



Montana Geriatric Education Center

Instructions on Completing the Module Screening for Cognitive Impairment

**The results of the assessments and evaluations are confidential,
and the data is used to meet requirements of our federally funded grant.*

Please make sure to turn in Pre-Test, Post-Test, and Module Evaluation.

1. **Before** reading the module, and without looking at it, complete the Pre-Test.
Record your answers on the examination form marked Pre-Test. (*Found at the start of the module.*) Keep the completed answer form to turn in at the completion of the module.
2. Complete the module as outlined.
3. **After** reading the module, please complete the Post-Test.
Use the questions in Appendix C and record your answers on the examination form marked Post-Test. (*Appendix C.*) Keep the completed answer form to return with the pre-test at the completion of the module.

Complete the Module Evaluation. (*Appendix D, after the post-test.*) Keep the completed module evaluation form to return with the pre-test and post-test at the completion of the module.
4. **To obtain credit for the module you must:**
 - a. Complete [online](#) or return the MTGEC Participant Profile
 - b. Return the Pre-Test, Post-Test, and Module Evaluation
 - c. Obtain a score of 70% or better on the Post-Test

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Pre-test: *Screening for Cognitive Impairment*

1. Dementia is under-diagnosed and under- treated in older adults for all of the following reasons EXCEPT:
 - a. Healthcare providers consider screening a low priority because of the lack of effective treatment options.
 - b. A diagnosis of dementia can only be made after death with an autopsy.
 - c. People try to avoid talking about their memory loss and compensate for it so others won't notice.
 - d. People believe "senior moments" are normal and to be expected.
2. Delirium, dementia, and depression:
 - a. Are interchangeable terms.
 - b. Are different degrees of severity of the same symptoms.
 - c. Cannot be accurately diagnosed except through an autopsy after death.
 - d. Are different disorders but may have similar symptoms.
3. Which of the following statements is NOT true?
 - a. The incidence of dementia is expected to dramatically decline over the next thirty years because of improved health care.
 - b. A significant number people with dementia worldwide have not been diagnosed.
 - c. About a third of people over the age of 85 have dementia.
 - d. Alzheimer's is the only cause of death among the top 10 in America without a way to prevent, cure, or even slow its progression.
4. Important risk factors for the development of Alzheimer's disease include:
 - a. Family history and genetics.
 - b. Changes in the brain, including plaques, tangles, and fewer nerve cells.
 - c. Other medical conditions and poor health.
 - d. All of the above.
5. Which of these is NOT usually a symptom of cognitive impairment?
 - a. Difficulty completing familiar tasks
 - b. Excessive sleeping
 - c. Forgetting recently learned information
 - d. Withdrawal from work or social activities
6. Which physiologic condition(s) can produce dementia-like symptoms?
 - a. Depression
 - b. Reactions to medications
 - c. Urinary tract infection
 - d. All of the above
7. The Mini-Cog screening test is composed of which two activities:
 - a) Word recall and clock drawing test
 - b) Reverse serial sevens and word recall
 - c) Mood assessment and clock drawing test
 - d) Reverse serial sevens and clock drawing test

8. If dementia is suspected on a screening, the person should be referred :
 - a. To a neurologist for a complete neurological exam.
 - b. To a psychiatrist for medications.
 - c. To a primary health care provider for further evaluation of the symptoms.
 - d. To a lawyer to name a durable power of attorney for medical affairs.

9. After a diagnosis of dementia is confirmed, all of the following may be recommended EXCEPT:
 - a. Cholinesterase inhibitor medication to slow the progression of the disease.
 - b. Electroconvulsive therapy (ECT) to improve communication between brain cells.
 - c. Support groups for both the patient and caregiver.
 - d. Environmental and behavioral management training for the caregiver.

10. Dementia research is currently focused on:
 - a. Early diagnosis of Alzheimer's disease with brain imaging scans, spinal fluid tests and blood tests.
 - b. Developing evidenced-based effective psycho-educational programs for patients and caregivers.
 - c. Clinical trials of drugs that delay or prevent dementia.
 - d. All of the above.

PRE-TEST: Examination Form

Screening for Cognitive Impairment

Participant Information

1. Name: _____
2. Mailing address: _____

3. Date exam completed _____

Questions: (Please circle one response per question)

1	A	B	C	D
2	A	B	C	D
3	A	B	C	D
4	A	B	C	D
5	A	B	C	D
6	A	B	C	D
7	A	B	C	D
8	A	B	C	D
9	A	B	C	D
10	A	B	C	D

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Montana Geriatric Education Center

Screening for Cognitive Impairment

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A 2.5-hour Geriatric Health Screening Module from the

Montana Geriatric Workforce Enhancement Program

A Consortium of:
The University of Montana, Missoula
Mountain Pacific Health, Helena
RiverStone Health, Billings
St. Vincent Healthcare, Billings

[Montana Geriatric Education Center Website](#)

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Montana Geriatric Education Center (MTGEC)

Screening for Cognitive Impairment

Disclosures

Montana Geriatric Workforce Enhancement Program Goals/Purpose

Improve health outcomes for older adults in rural Montana via increased knowledge of older adult care and treatment of health problems by health professionals.

Successful completion of this continuing education activity includes:

- Completion of the Pre-Test
- Reading of text
- Visiting websites as directed in module
- Completion of the Post-Test with at least 70% accuracy
- Completion of the module evaluation

Contact Hours: 2.5

Montana Nurses Association (MNA)

The Montana Geriatric Education Center is an approved provider of continuing nursing education by the Montana Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.

MNA Continuing Nursing Education Expiration Date: 10/23/2017

Conflicts of Interest

The planners and presenters of the CE activity have disclosed no relevant financial relationship with any commercial companies pertaining to this activity. (OR AS APPROPRIATE)

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Description of Module

Content:

This module will present:

1. An overview of the incidence and prevalence of cognitive decline in the older adult population;
2. Review of signs and symptoms of cognitive decline in older persons;
3. Discussion of screening tests used to identify cognitive decline; and
4. A summary of treatment and follow-up, including appropriate referral sources for older adults with cognitive decline.

Module Purpose:

Participants will improve their knowledge of screening and follow-up for cognitive decline in older adults.

Learning Objectives:

Specifically, the learner will be able to:

1. Review the impact of cognitive decline in older adults.
2. Describe the procedures for conducting basic cognitive assessments, including the Mini-Cog.
3. Summarize the need for referral and the treatments for cognitive decline in older adults.

Table of Contents

I. Incidence and Prevalence of Cognitive Impairment and Types of Dementia in Older Adults	9
A. Three stages of Alzheimer’s	12
B. Seven stages of Alzheimer’s.....	13
C. Related conditions	13
D. Causes and risk factors.....	16
II. Symptoms of Cognitive Decline in Older Adults	19
III. Screening Tests Commonly Used to Identify Cognitive Decline in Older Adults	21
A. To screen or not to screen	21
B. Types of screening	23
C. Diagnosis and the DSM-5	26
D. Notes on assessments for cognitive impairments.....	27
IV. How to Conduct and Score the Mini-Cog for Cognitive Screening.....	28
V. Types of Referrals and Referral Sources for Patients with cognitive Impairment	30
VI. Summary of Interventions and Follow Up for Cognitive Impairment.....	35
A. Drug therapy for AD.....	35
B. Psycho-educational interventions	37
C. Counseling.....	37
D. Environmental and behavior management	38
VII. Cognitive Screening – Video Review	40
VIII. Cognitive Impairment Web Resources.....	41
IX. Cognitive Impairment Glossary	42
X. References	43
Appendix A: Alzheimer’s Association’s Ten Warning Signs of Alzheimer's Disease (AD)	49
Appendix B: Additional Screening Tools	50
Appendix C: Post-test Screening for Cognitive Impairment.....	51
Appendix D: Evaluation: Screening for Cognitive Impairment.....	54

Screening for Cognitive Impairment

I. Incidence and Prevalence of Cognitive Impairment and Types of Dementia in Older Adults

People fear dementia and its related loss of dignity, demands on family caregivers and resources, and institutional placement almost as much as they fear cancer (Mozes, 2011). Throughout history, senility has been seen as a normal condition of old age. Since Dr. Alois Alzheimer's description of brain tissue changes associated with cognitive impairment in a 55 year old woman in 1906, awareness of and knowledge about cognitive impairment has gradually increased over the last century. The publicity around President Ronald Reagan's diagnosis with Alzheimer's disease (AD) in 1994 was a turning point in the recognition and discussion of the tragic and personal impact of the disease.

As people live longer and the Baby Boomers age, the population of older adults is growing. Because advanced age is the greatest risk factor for dementia, the devastating, progressive decline of cognition will affect more and more individuals, families, and the entire health care system (Sanders & Osterhaus, 2011).

Health care providers do not yet completely understand the cause of Alzheimer's disease (AD) and other cognitive impairment disorders, nor are there effective treatments. The urgency of the looming crisis has produced a flurry of support and research. Just in the last few years, Congress has drafted and updated the National Plan to Address Alzheimer's Disease, creating the National Alzheimer's Project with goals to prevent and effectively treat Alzheimer's by 2025. (U.S. Department of Health and Human Services, 2012) In early 2014, Congress passed an unprecedented \$122 million increase for Alzheimer's research, education, outreach and caregiver support. The bulk of this new funding increases research dollars from \$503 million to \$603 million. Although a significant increase, \$603 million seems insignificant considering that the cost to the American society of caring for those with AD will total an estimated \$214 **billion** in 2014.

