OTR/L, originally from the UK, graduated with an MA in Occupational Therapy from Tufts University, Boston MA in 2005. She spent the following ten years working in long-term acute care gaining experience as a clinician, educator, and manager. In 2010, Midge was selected for the inaugural cohort of AOTA's Emerging Leaders Development Program (ELDP). Since then she has continued to amplify AOTA's leadership initiatives by serving the Emerging Leaders Development Committee (ELDC) as Chairperson and as a member of AOTA's Volunteer Leadership Development Committee (VLDC). She is currently the Editor of AOTA's A Mindful Path to Leadership, a new online self-paced leadership development course, and she co-authored Module 3: Mentoring and Leadership with current AOTA president, Amy Lamb.

Midge is currently employed as a consultant for internship development in the adolescent residential psychiatric programs at Sheppard Pratt Hospital in Baltimore MD, an adjunct professor at the MGH Institute of Health Professions in Boston, and a clinician at local rehab and assisted living facilities. Midge is also enrolled at Thomas Jefferson University for her post-professional OTD with a specialty in teaching in the digital age. In her limited spare time she watches English soccer and eats a lot of popcorn.

DISCLOSURES: Financial – Midge (Annamaria) Hobbs received a stipend as the author of this course. Nonfinancial – No relevant nonfinancial relationship exists.

INTRODUCTION

According to the Centers for Disease Control and Prevention (CDC), aging in place is defined as “the ability to live in one’s own home and community, independently and comfortably, regardless of age, income or ability level.”¹ The AARP has determined that at least 90% of individuals over 65 would prefer to age in place – to remain in their own homes as they age, rather than relocating to senior housing facilities or nursing homes.² While escalating costs are a factor, there is also a general sense of dissatisfaction among older Americans regarding the trajectory and quality of long-term care; further, research indicates that health and wellbeing deteriorates with each change of environment.³

Despite the preference to remain at home, there are significant challenges associated with successful aging in place. In addition to financial concerns, many older adults experience chronic disease, an increase risk of falls, and mental health concerns as they age.

The National Council on Aging (NCOA) reports that approximately 92% of older adults have been diagnosed with at least one chronic condition, with diabetes, heart disease, cancer and stroke contributing to two thirds of deaths among older adults each year. Falls are the leading cause of trauma-related injuries and hospital admissions among seniors. The United States spends approximately \$30 billion a year in treating injuries associated with falls. One in four older adults is also said to experience mental health challenges, including depression and anxiety disorders, although the majority do not seek help or receive treatment. Additionally, the number of older adults with substance abuse concerns continues to increase annually. Whether undiagnosed or untreated, mental health and substance abuse challenges contribute to poorer health outcomes, higher medical care needs, increased caregiver burden, and a decline in quality of

life with a higher mortality rate and suicide risk.⁴ These health related challenges, combined with fear of losing their independence, often leads to hesitancy around asking for help, which may lead to greater isolation, increased safety concerns, and a further decline in health and wellbeing.²

Clearly, a gap exists between the goal of living independently at home and making aging in place both a reality and a success. Therefore, every consideration must be made to review each individual case to ensure safety and minimize discomfort, injury, and possible fatality. This need not be a significant expense or inconvenience, but it does require collaboration, education, and adaptation, and frequently necessitates some environmental remodeling to accommodate changes in health and functional ability.

Occupational Therapy (OT), with its distinct focus on evaluating individual needs and developing meaningful, client-centered interventions, can help individual maximize functional capacity through education, the improvement of strength and activity tolerance, psychosocial support, and environmental adaptations. While some occupational therapists become Certified Aging in Place Specialists (CAPS), it is important that all therapists, regardless of their primary practice area, recognize that they can play a key role in successful aging in place with the goal of enhancing quality of life within the home environment by allowing older adults to continue participating in meaningful activities and by facilitating the necessary modifications to ensure safety.

COMMON CHRONIC DISEASES ASSOCIATED WITH AGING

Type 2 Diabetes Mellitus (DMII)

Description: Diabetes is a chronic condition that affects the way the body manages blood sugar or glucose levels. In Type 2 diabetes, the hormone that regulates glucose levels, insulin, is not made or used appropriately by the body. This leads to **hyperglycemia**, a buildup of glucose in the bloodstream. Over time, chronic high glucose levels can have significant health complications including peripheral **neuropathy**, cardiovascular problems, and vision impairments.⁵

Pathophysiology: Type 2 diabetes mellitus, also known as insulin resistance, typically develops in adults and prevalence increases with age. Up to a third of individuals over the age of 65 experience impaired glucose tolerance and are diagnosed with the disease, while it is estimated that approximately 1 in 4 individuals go undiagnosed. While the disease affects all races, in the United States, the populations most

impacted are Native Americans, Hispanic-Americans, and Asian-Americans.⁶ An estimated \$245 billion is spent on medical costs each year in the United States; according to the CDC, risk of death is 50% higher for those diagnosed with the disease than those without. In 2015, approximately 1.6 million deaths were attributed to diabetes; the World Health Organization (WHO) projects that this number will continue to grow and by 2030 diabetes will be the seventh leading cause of death in the U.S.^{5,7}

In Type 2 diabetes, the normal processing of glucose – the main source of energy for the body’s cells – begins to fail. Instead of moving into the cells, glucose builds up in the bloodstream, and as levels increase the insulin-producing beta cells in the pancreas respond by releasing more insulin. Eventually, the beta cells become impaired and can no longer meet the body’s demands. Pathogenesis of diabetes mellitus is considered complex, but genetic predisposition is known to play a role along with a cluster of risk factors, including obesity, inactivity, and diet, which typically precede and predict onset. In addition, certain hormonal diseases such as Cushing’s syndrome may lead to insulin resistance and diabetes.^{5,8}

Clinical picture: Prediabetes is a condition defined by higher than normal levels of glucose in the bloodstream but not high enough to be classified as diabetes. However, if left untreated prediabetes often develops into Type 2 diabetes. Symptoms of diabetes typically develop slowly and mild hyperglycemia is often asymptomatic, which may result in delayed diagnosis. Typical symptoms include **polydipsia** and **polyuria** as excess glucose levels in the bloodstream cause fluid to be drawn from the tissues. This may lead to dehydration and excess thirst causing weakness, fatigue, mental status changes, and orthostatic hypotension. Additionally, when excessive calories are lost through the urine, individuals with diabetes may lose weight and often experience an increase in hunger.⁵

Diagnosis includes a **glycated hemoglobin (AC1) test** to determine the average blood glucose level for approximately 2-3 months.

Result	AC1
Normal	< 5.7%
Prediabetes	5.7% to 6.4%
Diabetes	6.5% or higher

American Diabetes Association⁹

If the AC1 test is not available, doctors may perform random or fasting blood sugar tests, or an oral glucose tolerance test. Once diagnosed, a physician will recommend an AC1 target range depending on age and other individual factors, but the American Diabetes Association suggests that AC1 levels should be checked

between two and four times a year to assess treatment progress. A medical professional will also periodically check cholesterol levels, thyroid, liver, and kidney functions, and blood pressure, as well as recommend regular eye and foot exams.^{9 10}

There are many complications associated with diabetes, particularly if the disease is not managed well, which can lead to a number of significant health problems. Diabetes can affect the body's ability to heal, leading to frequent infections or non-healing skin problems. Individuals with diabetes are also 40% more likely to develop eye problems such as glaucoma and cataracts. Approximately half of all those diagnosed with diabetes also experience nerve damage in the form of peripheral neuropathy. Symptoms include numbness, tingling, pain, and/or loss of sensation. Injury is commonplace as well as skin changes due to poor circulation, which may lead to narrowing and hardening of the peripheral blood vessels. For many, reduced blood flow evolves into peripheral arterial disease (PAD) that may further increase the risk of skin infections, which may in turn lead to amputation. People with diabetes are at a higher risk for amputation than any other chronic condition. Further complications include the development of hypertension and kidney disease, while individuals with diabetes are also 1.5 times more at risk for a stroke. Studies also indicate that increased stress and depression are common complications associated with the disease.¹¹

There is no cure for diabetes. Treatment is tailored to individual needs, which is typically a balance of medication and self-management strategies that centers around diet and exercise. Medications focus on lowering blood glucose levels, relieving symptoms, and preventing complications. An essential aspect of the treatment plan is regular monitoring of blood glucose levels and healthcare providers recommend keeping a log to monitor individual target ranges and assess the treatment plan. People with diabetes are educated on the factors affecting blood glucose levels and how to make appropriate decisions about food and activity levels. Healthy eating and managing weight are both vital to managing the disease and will likely include a significant reduction in carbohydrate and sugar intake. A registered dietician is typically involved in helping individuals plan appropriately. Exercise is also considered a staple in diabetes management as it can lower blood sugar, increase sensitivity to insulin, limit weight gain, and improve circulation. Education may also include monitoring blood pressure, smoking cessation, responsible alcohol consumption, foot care, and the importance of regular eye exams.^{5 12}

Arthritis

Description: Arthritis is an umbrella term that commonly refers to inflammation of one or more joints or joint disease, which typically worsens over

time. There are two common types of arthritis: osteoarthritis and rheumatoid arthritis. Osteoarthritis (OA) is the most common type of degenerative arthritis that causes a breakdown of cartilage leading to joint pain, swelling and stiffness. According to the CDC, it affects more than 30 million American adults.¹³ Rheumatoid or inflammatory arthritis is an autoimmune disorder that targets the **synovium** lining of the joints and may impact other parts of the body, such as the lungs, heart, and eyes. It is estimated that approximately 1.5 million individuals in the United States are impacted by rheumatoid arthritis (RA).^{14 15 16}

Pathophysiology: The etiology of primary OA remains inconclusive, although is typically the result of a combination of factors that may include age, weight / obesity, repetitive use of joints, and weakness in weight-bearing joints.¹⁷ However debate among researchers continues as to whether OA is truly a disease or a natural step of the aging process.¹⁸ Secondary OA is commonly the result of a comorbidity such as a joint abnormality, an infection, injury, or a metabolic disorder. Attempts by the body to repair any damage to the joint may lead to overgrowth of cartilage or bone causing **osteophytes** that contribute to the erosion of the cartilage surface affecting range of motion and impact absorption. While the disorder often begins in the 40s and 50s, many individuals are asymptomatic. However, after the age of 70 many people of both genders are affected to some degree.¹⁹

The etiology of RA is not well understood but is generally thought to be an abnormal autoimmune response. Evidence suggests that genes, hormones, and environmental factors may all contribute to its development and the disease can affect all age groups, although it more commonly affects older adults and women.²⁰

Clinical picture: OA symptoms usually develop gradually, affecting one or two areas, such as the weight-bearing joints. Individuals typically describe OA pain as a deep ache or stiffness that is commonly present after a period of immobility or upon waking in the morning, which usually subsides within 30 minutes of movement. However, as symptoms increase over time, joint range of motion may become increasingly limited with worsening pain associated with further degradation of the cartilage surface. OA also affects smaller joints, including vertebra, and chronic back pain is a common complaint among older adults. Bony overgrowths within the spinal canal may also impact nerves serving the lower extremities causing leg pain and gait problems. Diagnosis of OA is based on a full medical to assess symptoms and X-rays, although films may not indicate cartilage changes in the early stages of the disease. Treatment focuses on medication, maintaining joint flexibility, pain management, and physical and occupational therapy. Surgery, such as hip or knee repair or replacements

and joint fusion, may also be indicated if conservative treatment fails and pain or functional limitation is significant.^{11 21}

Many of the symptoms associated with RA are non-specific, and individuals require a rheumatologist to make the differential diagnosis to eliminate other forms of inflammatory joint disease. Symptoms include pain, stiffness, or swelling in more than one joint, which are often bilateral. Additional symptoms include fever, weight loss, significant fatigue, and general weakness. Diagnosis is based on a thorough review of symptoms, a physical examination, lab tests and X-rays, and treatment focuses on medication and self-management strategies, such as smoking cessation, pain management, monitoring weight, and physical activity. While many people experience periodic RA flares, or inflammatory exacerbations, which may be triggered by a number of factors that include stress, infection, and fatigue, research has shown a 67% decrease in hospitalizations for RA between 1993 and 2011 indicating the effectiveness of current treatment protocols.^{10 22} Even so, the disease can still significantly impact daily living, such as employment, self-care, and participation in leisure and social activities. Additionally, the chronic nature of RA may lead to complications such as an increased risk for heart disease, diabetes, and obesity.²³

Dementia / Alzheimer's

Description: The terms dementia and Alzheimer's are often used interchangeably, although they are distinct from each other. While both are the result of progressive brain cell death and most commonly associated with irreversible cognitive decline as a result of aging, dementia can also occur as a result of a brain injury, tumor, stroke or other underlying disorders, such as Huntington's or Parkinson's Disease. Dementia is a general term used to describe a set of symptoms that includes memory loss, decreased attention and communication skills, and poor problem-solving. As dementia progresses, it can significantly impact function and independence, placing an emotional and financial burden on families and caregivers. Alzheimer's disease is degenerative and not reversible and is responsible for approximately 60-80% of all dementia cases.^{24 25}

Pathophysiology: It is estimated that 47 million individuals worldwide live with a diagnosis of dementia. While the disease can occur at any age, many of the individuals affected are over the age of 60 and live in low- and middle-income countries. Age and family history are considered the most significant risk factors to developing dementia; research also suggests a possible correlation between the disease and lifestyle factors, such as poor dietary habits, increased tobacco or alcohol use, and physical inactivity. As numbers living in the low to middle socioeconomic bracket increase over time, the overall number of people living

with dementia is projected to triple by 2050. In 2015, the total global cost to society was estimated in the region of \$818 billion.²⁶

In the United States, it is estimated that approximately 5.5 million have Alzheimer's disease with the majority over the age of 65. Alzheimer's is currently the sixth leading cause of death in the U.S. Approximately two thirds of those diagnosed are women, and African-Americans are almost twice as likely to develop the disease than their white counterparts. Alzheimer's is considered one of the costliest conditions as the combination of health care, caregiver support, and long-term care can be significant with an estimated \$259 billion spent annually on Alzheimer's or other dementias.²⁷

Clinical picture: Onset of dementia is typically gradual and symptoms often develop along a continuum, with early manifestations frequently indistinguishable from general age-related memory loss. Oftentimes, it is family members or close friends that are first aware of obvious recent memory decline, personality changes, or language impairments. As the disease progresses, individuals may have increased difficulty with routine daily tasks such as money management, navigating their way around typically familiar routes, locating items, and grocery shopping. Insight and judgment may be noticeably impaired with a tendency towards emotional lability. As the disease enters the intermediate phase and memory declines still further, although individuals may remain ambulatory, they may have increasing difficulty managing basic activities of daily living (ADLs), such as bathing, dressing, toileting, and eating. More agitation and uncooperative behavior may develop, and as sense of time diminishes there is an increased risk for wandering. Sleep patterns are commonly affected and altered perception of time may exacerbate anxiety or develop into paranoid delusions. In the later stages of dementia, individuals are often unable ambulate or perform ADLs, the likelihood of incontinence increases, and swallowing may be impaired increasing the risk for malnutrition or aspiration pneumonia. End stage dementia often leads to death, most commonly as a result of infection.²⁸

Symptoms associated with Alzheimer's follow the typical patterns of other dementias, with notable short-term memory deficits indicated by repetitive questions and forgetting appointments, impaired reasoning, linguistic errors such as inability to access/use common words, or visuospatial dysfunction that includes recognition of familiar people or objects. The disease progresses gradually but may also plateau intermittently.²⁹

Diagnosis of dementia includes a history and physical, a neurological workup including a mental status exam, and lab testing or neuroimaging if applicable. Differentiating Alzheimer's from other forms of dementia is considered a challenge, but it

is typically diagnosed if dementia has been formally established, there are deficits in more than two areas of cognition, onset has been gradual, there has been no loss of consciousness, and all other options that could promote memory and cognitive loss have been ruled out. The National Institute on Aging-Alzheimer's Association also include biomarkers that may increase the the likelihood that dementia is the result of Alzheimer's.²¹

While there are some FDA approved drugs available to temporarily improve symptoms of the disease, such as cholinesterase inhibitors aimed at enhancing memory and judgment, and antidepressants and antipsychotics, current treatment protocol focuses on educating the client and caregivers. Typical non-pharmalogical intervention includes occupational therapy to increase participation in ADLs via task modification and recommend environmental adaptations to maximize safety. As the disease progresses and cognition and health issues continue to deteriorate, treatment may focus on pain and distress management, as well as more supportive measures and resources for caregivers.

30 31

Urinary Tract Infection (UTI) and Sepsis

Description: Urinary tract infections (UTI) occur when bacteria in the urethra, bladder, ureter or kidneys begin to multiply. Untreated it can lead to recurrent infections that may permanently damage genitourinary organs and lead to kidney failure. UTIs are particularly prevalent in the elderly as immune systems weaken or muscles impacting bladder control begin to deteriorate, leading to increased risk of urine retention or poor bladder emptying. UTIs are also the leading cause of sepsis, a systemic infection and medical emergency.³²

Pathophysiology: Approximately 95% of UTIs are caused by bacteria. The condition is one of the most common infections noted among older adults, particularly those in long-term care: the CDC suggests that 20-30% of all infections reported by long-term care facilities are UTIs. Among individuals over 65 years of age living in the community, it is the second most common reason for a hospitalization.^{33 34 35}

In general, women's anatomy increases the risk for developing the infection, but among the elderly it affects both sexes equally as pelvic musculature changes and postvoiding residual volume increases with age. Additional risk factors include a history of UTI, reduced mobility, urinary incontinence, kidney stones, prostate enlargement, and poor hygiene.³⁶ An indwelling catheter, a drainage tube inserted into the bladder through the urethra and used as a urinary collection system, may also be a significant risk factor for UTI. While more commonly used in acute care settings, prevalence remains high in long-term care and prolonged use is discouraged as it may lead to a decline in function or serious complications such as the development of **sepsis**.²⁶

Clinical picture: The mortality rate for elderly individuals with a diagnosis of UTI is estimated to be approximately 33%; therefore, prevention or early detection is essential. Important preventive strategies include thorough hygiene procedures, appropriate hydration to ensure bacterial flushing from the urinary tract, and minimizing the use of indwelling catheters whenever possible.³⁷

In general, the most common symptoms associated with UTI includes a frequent and strong need to urinate, a burning sensation while urinating, cloudy urine or urine that is strong smelling, pelvic pain, particularly in women, or urine that is red or pink which may indicate the presence of blood. However, classic symptoms may not be present in older adults who may instead experience changes in mental status, an increase in lethargy or agitation, or a decrease in appetite or mobility. In cases where dementia or Alzheimer's is present, cognitive changes may be masked by the underlying condition. If the infection impacts the kidneys, individuals may also experience fever, back pain, and nausea and vomiting.³⁸

Diagnosis is by urinalysis although urine cultures may also be recommended in those with a history of UTI or who are immunosuppressed. If symptoms suggest sepsis, an immediate additional work up also includes a complete blood count (CBC), electrolytes, blood urea nitrogen (BUN), and creatine lab tests. All forms of bacterial UTI are typically treated with antibiotics.²⁶

While most UTIs are resolved, an untreated infection may develop into sepsis – a life threatening clinical syndrome that affects millions each year and can be fatal. The CDC reports that estimating the exact numbers of sepsis-related mortality is challenging but approximately 22% of all deaths between the years 1999-2014 listed sepsis as the underlying cause of death on the death certificate.³⁹ The onset of sepsis is typically rapid and must be treated quickly and efficiently or risk tissue damage, organ failure, and death. The risk of death from sepsis increases by almost 8% with every hour that passes before treatment begins.⁴⁰

Individuals are diagnosed with sepsis when they present with a temperature above 101F or below 96.8F, a heart rate above 90 bpm, and a respiratory rate of 20 or above. In severe cases, individuals may also experience a significant reduction in urine output, mental status changes, abdominal pain, and dyspnea. Septic shock is indicated when significant hypotension is present and there is poor response to fluid replacement. Treatment includes antibiotics, vasopressors to increase blood pressure, ventilator support or supplemental oxygen, and IV fluids.^{41 42}

Respiratory Disorders: Asthma and Chronic Obstructive Pulmonary Disease (COPD)

Description: Asthma is a long-term condition whereby the airways narrow, become inflamed, and produce excess mucus as a result of exposure and hypersensitivity to environmental triggers.⁴³ COPD is not a single disease but rather an umbrella term used to describe progressive lung diseases that include emphysema and chronic bronchitis. Although COPD is considered preventable, it is a progressive, life-threatening disorder in which the lungs are irreparably damaged making it difficult to breathe.⁴⁴ While asthma and COPD are distinct conditions, research indicates that individuals with asthma are 17 times more likely to develop COPD than those without asthma.⁴⁵

Pathophysiology: According to the CDC, 15% of American adults, or approximately 25 million individuals, live with a diagnosis of chronic lung disease such as asthma or COPD.⁴⁶ According to the American Academy of Allergy, Asthma, and Immunology (AAAAI) healthcare costs associated with asthma were estimated at \$56 billion in 2007 and it is anticipated that costs will continue to rise. Worldwide, 64 million people live with COPD with an estimated 3 million deaths attributed to the disease each year. According to the World Health Organization (WHO), 80% of deaths are a result of long-term smoking, which explains why COPD typically affects older adults who may have had a longstanding history of tobacco use. Additionally, more women than men are now being diagnosed with the disease as a result of increased tobacco use over the past 30 years.^{36 47}

Asthma is defined as hyper-responsiveness to various allergens, such as pollen, molds, dust mites, pet dander, cold air, air pollution, or tobacco smoke. It can affect any age group although it commonly goes undiagnosed or untreated in older adults. Chronic inflammation associated with asthma leads to epithelial thickening of the airways with subsequent narrowing and loss of bronchial elasticity. Permanent structural changes significantly impact gas exchange and endurance.⁴⁸

Gas exchange is also significantly compromised in individuals who have been diagnosed with COPD. Over time, an increase in mucus production (chronic bronchitis) and narrowing or damage to the airways (emphysema) can significantly exhaust respiratory muscles and lead to an accumulation of carbon dioxide as well as an increased risk of **hypoventilation**.⁴⁹

Clinical picture: Dyspnea with minor exertion is the most common symptom associated with COPD, along with a persistent cough, expiratory wheezing, and fatigue. However, symptoms do not typically manifest until significant lung damage has already occurred. A diagnosis may be confirmed through a **pulmonary function test (PFT)**, a chest X-ray, CT scan, or an **arterial blood gas analysis (ABG)**. Management

of the disease focuses on lifestyle changes, including smoking cessation, and prescribed medication such as **bronchodilators** that relax the muscles around the airways and relieve coughing and dyspnea.⁵⁰ For more severe symptoms, inhaled **corticosteroids** may be prescribed to reduce airway inflammation and minimize the risk of worsening symptoms known as an exacerbation. In cases of moderate to severe COPD, doctors may also prescribe supplemental oxygen.⁵¹

The most common symptoms associated with asthma include shortness of breath and chest tightness. Coughing or wheezing may also be present or exacerbated by a respiratory virus. Severe asthma attacks may be life-threatening and immediate medical attention must be sought if there is rapid worsening or shortness of breath that is not alleviated by rescue inhalers. Diagnosis is confirmed through a physical exam and pulmonary function tests. Treatment of asthma may include long-term anti-inflammatories and/or quick relief rescue medications, although prevention and management are integral to successful treatment. This includes learning to avoid triggers and tracking symptoms.⁵²

Cardiovascular Disease, including Angina, Coronary Artery Disease, and Heart Failure

Description: Cardiovascular disease, known popularly as heart disease, is an umbrella term that includes conditions affecting the blood vessels such as coronary artery disease, as well as conditions affecting structure such as congestive heart failure. While hospitalizations and deaths associated with heart disease have declined in the U.S.A. over the last decade – due to an increase in evidence-based practice and medications, as well as initiatives to promote heart-healthy lifestyles – it remains the number one cause of death for both men and women in the U.S.A., killing more than 600,000 individuals annually and spanning most racial/ethnic groups. An estimated 83.6 million American adults live with a diagnosis of cardiovascular disease, of which more than 42.2 million are adults over the age of 60.⁵³

Coronary artery disease (CAD) is one of the most common cardiac-related disorders, affecting millions of individuals worldwide. It is an **ischemic** disease, most commonly attributed to atherosclerosis, a buildup of fatty, fibrous **plaque** in the coronary arteries that can progressively narrow the vessels over time and occlude blood supply to the heart muscle, increasing the risk of significant health related issues.⁵⁴ Angina is a common complication of CAD that may develop as the arteries continue to narrow over time and blood supply is reduced.⁵⁵ Heart failure, or congestive heart failure (CHF), is a complex diagnosis that results from impaired structure and/or function of the ventricles. It is a chronic progressive condition that affects the heart's ability to pump blood to the body and provide organs and tissues with necessary oxygen and nutrients.⁵⁶

Pathophysiology: In the United States, approximately 370,000 deaths are attributed to CAD annually.⁵⁷ While genetic predisposition or a family history of heart disease may increase the likelihood of developing CAD, there are also a number of additional risk factors that can be modified or controlled with appropriate medical care. For example, controlling high blood pressure is key, as an increase in cardiac output associated with hypertension (HTN) can place significant stress on the heart muscle. Other significant factors that require appropriate medical attention are managing cholesterol levels, managing diabetes mellitus, monitoring weight, staying physically active, and stopping smoking. Other factors that contribute to the development of CAD include excessive alcohol consumption, which can raise blood pressure and contribute to high cholesterol and weight gain. Individual exposure to stress and the ability to manage stress may also be a contributing factor to CAD: not only does it increase the workload and strain on the heart muscle but it may also lead to unhealthy behaviors such as poor dietary choices or an increase in smoking or alcohol consumption.⁷ CAD is a complex chronic inflammatory disease notable for a narrowing of the coronary arteries that supply oxygen to the heart by atherosclerotic plaque. As blood flow is restricted over time, CAD can lead to a weakening of the heart muscle increasing the risk for major health concerns, including angina.⁵⁸

Approximately 5.7 million American adults have a diagnosis of CHF, with an additional 500,000 new cases each year. Approximately one million hospitalizations are attributed to the disease with costs estimated in the region of \$30.7 billion annually, which includes medical care and treatment costs, medications, and missed work.^{59,60} Any disorder that directly impacts the heart may contribute to the development of heart failure. The most common etiology for systolic dysfunction is coronary artery disease, typically caused by a combination of factors; as vessels narrow over time limiting the flow of oxygenated blood to the heart, cardiac muscle weakens impacting its ability to contract. Chronic HTN is the most common disorder that leads to diastolic dysfunction; as the heart pumps more forcibly at a higher pressure the cardiac walls thicken leading to ventricle hypertrophy, which makes oxygenating the heart muscle even more difficult and may lead to ischemic damage. Additionally, an acute ischemic event such as a myocardial infarction (MI) may destroy tissue contributing to cardiac inefficiency. Unhealthy lifestyle factors may also increase the risk for developing heart failure. These include smoking, having a diet high in fat and/or sodium, alcohol or drug abuse, limited physical activity, and/or obesity.⁶¹

Clinical picture: CAD is commonly diagnosed through a detailed medical history, physical exam, and diagnostic tests that may include an **echocardiogram** to assess the heart's effectiveness, a **stress test** to

determine the heart's response to increased activity demand, and/or **cardiac catheterization** or **angiogram** to determine potential blockages.⁶² Individuals may not experience any symptoms during the early stages of the disease, which is commonly treated by controlling risk factors, such as managing high blood pressure, cholesterol levels, and diabetes, as well as other preventative actions designed to address diet and weight, activity, stress, and smoking cessation.

As the arteries narrow over time and blood supply is restricted, the heart muscle may constrict with increased activity demand, such as exercise, eating, or stress, causing chest discomfort or pain, which is typical of angina. It may also be experienced as pressure, aching, or a squeezing sensation in the left shoulder, the arms, neck, back, or jaw. Other symptoms associated with angina include shortness of breath, nausea or vomiting, a rapid or irregular heartbeat, diaphoresis, or a feeling of fullness or heartburn similar to indigestion.⁶³ Typically, women's angina symptoms are less easily identified as cardiac related and consequently women are often less likely to seek medical help for the onset of a heart attack. While women can also experience chest pain or pressure that extends to the arm or jaw during an episode of angina, many often report additional symptoms prior to having a heart attack, including significant fatigue, sleep disturbance and anxiety.⁶⁴ Treatment for angina includes nitrates, such as **nitroglycerin** tablets, or beta-adrenergic blockers that dilate vessels. Symptoms of angina are very similar to those of a heart attack and immediate medical attention is imperative if symptoms persist and last longer than 15 minutes or there is no response to prescribed medication.⁶⁵

Heart failure may begin with an acute onset or progress slowly and become a chronic condition, although in many cases individuals are initially asymptomatic. Heart failure symptoms are classified in stages from mild to severe.⁶⁶ Initially, in left-sided heart failure, shortness of breath may only be evident with increased activity demand. However, as the disease progresses and with increasing fluid accumulation in the lungs, **dyspnea** may also occur at rest or with minimal exertion. Additionally, individuals may also experience **orthopnea** as gravity causes the increase in fluid to move to the lungs, which is exacerbated in supine. Breathing is often improved by sitting up. In addition to shortness of breath, individuals may also experience wheezing and **bronchospasms**, as well as an increase in fatigue and muscle weakness. Right-sided heart failure is characterized by peripheral edema that includes the lower extremities, the liver, and abdomen. With significant fluid accumulation in the abdomen or liver, individuals may experience a decline in appetite and/or nausea. When food is not being absorbed efficiently, **cardiac cachexia** is common.⁶⁷ Depression, decreased alertness, and a decline in cognition are also characteristics of CHF.⁶⁸ Diagnosis

is typically determined through a complete medical history with a thorough assessment of symptoms and physical examination. Additional procedures are used to support the diagnosis, which typically includes an electrocardiogram (ECG) to determine heart rhythm irregularities, whether there are structural changes in the ventricles or to assess valve function.⁶⁶

While CHF is considered a chronic condition, it can be managed long-term with appropriate medical care and lifestyle changes. However, CHF may worsen rapidly requiring immediate emergency care and hospitalization. While a good number of individuals manage the disease for many years and life expectancy can improve with treatment, much depends upon the severity of the condition and which treatments options are applicable. Approximately 70% of individuals with mild heart failure die within 10 years of being diagnosed, while those who are classified as severe cases often die within 2 years. In older adults, treatment options may be limited and quality of life takes priority versus attempting to implement heroic measures. In such cases, hospice is the main consideration whereby the individual is offered symptom relief and compassionate care to ensure comfort and dignity at end of life.⁶⁹

Treatment options vary but typically include a combination of measures. Medications and lifestyle changes are often the cornerstone of treatment plans while oxygen and/or surgical interventions may also be indicated. For example, if the known etiology is valve dysfunction or vessel blockage, surgery may be appropriate. A heart transplant may also be an option for eligible candidates with worsening symptoms but no other comorbidities. Despite managing chronic disease symptoms, heart failure can cause sudden death even without a period of worsening symptoms. Healthcare providers are encouraged to discuss end of life issues and advance directives with individuals who have been diagnosed with CHF and include family members and significant others in the dialogue.⁶⁷

Low Vision, including Macular Degeneration, Glaucoma, and Cataracts

Description: Age-related macular degeneration (AMD) occurs when there is damage to the macula, a small area near the center of the retina, causing a loss of central vision and detail while peripheral vision largely remains intact. It is the leading cause of vision loss in adults over 50.⁷⁰ Glaucoma is a group of diseases that typically develop as a result of fluid buildup in the front of the eye that damages the optic nerve causing vision loss and blindness. Open-angle glaucoma is the most common type and while its prevalence is significant in people over 60, it can be prevented with early diagnosis and treatment.⁷¹ Cataracts typically develop over time when aging or injury changes the tissue of the lens and slowly clouds vision. While cataracts can significantly impact function, cataract

surgery is considered a safe and effective procedure. According to the National Eye Institute (NEI), more than half of all Americans will have developed a cataract or had cataract surgery by the age of 80.⁷²