Alzheimer's Disease International, in the World Alzheimer Reports of 2011 and 2013, reviewed thousands of scientific studies and concluded:

- Of the estimated 44.4 million people with dementia worldwide, most have not been diagnosed, ranging from 20-50% in high income countries, and up to 90% in India (Alzheimer's Disease International, 2014)
- Failure to diagnose is based on the false belief that dementia is a normal part of aging and nothing can be done about it.
- Early detection could save around \$10,000 or more per person over the course of the disease.
- Dementia diagnosis provides access to a pathway of evidence-based treatment, care, and support.

- Drugs and psychological treatment can improve cognition, independence and quality of life.
- A national dementia strategy should include early diagnosis, networks of specialist centers and a continuum of care.
- Physicians and other health care professionals should be taught to detect dementia early.
- Governments should spend more money on diagnosis, treatment and research (Prince, Bryce, & Ferri, 2011; Reinberg, 2011).

Here are the hard statistics from the Alzheimer's Association (Alzheimer's Association, 2014a):

- It is estimated that in 2014 an estimated 5.2 million Americans of all ages have AD. This figure includes 5 million people aged 65 and older and 200,000 individuals under age 65 who have early-onset Alzheimer's.
- One in nine people aged 65 and older (11%) has AD.
- About a third of people aged 85 and older (32%) have AD.
- Of those with AD, an estimated 4% are under age 65, 15% are 65 to 74, 44% are 75 to 84, and 38% are 85 or older.
- Half of the estimated 5.2 million Americans with AD may not know they have it. When AD can be detected earlier, this estimate may be proven to be very low.
- Almost two-thirds of those with the disease – 3.2 million – are women. Women are not more likely to develop AD than men; they just currently live longer, which increases their risk.
- By 2025, it is estimated that the numbers of people with AD in the U.S. will increase by 40% - from 5.2 million to 7.1 million.
- AD is the 6th leading cause of death in the United States and the 5th leading cause of death for those aged 65 and older.
- More people die *with* AD disease than *from* it; one-third of seniors who die each year have been diagnosed with AD or another dementia.
- Deaths from AD increased 68% between 2000 and 2010, while deaths from other major diseases decreased, including the number one cause of death, heart disease, which decreased 16%.
- AD is the only cause of death among the top 10 in America without a way to prevent, cure, or even slow its progression.
- Most people survive an average of four to eight years after an AD diagnosis, but some live as long as 20 years with the disease.
- About two-thirds of people dying of AD die in a nursing home; only 20% of people dying with cancer and 28% of people dying from all other conditions die in a nursing home.
- In 2013, 15.5 million family and friends provided 17.7 billion hours of unpaid care to those with AD or other dementias, for an estimated value of \$220.2 billion.
- Older adults with AD have more home health care visits, more hospital stays, and more skilled nursing facility stays than any other group of older adults.
- In Montana, an estimated 18,000 people have AD in 2014. It is estimated that in 2025 there will be 27,000 cases in Montana, an increase of 50%.

In addition, as Healthy People 2020 points out,

People living with dementia are at greater risk for general disability and experience frequent injury from falls. Older adults with dementia are 3 times more likely to have preventable hospitalizations. As their dementia worsens, people need more health services and, oftentimes, long-term care. Many individuals requiring long-term care experience major personal and financial challenges that affect their families, their caregivers, and society (U.S. Department of Health and Human Services, 2014).

These “facts” are estimates only, and only show part of the picture, for three main reasons. According to 2011 guidelines, Alzheimer’s, for the first time, is being defined as a continuum of stages from the “preclinical” stage when changes are occurring in the brain but there are no symptoms, to mild cognitive impairment (MCI), through seven stages of AD. Adding the “preclinical” stage to the definition could double some of the above numbers (Albert, et al., 2011). Secondly, cognitive impairments, similar to depression, are difficult to quantify not only because they are largely undiagnosed, but also because the causes and symptoms are complex and only partially understood at this time. Finally, although Alzheimer’s disease is the most common type of cognitive impairment, there are individuals suffering from other types of dementia.

Common causes of cognitive impairment in later life include delirium, depression, mild cognitive impairment (MCI) and various types of dementia. These related terms may be confusing and incorrectly used interchangeably. In addition, the Alzheimer’s Association, the National Institute on Aging, DSM-5, insurance codes and research have all been generating new terms and definitions, many of which do not neatly correspond with each other, adding to the confusion.

“**Dementia**” does not refer to one specific diagnosis or disease, but actually is an umbrella term, or syndrome, covering a set of cognitive symptoms and conditions that are produced by many disorders. The term is derived from the Latin word for “mad” or “insane”. In 2013, the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) chose to replace the term with new terms that were believed to more accurately depict a decline from a previous level rather than a cognitive deficit, and to hopefully reduce the stigma. The new terms are “**major or minor neurocognitive disorder**”. In practice, the common use of the term “dementia” continues (Siberski, 2012; Warchol, 2013).

Dementia is a loss of cognitive functioning persisting over time which includes memory impairment and may also include difficulty with planning, reasoning, decision-making, perception, language, orientation, behavior, motor functioning, and judgment as well as confusion and/or personality changes. The DSM-5 differentiates minor and major neurocognitive disorder as follows:

- ◆ **Minor neurocognitive disorder:** Has evidence of modest cognitive decline from a previous level of performance in one or more of the domains listed above, ranging roughly from one to two standard deviations below appropriate norms in formal evaluation. Despite the deficits, the individual may remain independent with effort, compensatory strategies and/or accommodation.

- ♦ **Major neurocognitive disorder:** Has evidence of substantial cognitive decline from a previous level of performance in one or more of the domains listed above, performing at two or more standard deviations below appropriate norms in formal evaluation. The individual's deficits interfere with independence, requiring at least minimal assistance with instrumental activities of daily living.

The subtypes of neurocognitive disorders in the DSM-5 are Alzheimer's disease; vascular neurocognitive disorder; frontotemporal neurocognitive disorder; neurocognitive disorder due to traumatic brain injury, Lewy body dementia, Parkinson's disease, or HIV infection; substance-induced neurocognitive disorder; neurocognitive disorder due to Huntington's disease, Prion disease, or to another medical condition; and neurocognitive disorder not elsewhere classified (Warchol, 2013).

A. Three stages of Alzheimer's

In 2011, the Alzheimer's Association and the National Institute on Aging (NIA) of the National Institutes of Health published new criteria and guidelines for the diagnosis and study of AD. These stages, however, were not incorporated in the DSM-5 for current use in diagnosis (Alzheimer's Association and National Institute on Aging, 2011).

1) Preclinical stage of AD: Recent research has discovered that functional and structural changes occur in the brain years, and probably decades, prior to the diagnosis of clinical dementia. Neuroimaging, cerebrospinal fluid assays, genetic testing and other biomarkers are being used to track amyloid accumulation, helical filament tau formation ("tangles"), neuronal loss, and brain tissue deterioration, as well as genetic, cardiovascular disease, and life-style associations. The hope is that by understanding these changes (and also similar changes that do NOT develop into AD), early interventions may be developed in the near future. Biomarkers may also eventually be used to confirm an AD diagnosis.

2) Mild Cognitive Impairment (MCI) due to AD: Similar to the term dementia, MCI is actually a term describing a cluster of symptoms including changes in memory, language and processing information. Although MCI has been replaced by minor neurocognitive disorder with the DSM-5, previous diagnosis, inclusion in the three stages of AD and common usage of the term assure that use of the term will likely continue. Although the signs of MCI are severe enough to be noticed by family and friends and to register on assessments, they are not severe enough to significantly interfere with daily independent living. MCI may or may not be pre-dementia; about half of the cases do progress to AD. For unknown reasons, MCI appears to affect men more than women. People suffering from MCI are able to live independently and continue most of their normal activities, but often recognize that their problems are gradually worsening over time. Unlike delirium, the symptoms do not occur suddenly, but MCI may also be accompanied by depression, anxiety, irritability or apathy, in part perhaps because of the frustration of experiencing MCI. The 2011 guidelines define four levels of evaluation for ruling out other causes of MCI and arriving at a diagnosis of MCI due to Alzheimer's disease (National Center on Caregiving, 2012; Sanders & Osterhaus, 2011; Albert et al., 2011).

3) Dementia due to AD: Also known as "major neurocognitive disorder", the dementia of Alzheimer's disease is marked by memory, thinking and behavioral symptoms that impair a person's ability to function in daily life (Alzheimer's Association and National Institute on Aging, 2011).

B. Seven stages of Alzheimer's

Another staging model developed by Dr. Barry Reisberg is helpful for discussing the progression of AD with families and health professionals, although it is not used for DSM-5 diagnosis. There are, of course, individual differences in how (or even if) AD progresses and the specific symptoms may overlap several stages at any given time. Several different terms may be used for the same stage (Alzheimer's Association, 2014b).