Pathophysiology: The CDC reports that approximately 3.4 million Americans over the age of 40 are either blind or visually impaired. Of that number, it is estimated that 1,600,000 live with macular degeneration, about 2.2 million have glaucoma, and 20.5 million have cataracts.⁷³

White Americans have the greatest risk of developing macular degeneration and more women than men are affected. The macula is the most sensitive area of the retina and is comprised of millions of light-sensing cells that effect central vision sharpness. The condition typically develops slowly over time with a blurred area near the center of vision progressively growing larger. In some cases, blank areas may also develop in the central vision area. Although age and family history are the most significant risk factors for developing macular degeneration, research indicates that lifestyle factors, such as smoking and poor nutrition, also play a role.⁵³

Glaucoma affects all races and genders. The optic nerve, which is necessary for good vision, connects the retina to the brain and is made up of more than a million nerve fibers. An increase in eye pressure is the most significant risk for optic nerve damage. In open-angle glaucoma, the natural flow of fluid in and out of the chamber that nourishes local tissue begins to slow down causing a build of fluid and pressure on the optic nerve. As the pressure intensifies, loss of vision may occur. Additionally, high blood pressure may also increase the risk of optic nerve damage.⁷⁴

The development of vision impairing cataracts is most commonly age-related and largely impacts those over 60. However, the condition may also occur earlier or with the presence of other medical conditions, such as diabetes. Additional risk factors include prolonged exposure to ultraviolet sunlight, as well as smoking and alcohol use. Cataracts form as a result of changes in the protein in the lens, which causes clouding. In a healthy eye, the lens is made up of water and protein that is arranged in a way to keep the lens clear and this allows light to pass through. When light is focused onto the retina at the back of the eye, an image is recorded. The lens also plays a primary role in adjusting the eye for either near or distant vision. When cataracts occur, the image reaching the retina is impaired.⁵⁵

Clinical picture: In most cases, the early stage of macular degeneration is typically asymptomatic. As the condition progresses, the main symptom is the development of a blurred area or blank spot in the central vision area. While this does not cause blindness per se it does significantly impact everyday activities and limit independence. Diagnosis is determined by a comprehensive eye exam. In the late stages of macular degeneration, individuals experience increased

vision loss associated with damage to the macula. In some cases, abnormal blood cells may develop under the retina that leak fluid or blood causing further the damage to the macula. In these instances, vision loss can be rapid and severe. Treatment includes a combination of vitamin and mineral supplements to maintain the health of the eye for as long as possible.⁵³

Like macular degeneration, the early stage of glaucoma is typically asymptomatic. It can develop in one or both eyes, and if left untreated, individuals will begin to experience peripheral vision loss. Over time, central vision can also deteriorate until there is complete vision loss. Diagnosis is via a comprehensive eye exam that includes **tonometry** to measure pressure inside the eye and a dilated eye exam to look for optic nerve damage. There is no cure for glaucoma but treatment can delay progression. Typical treatment includes a combination of medication in the form of eye drops or pills to lower pressure in the eye or **laser trabeculoplasty** to drain fluid from the eye.⁵⁷

The most common symptoms associated with cataracts are cloudy or blurry vision, a halo around lights, poor night vision, and experiencing lights as too bright or colors that appear faded. Diagnosis is via a comprehensive eye exam that may include tests to assess the structure of the eye. Treatment typically depends on the stage of development. In the early stages, symptoms can often be improved with changes in prescription lenses, anti-glare sunglasses, or magnifiers. As symptoms progress and loss of function is further impacted, surgery may be the only effective treatment. For most people, vision is restored following surgery.⁵⁵

For many, the loss of vision is traumatic and counseling may be indicated to support the individual as their eye condition progresses. Education that includes compensatory strategies or low vision devices is also key to managing eye conditions. Devices may include hand held magnifiers, large print reading material, talking clocks or calculators, and computer aids.

Osteoporosis

Description: A common disease associated with aging that affects bone density. It typically occurs when the creation of new bone does not keep pace with the removal of old bone causing them to become weak and brittle, which significantly increases the risk for fractures.⁷⁵

Pathophysiology: While bones are in a constant state of renewal throughout the lifespan, this process declines with age. Peak bone mass in men and women occurs around age 30, although men typically have a higher bone mass than women. For many, the likelihood of developing osteoporosis with age correlates with the “banking” of bone mass in youth. Bone mass plateaus for approximately 10 years after peaking and then begins to decline with bone loss accelerating in women after menopause. More than 95% of cases are classified as primary osteoporosis,

which occurs spontaneously, while <5% of cases are associated with certain medical conditions, such as celiac disease, inflammatory bowel disease, cancer, lupus, and rheumatoid arthritis, or medication use. For example, long term use of medications such as corticosteroids may interfere with the bone renewal process.^{45 76}

Additional risk factors include age, race, genetic predisposition, and lifestyle choices. For example, the condition affects more women than men due to the decline in estrogen after menopause. Estrogen deficiency increases bone breakdown and may cause rapid bone loss. Small body frames, which tend to have less bone mass, have an increased risk. Dietary factors, such as low vitamin D levels or calcium intake over time, may also contribute to lower bone density. Additionally, a history of eating disorders with significantly low weight can also weaken bone mass. Further risk factors include a sedentary lifestyle due to the lack of weight bearing exercise, excessive alcohol consumption, and tobacco use.⁴⁵

Worldwide, osteoporosis results in a fracture every 3 seconds. In the United States, an estimated 8 million women and 2 million men are affected by the condition, which is the most common cause of fractures among older adults. An estimated 1.5 million individuals each year suffer a fracture associated with the condition and more than 500,000 individuals require hospitalization.⁷⁷

Clinical picture: There are no significant symptoms associated with the early stages of osteoporosis. However, once bones have been weakened, symptoms include back pain associated with vertebral fractures or compression, dorsal **kyphosis**, or a fracture that may occur with minimal trauma. Hip fractures are the most common injuries associated with osteoporosis in older adults and are often caused by falls.⁴⁶

While standard x-rays may reveal loss of structure indicating osteoporosis, **dual-energy x-ray absorptiometry (DXA)** is the primary method to measure bone mineral density and confirm diagnosis. DXA is also used over time, typically every 2-3 years, to monitor bone loss and response to treatment. Other tests may include checking serum calcium, magnesium, and phosphorus levels and liver function tests.⁴⁶

Treatment primarily focuses on preserving bone mass, minimizing risk of fractures, decreasing pain, and maintaining function. Treatment typically consists of calcium and vitamin D supplements, **antiresorptive** medications, and lifestyle modifications to minimize risk factors. Modifications include increasing weight-bearing exercise, limiting caffeine and alcohol intake, and smoking cessation. Education to minimize the risk of falls, including environmental adaptations, may also be indicated.⁴⁶

Complications of osteoporosis typically occur as a result of prolonged immobilization and disability associated with fractures. Loss of activity may impact participation in functional activities, limit social interactions, cause an increase in weight gain, exacerbate chronic pain, and lead to depression.⁷⁸

Mental / Behavioral Health, including Depression, Anxiety, and Substance Abuse

Description: While occasionally feeling sad or stressed may be normal responses to life events, lasting depression or anxiety are not a typical part of aging. Generalized anxiety disorder (GAD) is the most common anxiety disorder associated with older adults, and may be linked to a traumatic event such as acute illness and hospitalization or a fall. Depression may occur as a result of biological, social, and psychological factors, including family history or significant life changes such as bereavement, medical problems, abuse, loss of function or purpose. Substance abuse is considered one of the fastest growing health problems among adults over 60 years of age, and prolonged substance abuse, particularly alcohol consumption or prescription drug use, may also contribute to depression. Again, contributing factors may include health-related issues or life changing events that place undue emotional stress on individuals.^{79 80}

Pathophysiology: The Centers for Disease Control (CDC) estimates that approximately 20% of individuals over 55 experience some type of mental health concern as they age. The most common conditions include anxiety or a mood disorder, such as depression. Prevalence studies suggest that approximately 14-20% of elders living in the community are at risk for depression with numbers increasing to 40% in long-term care facilities.⁸¹ Risk factors associated with depression in the older adult include chronic illness, death of a spouse/loved one, rising health care costs, loss of role or purpose, and loss of independence. In addition, a number of medical conditions are commonly associated with the development of depression, particularly if they are disabling, painful, or life-threatening such as stroke, cancer, or Parkinson's disease. Depression may also be a side effect of certain common prescription drugs, including blood pressure medication, sleeping pills, and steroids, while abuse of alcohol or recreational drugs may also trigger symptoms. Depression is a serious condition that can take a significant toll on health, function, and loved ones. It is also considered a significant predictor of suicide among the elderly with individuals over the age of 65, particularly white men, accounting for approximately 20% of all suicide-related deaths in the U.S.⁸²

Between 3-14% of older adults meet the criteria for a diagnosable anxiety disorder while more than 27% have symptoms of anxiety that do not warrant a formal diagnosis. Regardless, anxiety can significantly

impair function and limit quality of life. Generalized anxiety disorder (GAD) is the most common type of anxiety among older adults; others include post-traumatic stress disorder (PTSD) and obsessive compulsive disorder (OCD). Anxiety may be associated with a number of risk factors, such as a general sense of poor health or managing chronic medical conditions, alcohol or prescription medication abuse, stressful life events, poor sleep, physical limitations impacting function, and side effects of medications, including steroids, antidepressants, and bronchodilators.⁸³ Due in part to concern about the social stigma associated with mental health, many older adults ignore symptoms of anxiety or depression, and consequently, these conditions go unrecognized, untreated, or under-treated.⁸⁴

Studies show that use of prescription and illicit drugs among adults over the age of 65 has increased, but alcohol remains the most commonly used substance among this population. While rates of alcohol abuse may be lower in this age group than the general population, age-related physical changes in the body, such as a decrease in muscle mass, reduced blood-brain barrier permeability, as well as a decline in the liver's ability to process alcohol, may cause greater blood alcohol concentration and increased sensitivity to the effects of even moderate alcohol consumption. Risk factors associated with substance abuse include chronic pain, physical limitations impacting function, transitions in living situations, poor coping strategies, bereavement, social isolation, and loss of role/purpose commonly associated with retirement.⁸⁵ An estimated 14% of older adult emergency room admissions are attributed to alcohol or drug abuse.⁸⁶

Clinical picture: Given that depression is caused by a combination of genetic, biological, environmental, and psychological factors, no two people are affected in the same way and there is great variability in symptom presentation. Consequently, treatment also varies considerably and it may take time to establish the most effective regimen.⁸⁷ Though men and women often experience depression differently, common symptoms may include difficulty concentrating, an increase in worry, irritability, a sense of sadness or hopelessness, limited ability to feel positive emotions, obsessive thinking, physical issues such as fatigue and poor sleep, headaches, decreased appetite and digestive complaints, an increase in aches and pains, the need for alcohol or drugs, and thoughts of death or suicide attempts.⁸⁸ Diagnosis is based on a medical history and a physical exam to rule out other conditions that may be contributing to depression. Treatment primarily consists of antidepressants along with psychotherapy and lifestyle changes such as physical activity and yoga.⁸⁹

Symptoms associated with general anxiety disorder (GAD) include chronic and exaggerated concern about routine activities and life events that last at

least six months. Physical symptoms may also include heart palpitations, fatigue, increased muscle tension, recurrent headaches, and episodes of nausea. Post traumatic stress disorder (PTSD) is associated with a traumatic event such as abuse, accidents, or a sudden health crisis that is perceived as life-threatening. Nightmares, irritability and anger, feeling easily alarmed, emotional numbing, and flashbacks are all common symptoms linked with PTSD. Individuals with obsessive compulsive disorder (OCD) experience difficulty controlling repetitive and unwanted thoughts or compulsions. Common signs of OCD include repetitive hand-washing, counting or checking.⁴⁹ Diagnosis is often a challenge, as late-life anxiety is often comorbid with depression where there are many overlapping symptoms, or other medical conditions that include headaches, shortness of breath, or digestive complaints. A thorough case history is vital to determine a diagnosis of anxiety and a mental health specialist may also administer more specific assessment tools to refine the diagnosis. Treatment is typically a combination of medication, such as antidepressants or **anxiolytics** to lower anxiety, psychotherapy, and symptom management through lifestyle modifications that may address sleep hygiene, exercise, and excess caffeine consumption.⁹⁰

Signs and symptoms of substance abuse commonly include memory loss and/or confusion, slurred speech, ritual drinking, hostility or depression, solitary or secret drinking, loss of interest in pleasurable activities, and a decline in personal hygiene or appearance. While increasing in prevalence among older adults, alcohol and drug misuse is commonly overlooked by healthcare providers as symptoms commonly mimic other age-associated medical conditions such as diabetes, dementia, urinary tract infections, and depression. A detailed medical and mental health assessment, as well as drug screen, may be indicated to determine the level of the problem and what treatment options are appropriate. Once a problem has been identified, treatment primarily focuses on addiction support and counseling and preventative education, as well as residential addiction rehab if appropriate.⁵²

COMMON TERMINOLOGY

Angiogram: An imaging technique used to diagnose heart conditions. It is the primary procedure used to evaluate arterial blockages and is typically conducted under sedation. The procedure is conducted using X-rays and contrast dye to identify blockages and determine the most appropriate treatment. The most common interventions provided during an angiogram are stent placement and balloon angioplasty.⁹¹

Antiresorptive: A medication used to manage osteoporosis by reducing the destruction of bone by osteoclasts, that cells that break down and remove bone tissue.

Anxiolytics: A medication used to prevent or treat anxiety. They target key messengers in the brain that help decrease excitability. The most common anxiolytics are benzodiazepines such as Ativan, Valium or Xanax.

Arterial blood gas analysis (ABG): The ABG is a test that measures the levels of oxygen, carbon dioxide, and acidity (pH) of the arterial blood, all of which are important indicators of lung function. During the procedure, a blood sample is taken from an artery, typically the radial artery in the wrist, using a needle.⁹²

Bronchodilators: A common medication used to manage the symptoms of asthma and COPD, such as bronchospasms that may cause wheezing, shortness of breath, and chest tightness. Bronchodilators relax the muscles around the airway increasing an individual's ability to breathe. Some bronchodilators are used as short-term rescue inhalers while others are used more regularly to manage the disease long-term.