Stage 1: No impairment: “preclinical stage”; normal function

Stage 2: Very mild decline: “preclinical stage”; may be normal age-related changes or earliest symptoms of AD

Stage 3: Mild decline: “early stage AD”; first time changes may be noticed with cognitive screenings

Stage 4: Moderate decline: “mild or early stage AD”; marked changes on cognitive screenings, some difficulties with instrumental activities of daily living, possible mood and personality changes

Stage 5: Moderately severe decline: “moderate or mid-stage AD”; need assistance with many daily tasks

Stage 6: Severe decline: “moderately severe or mid-stage AD”; need extensive help with daily activities, including dressing and toileting, may wander and have trouble with sleeping, extreme difficulty with memory

Stage 7: Very severe decline: “severe or late-stage AD”; lose the ability to respond to their environment and eventually to control movement, including swallowing

ICD Codes: The International Classification of Diseases, Version 9 (ICD-9) specifies insurance codes that support skilled intervention. Dementia related codes include:

- Dementia (290.0–290.4)
- Alzheimer's (331.0)
- Mild cognitive impairment (331.83)
- Memory loss not specified elsewhere (780.93)

Therapists should use diagnosis codes that are provided by the patient's medical provider. Note that in October of 2015, ICD-10 diagnosis codes will go into effect and the above codes will no longer be valid. For example, mild cognitive impairment's code will become G31.84 (Warchol, 2013).

C. Related conditions

Delirium is a condition with sudden and severe changes in cognition and brain function that should be reversible when the underlying cause is addressed. The definition for delirium has been slightly altered with the DSM-5, adding changes in attention and orientation to the environment. It develops over

hours or days, rather than months or years, and presents with unpredictable confusion, disorientation and difficulty with memory and focus. Symptoms often fluctuate during the day and become worse at night.

Delirium is the result of some physiologic conditions (e.g., pain, poor functional status), illness (a urinary tract infection is a common culprit in older adults), disrupted sleep, or reaction to medication, particularly psychotropic drugs, or even over-the-counter medications. People over 65 are at the highest risk for delirium due to their reduced ability to metabolize, break down and excrete drugs, and their typically larger number of prescriptions. Delirium can be easily misdiagnosed or confused with depression or psychosis. It is considered a medical emergency, as it is associated with increased morbidity and mortality rates (Multidisciplinary Center on Aging, n.d., Miller, 2012; Siberski, 2012).

Depression may be difficult to distinguish from dementia; patients or their families may seek professional help due to cognitive impairment, when depression may actually be the cause. Depression and dementia can, and often do, co-exist. Depressed patients may score better on cognitive scales than many patients with dementia, but they may also give “I don’t know” responses. A trial of antidepressant therapy may be indicated to distinguish between depression and dementia.

The causes of cognitive impairment are complex, but with a comprehensive assessment, a skilled clinician can now identify the primary cause 90% of the time (Sanders & Osterhaus, 2011). Outside of delirium, depression, and MCI, the vast majority of dementia cases fall into two diagnoses: roughly 60-80% are Alzheimer’s disease and 5-10% are vascular dementia (Alzheimer’s Association, 2014a). Since Alzheimer’s disease is the most common, AD will be the primary focus of the rest of the module.

Table 1: Common Types of Dementia and Their Typical Characteristics (Alzheimer's Association, 2014a, pp. 5-6), edited, with additional notes:

Type of Dementia	Characteristics
Alzheimer's disease (AD)	<p>Most common type of dementia; accounts for an estimated 60 - 80% of cases. Considered a terminal disease; can survive 3-20 years, with average of 4-8 years.</p> <p>Difficulty remembering names and recent events, apathy and depression are often early symptoms. Later symptoms include impaired communication and judgment, disorientation, confusion, behavior changes and difficulty speaking, swallowing and walking.</p> <p>Hallmark abnormalities in the brain are deposits of the protein fragment beta-amyloid (plaques), twisted strands of the protein tau (tangles), nerve cell damage and death in the brain.</p>
Vascular dementia (also known as multi-infarct or post-stroke dementia or vascular cognitive impairment)	<p>The second most common type of dementia, accounting for 5- 10% of dementia cases</p> <p>Impairment is caused by brain injuries such as microscopic bleeding and blood vessel blockage. Injury type and location will determine type of impairment.</p> <p>Symptoms often overlap with those of Alzheimer's, although impaired judgment is usually the initial symptom and memory may not be as seriously affected. Stair step decline is seen, rather than gradual decline seen with AD.</p>
Mixed dementia	<p>Abnormalities linked to more than one type of dementia occurring simultaneously in the brain. Often Alzheimer's and another type of dementia — most commonly vascular dementia, but also other types, such as dementia with Lewy bodies.</p> <p>Recent studies suggest that mixed dementia is more common than previously thought.</p>
Dementia with Lewy bodies (DLB)	<p>Pattern of decline may be similar to Alzheimer's, including problems with memory and thinking, but are more likely to have early symptoms of sleep disturbances, hallucinations, muscle rigidity or tremors.</p> <p>Lewy bodies are abnormal deposits of the protein alpha-synuclein that develop in the cortex.</p>
Parkinson's disease	<p>Problems with movement are a common symptom early in the disease. As it progresses, dementia often develops similar to that of Alzheimer's or dementia with Lewy bodies.</p> <p>Alpha-synuclein clumps are likely to begin in an area deep in the brain called the substantia nigra. These clumps are thought to cause degeneration of the nerve cells that produce dopamine.</p>
Frontotemporal dementia (FTD)	<p>Includes dementias such as behavioral variant FTD (bvFTD), primary progressive aphasia, Pick's disease and progressive supranuclear palsy.</p> <p>Typical symptoms include changes in personality and behavior and difficulty with language. Nerve cells in the front and side regions of the brain are especially affected.</p> <p>No distinguishing microscopic abnormality is linked to all cases. People with FTD generally develop symptoms at a younger age (about 60) and survive for fewer years than those with AD.</p>
	Continued -

Type of Dementia	Characteristics
Creutzfeldt-Jakob disease (CJD)	CJD is the most common human form of a group of rare, fatal brain disorders affecting people and certain other mammals. Variant CJD (“mad cow disease”) occurs in cattle, and has been transmitted to people under certain circumstances. Rapidly fatal disorder that impairs memory and coordination and causes behavior changes. Results from misfolded prion protein that causes a “domino effect” throughout the brain.
Normal pressure hydrocephalus	Symptoms include difficulty walking, memory loss and inability to control urination. Caused by the buildup of fluid in the brain. Can sometimes be corrected with surgical installation of a shunt in the brain to drain excess fluid.
Huntington’s Disease	A progressive brain disorder caused by a single defective gene on chromosome 4. The gene defect causes abnormalities in a brain protein that, over time, leads to worsening symptoms. Symptoms include abnormal involuntary movements, a severe decline in thinking and reasoning skills, irritability, depression and other mood changes.
Wernicke-Korsakoff Syndrome	Korsakoff syndrome is a chronic memory disorder caused by severe deficiency of thiamine (vitamin B-1). The most common cause is alcohol misuse. Memory problems may be strikingly severe while other thinking and social skills seem relatively unaffected. Thiamine helps brain cells produce energy from glucose. When thiamine levels fall too low, brain cells cannot generate enough energy to function properly.

D. Causes and risk factors

Research indicates that dementia is caused by a number of factors interacting over many years, as is the case with other chronic conditions. Some risk factors such as age and genetics cannot be modified while other risk factors have the potential for modification. The major risk factors associated with AD are discussed below (Alzheimer’s Association, 2014c).

Age: Like depression, dementia is NOT a normal part of the aging process. Aging, however, is the greatest risk factor for AD. The prevalence of dementia doubles every five years after the age of 65 (U.S. Department of Health and Human Services, 2014).

Family History: Individuals with a close relative with AD are two to three times more likely to develop AD (Sanders & Osterhaus, 2011). If more than one family member has AD, the risk increases. Heredity (mainly genetics), environmental or lifestyle factors, or all three, may affect a person’s risk.

Genetics: To date, researchers have identified three gene mutations that are associated (50% chance) with early-onset AD (before age 60), and four gene mutations that are correlated with late-onset AD. Genetics currently is an area of concentrated dementia research searching for causes and a cure (Dallas, 2011). Scientists estimate that risk genes (such as APOE-e4) may be a factor in about 20-25% of AD

cases, and deterministic “familial” genes – ones that directly cause AD – may be a factor in less than 5% of AD cases. Until preventive treatments are available, routine clinical genetics testing for Alzheimer’s genes is not currently recommended (U.S. Department of Health and Human Services, 2014; Alzheimer’s Association, 2014c).

Gender: Although the development of dementia does not differ between men and women, more women have cognitive impairment, possibly because women currently live longer. The life expectancy rate difference for men and women is shrinking, which may ultimately change this statistic. Men seem to be at greater risk of developing AD if they have chronic medical conditions, while women at risk are those who are socially isolated, have a disability, or are overall in poor health (Sanders & Osterhaus, 2011).

Health: People with conditions that can affect brain blood vessels are eight times more likely to develop AD. This includes head trauma, diabetes, vascular conditions, heart disease, high cholesterol, high blood pressure and stroke. AD also is correlated with tobacco use, frequent falls, sleep apnea, high salt consumption, loss of teeth, bone loss, substance abuse, lack of exercise, depression, alcohol abuse, and Post Traumatic Stress Disorder in combat veterans (National Center on Caregiving, 2012; U.S. Preventive Services Task Force, 2014).