Bronchospasm: An involuntary contraction of the walls of the bronchi and bronchioles resulting in a narrowing of the airway. It is most commonly the result of an infection, allergen, or irritation or injury to the mucosa. It is a key characteristic of asthma and is often associated with a cough or wheezing.⁹³

Cardiac cachexia: Often described as “body wasting,” cardiac cachexia is a common complication of chronic disease such as congestive heart failure. Weight loss is unintentional and typically associated with decreased appetite, nausea, poor absorption, and an increased respiration rate that causes the body to burn additional calories. Individuals often experience a generalized loss of muscle mass that leads to significant weakness and fatigue and impacts activity tolerance and daily function.⁹⁴

Cardiac catheterization: A 30-minute procedure used to diagnose and treat cardiovascular conditions by means of inserting a catheter into an artery or vein in the groin, neck, or arm, which is then threaded through the blood vessels to the heart. Contrast material and imaging help to identify narrow arteries or blockages, and if indicated, a non-surgical intervention such as an angioplasty may also be performed during the diagnostic procedure.⁹⁵

Corticosteroids: A common medication used to treat asthma as well as other allergic conditions, such as skin allergies. In asthma cases, a corticosteroid can be used via an inhaler to decrease airway inflammation and minimize the risk of an exacerbation. It is considered the most effective long-term medication in the management of asthma symptoms.⁹⁶

Dual-energy x-ray absorptiometry (DXA): A simple and non-invasive procedure used to measure bone loss and assess an individual's risk for developing fractures. It is considered an enhanced form of x-ray

technology that uses a small dose of ionizing radiation to produce images, typically of the most clinically important sites such as the spine and pelvis. It is considered the most accurate method for diagnosing osteoporosis and track structural changes over time.⁹⁷

Dyspnea: Shortness of breath or difficulty breathing, commonly an indicator of airway, lung, or heart dysfunction. The most common respiratory diseases associated with dyspnea include asthma, pneumonia, and chronic obstructive pulmonary disease (COPD). Red flags of particular concern include dyspnea at rest, chest pain, wheezing, palpitations, and crackles (suggestive of left sided heart failure or interstitial lung disease). An appropriate history and physical is required to determine severity, cause, and treatment.⁹⁸

Echocardiogram (echo): A non-invasive test that uses sound waves to produce images of the heart and determine the cause of heart disease. It is often used to assess overall cardiac performance as well as more specific concerns such as unexplained chest pain, arrhythmias, or heart valve function.⁹⁹

Glycated hemoglobin (AC1) test: A common blood test used to diagnose Type I and Type II diabetes, as well as gauge management of the disease. The test specifically measures what percentage of hemoglobin is glycated or coated in sugar. A higher level is indicative of poorer blood sugar control and greater risk of disease complications.¹⁰⁰

Hyperglycemia: An abnormally high blood glucose level and a hallmark of diabetes. Factors that contribute to hyperglycemia include dietary and physical activity choices, illness, or non-diabetes medications. Hyperglycemia may develop slowly over several days and symptoms typically only present when glucose levels are significantly high – above 200 mg/dL. Early symptoms include frequent urination, increased thirst, vision changes, abnormal fatigue, and headache. It is vital that hyperglycemia is treated as it can lead to serious complications requiring emergency care. If left untreated, toxic acids (ketones) build up in the blood and urine leading to ketoacidosis. Symptoms of ketoacidosis include nausea and vomiting, fruit-smelling breath, dry mouth, weakness, shortness of breath, and confusion.¹⁰¹

Hypoventilation: An abnormal respiratory state when the amount of air entering the alveoli is not adequate for the body's metabolic needs. It typically results in impaired gas exchange with decreased oxygen and increased carbon dioxide levels in the blood. A typical and recognizable symptom is cyanosis – a bluish discoloration of the skin and mucus membranes. Hypoventilation is most commonly associated with the uneven distribution of inspired air, as in bronchitis, or diminished lung function, as in emphysema or pleural effusion.

Ischemia: Restriction of blood supply to tissue, particularly the heart, preventing it from receiving adequate oxygen.¹⁰²

Kyphosis: An exaggerated rounding of the upper back. When age-related it is commonly associated with a weakening of spinal vertebra as a result of osteoporosis. Mild kyphosis rarely causes problems but severe cases can cause chronic back pain and disability.

Laser trabeculoplasty (SLT): A form of laser surgery used to decrease eye pressure in cases of glaucoma. It is typically indicated when medication is no longer a viable solution to lower pressure or there are side-effects.

Neuropathy: Neuropathy is a condition that occurs due to damage to the peripheral nervous system and may result in symptoms of paresthesia, muscle weakness, or numbness or tingling, as well as abnormal sensitivity or burning pain in response to stimuli. The most common form of neuropathy is associated with diabetes and is the result of chronically high blood glucose levels inhibiting the body's ability to transform nutrients into energy and process waste products leading to sensory, motor, and autonomic nerve damage. It can be acute in nature or chronic with symptoms developing slowly over a period of time. Pain and numbness is commonly experienced bilaterally in the feet, which then progresses slowly up both legs. As the disease develops, the fingers and hands may also become affected.¹⁰³

Nitroglycerin (nitro): A prescription medication commonly used to treat angina as a result of coronary artery disease. It works by relaxing blood vessels and increasing blood flow to the heart while reducing cardiac workload.¹⁰⁴

Orthopnea: Shortness of breath that occurs while an individual is lying down but is relieved by assuming an upright position. It is often caused by pulmonary congestion as blood volume is redistributed from the lower extremities to the lungs while in a recumbent position, and is commonly associated with the early stages of heart failure.¹⁰⁵

Osteophytes: Bony projections that occur along joints. They are commonly referred to as bone spurs and typically develop when joint cartilage degenerates.

Plaque: A fatty deposit made up of cholesterol, fat, calcium, and other cellular waste substances in the blood that may slowly build up and line the arterial walls thereby restricting blood flow. If plaque breaks off and blocks the artery risk of heart attack or stroke increases.¹⁰⁶

Polydipsia: Excessive thirst commonly associated with the initial stages of diabetes mellitus. It occurs as a result of high blood sugar levels. Symptoms are recognized as persistent and unexplained thirst

regardless of fluid intake, and passing more than 5 liters of urine a day.

Polyuria: Defined as the frequent passing of large amounts of urine compared to normal output. If left untreated it can lead to dehydration and affect kidney function. It is one of the main symptoms of diabetes.

Pulmonary function test (PFT): A means of measuring breathing to assess how well the lungs are functioning, it includes an assessment of lung volume and how well gas exchange is being performed. It is typically used to determine the cause of shortness of breath, diagnose diseases such as asthma or bronchitis, check lung function prior to surgery, or measure the progress of treatment. Measurements are made via a spirometer, which is a mouthpiece connected to a tube and recording device. The volume of air inhaled and exhaled, as well as the duration of the breath cycle, are recorded and analyzed. Lung volume measurements indicate the elasticity of the lungs and strength of the respiratory muscles. Flow rates indicate the degree of airway narrowing or obstruction.¹⁰⁷

Sepsis: Sepsis is the body's extreme response to infection and without immediate intervention it is potentially life-threatening. It is viewed as a three-stage syndrome that begins with sepsis but has the potential to progress to severe sepsis and septic shock unless treatment is early and aggressive to enhance chances of survival. Typically, treatment and close monitoring is conducted in a hospital intensive care unit. The most common causes of sepsis include pneumonia (PNA), urinary tract infection (UTI), and abdominal infections. It can affect anyone across the lifespan, but the most vulnerable include those over 65 years of age or infants, people with chronic medical conditions such as kidney disease, diabetes, or lung disease, and anyone with a weakened immune system. Symptoms may vary depending on the individual but diagnosis is dependent upon a temperature above 101 F or below 96.8 F, a heart rate above 90 bpm, and a respiration rate of 20 or above. Additional symptoms may include confusion and nausea and vomiting. Severe sepsis symptoms may also include significant mental status changes, decreased urine output, or abdominal pain. While many people recover from sepsis, the mortality rate for septic shock remains high at almost 50%.¹⁰⁸

Stress test: An assessment of cardiovascular fitness in a controlled clinical setting. The procedure typically involves walking on a treadmill or riding a stationary bike while heart rate, blood pressure, and respiration rate are monitored. It is commonly used to diagnose heart diseases such as coronary artery disease and arrhythmias. It may also be used to monitor cardiac treatment for effectiveness, particularly following surgery such as valve replacement or the introduction of medication.¹⁰⁹

Synovium or synovial membrane: Connective tissue that lines the inner surface of the joint capsule, tendon sheaths, and bursa. In cases of rheumatoid arthritis, the synovium becomes inflamed which in turn destroys the cartilage and bone within the joint. The surrounding supporting muscles, ligaments, and tendons become weak causing joint pain and decreased function.

Tonometry: A standard diagnostic procedure used to determine the intraocular pressure, or the fluid pressure, of the eye in cases of glaucoma.

ROLE OF OCCUPATIONAL THERAPY IN HEALTHY AGING IN PLACE

Overview of Occupational Therapy Philosophy

Occupational Therapy practice, education, research, and advocacy is founded on the premise that individuals, communities, and populations of all age groups have the right to engage in meaningful occupations throughout the lifespan. It is understood that participation in occupation can be a conduit to change and a means to foster health and well-being. "Health enables people to pursue the tasks of everyday living that provide them with life meaning that is necessary for their well-being."¹¹⁰

Occupation is defined as any purposeful and meaningful activity that enables participation in society and supports the ability to live life to its fullest. Occupational Therapists (OT) and Occupational Therapy Assistants (OTA) consider both intrinsic and extrinsic factors in determining interventions, including psychosocial, cultural, physical, and environmental issues, and use occupation as a means to promote health and wellness.¹¹¹

OT/OTAs are trained in the areas of prevention, life-style modification, and physical and psychosocial rehabilitation.¹¹² Therapists work from the understanding that many factors influence participation and performance, and that clients have values, life experience, and skills that are invaluable in developing meaningful short and long-term goals. OT/OTAs understand that including the client and caregivers in the decision-making process care is empowering and that client-centered practice fosters greater collaboration and participation in the therapeutic process.¹¹³

Additionally, interprofessional collaborative practice is integral to providing safe, quality, accessible, and client-centered care. Successful interprofessional practice includes four competencies: understanding one's role and those of other professions to assess and address the needs of clients and populations served; maintaining a climate of mutual respect based on shared values and ethical principles; providing responsible and timely communication with clients,

caregivers, communities, and other healthcare providers; and applying relationship-building values to maintain healthy team roles in order to plan and deliver effective client-centered health care.¹¹⁴

Occupational Therapy plays a distinct role in interprofessional practice and in the provision of client-centered care while addressing ways to support successful aging in place.

Typical Settings Associated with Occupational Therapy and Healthy Aging in Place

Home Care, Including Independent Living Facilities (ILF):

Clients living in the community may benefit from OT services to maximize functional independence within the context of their own homes. Therapists often provide ADL and IADL re-training, safety and energy-conservation education, and home modification recommendations, as well as caregiver support.

Conditions addressed vary greatly in home care or independent/assisted living facilities and range from low vision training to fall prevention recommendations to compensatory strategies for cognitive limitations. However, OT/OTAs may also assist clients who have experienced recent hospitalization and may need assistance and training while transitioning back into their homes and communities.

Occupational therapy works within an interprofessional team that may include members from medicine, nursing, physical therapy, and speech-language pathology, as well as independent living staff.

Assisted Living Facilities (ALF) / Long-Term Care Facilities:

Clients who live in an assisted living or long-term care facility typically benefit from 24 hour staffing and often need some degree of assistance or support with ADLs or medication management. Residents usually have limited access to individual kitchen facilities and will take meals in a dining room. Transportation is often provided as well as organized social activities. As with home care, conditions addressed by therapists vary considerably, but standard interventions provided by OT/OTAs include ADL re-training, caregiver education, and environmental modifications to maximize functional independence and enhance safety. In both assisted living or long-term care facilities, clinicians work within an interprofessional team that may include a primary care physician, nursing, physical therapy, speech-language pathology, dietician, activities director, and assisted living staff.

Memory Support:

Clients residing in memory support units and long-term care facilities may benefit from OT services to live

safely and well for as long as possible, largely through compensatory strategies, adaptation of activities, and caregiver training. The most common conditions addressed in memory care units include dementia and Alzheimer's disease. OT/OTAs are trained to assess each individual and focus on client strengths in order to promote wellness and participation in meaningful roles and activities. It is typical for therapists to work within an interprofessional team that may include nursing, physical therapy, and speech-language pathology, as well as specialist memory care staff.

Typical Areas Addressed by OT to Facilitate Healthy Aging in Place

Home Modifications:

Home modifications are typically recommended by OTs following an individual evaluation to determine need, and may focus on increasing client safety, compensatory strategies, and use of the environment in order to maximize functional independence. Modifications may benefit those with chronic health conditions, mobility limitations, cognitive disorders, or sensory impairments. Recommendations may be simple solutions, like the use of off the shelf adaptive equipment or client/caregiver training, or may require more specialized or customized equipment/technology and training.

Fall Prevention / Safety:

OT/OTAs can play a significant role in reducing injuries and possible death associated with falls. Clinicians can increase awareness of environmental factors including poor lighting, floor clutter, and hazardous rugs/thresholds, review medication management within the context of safety, and educate clients regarding appropriate footwear, as well as the importance of maintaining physical strength and mobility to improve balance and minimize the risk of falls. In addition, fear of falling may impact older adults' participation in meaningful habits, routines, work, and leisure activities. OTs can play a role in helping clients address these fears by developing skills or recommending compensatory measures to improve participation and performance.

Low Vision:

Low vision can significantly impact independence, safety and social participation. OT/OTAs can recommend home modifications, adapt tasks, provide education for compensatory strategies and use of low vision devices to improve function, and prevent accidents and injury.¹¹⁵

Community Mobility:

Community mobility is defined by the Occupational Therapy Practice Framework (OTPF)⁸⁴ as movement within the community using public or private means

of transportation. OT/OTAs can play a key role in helping older adults safely transition from driving if deemed unsafe. This milestone is considered a major life event that impacts one's level of independence, social identity and community engagement. Therapists can work collaboratively with clients and caregivers to make this milestone less traumatic by recognizing the changes, validating the experience, and by exploring and recommending alternate means of transportation.

Social Participation:

The limited mobility, chronic disease, cognitive deficits, and safety concerns that often significantly impact community mobility for older adults may in turn lead to loss of roles and responsibilities, social isolation and depression. OT/OTAs may facilitate the transition to community resources including public transportation, help individuals explore volunteer opportunities, and provide technology training to maximize social participation, including computer/tablet and cell phone use incorporating applications such as Skype and Facebook.

Cognition:

Cognition is an umbrella term that includes attention, perception, problem-solving, memory, judgment, and reasoning. Cognitive disorders such as dementia, traumatic brain injury (TBI), and stroke, often significantly impacts an individual's ability to participate in meaningful activities or perform them to a satisfactory level. OT training prepares clinicians to understand the dynamic relationship between cognition and performance. Through assessment and observation OT/OTAs develop individual treatment plans to remediate or compensate for deficits in order to help clients/caregivers continue to participate in meaningful activities and enhance their quality of life.

Caregiver Support / Training:

Caring for an older adult often requires many lifestyle changes for loved ones with responsibilities varying according to physical and/or cognitive needs. It is common for loved ones to feel unprepared and overwhelmed. OTs can provide support, resources, and recommendations to maximize an individual's functional independence and decrease caregiver burden.

Wellness / Health Promotion:

A core belief of OT is that health and wellbeing can be strongly influenced by individuals having some control over their everyday meaningful occupations. Viewing individuals holistically and understanding the dynamic relationship between the person, environment, and activities means that practitioners are ideally equipped to develop tailored treatment plans that not only match skills with appropriate activity demand, but also address the unique barriers that may be

limiting health. OT clinicians offer tailored solutions, recommend adaptations and equipment, and provide education to help clients live life to its fullest.

Mental Health:

OT is a profession with origins in mental health and OT/OTAs continue to play a key role in understanding behavior and limitations to participation in meaningful activities that may be associated with depression, anxiety, psychiatric disorders, and substance abuse. Interventions often include environmental modifications to minimize stress and anxiety and promote safety, and exploration of coping strategies and healthy leisure pursuits to alleviate depression, promote a sense of purpose, and maintain dignity.

Chronic Disease Management:

Empowering individuals to manage their own chronic conditions can reduce hospital readmissions and help clients continue to live full and productive lives. OT/OTAs are able to identify problems and symptoms associated with specific conditions and develop strategies to increase responsibility for disease management in order to maximize independence.

OT Process – From Evaluation to Discharge

OT Evaluations and Screening Tools That May Be Used to Facilitate Healthy Aging in Place

Evaluation Process:

An OT evaluation is indicated when there are concerns regarding an individual's functional ability to perform the activities that are meaningful and necessary to live well in the home environment. In order to understand an individual's performance strengths and limitations, an OT will use his/her clinical reasoning skills to perform an evaluation that may include a synthesis of formal standardized assessment tools, medical data, informal observation and interview techniques, as well as interprofessional communication. In addition to performance skills impacting motor, cognitive processing, and/or social interaction, client factors and performance patterns, such as values and beliefs and roles and routines, as well as environmental and contextual factors are also considered in OT's holistic approach to care.