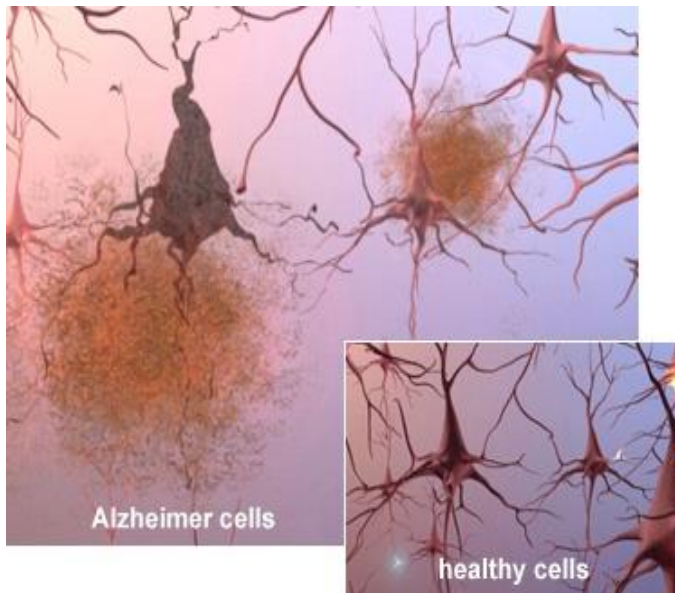
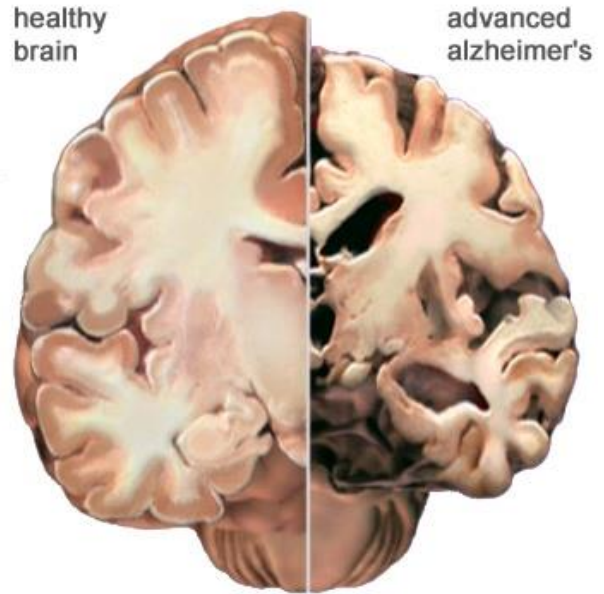
It has recently been speculated that lifestyle changes could prevent more than half of AD cases globally. Modifiable risk factors seem to prevent normal circulation in the brain that correlates with AD, although they have not been shown to actually cause it. In the U.S., researchers estimate that 21% of AD cases might be traced to low physical activity, 15% to depression, 11% to smoking, 8% to mid-life hypertension, 7% to mid-life obesity, 7% to low education, and 3% to diabetes (Barnes & Yaffe, 2011).

Education and Socioeconomic Status: People who have lower educational and socioeconomic levels tend to have poorer overall health, and cognitive diagnostic disparities on assessments are no exception (Sanders & Osterhaus, 2011; U.S. Preventive Services Task Force, 2014).

Race and Ethnicity: AD is under-diagnosed and undertreated in minority groups, making it difficult to assess risk. African Americans, Latinos, and Asians seem to have a higher risk, but this may be due to differences in education, economic factors and health factors. Cultural views of dementia vary, including stigmas about mental health conditions, fear of public disclosure, fear of the health care system, and family values of care within the family instead of involving outsiders (Sanders & Osterhaus, 2011).

In the Alzheimer's brain:

- The **cortex shrivels up**, damaging areas involved in thinking, planning and remembering.
- Shrinkage is especially severe in the **hippocampus**, an area of the cortex that plays a key role in formation of new memories.
- **Ventricles** (fluid-filled spaces within the brain) grow larger.
(Alzheimer's Association, 2014d, p. 9)



Brain cells in AD: Alzheimer's tissue has many fewer nerve cells and synapses than a healthy brain.

Neuritic Plaques, abnormal clusters of protein fragments called beta-amyloid peptide, build up between nerve cells.

Neurofibrillary Tangles, which are made up of twisted strands of the protein tau, are contained in dead and dying nerve cells.

Loss of connections among brain cells responsible for memory, learning and communication. These connections, or synapses, transmit information from cell to cell.

Inflammation resulting from the brain's effort to fend off the lethal effects of the other changes under way.

Eventual death of brain cells and severe tissue shrinkage, which affects all brain function.

(Alzheimer's Association, 2014d, p. 10)

Scientists are not absolutely sure what causes cell death and tissue loss in the Alzheimer's brain, but plaques and tangles are prime suspects. Plaques and tangles develop in all aging brains, but those with AD have considerably more and experience greater damage as a result. Plaques and tangles interfere with the communication between nerve cells. Once a nerve cell is damaged, damage occurs to other neighboring cells, resulting in the cells ceasing to function and eventually dying (Alzheimer's Association, 2014d). The buildup of aluminum, lead, mercury, and other substances in the brain is no longer believed to be a cause of AD (A.D.A.M. Medical Encyclopedia, 2010).

- If you are interested in learning more about the changes in an Alzheimer's brain, see The Alzheimer's Association's "[Inside the Brain: Alzheimer's Brain Tour](#)".

II. Symptoms of Cognitive Decline in Older Adults

Normal age-related changes in the brain do bring slower mental processing and some difficulty with memory, particularly learning and recalling information and selective attention. The earliest symptom of MCI and AD is memory impairment and is often overlooked or attributed to "senior moments", stress, depression or some other temporary disorder. Decline may initially come in only a few areas of cognitive functioning, and people are often able to find ways to compensate, sometimes with the help of those close to them. It's helpful to look at what is and what is not dementia.

Table 2: Distinguishing Normal “Senior Moments” From More Worrisome Memory Lapses

Normal Age-Related Forgetfulness	Mild Cognitive Impairment	Dementia
Sometimes misplaces keys, eyeglasses, or other items.	Frequently misplaces items.	Forgets what an item is used for or puts it in an inappropriate place.
Momentarily forgets an acquaintance’s name.	Frequently forgets people’s names and is slow to recall them.	May not remember knowing a person.
Occasionally has to “search” for a word.	Has more difficulty using the right words.	Begins to lose language skills. May withdraw from social interaction.
Occasionally forgets to run an errand.	Begins to forget important events and appointments.	Loses sense of time. Doesn’t know what day it is.
May forget an event from the distant past.	May forget more recent events or newly learned information.	Has serious impairment of short-term memory. Has difficulty learning and remembering new information.
When driving, may momentarily forget where to turn; quickly orients self.	May temporarily become lost more often. May have trouble understanding and following a map.	Becomes easily disoriented or lost in familiar places, sometimes for hours.
Jokes about memory loss.	Worries about memory loss. Family and friends notice the lapses.	May have little or no awareness of cognitive problems.

(Johns Hopkins, 2014)

The Alzheimer’s Association has identified a list of warning signs for consumers which mirror the examples above; this list is included in Appendix A. Every individual may experience one or more of these signs in different degrees. The Alzheimer’s Association recommends that if any of them are present, one should see a doctor (Alzheimer's Association, 2009).

As the AD progresses, other symptoms may include:

- Forgetting events of one’s own life history, losing awareness of who one is and eventually who family members are
- Diminishing ability to do self-care and basic tasks, including incontinence
- Diminishing ability to understand language and interact
- Safety issues, such as leaving the stove on
- Loss of initiative
- Wandering
- “Sundowning” - confusion, anxiety, agitation, and disorientation, beginning at dusk and continuing through the night
- Paranoia
- Aggression, even violence
- Hallucinations
- Inappropriate sexual behavior
- Swallowing problems
- Inability to adapt to temperature changes

Patients with AD often die earlier than normal. Since cognitive deterioration impacts most of the body's systems, death may be caused by pneumonia, falls and hip fractures, or complications from surgery. AD patients may live anywhere from 3 - 20 years after diagnosis (Sanders & Osterhaus, 2011; A.D.A.M. Medical Encyclopedia, 2010).

III. Screening Tests Commonly Used to Identify Cognitive Decline in Older Adults

Many individuals with AD remain undiagnosed for a number of reasons. The belief that memory deterioration is a normal part of aging often prevents people from seeking professional help. Due to the lack of effective treatment options, primary care providers may consider routine memory screenings to be a low priority. Additionally, the stigma of AD results in avoidance because no one, the individual, the family or the health professional, wants to think or talk about the possibility of dementia (U.S. Department of Health and Human Services, 2012; Prince, Bryce, & Ferri, 2011).

Early diagnosis, however, may be the key to effective treatment and care. When AD is not diagnosed until later, the patient and family miss out on access to information, treatment, care and support. Patients with early diagnosis have the time to plan for the future and possibly slow the progression of cognitive decline with medications and other interventions. In addition, early diagnosis may provide the patient opportunities to participate in clinical trials and access to future AD research breakthroughs (Doerflinger, 2007; Prince, Bryce, & Ferri, 2011).

A. To screen or not to screen

There are a number of cognitive or memory screenings which can be the first step of a diagnosis, but are NOT in themselves diagnostic. They only indicate whether diagnostic tests should be considered. The use of these cognitive screens has recently been widely debated.

On the one hand, memory screens are increasingly being recommended as quick, simple, safe and cost-effective tools for use in a variety of locations from community settings to clinical or research settings. They can reassure healthy individuals, encourage discussion within families and with health care providers, and indicate when further assessment may be needed by a qualified healthcare professional. Screenings may be used as base-line data for future assessments, or may be recommended whenever an individual, family member or professional is concerned about cognitive decline (Alzheimer's Foundation of America, 2011; U.S. Preventive Services Task Force [USPSTF], 2003; Prince, Bryce, & Ferri, 2011).

In March of 2014, however, the U.S. Preventive Services Task Force updated their recommendation on the value of routine cognitive dementia screenings for older adults. Similar to their stance in 2003, they concluded "the current evidence is insufficient to assess the balance of benefits and harms of screening for cognitive impairment" (U.S. Preventive Services Task Force, 2014). Their specific rationale states:

The USPSTF found inadequate direct evidence on the benefits of screening for cognitive impairment. Evidence shows that several drug therapies and nonpharmacologic interventions have a small effect on cognitive function measures in the short term for patients with mild to moderate dementia, but the magnitude of the clinically relevant benefit is uncertain. The USPSTF found adequate evidence that interventions targeted to caregivers have a small effect on measures of caregiver burden and depression, but the magnitude of the clinically relevant benefit is uncertain. The USPSTF found no published evidence on the effect of screening on decision making or planning by patients, clinicians, or caregivers (U.S. Preventive Services Task Force, 2014).

But it also stated:

Although the evidence on routine screening is insufficient, there may be important reasons to identify early cognitive impairment. In addition to its potential to help patients make diagnostic and treatment decisions, including treatment of reversible causes of dementia and management of comorbid conditions, early recognition of cognitive impairment allows clinicians to anticipate problems patients may have in understanding and adhering to recommended therapy. This information may also be useful to patients and their caregivers and family members in anticipating and planning for future problems that may develop as a result of progression of cognitive impairment. Although the overall evidence on routine screening is insufficient, clinicians should remain alert to early signs or symptoms of cognitive impairment (for example, problems with memory or language) and evaluate as appropriate (U.S. Preventive Services Task Force, 2014).

Some argue that screening and early diagnosis comes with a relatively high risk of misdiagnosis (false positives), increasing the stigma of dementia, and redirecting resources away from research and treatment of more advanced dementia. False positives may disrupt the lives of the 40-70% of people diagnosed with MCI who do not, in fact, develop AD. In addition, even if a person with diagnosed MCI does develop AD, some believe that it is hard to justify the resulting anxiety, fear and disruption of a diagnosis when treatments are not available. Some believe prevention efforts would be better spent on smoking, obesity and cardiovascular disease prevention, which might, in turn, prevent cognitive impairment (Borson, et al., 2013; The Daily Telegraph, 2013; Psychologist, 2013; Rabin, 2013).

Arguing for cognitive screenings are powerful national groups and initiatives, such as the Alzheimer's Association, the National Plan to Address Alzheimer's Disease, and Healthy People 2020. The National Plan to Address Alzheimer's Disease has set a specific strategy (1C) to "Accelerate Efforts to Identify Early and Presymptomatic Stages of Alzheimer's Disease." Because brain changes that lead to dementia begin up to 10 years before any symptoms can be detected, they support developing techniques to identify and monitor those early changes, with the new Alzheimer's disease Neuroimaging Initiative. Concurrently, they support research developing treatment options (U.S. Department of Health and Human Services, 2012). The Alzheimer's Association recommends that anyone with concerns about their cognition or with caregiver concerns about their cognition should be screened (Alzheimer's Association, 2014e). Another proponent, Healthy People (HP) 2020, is a federal project which sets 10-year national

objectives for improving the health of Americans. HP 2020 added two new objectives in 2010 for dementia including Alzheimer's disease. The first is to "increase the proportion of persons with diagnosed Alzheimer's disease and other dementias, or their caregivers, who are aware of the diagnosis" (U.S. Department of Health and Human Services, 2014, DIA-1). HP 2020 maintains that

Lack of diagnosis seriously reduces a person's access to available treatments and valuable information. Active medical management, information and support, and coordination of medical and community services have been shown to improve quality and outcomes of care for people with dementia (U.S. Department of Health and Human Services, 2014, para 14).

In reality, despite the debate, cognitive screens are being performed in larger numbers than ever before since the Affordable Care Act in 2011 recommends a brief assessment to detect cognitive impairment in Medicare's Annual Wellness Visit (Alzheimer's Association, 2012). As the debate continues, more people should become competent in how to sensitively administer memory tests and interpret the results.

B. Types of screening

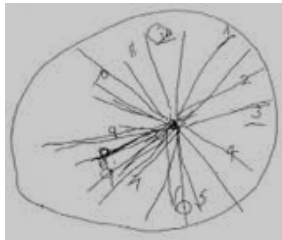
A thorough cognitive evaluation addresses a variety of cognitive functions and Activities of Daily Living (ADLs) which are covered in more detail in the MTGEC module *Cognitive Decline & Dementia in Older Adults*. Because memory and language deficits are key symptoms of MCI, most of the brief screening tests focus on just those indicators. Numerous assessments exist and many brief assessments have been developed which are easy to administer and score. No one instrument is perfect and no one test is recommended for the Medicare Annual Wellness Visit; therefore, combining several basic assessments may increase accuracy (Tuokko & Hadjistavropoulos, 1998; Medical Association Communications, 2003; Sanders & Osterhaus, 2011; Alzheimer's Association, 2014e).

Some assessments include input from the individual's caregiver or family member, either with a formal section of a screening instrument or with an informal interview, as they may be able to provide information about relevant medical conditions, changes in functioning, stress and behavior. For the primary health care provider, family and caregivers may also be able to provide family and personal medical histories and more details about when changes have occurred. Caregivers should also be assessed for their support system, stress, depression and physical strains (Tuokko & Hadjistavropoulos, 1998; Alzheimer's Association, 2014e).

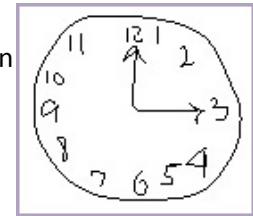
Brief self-assessment question: One or two questions may be included on routine Health Risk Assessments for employers' annual wellness exams or in preparation for a doctor's visit. One example would be "During the past 12 months, have you experienced confusion or memory loss that is happening more often or is getting worse?" An affirmative answer should, of course, trigger a more complete assessment (Alzheimer's Association, 2014e).

Common basic cognitive assessments consist of a series of tasks or questions designed to test memory, language skills, thinking ability and other cognitive functions. Some common components are:

Clock Drawing Test (CDT): Tests memory, adaptive functioning, information



processing, visual-spatial and executive functioning. A person is asked to draw a clock face (with or without a pre-drawn circle) and indicate a specified time. Scoring is based on clinical experience and/or a professional scoring system, taking into account the circular face (if not pre-drawn), the symmetry of number placement, the correctness of the numbers, and the accuracy of the time placement. The more distorted and inaccurate the drawings



are, the more likely the person has dementia (Johns Hopkins Health Alerts, 2014a; Alzheimer's Association, 2014e; Newport, 2008; DeMarco, 2009).

Time and Change Test: Tests comprehension, working (or task completion) memory, planning and calculating skills. A person is given 60 seconds and two attempts to read the time on a clock, and then is given three minutes and two attempts to make change for a dollar with three quarters, seven dimes, and seven nickels (Johns Hopkins Health Alerts, 2014a).

Word Recall: A person without memory problems should be able to remember at least three unrelated words and be able to recite them back after interruption with a distracting task. Someone who cannot remember at least two words out of three may have cognitive impairment. Another test is to ask a person to name as many items as possible in a given category, such as fruits or animals. Naming fewer than 10 items in one minute suggests slowed mental functioning (Alzheimer's Association, 2014e).

Reverse Recall: Tests working memory, attention and executive functioning.

- **Reverse Spelling.** Using 2-, 3-, 4- or 5-letter words. The 5-letter word, such as WORLD – “D L, R, O, W”, is difficult for many non-demented people, and the difficulty increases with age and lower educational levels (Tuokko & Hadjistavopoulos, 1998).
- **Reverse Serial Sevens:** Measures attention, concentration, and calculation abilities. A person is asked to count backward from 100 by 7s (100, 93, 86, 79, etc.) Once a common assessment, it has been removed from several assessments, as several studies found that many people cannot perform the test without error; only 1 in 9 over 55 can, nor can those with lower educational levels (Tuokko & Hadjistavopoulos, 1998).

Sniff Test: The loss of the sense of smell is an early warning sign of AD because beta-amyloid plaques first accumulate in areas of the brain responsible for perception of odors. People who misidentify odors may be more likely to progress to AD (Johns Hopkins Health Alerts, 2014a).