By synthesizing all pertinent data, the OT is able to develop an occupational profile that will guide the plan of care. This includes collaborating with the client and/or caregiver to determine his or her priorities regarding outcomes in order to develop objective and measurable goals that are meaningful and client-centered. Once the goals have been established, interventions may be determined to execute the plan of care.¹¹⁶

ADLs:

Barthel Index (BI): A 10 item ordinal scale used to measure ADL performance that is most commonly used in inpatient rehabilitation, skilled nursing facilities, and home care. Each of the 10 items describes performance in feeding, bathing, grooming, dressing, bowel control, bladder control, toileting, chair transfer, ambulation, and stair climbing. Each performance item has a designated score. A higher total score is associated with the increased likelihood of an individual successfully and safely living at home independently.¹¹⁷

BI sample performance items and rating scale:

Grooming

- 0 = needs help with personal care
- 5 = independent face/hair/teeth/shaving (implements provided)

Dressing

- 0 = dependent
- 5 = needs help but can do about half unaided
- 10 = independent (including buttons, zips, laces, etc.)

Transfers (bed to/from chair)

- 0 = unable, no sitting balance
- 5 = major help (one of two people, physical)
- 10 = minor help (verbal or physical)
- 15 = independent⁹¹

ADLs/IADLs:

Satisfaction with Performance Scaled Questionnaire (SPSQ): An instrument developed to measure an individual's performance satisfaction with their independent living skills. The tool is a self-report questionnaire and consists of two subscales. Subscale I identifies 24 items associated with home management, such as using a stove, handling a milk carton, and cleaning the tub or shower stall. Subscale II contains 22 items related to social and community activities, including paying bills and participating in vocational, educational, and leisure tasks. Each item is scored on a 5-point scale using the percentage of time over the past six months to report performance satisfaction.¹¹⁸

Canadian Occupational Performance Measure (COPM): An evidence-based, client-centered outcome tool designed to reflect an individual's satisfaction with ADL and/ or IADL performance. It is primarily administered by OTs and can be used across the lifespan with all clients, regardless of diagnosis or setting. The COPM enables individuals to self-assess performance, prioritize areas to address, and collaborate with their therapist to identify goals. Administration is conducted via a semi-structured interview format and is recommended at the beginning of services and periodically thereafter to

monitor progress towards outcomes. The tool has five key steps: The client is asked to identify performance areas that are challenging, rate the importance of each identified area using a 10-point scale, and then select up to 5 of the most important problems to address through therapy. The client is then asked to self-assess their own level of performance and satisfaction with each of the identified problem areas. The therapist then calculates an average score, typically between 1-10. A low score indicates poor performance and lower satisfaction with a higher score indicative of good performance and a higher level of satisfaction.¹¹⁹

Model of Human Occupation (MOHO) Modified Interest Checklist: A simple measure used to glean information on a client's strength of interest and engagement in 68 varied activities in the past, currently, and in the future in order to help them select meaningful activities as a leisure pursuit or to manage stress.¹²⁰

Low Vision / Visual Perception:

Basic vision test: While vision impairments are comprehensively assessed by an optometrist, occupational therapists can provide a basic vision screen that includes an assessment of visual acuity, visual fields, ocular motor (pursuits, saccades, and convergence), binocular vision, and photophobia. A general assessment typically begins with a questionnaire to determine symptoms and possible vision changes that may be influencing mobility, participation in functional tasks, and safety. In addition to a vision screen, a therapist may also conduct a lighting or glare assessment.

Motor-Free Visual Perceptual Test-4 (MVPT-4): A standardized tool widely used across the lifespan, including older adults, to assess visual perception independent of motor ability. The tool requires approximately 15 minutes to administer and enables therapists to assess visual perceptual skills in 5 domains: visual discrimination, figure-ground discrimination, visual memory, visual closure, and spatial relationships. There are 45 items consisting of a black-and-white line drawing stimulus and four multiple-choice response options. Scoring takes approximately 5 minutes and raw scores are converted to age and perceptual equivalents to provide a comparison and assist therapists in treatment planning.¹²¹

Mobility:

Timed Up and Go (TUG): A simple test to assess mobility and determine fall risk. Clients are given 5-step instructions to stand up, walk to a designated spot approximately 10 feet away, turn around, walk back to the chair and sit down. The process is timed and compared to the normative data by age with cut-off values predictive of falls. Clients can wear their own footwear and may use their preferred assistive device

(AD) as needed. An older adult who takes more than 12 seconds to complete the TUG is considered at risk for falling.¹²²

Range of Motion (ROM), Strength, and Coordination:

Measurement of upper extremity ROM is a standard procedure included in the OT evaluation process. Clinicians ask clients to perform active ROM (AROM) to determine whether each joint is performing within normal limits (WNL) and if they have the muscle strength to complete the movement. A goniometer may be used to determine degrees of motion with results compared to ROM norms. For example, shoulder flexion norm is 0-180 degrees and elbow flexion is 0-135 degrees. Passive ROM (PROM) may be used when full AROM is unattainable. Muscle strength is assessed through manual muscle testing (MMT) and grade on a 0-5 scale. For example, strength may be graded 5 if a muscle can move the joint it crosses through a full ROM, against gravity, and against full resistance applied by the clinician. If the muscle can move a joint it crosses through full ROM only if gravity is eliminated it is graded a 2. No muscle contraction or identified with palpation will be graded at 0. The Functional Reach Test is a simple dynamic test to determine the maximal distance a client can reach forward beyond arm's length while maintaining a fixed base of support.

Driving and Community Mobility:

OT-Driver Off Road Assessment (OT-DORA) Battery: Driving is a complex activity that affords many older adults a sense of independence and freedom, but all drivers are required to use a combination of cognitive, sensory, and motor skills to ensure competence and safety on the road. A deficit in any area can impair driver skills and limit potential to maintain a license. Both generalist occupational therapists and certified driver rehabilitation specialists (CDRSs) can assess the overall fitness of older adult clients using a standardized off-road assessment that is both easy and quick to use, and that provides useful information about the client's ability to drive a car. Client factors assessed include sensory, physical, cognitive, visual-perceptual, and behavioral skills. The OT-DORA Battery comes as a book and takes approximately 90 minutes to administer, including set up time. The book contains detailed information regarding administration and props required, such as a Snellen vision chart, shoes or slippers, a stopwatch, and goniometer. Once a profile score is determined, the OT can compare results against norms and use the guide to make appropriate clinical decisions. Clients may require on-road testing or a referral for a more comprehensive driver evaluation by a CDRS.¹²³

Specialty Certification and Community Mobility (SCDCM) OT: In addition to referring clients to a CDRS, clients

can also be assessed by occupational therapists who have undergone additional training and obtained a Specialty Certificate in Driving and Community Mobility (SCDCM). These specialist clinicians help facilitate client mobile in the community whether driving independently or using public transportation. A synthesis of assessment data, including on-road safety, is required before driving or mobility recommendations can be made.¹²⁴

Social Skills:

Social Profile: Assessment of Social Participation in Children, Adolescents, and Adults: A psychosocial tool used to assess social interactions across five levels of participation and cooperation. The adult version can be used to evaluate both individuals or groups in a variety of settings, including Assisted Living Facilities and Memory Care Units. The five areas of social function assessed are parallel, associative, basic cooperative, supportive cooperative, and mature levels. The assessment tool is comprised of 40 items that are divided into three topics: Activity Participation, Social Interaction, and Group Membership/Roles. Clinicians who work with groups of older adults with mental illness or behavioral health issues, including substance abuse, may use the Social Profile to assess an individual's or group's ability to interact, and can design interventions to improve both functional and social skills.¹²⁵

Stress Management:

Stress Management Questionnaire (SMQ): A valid and reliable tool designed to help individuals determine their personal stressors before exploring appropriate coping strategies to minimize the symptoms associated with stress. The questionnaire is a self-scoring tool that takes approximately 20 minutes to complete and consists of 87 psychometrically designed questions that use a 5 point Likert scale.¹²⁶

Cognition:

Short Portable Mental Status Questionnaire test (SPMSQ): A short 10-item standardized assessment tool designed to detect intellectual impairment, particularly in the elderly. Incorrect responses are tallied to provide an indication of cognitive impairment. For example, 0-2 errors indicate normal mental functioning, 3-4 errors indicate mild cognitive impairment, 5-7 errors suggest moderate impairment, and 8 or more errors are associated with severe deficits.¹²⁷

SPMSQ sample questions:

- What is the date, month, and year?
- What is the name of this place?
- How old are you?
- What year were you born?
- Who is the current president?
- Who was the president before that?¹⁰¹

Allen Cognitive Level Screen (ACLS): A standardized screening tool for functional cognition that gauges an individual's ability to learn and problem-solve during a series of three visual motor tasks of increasing challenge and complexity. Scores can be verified via additional assessments and interpreted using the cognitive disabilities model framework. There are three versions of the assessment: the standard screen, a larger version that can be used with clients who have fine motor or low vision deficits, and a disposable edition for single use or serial use with individuals who have infection control precautions in place. All three forms of the assessment are administered and scored using the relevant manual.¹²⁸ Using assessment data, therapists can plan interventions according to cognitive deficits noted, including compensatory strategies and client/caregiver education so that occupational performance and safety may be enhanced. For example, an individual who scores ACL 4.6 may be able to live alone with daily assistance due to an inability to plan ahead or problem-solve in unfamiliar scenarios. Scoring a 3.6 suggests closer supervision is required for all tasks, including cues to complete steps of a routine task, check results, and to minimize safety risks.

OT Interventions and Education that May Be Used to Facilitate Healthy Aging in Place

Activities of daily living (ADL) re-training: Clients with chronic conditions, such as cardiopulmonary issues, dementia, or low vision commonly find their ability to perform basic ADLs compromised by decreased activity tolerance, cognitive deficits, and decreased safety awareness. OT/OTAs provide interventions to address tasks that are typically performed on a daily basis and are considered essential to an individual's ability to live life to its fullest. ADLs include bathing/showering, grooming, dressing/undressing, toileting including hygiene, eating, sexual activity, and the ability to perform functional mobility. In caring for clients with chronic conditions, energy conservation techniques, compensatory strategies, and safety recommendations are commonly embedded into ADL re-training. For example, the OT/OTA may provide recommendations to modify tasks, such as adjusting body mechanics to minimize fatigue, or may suggest altering the environment to reduce extraneous effort and promote safety, or they may recommend compensatory strategies to address cognitive or visual-perceptual deficits. Therapists will also educate the client or caregiver regarding the use of adaptive equipment (AE) to maximize functional independence, such as a long-handled shoe or sock aide, or the use of durable medical equipment (DME), such as a tub seat for seated showers. The ability to complete ADL tasks safely is also a consideration and appropriate education is provided to both client and caregiver.

Instrumental activities of daily living (IADL) re-training: IADLs include activities that support daily life and

enable an individual to successfully live life to its fullest and interact with his/her environment and community. Examples of IADLs include home management, shopping, meal preparation, driving and community mobility, pet care, financial management, medication management, care of others, leisure tasks, employment, education, rest/sleep, and social participation. The OT/OTA may provide recommendations to modify tasks or alter the environment to reduce extraneous effort, decrease activity demand, and compensate for cognitive or visual-perceptual deficits. Energy conservation techniques are commonly embedded into IADL re-training, particularly when activity tolerance is impaired. Examples of recommendations include making larger meals to freeze, letting dishes air dry, grouping task items together to minimize unnecessary searches, sliding rather than carrying items, shopping with someone who can carry grocery bags, or using grocery home delivery services.

Activity tolerance and energy conservation techniques: Fatigue, shortness of breath, and limited endurance are common factors associated with aging and many chronic conditions and may limit performance and participation. OT/OTAs address strategies to modify tasks, and make recommendations regarding the use of assisted devices (AD) and/or adaptive equipment (AE) to reduce effort associated with the performance of daily routines in order to minimize fatigue or shortness of breath. Energy conservation education emphasizes prioritizing, planning, and organizing tasks. This may include simple strategies such as eliminating unnecessary steps, sitting versus standing if possible, setting up task equipment in advance to minimize extraneous effort, and using lightweight tools or utensils. Additionally, clients are encouraged to self-assess symptoms, pace themselves through activities, and take rest breaks prior to experiencing fatigue.

Stress management / relaxation strategies: Stress, anxiety, and depression are common by-products of chronic disease that includes cardiopulmonary conditions, diabetes, and dementia. Providing education to help individuals manage their symptoms in the context of daily routines is an important step in lessening anxiety and promoting participation in the treatment program. Interventions include strategies to help clients prioritize activities and create a balanced lifestyle, increase awareness of body and mind interaction to manage stressors and perform daily activities with more confidence, and provide education on a variety of relaxation methods. These include guided imagery, progressive muscle relaxation, and sensory strategies.

Safety re-training, including low vision recommendations and home modifications: OT/OTAs address home safety training that may include recommendations for environmental modifications, such as grab bar installation, the removal of scatter rugs, and the improvement of lighting. Additionally, modifications

may include the adaptation of tasks, compensatory strategy education, and use of low vision devices to improve function, and prevent accidents and injury. Where cognition is a limiting factor, additional safety measures may be recommended, such signs to increase orientation and locks to prevent wandering.

Health / wellness at home and in the community:

Education includes medication management training, exploration of healthy leisure pursuits for the home and/or the community to promote lifestyle balance, information regarding community resources, such as fitness groups, diet, nutritional, and weight loss education, and smoking cessation, as well as caregiver education to support a safe transition. Community resources and support may also be indicated in cases of depression, commonly associated with chronic disease, a decline in function, or loss of role.

Caregiver training: While the care needs of older adults may vary greatly and include managing both physical and cognitive changes, OT/OTAs take the role and well-being of caregivers into consideration during the evaluation and intervention process. Caring for a loved one may be rewarding but it can also create stress and lead to depression or physical problems. Therapists recognize the needs of caregivers must be included with the needs of the client, and will establish readiness to learn new strategies and willingness to implement home modifications before developing an appropriate education plan or making recommendations. Stress management and coping strategies are explored in addition to community resources to decrease caregiver burden.

OT Considerations for Safe Discharge Planning

While each discipline involved in an individual's care will contribute specific information according to their professional expertise, discharge planning is typically an interdisciplinary effort to ensure safe transitions. OT provides a distinct perspective on the client's functional status, including the individual's ability to safely perform ADLs, IADLs, and mobility, with recommendations for the continuum of care including the potential need for equipment, home modifications, compensatory strategies, or further services.

Common Client / Caregiver Questions

Q. What is aging in place?

A. Housing and care options that integrate design, equipment, and services to promote an individual's ability to remain in the home of his or her choice for as long as possible.

Q. What kind of home modifications will I need?

A. Home evaluations are completed on a case-by-case basis and all recommendations and adaptations are based on a thorough needs assessment and the individual goals of both client and caregiver(s).

Q. Can I afford to stay in my own home?

A. The cost of safety improvements vary depending upon the extent of the modifications recommended. The cost is driven by the needs and financial resources of the client.

Q. Is aging in place affordable?

A. Compared to alternatives, aging in place is the most affordable way for individuals to live independently in the home of their choosing

Q. Do I need a good support system?

A. You may need to rely on others at some point or another. It will be easier to remain independent if you have good social supports nearby to help out as needed, including close-to-home healthcare providers, doctors, and medical facilities. It may be important to investigate local community and government resources if planning to age in place.

CASE STUDY #1

Independent Living Community

History of Presenting Information (HPI):

Mrs. B. is an active 81-year-old woman with a past medical history significant for hypertension, (HTN), chronic urinary tract infections (UTI), macular degeneration, osteoporosis, several falls, and depression. She fell 18 months ago, fracturing her left wrist and required short-term rehab prior to returning home with outpatient OT services. She is limited by minor wrist flexion/extension but it does not significantly impact function. She has fallen twice since then with minor superficial injuries, although did require brief hospitalization due to a diagnosis of UTI with symptoms of frequent urination, pelvic pain, mild confusion, fever, and lethargy. On both occasions, she was successfully treated with antibiotics and discharged home with a temporary increase in ILF services to support a safe transition back to the community.

Reason for OT Referral:

Following her most recent hospitalization and transition home, Mrs. B's daughter discussed her mother's status with facility staff and the visiting nurse, and expressed concerns about safety and her mother's ability to continue living independently. Mrs. B. understands that with a history of osteoporosis she has been lucky not to have experienced more significant injuries after falling, but she does not want to transition to a higher level of care and would prefer to continue living alone and independently for as long as she is able. The visiting nurse recommended both OT and PT evaluations in order to assess Mrs. B.'s current functional status, develop a plan of care, and provide appropriate interventions and recommendations to support successful aging in place.

OT Initial Assessment:

Prior to the initial OT visit, the therapist reviewed the case with the visiting nurse and the physical therapist (PT) involved in her care. The nurse shared concerns about Mrs. B.'s hygiene as a potential risk factor for recurrent UTIs and whether her low vision was impacting medication management. The PT shared that Mrs. B.'s balance and mobility were mildly impaired and that she remained at risk for falls. Both had concerns about some clutter in the apartment. It was agreed that an environmental assessment would be beneficial with some recommendations for home modifications and compensatory strategies to maximize safety and functional ability.

The OT evaluation was conducted in Mrs. B.'s ILF apartment and included an informal interview, an environmental review, an assessment of her functional ability via the Barthel Index, a basic low vision screen, and a cognitive evaluation using The Large Allen Cognitive Level Screen (LACLS) for the visually impaired.

Mrs. B. had just returned from an exercise group at the time of the OT evaluation. She reported that she was in good spirits and was eager to regain some strength and endurance after her most recent hospitalization. She remained pleasant and cooperative throughout the session. She lives in a single level apartment with an open-plan arrangement for the living room and kitchen-diner with a separate bedroom and bathroom. She has a regular height bed without a rail and several closets that were full making it hard to find and retrieve items. Her bathroom was equipped with a walk-in shower stall with a hand-held shower hose, a grab rail, and a flip-down seat. She also had a grab rail by a standard height toilet. Lighting was poor in the shower area when the curtain was closed and there was no non-slip mat. The laundry hamper was full and a number of items had been left on the floor. Mrs. B.'s kitchen was organized so that she could more easily access regularly used items but there was poor lighting around the stove and the dials were worn making it difficult to see settings. A desk area included a lamp, a small magnifier, a number of large print novels, and Mrs. B.'s medications in an oversized pill sorter. There were a number of bags and boxes on the floor throughout the apartment, which Mrs. B. referred to as "important stuff" that still needed to be sorted. She used a cane to ambulate around the apartment, although often left it propped somewhere while she used the furniture for stability in confined spaces.

Mrs. B. is a former elementary school principal who retired twenty years ago. She was also widowed three years ago and moved into the ILF shortly afterwards. Her daughter lives an hour away and is very involved in her mother's care but has a full-time job and three children. Mrs. B. reports that she has always enjoyed reading but is limited by her low vision. She also

reports being active in the ILF community and that she tries to participate in as many of the social groups and events as possible, although her low vision is often a limitation for community outings. She acknowledges that she was depressed after her husband's passing but she is doing better now, although she does get down and scared when she falls and has to be hospitalized. She has a pendant alert system provided by the ILF but reports that she does not know the typical signs and symptoms of a UTI. She reiterates that she wants to remain as independent as possible and does not want to move to a higher level of care. She agrees to all of the functional assessments if subsequent training and modifications will enable to remain in her current apartment.

During the evaluation, Mrs. B. was able to ambulate independently with her cane and she completed a seated shower, as well as dressing, toileting, and grooming tasks at a Supervision (S) level as she required set up assistance for the shower and cuing to locate personal care items while grooming. She was able to complete some IADL tasks that included retrieving items from the bedroom closet, preparing a hot beverage in the kitchen, and sorting her medications into the pill sorter. While she was able to perform each of the assigned IADL tasks, she benefitted from occasional Contact Guard Assist (CGA) when reaching moderately beyond her base of support to retrieve items due to low vision and impaired balance. She also benefitted from Minimal Verbal Cues (VCs) to set the dial correctly on the stove when asked to boil the kettle, and she needed additional cuing to organize her medications in the correct compartment of the pill sorter, which she attributed to poor lighting. While distracted, she did not notice that the kettle was boiling and needed VCs to remember to turn off the stove. Mrs. B. scored a 5.2 on the Large Allen Cognitive Level Screen (LACLS) indicating that she may have some mild short-term memory deficits and require weekly supervision and occasional assistance due to decreased planning, goal-setting, time-management, and follow through skills.

OT Problem List:

- Low vision impacting safety and participation in ADLs/IADLs and community mobility
- Low vision impacting social participation and leisure activities
- Limited knowledge of low vision compensatory strategies and possible adaptive equipment (AE) or assistive technology (AT) to maximize safety and performance
- Cluttered environment and poor area lighting impacting safety and performance
- Limited knowledge of fall prevention strategies

- Decreased strength and balance following recent hospitalization
- Mild short-term memory deficits when distracted
- Limited knowledge of early signs and symptoms of a UTI and no safety/emergency plan
- Need for caregiver training

OT Plan of Care (POC):

Anticipated length of OT services: 6 weeks

Duration and frequency of OT sessions: Approximately 45 minutes, 2 x per week.

OT Environmental and Safety Recommendations:

- Remove environmental clutter and reorganize bedroom closets to maximize safety while reaching for items or ambulating in apartment
- Increase lighting in designated areas with brighter bulbs or additional light fixtures to maximize safety and performance in ADLs/IADL
- Purchase auto shut-off kettle
- Purchase talking clock with reminder capability to maximize follow through and compliance with medication schedule
- Purchase colored florescent tape to highlight and label dials, light switches, small personal items, cables, and thresholds
- Organize commonly used areas, such as bathroom sink, desk, kitchen counters, refrigerator etc., to establish consistent item location for easier access
- Educate client, staff and family regarding signs and symptoms of changes in health status that may require immediate medical attention
- Educate client, staff, and family on appropriate fall prevention strategies
- Educate client, staff, and family regarding need for supervision and assistance for all community mobility and transportation

Additional OT Recommendations:

- Explore leisure interest options and low vision compensatory strategies and adaptive equipment (AE) or assistive technology (AT)
- General health/wellness education

OT Short-term Goals: Anticipated timeframe – 3 weeks

- Client will demonstrate safe item retrieval for

shower set up and complete full bathing routine with Supervision (S) and appropriate attention to safety

- Client will access personal items and perform grooming routine sink-side with Supervision (S)
- Client will retrieve all items for hot beverage prep and complete tea-making task with Supervision (S) while demonstrating appropriate attention to safety and application of low vision compensatory strategies
- Client will demonstrate appropriate attention to safety while reaching moderately beyond base of support to retrieve/return clothing items from closet with Supervision (S)
- Client will independently demonstrate appropriate application of low vision compensatory strategies and adaptive equipment/assistive technology to take medications according to defined schedule
- Client and caregivers will participate in fall prevention education and be able to independently verbalize three strategies to minimize risk and increase home safety
- Client and caregivers will participate in disease management and health/wellness education and be able to independently verbalize early signs and symptoms of a UTI
- Client will explore low vision compensatory strategies and adaptive equipment (AE) / assistive technology (AT) to maximize participation in leisure pursuits and social activities

OT Long-term Goals: Anticipated timeframe – 6 weeks:

- Client will independently (I) perform all ADLs with appropriate application of low vision compensatory strategies, attention to safety, and adaptive equipment (AE)/assistive technology (AT) as needed
- Client will independently (I) perform multi-step meal prep demonstrating application of low vision compensatory strategies, appropriate attention to safety, and good balance while retrieving or transporting relevant items
- Client will independently (I) verbalize steps of emergency plan when concerned about possible changes in medical status that may require immediate assistance
- Client will independently (I) demonstrate appropriate skills to utilize compensatory

strategies and adaptive equipment to manage medications and comply with MD orders

- Client will independently (I) apply low vision compensatory strategies and use adaptive equipment (AE) / assistive technology (AT) to increase participation in leisure interests and social activities.

Interprofessional Communication:

Primary Care Physician (PCP): Discussed evaluation results and rationale for OT services with request for continued OT interventions 2 x pw for 6 weeks. PCP agreed with plan of care and provided verbal order.

Physical Therapy (PT): Discussed Mrs. B.'s OT plan of care and goals in order to develop a coordinated, collaborative effort with PT. Goals discussed included environmental modifications and low vision compensatory strategies, education, and increasing strength and balance via all ADL/IADL activities in order to improve maximize functional mobility and safety. Participated in frequent communication to provide updates, reinforce consistent educational material, and coordinate efforts to minimize schedule conflicts.

Nursing: Discussed Mrs. B.'s evaluation results including deficits, goals, and rationale for OT services. Discussed low vision and cognitive test score with implications for safety and reviewed recommendations for weekly supervision to maintain routine. Participated in frequent communication to provide updates, reinforce consistent educational materials, and monitor for signs and symptoms of UTIs.

Independent Living Facility Staff: Discussed evaluation results including Mrs. B.'s goals to maximize level of function for ADLs/IADLs and social participation. Discussed OT plan of care and recommendations to maximize functional independence via environmental modifications, use of adaptive equipment/assistive technology, and low vision compensatory strategies.

Independent Living Facility Resident Programs Coordinator: Discussed evaluation results and low vision deficits impacting participation in social/community activities, including options to incorporate compensatory strategies and provide assistance with community outings.

Interventions:

Mrs. B.'s interventions focused on addressing knowledge gaps via a tailored education plan, making environmental modifications and recommendations, and coaching her to apply new skills that would help her compensate for low vision deficits and increase safety via all functional tasks and mobility within her home and in the community. Use of adaptive equipment (AE) and assistive technology (AT) was

also included, which helped address Mrs. B.'s desire to continue reading and to participate in community-based leisure activities and social events.

Given Mrs. B.'s low vision and goal of staying socially active, the *Model of Human Occupation (MOHO) Modified Interest Checklist* was completed early in her plan of care, which highlighted potential alternatives to reading when her eyes become fatigued. It was clear that Mrs. B. had a preference for social contexts and that she was motivated to trial compensatory strategies to participate in group puzzles and card games.

The need for home modifications to maximize safety was discussed with both Mrs. B. and her daughter, and recommendations were made with rationale that helped support their understanding of the benefits and risks. Both agreed with the recommendations to remove floor clutter and organize and store Mrs. B.'s personal effects that remained important to her. Brighter light was installed at the desk area, plug-in night lights installed, and easy to access tap lights were purchased and placed in closets, near the stove and close to the shower stall. Colored florescent tape was used to highlight settings on the stove dials, electrical cables, light switches, as well as to indicate the edges of shelves, grab rails in the bathroom, and thresholds including the shower stall. Mrs. B. also agreed to purchase and use a stronger hand-held full page magnifier for reading, a large print calendar for better planning and task follow through, a talking clock with a reminder feature, an auto shut-off electric kettle, and a set of colored pill boxes to easily differentiate days of the week. Instruction was provided to increase safety while adapting to the environmental changes and to increase familiarity and use of all new purchases to maximize functional independence. Mrs. B. was also able to use the magnifier to successfully participate in group jigsaw puzzles and card games.

Having completed the environmental adaptations, Mrs. B. participated in training to minimize her risk for falling and maximize her ability to continue living independently. Given her chronic conditions, specifically HTN and a history of UTIs, Mrs. B. and her daughter were also educated on disease management that included general health and wellbeing information, such as nutrition and exercise recommendations, as well as more specific education to address signs and symptoms that may suggest an acute change in medical status. A symptom checklist was developed, printed out in a large font, and placed in a prominent position on Mrs. B.'s refrigerator. In addition to her using the ILF pendant alert system, Mrs. B. was able to successfully practice using the voice recognition tool on her phone to speed dial her daughter and emergency services.

Mrs. B. was also encouraged to participate in regular functional activities and ambulate as tolerated to increase her strength, balance, and activity tolerance.

She verbalized her understanding of the importance of physical activity in maintaining general endurance that would also enable her to participate in all ADLs/IADLs, and meaningful social activities within the ILF and local community.

Discharge:

For the first three weeks of OT services, Mrs. B. and her daughter helped to apply the home modification recommendations and complete the suggested purchases. Both participated in the educational program devised to increase safety and improve disease management. Mrs. B. also participated in supervised training to implement new strategies via meaningful ADL/IADLs. She met all of her long-term goals by the anticipated date and was discharged from OT services at an Independent (I) level for ADLs and IADLs, such as simple meal prep and bed making. She agreed to regular check-ins from staff and weekly visits from her daughter for grocery shopping and heavier household tasks, including laundry. Mrs. B.'s daughter also agreed to monitor medication management to ensure the routine was being followed correctly. The ILF staff agreed to provide appropriate supervision and support for all community outings if needed, so that Mrs. B. would be able to continue with her social activities.

CASE STUDY #2

Home Care

History of Presenting Information (HPI):

Mr. V. is a 78-year-old male with a past medical history significant for CAD, HTN, COPD, and Parkinson's Disease. He also has a history of tobacco use (1 pack per day x 57 years) and a history of alcohol abuse. He stopped drinking and smoking 5 years ago when diagnosed with Parkinson's Disease. He has had several falls over the past three years but experienced only minor injuries. Past surgeries include a right total knee replacement (TKA), bilateral cataract removal, and septoplasty.

Reason for OT Referral:

Mr. V. lives at home with his wife who is his primary caregiver. She was recently hospitalized for abdominal surgery and Mr. V. was temporarily transferred to a local ALF while his wife recovered from the procedure. He has now returned home and was referred to OT services to ensure a safe transition and to maximize his functional independence. His visiting nurse was also concerned about safety, reporting that the environment may increase Mr. V.'s risk of falling. She was also concerned by a comment from Mr. V.'s adult son who was visiting the family during her evaluation. He stated that his father still holds a driver's license and will occasionally still drive the family car to the local store, which is a mile away. The visiting nurse requested that the OT assess Mr. V.'s functional status and fitness to drive.

OT Initial Assessment:

Mr. V. and his wife were greeted in their dining room of their single level home. Mr. V. was seated in his "favorite chair" at the table with the newspapers in front of him. He presented with a flat affect and often required increased time to respond to questions, both consistent with Parkinson's Disease, but was pleasant and cooperative throughout the session. Mrs. V. was very involved in the evaluation, and noted that her husband seemed less active and engaged since returning home. Prior to his 3 week stay at the ALF, Mr. V. was independent with home mobility using a 4-wheeled walker, and was independent with toileting and grooming. He benefitted from set up for self-feeding and close supervision for tub transfers and community mobility. Mrs. V. provided minimal assistance (Min A) with bathing and dressing tasks, and performed all IADLs, including grocery shopping, meal prep, housekeeping, and medication management. Mrs. V. was also responsible for driving and financial management. Neither reported much community activity other than going to medical appointments. Their son lived locally and visited once a week. He was responsible for the heavier household chores including the yard work. In addition to an interview, a cognitive screen was performed, as well as functional assessment of ADLs and mobility including balance, strength, range of motion (ROM), and coordination. An evaluation of the environment was also completed.

Mr. V. ambulated in the apartment using a 4-wheeled walker but benefitted from close supervision (S) to make tight hallway turns because he did not pay appropriate attention to the numerous scatter rugs. The bathroom had an unusual layout with the toilet in a semi-private nook beyond the tub/shower combination and sink area. It required leaving the 4-wheeled walker by a partition wall and ambulating several feet into the toilet area without an assistive device. There was no grab rail in place by the toilet. He had a shower seat in the tub and a grab bar had been installed at the opposite end to the shower head that required Mr. V. to make a turn once standing inside the tub. Mr. V. participated in an ADL, and using the Barthel Index (BI), it was evident that he required increased assistance from his baseline for his bathing and dressing tasks. He required close supervision (CLS) to access the toilet and benefitted from contact guard assist (CGA) to stand from the low toilet seat. He was independent eating after set up that included cutting up his food due to mild tremors consistent with Parkinson's Disease. He was independent with basic grooming that included oral hygiene and use of an electric shaver. Mr. V. slept in a standard height bed but required Min A to complete supine to sit.

Mr. V. participated in the Timed Up and Go Test (TUG) and scored 14 indicating that he is at risk for falling. He had decreased shoulder AROM to approximately 90 degrees of flexion and 110 degrees of PROM. All other

BUE ROM was within functional limits (WFL). His shoulder strength was graded at 2+ as he was unable to complete full ROM but all other muscles were graded 3+. His wore bifocals, was mildly hard of hearing, and reported no pain. His vital signs were unremarkable. Using the Short Portable Mental Status Questionnaire test (SPMSQ), Mr. V. scored 4 indicating mild cognitive impairment.