Others: Orientation questions such as the date, season, current president, and the person's current location are common. Cognitive flexibility can be tested by asking that picture-word incongruities be read, such as the word “red” in green ink. Card sorting assesses executive functioning and proverb

interpretation is used to assess abstract thinking (Tuokko & Hadjistavropoulos, 1998; Sanders & Osterhaus, 2011).

The most popular formal cognitive assessments include a combination of many of the above components:

Mini-Mental State Examination (MMSE): Developed in 1975, with several modifications released since, the MMSE is the most widely known and researched screening tool. It is divided into two sections and takes 10-15 minutes to administer. Research indicates that it has satisfactory reliability and validity. It covers six areas of cognitive functioning: orientation, immediate recall, attention and calculation, language (including following verbal and written instructions and writing a spontaneous sentence), and copying interlocking pentagons. Because research has shown it has testing variations (it is most accurate with Caucasians with at least a high school education), scoring now is calculated by age and educational level. Cultural backgrounds can also skew results (Tuokko & Hadjistavropoulos, 1998; Corey-Bloom, 2000; U.S. Preventive Services Task Force, 2014).

MMSE scores in the moderately impaired range can indicate either cognitive impairment associated with depression or an independent cognitive disorder (Osterweil & Brummel-Smith, 2000). Free versions of the MMSE are available on the internet, but the official version is copyrighted and must be ordered through Psychological Assessment Resources. Directions provided for the official version indicate the test should be administered by someone who has been trained to test individuals with cognitive impairment. Translations have been done in ten languages. The test is designed for moderate to severe cognitive impairment, but is also used at annual physicals to assess changes. A person with AD declines about two to four points each year. Accuracy is improved by adding the Clock Drawing Test (Alzheimer's Association, 2014e).

Mini-Cog: This test has been proven to assess a person's registration, recall and executive function and be effective culturally and educationally. It is popular because it is at least twice as fast as the MMSE (around 3 minutes to administer), can be given with minimal training, is available for free, is effective in a variety of settings, and researchers have found it to be valid, reliable, and to have sensitivity and specificity. It also is effective at identifying MCI (Alzheimer's Association, 2014e; Borson, Brush, Vitaliano & Dokmak, 2000; Doerflinger, 2007; Medical Association Communications, 2003). The Mini-Cog is reviewed in detail in the next section.

General Practitioner Assessment of Cognition (GPCOG): This tool, developed in 2002, is used for screening cognitive impairment in the primary care setting. The GPCOG includes a four-minute patient assessment and a two-minute caregiver interview. A web-based tool is available. Research has shown it to perform at least as well as the MMSE (Brodaty, Pond, & Drapen, 2009; Alzheimer's Association, 2014e).

Memory Impairment Screen (MIS): The MIS is a four-minute, four-item delayed memory recall test that assesses free and cued words. The person is given four words and four different categories, for example: checkers (game); saucer (dish); telegram (message); and Red Cross (organization). Categories

are used as cues several minutes later. The MIS has greater specificity and sensitivity for free recall than the three-word recall used in other measures (Medical Association Communications, 2003; Alzheimer's Association, 2014e).

The Alzheimer's Association recommends that Primary Care Physicians use the Mini-Cog, CPCOG or MIS in the annual Medicare Wellness Visit if there are any concerns about cognition, judging them to be suitable alternatives to the MMSE (Alzheimer's Association, 2012).

Montreal Cognitive Assessment (MoCA): The MoCA is an 11-item, 10 minute cognitive screening test designed to assist health professionals in the detection of MCI which has been validated for 55-85 year olds. The test may only be interpreted by health professionals (Nasreddine, 2014).

Informant Interviews: Three notable assessments are recommended by the Alzheimer's Association that can be given to an "informant" – a person, such as a caregiver or family member who is very familiar with a person's abilities and changes. Because people are likely to minimize their own cognitive difficulties, this information can increase the accuracy of an assessment. (Alzheimer's Association, 2014e)

GPCOG: Has a brief two-minute "informant" section to supplement the patient assessment.

Short Form of the Informant Questionnaire on Cognitive Decline in the Elderly (Short IQCODE): A questionnaire for a friend or relative comparing on a five-point scale how the person is now compared to ten years ago (Alzheimer's Association, 2014e).

AD8 Dementia Screening Interview: Eight-item interview asking whether there has been a change, without any timeframe given. The answers are "YES, a change; NO, no change; N/A don't know" (Alzheimer's Association, 2014e).

C. Diagnosis and the DSM-5

Note that simple screenings are not sufficient for diagnosis. In order to diagnose a minor neurocognitive disorder according to the DSM-5, cognitive decline of one or two standard deviations below appropriate norms is required; a major neurocognitive disorder requires cognitive decline two or more standard deviations below appropriate norms. The Mini Mental State Examination and most other common screening tools do not yield results in standard deviations. In addition, a clinical subjective judgment is required to assess whether the cognitive deficit(s) interfere with independence (Siberski, 2012).

Other related assessments include:

Blood screens, genetic tests or brain imaging scans (such as MRIs) are being developed to detect changes years before symptoms exist, with the hope that they may someday be clinically relevant and cost-effective (Alzheimer's Association, 2014e).

Mood Assessment: Depression screenings such as the Geriatric Depression Scale are important, as depression can cause memory problems, loss of interest in life, and other symptoms that can mimic or overlap dementia symptoms.

Functional Activities Questionnaire (FAQ): An informant-based measure of functional abilities on ten complex higher-order activities, with sensitivity and specificity comparable to that of the MMSE (USPSTF, 2003; Chronic Care Networks for Alzheimer's Disease initiative, 2003).

Assessment Tools for Staging the Seven Stages of AD: By describing functionality during the cognitive decline of dementia, the stages provide ways to assess, talk about and, when possible, treat dementia. These stages are not necessarily linear and may overlap (Alzheimer's Association, 2014b). [Both tools are available on one site online, click here to go to tools.](#)

- Global Deterioration Scale (GDS): Describes staging characteristics to assess the current AD stage. Can be administered over the telephone (Richardson & Barusch, 2006).
- Functional Assessment Staging Tool (FAST): Categorizes the seven stages of AD progression including stage one to two - early, stage four - moderate need for assistance, stage six- severe, and stage seven - mostly bedbound. Results are not necessarily linear (Sanders & Osterhaus, 2011).

D. Notes on assessments for cognitive impairments

A number of conditions or problems can affect the results of mental status assessments such as medications; substance use and abuse; head trauma; medical, neurologic or psychiatric conditions including depression, visual or hearing impairments; learning disabilities; and the stress of taking a cognitive assessment. Efforts to make the person as comfortable as possible and to address specific conditions should be made.

The U.S. Preventive Services Task Force (USPSTF) cautions about 'labeling effects' of dementia screenings. Both false-positive and true- positive results could have adverse psychological effects. Always remind participants that poor results are only an indication of possible cognitive impairment. A more complete evaluation is needed before a dementia diagnosis can be made (U.S. Preventive Services Task Force, 2014).

Finally, ethical considerations for administering a cognitive screening test must be reviewed. Anyone performing a screen should have enough training to be competent and respectful, include informed consent, practice confidentiality and proper storage or disposal of assessment results, and be able to sensitively provide feedback and referrals when needed (Tuokko & Hadjistavropoulos, 1998).

IV. How to Conduct and Score the Mini-Cog for Cognitive Screening

One must be sensitive when approaching a person about a Mini-Cog screening. Saying, “I’m going to give you a test to see if you have dementia or even Alzheimer’s” would undoubtedly produce anxiety in anyone, and could easily affect the person’s thinking abilities. It is a difficult topic to discuss because there are few things dreaded more in old age than dementia. Be straight-forward, relaxed, and normalize the experience. The screening should take place in a quiet, private setting, with the following considerations:

- It is important to develop good interviewing skills. Most importantly, establish a positive rapport with the client. Briefly, but clearly, state the purpose of the assessment, and conduct the assessment in such a way that it is respectful and mindful of the person’s needs. Listen carefully to what is said, offer to discuss or explain anything, summarize the findings, and, if the person desires, suggest the next steps and referrals (Emlet, 1996; Smith, 2011).
- It is appropriate to ASK what older patients are thinking and feeling, even when these questions may seem intrusive. Despite the cohort’s stoicism, the belief that people aren’t interested may prevent them from expressing themselves and keep them isolated. Many in fact, are pleased and relieved to be asked, and to be given a chance to talk.
- Be aware that a fear may exist that seeking mental health help is the first step to being institutionalized. Gently address those fears (Hinrichsen & Clougherty, 2006).
- “Stage” your interview to be considerate of working with older adults. Face the person directly, sit somewhat close and do not cover your face with your hands or other objects. Eliminate background noise by turning off the television or radio and, if at all possible, do not interview in rooms with other conversations or background noise. For those with hearing impairments, lower your voice tone and do not shout.
- Slow down your rate of speech and use simple sentences, but do not talk down to the client or change your tone or inflections. Practice reading the questions so that you feel comfortable saying them outloud without embarrassment, with a normal tone of voice, and without any leading inflections.