Mr. V. is a former mechanic who spent most of his life working in and then managing a local garage. He spends most of the day sitting in the dining room and loves watching the Red Sox and reading the newspapers. He said that he used to be very active and was now often bored. He reported enjoying some of the group activities while staying at the ALE. When asked about driving, Mr. V. hesitantly agreed that in the past he did occasionally take the car to the store. He acknowledged that he was probably unsafe to do so now and would be willing to participate in an assessment to determine his fitness for driving.

Apart from the potential bathroom adaptations and presence of scatter rugs that increased the risk for falling, the home was very cluttered with extra items stacked by doorways, in the hallways, and by the bed. The house had a large bright sun room next to the kitchen but Mr. V. was unable to access it because it was mainly being used for storage.

OT Problem List:

- Decreased driver skills impacting safety
- Significant environmental hazards impacting safety
- Limited knowledge of fall prevention strategies
- Limited knowledge of available DME and home modifications to maximize performance in ADLs
- Decreased strength and balance impacting mobility
- Decreased coordination and fine motor skills impacting participation in ADLs/IADLs
- Mild short-term memory deficits
- Decreased social support and limited engagement in meaningful leisure pursuits
- Need for caregiver training

OT Plan of Care (POC):

Anticipated length of OT services: 6-8 weeks

Duration and frequency of OT sessions: Approximately 45-60 minutes, 2 x per week.

OT Environmental and Safety

Recommendations:

- Remove environmental clutter, specifically all scatter rugs in hallways and all unnecessary belongings and/or furniture around doorways to maximize safety.
- Purchase a bed rail to maximize independence with bed mobility and decrease caregiver burden
- Purchase and install grab rails by toilet and tub to maximize safety and decrease caregiver burden
- Purchase raised toilet seat to maximize independence with toileting and decrease caregiver burden
- Educate client and caregiver on safe transfers using least restrictive assistive device (AD)
- Educate client and caregiver on appropriate fall prevention strategies

Additional OT Recommendations:

- Assess coordination, dexterity, and cognition for driver safety and make appropriate recommendations
- Educate client and caregiver regarding need for supervision and assistance for all community mobility and transportation
- Explore leisure interest options, including community resources
- Educate client and caregiver on home exercise program to increase strength, ROM, coordination, and dexterity to maximize participation in all functional tasks
- General health/wellness education

OT Short-term Goals: Anticipated timeframe – 3 weeks

- Client will perform all household mobility with distant supervision (Dist. S) using least restrictive AD
- Client will perform toilet transfers with supervision (S) and appropriate use of AD, DME, and grab rail as needed
- Client will perform bed mobility with supervision (S) and appropriate use of bed rail
- Client will complete tub transfer with close supervision (CLS) and appropriate use of grab rail and DME
- Client will be Min A for shower routine sitting/standing as tolerated

- Client will be Min A to dressing tasks sitting/standing as tolerated
- Client and caregiver will participate in fall prevention education and be able to independently verbalize three strategies to minimize risk and increase home safety
- Client will participate in home exercise program with supervision (S) and Min verbal cues (VCs) to increase strength, ROM, and coordination
- Client and caregivers will participate in disease management and health/wellness education and be able to independently verbalize early changes in medical status that may require immediate medical assistance
- Client will explore community resources to maximize participation in leisure pursuits and social activities
- Client will participate in evaluation of skills required for driving

OT Long-term Goals: Anticipated timeframe – 6 weeks:

- Client will independently (I) perform all household mobility with appropriate use of AD
- Client will independently (I) perform toilet transfers with appropriate use of AD, DME, and grab rail as needed
- Client will independently (I) perform bed mobility with appropriate use of bed rail
- Client will perform tub transfer with supervision (S) and appropriate use of grab rail and DME
- Client and caregiver will be independent (I) performing daily home exercise program to increase strength, ROM, and coordination
- Client will identify 2-3 appropriate community resources to maximize participation in leisure pursuits and increase social activities

Interprofessional Communication:

Primary Care Physician (PCP): Discussed evaluation results and rationale for OT services with request for continued OT interventions 2 x pw for 6 weeks. Highlighted concern regarding report of Mr. V. driving in the recent past and need for driver skills assessment to make appropriate recommendations. PCP agreed with plan of care and provided verbal order.

Nursing: Discussed Mr. V.'s evaluation results including deficits, goals, and rationale for OT services. Discussed assessments of cognition, mobility, and environment that may impact participation and performance. Also discussed concern regarding Mr. V.'s report

of driving and need for driver skills assessment to make appropriate recommendations. Participated in frequent communication to provide updates, reinforce consistent educational materials, and monitor for changes in medical status.

Interventions:

Mr. V.'s interventions focused on making environmental modifications and recommendations, maximizing safety to minimize risk of falls, increasing strength and ROM to increase participation in all functional tasks, and providing education regarding disease management to reduce knowledge gaps and maximize potential for successful aging in place. A trial of appropriate AD to maximize independence with home mobility was included, as well as exploration of community-based leisure activities to increase social engagement.

The need for home modifications to maximize safety was discussed with both Mr. V. and his wife, and recommendations were made with rationale that helped support their understanding of the benefits and risks. Mrs. V. was initially reluctant to remove scatter rugs but agreed when provided with evidence regarding fall risks. She also agreed to ask her son for help in removing additional household clutter and to ensure all pathways were clear and accessible. Her son also agreed to install an additional rail at the shower head end of the tub to increase safety during tub transfers. Mr. V. and his wife also agreed on the necessity to raise the height of the toilet and opted to add a standard raised toilet seat and install a grab rail due to the confined space.

Having completed the environmental adaptations, Mr. V. participated in training to minimize the risk for falling and to maximize his ability to continue living independently while also reducing the burden of care on his family. Mr. V. was educated on the pros and cons of using an AD with Parkinson's Disease and was able to compare use of a regular rolling walker (RW) with his 4-wheeled walker. It was explained that while an AD will increase stability and safety, it may also hinder mobility due to gait freezing episodes consistent with the disease. However, following evaluation of his mobility, it was recommended that Mr. V. continue to use an AD. He verbalized understanding, and after a trial, opted to continue using the 4-wheeled walker. He and his wife also participated in transfer training that incorporated education for body mechanics and appropriate use of the newly installed grab rails around the bed, toilet, and shower. Both also participated in ADL re-training, specifically showering and dressing, to minimize caregiver burden. Mrs. V. was educated on the value of allowing Mr. V. to participate in all functional tasks to increase strength, ROM, and coordination, and maximize his functional independence.

Although Mr. V. initially requested the OT-Driver Off Road Assessment (OT-DORA) Battery to evaluate his appropriateness for continued driving, he deferred once he had participated in the initial OT evaluation and it was clear that his mobility, coordination including speed and accuracy, and cognition were impaired rendering him unfit for driving and a safety risk on the road. He agreed to give up his desire to drive and this information was conveyed to his PCP. Mrs. V. understood that she would be the primary driver for all transportation needs and that supervision in the community was being recommended. Mr. V.'s son was also agreeable to driving responsibilities as needed to decrease the burden of care on this mother.

Given Mr. V.'s chronic conditions, he and his wife were also educated on disease management that included general health and wellbeing information, such as nutrition and exercise recommendations. A home exercise program was implemented to increase strength, ROM, and coordination, and training was provided. In addition, specific education to address signs and symptoms that may suggest an acute change in medical status was provided and a symptom checklist was developed to provide cues.

In addition to participating in regular functional activities and ambulating as tolerated to increase his strength, balance, and activity tolerance, Mr. and Mrs. V. were encouraged to explore local resources in the community to increase Mr. V.'s leisure options and social participation, which he said he missed after his stay at the ALF. Mr. V. liked the idea of visiting the Senior Center once or twice a week, and was drawn to the exercise groups and model making activities. As a former mechanic, Mr. V. often commented on having idle hands. Mr. V. also agreed that visiting the local Senior Center would increase his social participation and provide his wife with several hours of respite.

Discharge:

By the end of 2 weeks, Mrs. V. and her son had purchased the suggested equipment and helped to apply the home modification recommendations. Both Mr. and Mrs. V. participated in the educational program devised to increase mobility and safety, and improve disease management. Both participated in ADL re-training and Mr. V. was able to reach his toileting, bathing and dressing goals. He was able to demonstrate appropriate skills to utilize the newly installed AE and DME and met all of this mobility and transfer goals. By the end of 6 weeks, he was also independent with his home exercise program and had begun Senior Center activities 2 x per week. Mrs. V. and her son shared driving responsibilities for transportation and community mobility.

CASE STUDY #3

Home Care

History of Presenting Information (HPI):

Mrs. P. is an 80-year-old woman with a past medical history significant for diabetes mellitus (DM), coronary artery disease (CAD), hypertension (HTN), chronic urinary tract infections (UTIs), a history of urosepsis and acute kidney injury (AKI), depression, and Alzheimer's disease. She lives with her daughter, son-in-law, and their two young adult children who both attend local colleges. The family have noticed a decline in function over recent months that includes increased irritability, decreased ability to perform routine tasks that include organizing and problem-solving, occasional episodes of wandering, and more pronounced short-term memory deficits.

Reason for OT Referral:

Following the changes in function observed by the family and a recent episode of wandering in the neighborhood, Mrs. P. was assessed by her PCP. A Mini Mental Exam (MME) score of 22 confirmed a decline from her previous baseline, consistent with mild-to-moderate cognitive impairment that indicated a significant effect on day-to-day functioning. The PCP discussed options for care with the client and family and it was agreed that Mrs. P. would benefit from remaining at home with her immediate family providing long term care and support and with additional services, as needed. The PCP recommended a visiting nurse to ensure Mrs. P.'s medical needs were being addressed, plus an occupational therapy evaluation to assess her current functional status, develop a plan of care, and provide appropriate interventions and recommendations to support Mrs. P.'s successful aging in place.

OT Initial Assessment:

The OT evaluation was conducted in the home of Mrs. P.'s family, a two level home with 2 steps to enter and bilateral rails. The initial evaluation included an informal interview, a functional assessment, a cognitive screen, and a review of the environment. Mrs. P.'s daughter and son-in-law were both present for the duration of the evaluation.

Mrs. P. is a retired administrator who worked for more than 35 years at an insurance company in the city. She has been widowed for 10 years and moved to her daughter and son-in-law's home 2 years ago after being diagnosed with mild Alzheimer's. She also appeared to be exhibiting signs of depression associated with the prognosis and the family felt that she would be more comfortable and safe living in their family home rather than alone. Both her daughter and son-in-law work full time, although Mrs. P.'s daughter works primarily from home. Mrs. P.'s grandchildren, aged 19

and 22, live on campus at a local collage and return home during school breaks and also occasionally visit at the weekends. Mrs. P.'s daughter provides distant supervision for ADLs but is now concerned about her mother's level of thoroughness, sequencing, and ability to complete tasks. Mrs. P. was pleasant and cooperative throughout the evaluation, although became mildly withdrawn or occasionally uncomfortable or flustered when unable to answer questions. She frequently looked to her daughter for guidance who provided additional information and support as needed to ensure her mother remained at ease.

During the evaluation, Mrs. P. was able to ambulate independently around the home without a device, but required occasional verbal cues to reorient and locate a designated room. Using the Barthel Index (BI) to assess function, Mrs. P. required Supervision (S) for bathing, dressing, toileting, and grooming tasks as a result of moderate verbal cues to initiate, sequence and problem-solve. With supervision (S) and verbal cues, she was also able to complete some simple IADL tasks that included unloading the dishwasher, preparing a cold beverage, and folding laundry. While distracted by family, she did not notice that she left the refrigerator door ajar. Mrs. P. scored a 3.6 on the Allen Cognitive Level Screen (ACLS) indicating that her attention span is short and that she lacks awareness of cause and effect, end product or goal. This score suggests that she will need close supervision or assistance to maintain focus, complete tasks, and maintain safety. For example, prompts will be necessary during ADLs and a consistent set up will be beneficial as she may not look for items if not visible.

The family live in a suburban neighborhood in a modest home that is well organized and clean with minimal clutter. Mrs. P.'s bedroom is on the first floor, which has an en suite bathroom and a walk-in shower stall. There were no grab rails or additional equipment present. Mrs. P.'s daughter and son-in-law's bedroom and bathroom is on second floor, along with both children's rooms. In addition to Mrs. P.'s bedroom and en suite bathroom, the first floor is comprised of the kitchen, living room, dining room, home office, and half bathroom. Mrs. P.'s bedroom is light, simple, and functional with a standard height twin bed, night stand, dresser, and recliner by the window. There are a number of pictures of her husband and family on the surfaces and walls. A back door off the kitchen leads to a garage and yard area, a door in the hallway leads directly to the laundry and basement, and the front door leads to a front yard and road. Mrs. P. typically does not go outside, upstairs or down to the basement unescorted but she occasionally forgets and has episodes of wandering.

Mrs. P. has always loved birds and taking care of her home, but has very few hobbies now. According to her family, she primarily spends her day watching television and napping, although she will participate

in meal prep and clean up when the family has time to include her in activities. The family also report that she will occasionally become agitated when disoriented or upset if overstimulated by loud noise, requiring distraction or calming strategies.

OT Problem List:

- Moderate cognitive deficits impacting performance in ADLs and IADLs, as well as safety
- Limited participation in meaningful activities
- Limited social engagement outside of the family
- Potential for impulsivity and wandering impacting safety
- Environmental hazards, such as easy to open doors to neighborhood, garage, and laundry
- Limited knowledge of early signs and symptoms of medical status and no safety/emergency plan
- Need for caregiver training
- Potential for caregiver burnout

OT Plan of Care (POC):

Anticipated length of OT services: 6 weeks

Duration and frequency of OT sessions: Approximately 45 minutes, 2 x per week.

OT Environmental and Safety Recommendations:

- Explore sensory options to facilitate a calm environment, including music, lighting, and minimal stimulation
- Increase lighting in designated areas with brighter bulbs or additional light fixtures to maximize safety and performance in ADLs
- Remove access to hazards, such as medications and cleaning products and toxic chemicals. Place locks on cabinets if necessary
- Place labels/names on doors to increase orientation
- Barricade open stairwells or install gates, especially at night
- Purchase security locks for doors to prevent wandering or access to hazards
- Purchase Alzheimer's alert ID bracelet to maximize safety in case of wandering
- Purchase motion-sensor nightlights to maximize safety at night

- Organize commonly used areas, such as bathroom, night stand, and dresser to establish consistent item location
- Educate client and family on appropriate fall prevention strategies, including use of DME
- Educate client and family regarding need for supervision and assistance for all ADLs
- Educate client and family regarding need for supervision and assistance for all community mobility and transportation

Additional OT Recommendations:

- Educate client and family regarding importance of engaging in meaningful activities to prevent sitting and boredom for extended periods of time
- Explore options for daily social opportunities, including community resources
- Educate client and family regarding signs and symptoms of changes in health status that may require immediate medical attention
- General health/wellness education
- Educate family regarding importance of minimizing caregiver burden

OT Short-term Goals: Anticipated timeframe – 3 weeks

- Client will perform morning/evening ADL routine with Supervision (S) and moderate verbal cues for initiation, sequence, and safety
- Client will perform simple IADLs with Supervision (S) and moderate verbal cues for initiation, sequence, and safety
- Client and family will explore meaningful leisure activities to maximize engagement
- Client and family will explore opportunities to increase social participation via community resources
- Client and family will organize commonly used areas to increase item location
- Client and family will participate in fall prevention education and be able to independently verbalize three strategies to minimize risk and increase home safety
- Client and family will explore sensory options to maximize calm environment
- Client and family will participate in disease

management and health/wellness education and be able to independently verbalize early signs and symptoms of changes in medical status requiring immediate medical attention

OT Long-term Goals: Anticipated timeframe – 6 weeks:

- Client will perform morning/evening ADL routine with Supervision (S) and minimal verbal cues for initiation, sequence, and safety
- Client will perform simple IADLs with Supervision (S) and minimal verbal cues for initiation, sequence, and safety
- Family will adapt home environment per recommendations to maximize safety
- Client and family will identify 2-3 meaningful activities to maximize participation in IADLs and leisure pursuits at home
- Client and family will identify 2-3 appropriate community resources to maximize participation in leisure pursuits and increase social activities
- Family will independently (I) verbalize steps of emergency plan when concerned about possible changes in medical status that may require immediate assistance
- Family members will independently (I) verbalize three strategies each to minimize stress associated with caregiver burden

Interprofessional Communication:

Primary Care Physician (PCP): Discussed evaluation results and rationale for OT services with request for continued OT interventions 2 x pw for 6 weeks. PCP agreed with plan of care and provided verbal order.

Nursing: Discussed Mrs. P.'s evaluation results including deficits, goals, and rationale for OT services. Discussed cognitive test score with implications for function and safety and reviewed recommendations for environmental adaptations, family education, and safety. Participated in frequent communication to provide updates, reinforce consistent educational materials, and monitor for signs and symptoms of changes in medical status.

Interventions:

Interventions focused on both Mrs. P. and her family's knowledge gaps using a tailored approach to develop an education plan and make environmental modifications that would facilitate safe performance in functional tasks, increase participation in meaningful leisure or social activities, maximize safety, and reduce caregiver burden. Use of adaptive equipment (AE) where indicated and the purchase of safety items to

decrease the risk of wandering was also included, as well as exploration of community-based leisure activities and social events.

The need for home modifications to maximize safety was discussed with Mrs. P. and her family, and recommendations were made with rationale to facilitate understanding of the benefits and risks. Motion-sensor night lights were installed throughout the first floor and lighting improved in the bathroom to increase safety during ADLs. Locks were placed on relevant doors and cabinets to minimize access to medications or hazardous material, including the garage and basement laundry room. Additional locks and large distinctive “Stop” signs were added to the back of each exit door to minimize wandering. Labels to identify rooms were also placed prominently on doors or to doorframes to promote orientation, and gates were added to the stairs to limit access to the second floor. Mrs. P.’s family also addressed sensory needs to minimize potential overstimulation and provide a calm environment. A dimmer switch was installed for a soft lighting option and an iPod and speaker system set up to stream relaxing music if indicated. Grab rails, a shower seat, and a non-slip mat were purchased and installed for the bathroom to increase safety and minimize caregiver burden. An Alzheimer’s alert ID wrist bracelet was also purchased to increase safety in the event of wandering. Instruction was provided to increase safety while adapting to the environmental changes and to increase familiarity and use of all new purchases to maximize functional independence.

After modifying the environment, Mrs. P. and her family participated in training to minimize her risk for falling and maximize her ability to participating in functional tasks. Given Mrs. P.’s chronic conditions, specifically HTN, history of UTIs, and diabetes, Mrs. P.’s daughter was also educated on disease management that included general health and wellbeing information, such as nutrition and exercise recommendations, as well as more specific education to address signs and symptoms that may suggest an acute change in medical status.

Mrs. P.’s family was encouraged to help Mrs. P. participate in regular functional activities as much as possible to maximize engagement in meaningful tasks. They were educated on appropriate strategies that included using consistent verbal or visual cues and demonstrations. Given that Mrs. P. enjoyed homemaking, they were encouraged to include her in IADL activities whenever possible to promote a sense of role and purpose: for example, folding clothes, matching socks, drying dishes, and dusting surfaces. Sensory education was also provided to help the family read cues associated with overstimulation, fatigue, or disorientation and implement strategies to de-escalate stress or anxiety.

Leisure options were explored that included activities to also engage the family, such as listening to nostalgic music, singing, and browsing family photo albums. In addition, Mrs. P. enjoyed bird watching and a feeder was installed outside of her bedroom window so she could see them from her recliner. She was included in the cleaning process and restocking of the feeder. Her grandchildren also agreed to escort her to the park to feed the ducks whenever they were home. The family also visited a local senior center and discovered options for supervised activities and events that would increase Mrs. P.’s opportunities to socialize and participate in additional leisure pursuits.

Discharge:

For the first three weeks of OT services, the family made the suggested purchases and implemented the home modification recommendations. Mrs. P. and her family participated in the educational program developed to increase safety, maximize engagement, and improve disease management. Mrs. P. and her family also participated in supervised training to implement new strategies via meaningful ADL/IADLs, and to implement a sensory plan to minimize stress and anxiety. Both Mrs. P. and the family met all of the long-term goals by the anticipated date and she was discharged from OT services at a supervision (S) level for ADLs and IADLs.

RESOURCES

The Certified Aging in Place Specialist training (CAPS) program: Developed by the National Association of Home Builders (NAHB) Remodelers, NAHB Research Center, 50+ Housing Council and the AARP.

<https://www.nahb.org/en/learn/designations/certified-aging-in-place-specialist.aspx>

AOTA’s Occupational Profile Template

https://www.aota.org/~/_media/Corporate/Files/Practice/Manage/Documentation/AOTA-Occupational-Profile-Template.pdf

MOHO Modified Interest Checklist

<https://www.cade.uic.edu/moho/resources/files/Modified%20Interest%20Checklist.pdf>

The National Aging in Place Council (NAIPC): An interprofessional group dedicated to increasing an individual’s ability to remain safe and independent in their home as they age. <http://www.ageinplace.org>

AOTA Resources: Caring for Adults and Older Adults. A comprehensive resource that includes links for understanding Medicare, financial planners, managing pain, locating driving evaluation specialists, and fall prevention tips. <https://www.aota.org/About-Occupational-Therapy/Patients-Clients/Caregivers/adults.aspx>

Senior Resource for Aging in Place: Resources and recommendations specific to aging in place, including share housing options, Alzheimer's communities, and senior daycare options. <http://www.seniorresource.com/ageinpl.htm>

AARP Livable Communities: HomeFit downloads, worksheets, and resources. <https://www.aarp.org/livable-communities/info-2014/home-fit-resources-worksheets.html>

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OCCUPATIONAL THERAPY AND HEALTHY AGING IN PLACE

(4 CE HOURS)

FINAL EXAM

- Up to a third of individuals over the age of 65 experience impaired glucose tolerance and are diagnosed with Type 2 diabetes, while it is estimated that approximately _____ individuals go undiagnosed.
 - 1 in 4
 - 1 in 5
 - 1 in 7
 - 1 in 10
- _____ is generally thought to be an abnormal autoimmune response. Evidence suggests that genes, hormones, and environmental factors may all contribute to its development and the disease can affect all age groups, although it more commonly affects older adults and women.
 - Diabetes
 - Osteoarthritis (OA)
 - Rheumatoid arthritis (RA)
 - Urinary Tract Infection (UTI)
- _____ is currently the sixth leading cause of death in the U.S., and is considered one of the costliest conditions as the combination of health care, caregiver support, and long-term care can be significant with an estimated \$259 billion spent annually.
 - Alzheimer's disease
 - Chronic Obstructive Pulmonary Disease (COPD)
 - Coronary Artery Disease
 - Glaucoma
- The mortality rate for elderly individuals with a diagnosis of urinary tract infection (UTI) is estimated to be approximately _____.
 - 12%
 - 18%
 - 26%
 - 33%
- _____ is the most common symptom associated with chronic obstructive pulmonary disease (COPD), along with a persistent cough, expiratory wheezing, and fatigue.
 - Dyspnea with minor exertion
 - Heartburn similar to indigestion
 - Hyper-responsiveness to various allergens
 - Peripheral edema that includes the lower extremities
- _____ is characterized by peripheral edema that includes the lower extremities, the liver, and abdomen.
 - Asthma
 - Left-sided heart failure
 - Right-sided heart failure
 - Urinary tract infection (UTI)
- In most cases, the early stage of _____ is typically asymptomatic. As the condition progresses, the main symptom is the development of a blurred area or blank spot in the central vision area.
 - Cataracts
 - Glaucoma
 - Macular degeneration
 - All of the above
- In the United States, an estimated _____ are affected by osteoporosis, which is the most common cause of fractures among older adults.
 - 8 million women and 2 million men
 - 8 million women and 4 million men
 - 10 million women and 4 million men
 - 10 million women and 6 million men
- _____ is the most common type of anxiety among older adults.
 - Depression
 - Generalized anxiety disorder (GAD)
 - Obsessive compulsive disorder (OCD)
 - Post-traumatic stress disorder (PTSD)
- There are many complications associated with _____, particularly if the disease is not managed well, which can lead to a number of significant health problems. It can affect the body's ability to heal, leading to frequent infections or non-healing skin problems. Individuals with this disease are also 40% more likely to develop eye problems such as glaucoma and cataracts. Approximately half of all those diagnosed also experience nerve damage in the form of peripheral neuropathy. Symptoms include numbness, tingling, pain, and/or loss of sensation.
 - Arthritis
 - Coronary artery disease
 - Diabetes
 - Osteoporosis

11. _____: A simple and non-invasive procedure used to measure bone loss and assess an individual's risk for developing fractures.
 - a. Arterial blood gas analysis (ABG)
 - b. Dual-energy x-ray absorptiometry (DXA)
 - c. Laser trabeculoplasty (SLT)
 - d. Tonometry
12. _____: A standard diagnostic procedure used to determine the intraocular pressure, or the fluid pressure, of the eye in cases of glaucoma.
 - a. Echocardiogram
 - b. Ocular catheterization
 - c. Stress test
 - d. Tonometry
13. _____: An exaggerated rounding of the upper back. When age-related it is commonly associated with a weakening of spinal vertebra as a result of osteoporosis.
 - a. Bone spurs
 - b. Kyphosis
 - c. Osteophytes
 - d. None of the above
14. _____: A common medication used to treat asthma as well as other allergic conditions, such as skin allergies.
 - a. Antiresorptive
 - b. Anxiolytics
 - c. Bronchodilators
 - d. Corticosteroids
15. _____: Shortness of breath that occurs while an individual is lying down but is relieved by assuming an upright position.
 - a. Bronchospasm
 - b. Hypoventilation
 - c. Ischemia
 - d. Orthopnea
16. _____: a condition that occurs due to damage to the peripheral nervous system and may result in symptoms of paresthesia, muscle weakness, or numbness or tingling, as well as abnormal sensitivity or burning pain in response to stimuli.
 - a. Dyspnea
 - b. Ischemia
 - c. Neuropathy
 - d. Sepsis
17. _____: A common complication of chronic disease, often described as "body wasting." The unintentional weight loss is typically associated with decreased appetite, nausea, poor absorption, and an increased respiration rate that causes the body to burn additional calories.
 - a. Cardiac cachexia
 - b. Polydipsia
 - c. Polyuria
 - d. Sepsis
18. "Environmental modifications to minimize stress and anxiety and promote safety," and "exploration of coping strategies and healthy leisure pursuits to alleviate depression, promote a sense of purpose, and maintain dignity," are potential OT-led interventions characteristic of which area of healthy aging in place?
 - a. Chronic Disease Management
 - b. Community Mobility
 - c. Mental Health
 - d. Social Participation
19. _____: A 10 item ordinal scale used to measure ADL performance that is most commonly used in inpatient rehabilitation, skilled nursing facilities, and home care.
 - a. Barthel Index (BI)
 - b. Canadian Occupational Performance Measure (COPM)
 - c. Model of Human Occupation (MOHO) Modified Interest Checklist
 - d. Satisfaction with Performance Scaled Questionnaire (SPSQ)
20. _____: A simple measure used to glean information on a client's strength of interest and engagement in 68 varied activities in the past, currently, and in the future in order to help them select meaningful activities as a leisure pursuit or to manage stress.
 - a. Model of Human Occupation (MOHO) Modified Interest Checklist
 - b. Satisfaction with Performance Scaled Questionnaire (SPSQ)
 - c. Short Portable Mental Status Questionnaire test (SPMSQ)
 - d. Social Profile: Assessment of Social Participation in Children, Adolescents, and Adults
21. _____: A short 10-item standardized assessment tool designed to detect intellectual impairment, particularly in the elderly.
 - a. Barthel Index (BI)
 - b. Canadian Mental Performance Measure (CMPM)
 - c. Short Portable Mental Status Questionnaire test (SPMSQ)
 - d. Stress Management Questionnaire (SMQ)

22. _____ may include simple strategies such as eliminating unnecessary steps, sitting versus standing if possible, setting up task equipment in advance to minimize extraneous effort, and using lightweight tools or utensils.
- Activity tolerance and energy conservation techniques
 - Stress management/relaxation strategies
 - Safety re-training
 - None of the above
23. Considering Case Study #1: Given Mrs. B.'s low vision and goal of staying socially active, the _____ was completed early in her plan of care, which highlighted potential alternatives to reading when her eyes become fatigued.
- Barthel Index (BI)
 - Model of Human Occupation (MOHO) Modified Interest Checklist
 - Satisfaction with Performance Scaled Questionnaire (SPSQ)
 - Short Portable Mental Status Questionnaire test (SPMSQ)
24. Considering Case Study #2: To reduce Mr. V's risk of falls, OT environmental and safety recommendations included _____.
- Educate client and caregiver on appropriate fall prevention strategies
 - Purchase and install grab rails by toilet and tub to maximize safety and decrease caregiver burden
 - Remove environmental clutter, specifically all scatter rugs in hallways and all unnecessary belongings and/or furniture around doorways to maximize safety
 - All of the above
25. Considering Case Study #3: Mrs. P.'s family addressed _____ to minimize potential overstimulation and provide a calm environment: A dimmer switch was installed for a soft lighting option and an iPod and speaker system set up to stream relaxing music if indicated.
- Caregiver burden
 - Engagement in meaningful tasks
 - Leisure options
 - Sensory needs

ANSWER SHEET

First Name: _____ Last Name: _____ Date: _____

Address: _____ City: _____

State: _____ ZIP: _____ Country: _____

Phone: _____ Email: _____

License/certification # and issuing state/organization _____

Clinical Fellow: Supervisor name and license/certification # _____

Graduate Student: University name and expected graduation date _____

** See instructions on the cover page to submit your exams and pay for your course.

By submitting this final exam for grading, I hereby certify that I have spent the required time to study this course material and that I have personally completed each module/session of instruction.

Occupational Therapy and Healthy Aging in Place Final Exam

- | | | | | |
|--------------------|---------------------|---------------------|---------------------|---------------------|
| 1. (A) (B) (C) (D) | 6. (A) (B) (C) (D) | 11. (A) (B) (C) (D) | 16. (A) (B) (C) (D) | 21. (A) (B) (C) (D) |
| 2. (A) (B) (C) (D) | 7. (A) (B) (C) (D) | 12. (A) (B) (C) (D) | 17. (A) (B) (C) (D) | 22. (A) (B) (C) (D) |
| 3. (A) (B) (C) (D) | 8. (A) (B) (C) (D) | 13. (A) (B) (C) (D) | 18. (A) (B) (C) (D) | 23. (A) (B) (C) (D) |
| 4. (A) (B) (C) (D) | 9. (A) (B) (C) (D) | 14. (A) (B) (C) (D) | 19. (A) (B) (C) (D) | 24. (A) (B) (C) (D) |
| 5. (A) (B) (C) (D) | 10. (A) (B) (C) (D) | 15. (A) (B) (C) (D) | 20. (A) (B) (C) (D) | 25. (A) (B) (C) (D) |

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OCCUPATIONAL THERAPY AND HEALTHY AGING IN PLACE

(4 CE HOURS)

COURSE EVALUATION

Learner Name: _____

	Disagree			Agree		
Orientation was thorough and clear	1	2	3	4	5	
Instructional personnel disclosures were readily available and clearly stated	1	2	3	4	5	
Learning objectives were clearly stated	1	2	3	4	5	
Completion requirements were clearly stated	1	2	3	4	5	
Content was well-organized	1	2	3	4	5	
Content was informative	1	2	3	4	5	
Content reflected stated learning objectives	1	2	3	4	5	
Exam assessed stated learning objectives	1	2	3	4	5	
Exam was graded promptly	1	2	3	4	5	
Satisfied with learning experience	1	2	3	4	5	
Satisfied with customer service (if applicable)	1	2	3	4	5	n/a

What suggestions do you have to improve this program, if any?

What educational needs do you currently have?

What other courses or topics are of interest to you?