Depending on the situation, some suggestions for approaching a participant might be:

- “Many people like to try a simple assessment that explores their memory. It is very short and only takes 3-5 minutes. Would you be interested?” Or
- “I have two questions that are a quick and common check of memory. Would you like to try it?” Or
- “I have a few questions we always ask older adults [at a health screening]. [They] help us get an idea of how your memory is. Some of the questions may be easy and some difficult. Some may seem a little odd or silly. But if you will bear with me and answer the questions the best you can, I would appreciate it.” (Emlet, 1996, p. 191).

The Mini Cog Screening Test consists of three simple steps:

1. **Word Recall:** Instruct the patient to listen carefully to and remember three unrelated words and then to repeat the words. Examples: “cup, box, blue”; “pebble, glass, golf”; “apple, penny, table”; “shirt, brown, honesty.” The last two examples are from the MMSE.
2. **Clock Drawing Test (CDT):** Instruct the person to draw the face of a clock, either on a blank sheet of paper or on a sheet with the clock circle already drawn on the page. After the patient puts the numbers on the clock face, ask him/her to draw the hands of the clock to read a specific time: i.e., 11:10, 3:40, 7:25.
3. **Word Recall:** Ask the patient to repeat the three previously stated words (Borson, et al, 2000).

Scoring is based on word recall with possible use of the CDT as noted below:

1. The CDT portion is considered normal if all numbers are present in the correct sequence and position, and the hands readably display the requested time.
2. Word Recall: Give 1 point for each recalled word after the distraction of the CDT test.

To calculate the score:

- Patients recalling none of the three words are classified as potentially cognitively impaired (Score = 0).
 - Patients recalling all three words are classified as non-cognitively impaired (Score = 3)
 - Patients with word recall of 1 or 2 words are classified based on the CDT:
 - Abnormal CDT & 1 or 2 on Recall = potentially cognitively impaired
 - Normal CDT & 1 or 2 on Recall = non- cognitively impaired
- (Borson, et al, 2000; Doerflinger, 2007)

- Although Borson, et al (2000) uses the words “demented” when classifying the scoring, remember that the Mini- Cog does NOT diagnose a person with dementia, but only indicates a need for further assessment.

After a screening, the person who administers the screening reviews the results with the person screened. If the results indicate potential cognitive impairment, the person should be given the test results, and encouraged to take the results to their primary care provider for follow-up. Explain that a number of conditions could be causing memory difficulties and further evaluation will help determine the cause. There may be treatment which could make them feel better and think more clearly (Powers, Ashford, & Peschin, 2008; Alzheimer's Association, 2014e).

Considerations:

- The CDT can be affected significantly if the person has visual impairment, arthritis, hand motor difficulty (shakiness or tremor), or if the person is sedated. Judgments on the CDT score must be made accordingly.
- In the case of severe anxiety, a distracting environment, or communication problems, the test could be repeated with different words for the item recall and a different time given for the CDT. If the person is cognitively impaired, a second test will not give a dramatically different score.

V. Types of Referrals and Referral Sources for Patients with cognitive Impairment

In their overview of “Dementias, Including Alzheimer's Disease”, Healthy People 2020 recommends five steps to identify and care for people with dementia. These steps provide a frame-work for discussion of referrals:

- Increasing the availability of existing effective diagnostic tools.
- Decreasing the number of people with undiagnosed dementia.
- Reducing the severity of symptoms through better medical management.
- Supporting family caregivers with social, behavioral, and legal resources.
- Encouraging healthy behaviors to reduce the risk of co-occurring conditions.

(U.S. Department of Health and Human Services, 2014)

The first two Healthy People 2020 steps have been addressed already in this module; the remaining three are incorporated below.

Initial Referral: Primary Care Provider (PCP)

There is no single, specific test that identifies Alzheimer's disease. Many cases of unusual confusion, disorientation, and forgetfulness may have an underlying physiological cause. A full medical evaluation is needed by a qualified health professional to rule out potentially reversible causes or to diagnose dementia and its cause. Usually that professional is a primary care provider, but may also be a neurologist or psychiatrist. The evaluation for treatable conditions should include:

- A complete medical history, including a family medical history, previous and current illnesses and conditions, and detailed information about the onset, severity and duration of cognitive problems.
- Complete physical exam for any medical or neurologic conditions that may be causing the symptoms, such as infections, dehydration, strokes, hearing or vision loss, sexually transmitted diseases or chronic disease flare-ups.

- A review of current medications to assess medication side effects, drug interactions, problems with new medications or with incorrect administration of medicines.
- An interview to assess depression, sleep disturbances, substance use or abuse, and assess quality of life and other potential problems from elder abuse to poverty. An interview with a family member or caregiver may also add important observations.
- Laboratory tests of blood and urine. Common suspects are urinary tract infections, vitamin B12 or niacin deficiencies, anemia, and thyroid imbalance.
- Assessment of Activities of Daily Living (ADLs) and Instrumental ADLs (IADLs) to evaluate functional skills and the change of these skills from previous levels.

Further referrals may be made to a multi-disciplinary team and/or specialists for more in-depth mental status evaluations. These may include geriatricians, neurologists, psychiatrists, psychologists, social workers, therapists, psychiatric nurse practitioners or researchers (National Center on Caregiving, 2011; Alzheimer's Association, 2014e). A common next step might be a referral for a neurological exam with in-depth, multi-domain assessment of cognitive and memory function including episodic memory, executive function, attention, language, and visuospatial skills and further neurologic testing such as evaluation of cranial nerves, motor system, sensory system, deep tendon reflexes, coordination, and gait (Remedy Health Media, 2007; Alzheimer's Association, 2014e). Brain scans such as MRI or CT may be performed to check for brain tumors or strokes and evaluate changes and injuries.

Rural professional care can be difficult to find. Some Montanans need to travel great distances to consult with specialists, adding to the burden of AD. Telemedicine consultations are increasingly available, but are not available in every location.

More sophisticated tests are being developed to identify dementia years before symptoms develop and may become more common in the future. Brain imaging scans such as an MRI identify changes in brain structure, such as the shrinkage of the brain's memory center, the hippocampus. PET scans can identify amyloid-beta plaques in the brain. These scans are accurate but expensive. Spinal fluid tests can find imbalance in beta amyloid and tau, indicating brain cell damage. Retinal scans or blood tests can check for beta amyloid protein. A decline in brain glucose metabolism can be evaluated (Alzheimer's Association, 2014e).

Genetic markers are also being studied, as some cases of early onset Alzheimer's are currently believed to be caused by extremely rare mutations in one of three genes (accounting for only 1 in 1,000 cases). Research is identifying a growing number of genes related to the risk of late onset dementia, notably APOE. Because the genetic markers relate only to risks, not direct causation of dementia, genetic testing at this point is not recommended (Alzheimer's Society, 2012; Alzheimer's Association, 2014g)(Alzheimer's Society, 2012).

Used mainly in research at this point, the development of these "biomarkers" has been included in new diagnostic guidelines to lay the path for future identification when the tests become more affordable and/or when treatments are developed (Alzheimer's Association, 2014e).

Once a diagnosis of AD has been obtained, treatment and support options should begin immediately.

3. Reducing the severity of symptoms through better medical management.

Primary care providers (PCPs), psychiatrists, neurologists, psychiatric nurse practitioners and pharmacists may be involved in pharmaceutical interventions to slow the progression of AD, which may allow higher functioning for patients for longer periods. See the Treatment section below for more details.

With early detection and electronic medical records, better management of preventive services and care of comorbidities can be accomplished by all of the patient's health care providers. Cognitive impairment should be considered in all aspects of provider visits, treatment and care. In a 2004 Medicare beneficiary survey, many patients with dementia also had coronary heart disease (26%), diabetes (23%) and cancer (13%) (Alzheimer's Association, 2014e). Mental health counselors may not be routinely recommended, but can be of great assistance with managing dementia. See the Treatment section below for more details.

4. Supporting family caregivers with social, behavioral, and legal resources.

There is a saying "If you've seen one person with Alzheimer's disease, you've seen one person with Alzheimer's disease." One could say the same for caregivers (Shriver, 2010; Lunde, 2007). Each person, family and living situation is unique and will require unique, specific assistance at each of the various stages of AD. AD challenges the coping strengths of most families and often depletes their emotional, social, financial, and family resources (Richardson & Barusch, 2006). Environmental factors can profoundly affect, either positively or negatively, an individual's capacity for independent functioning and quality of life. Proper support can make all the difference. A multi-disciplinary support team is usually recommended, which should be updated regularly, depending on the current needs of the patient and caregivers. A team may consist of:

- **Social Worker (SW):** A SW can serve as psychosocial evaluator, case manager, counselor, resource referral, crisis consultant, educator, facilitator, and advocate. A SW can help individuals and their families with coping, quality of life improvement, respite care, planning, finding financial resources and navigating the disease from time of diagnosis until death. A SW can assist with family conflict and the difficult decisions and transitions that occur over the course of AD (Sanders & Osterhaus, 2011).
- **Counselors:** Psychologists and therapists assess cognitive, emotional, and personality functioning and assist with psychological supports. See Treatment section below for more information (Sanders & Osterhaus, 2011).
- **Pharmacists and Psychiatrists:** Often contribute to the evaluation of the effects of illnesses and medications on physical and psychological functioning, cognition and mood.
- Other health professionals such as **Physical Therapists (PTs), Occupational Therapists (OTs), Dentists and Registered Nurses (RNs):** May assist with problems in daily activities, assistive devices,

posture, and range of motion, movement safety, fall prevention, or oral health. They are also good sources for education on disease, managing behaviors, and problem solving approaches.

- **Elder Law and Estate Attorneys and Accountants** should be consulted as soon as possible to assist with durable healthcare power of attorney, durable power of attorney, living will/advance directives and estate planning. If planning is not completed while the person is deemed competent, state statutes may define the decision-maker, usually the spouse, or an adult child. If needed, a guardian may be appointed by a judge; this is a serious step that strips an individual of basic rights and liberties. Family mediation might be required to make decisions about current issues and how decisions will be made in the future. Preparation for the staggering costs of care, which can range from roughly \$10,000 annually during the early stages, and can grow to \$20,000 annually for homecare up to \$50,000 or more per year for a long-term care facility should be discussed (Sanders & Osterhaus, 2011).
- **Community-based Services:** Organizations such as the local Area Agencies on Aging, Senior Citizens Centers, local non-profit and for-profit organizations and agencies, and churches offer many services for families. These may include case management, support groups for both the AD patient and caregiver, telephone advice lines, adult day programs, therapeutic programs, nutrition programs such as Meals on Wheels, transportation assistance, respite care and other volunteers, home modification, legal and financial assistance, elder abuse referrals, health insurance counseling, etc. The Eldercare Locator (see Web Resources), Family Caregiver Alliance, social workers and health care systems can help with local referrals (Sanders & Osterhaus, 2011; National Center on Caregiving, 2012).
- **Health Care Organizations:**
 - **Home Health Care:** Offers assistance and respite for caregivers with home health aides, certified nursing assistants (CNAs), and/or skilled nursing care (LPNs or RNs) who provide for basic and medical care. They may also be able to provide a RN or SW case manager, PT or OT. Nationally, the average cost for such services is \$18-19 per hour, which may be covered by Medicare, long-term care insurance, veterans' benefits, or Medicaid waiver programs, if ordered by a physician (Sanders & Osterhaus, 2011).
 - **Long-Term Care facilities** (Assisted Living Facilities or Nursing Homes): Thirty percent of AD patients are receiving services in long-term care; within long-term care facilities, 50% have some form of AD. Some facilities have a particular focus for AD assistance, with specialized activities, safety systems, and environments for behavior management, but facilities vary considerably in the level and quality of care provided. Nursing home care of individuals with AD has greatly improved with the regulations and standards for quality care enacted with the Federal Nursing Home Reform Act of 1987 (Sanders & Osterhaus, 2011). It is, of course, a difficult decision for a family to place someone in long-term care.
 - **Hospice:** Provides a Medicare-supported interdisciplinary team for physical, palliative (pain and symptom management) and emotional assistance in the home or in long-term care

settings. Individuals must have a terminal diagnosis with less than a six-month life expectancy, which is usually stage 7 on the FAST assessment. Hospice is a service that is underutilized by AD patients; approximately 10% of hospice patients have a primary diagnosis of dementia at the time of admission. It is sometimes difficult for both the family and PCP to discuss the six-month life expectancy estimate (Sanders & Osterhaus, 2011).

- **Nationally-based Services:** Alzheimer's Association National Helpline, care consultation services, online support groups, and the Patient Advocate Foundation are some of the many national and online organizations which can provide education, consultation, support and sometimes even resources. *Safe Return* is an example of one program, a 24-hour nationwide emergency response service from the Alzheimer's Association and MedicAlert® that assists in medical emergencies and the safe and timely return of individuals with AD who wander and become lost. See Web Resources listed below.

5. Encourage healthy behaviors to reduce the risk of co-occurring conditions.

Occupational Therapists, Nutritionists, Chronic Disease Self-Management Programs, Counselors, and Life Coaches may be called upon as needed. The Family Caregiver Alliance and Johns Hopkins' University recommend these common sense tips to enhance memory, health and well-being:

- What's good for the heart is also what's good for the brain! Take good care of your body.
- Keep hydrated by drinking plenty of water. Eat a low-fat, healthy diet, with plenty of fruits and vegetables.
- Move more! Walking five to six miles per week helps retain cognitive abilities or even slows down the progression of MCI.
- Maintain an updated list of your medications and contact information, both for doctors and family. Keep it with you at all times.
- Reduce clutter at home; enlist a friend to help organize and label important files, documents and medications. Keep commonly lost items in a designated spot.
- Decrease your consumption of alcohol; it can have a negative effect on your mental abilities.
- Don't smoke.
- Continue to engage in social activities with friends and family.
- Never stop learning. Read a book, enroll in a class, or attend a concert or play.
- Talk with friends or a trained counselor about your feelings.
- Stay focused and alert. Use memory enhancement strategies such as working puzzles and keeping lists, recorded reminders and journals.
- Get plenty of sleep. (National Center on Caregiving, 2012; RemedyLife, 2011)

VI. Summary of Interventions and Follow Up for Cognitive Impairment

Unfortunately, there is no cure or dramatically impressive treatments for AD yet. However, drug therapies may, in some cases, temporarily slow the progression of the disease and/or minimize symptoms, and non-drug treatments may help with cognitive, mood and behavioral symptoms and address the psychosocial and quality of life needs of the person and caregiver.

As the most common form of dementia, most treatment discussions are focused on AD. Vascular dementia is actually the most potentially treatable form of dementia, being related to diseases of the heart and blood vessels. Managing blood pressure, weight, blood sugar and cholesterol, and avoiding smoking and excess alcohol may help prevent, slow the decline and/or minimize the symptoms of vascular dementia (Mayo Clinic, n.d.b). Creutzfeldt-Jakob disease, on the other hand, has no known treatment, so the comfort of the patient becomes the object of treatment (Mayo Clinic, 2012).

A. Drug therapy for AD

Drug therapy cannot currently repair brain damage, but can slow the rate of decline and lessen or stabilize some symptoms, for a limited time. Drug therapy may also be able to treat secondary symptoms such as depression, anxiety, agitation and sleep disorders. Clinical drug trials are also available which help in the search for better treatments.

Several drug therapies can delay the natural progression of the disease for 2 to 12 months or even up to a few years, particularly if AD is diagnosed early. That crucial delay can extend independence and buys precious time to plan for the future. It may allow a person to participate in decisions about future care, living options, financial and legal matters, and to build a network of support (USPSTF, 2003).

Four medications of two types are currently approved by the U.S. Food and Drug Administration to treat Alzheimer's. Science doesn't know exactly how they work, but it speculated that they regulate neurotransmitters, supporting communication between neurons. These drugs may help with thinking, memory, speaking, functional abilities and certain behaviors. They don't, however, alter the disease process or progression, may have side effects, and may not help everyone (National Institute on Aging, nd).

Cholinesterase inhibitors are used to treat mild to moderate AD. They are believed to prevent the breakdown of acetylcholine in the brain, which is involved in memory and judgment. They are not effective for everyone and only effective for a limited time, as the brain produces less acetylcholine as AD progresses. A person may respond better to one drug than another, but all work in a similar way. They may be used to treat Parkinson's, vascular, and Lewy body dementias, as well as AD.

Moderate to severe AD is treated with an N-methyl D-aspartate (NMDA) antagonist. It is believed to regulate glutamate in the brain, which may help with learning, memory and maintenance of some ADL functions for several more months.

These two types of drugs may be prescribed in combination and some are available generically. As with any drug, individual tolerance and side effects vary and interactions with other medications must be assessed (A.D.A.M. Medical Encyclopedia, 2010; National Institute on Aging , 2014; Mayo Clinic, nda; U.S. Preventive Services Task Force, 2014).

Table 3: A summary of the AD drugs from the NIH’s National Institute on Aging’s “Alzheimer’s Disease Medications Fact Sheet”

DRUG NAME	DRUG TYPE AND USE	HOW IT WORKS	COMMON SIDE EFFECTS
Namenda® (memantine)	N-methyl D-aspartate (NMDA) antagonist prescribed to treat symptoms of moderate to severe Alzheimer’s	Blocks the toxic effects associated with excess glutamate & regulates glutamate activation	Dizziness, headache, constipation, confusion
Razadyne® (galantamine)	Cholinesterase inhibitor prescribed to treat symptoms of mild to moderate Alzheimer’s	Prevents the breakdown of acetylcholine & stimulates nicotinic receptors to release more acetylcholine in the brain	Nausea, vomiting, diarrhea, weight loss, loss of appetite
Exelon® (rivastigmine)	Cholinesterase inhibitor prescribed to treat symptoms of mild to moderate Alzheimer’s (patch is also for severe Alzheimer’s)	Prevents the breakdown of acetylcholine & butyrylcholine (a brain chemical similar to acetylcholine) in the brain	Nausea, vomiting, diarrhea, weight loss, loss of appetite, muscle weakness
Aricept® (donepezil)	Cholinesterase inhibitor prescribed to treat symptoms of mild to moderate, and moderate to severe Alzheimer’s	Prevents the breakdown of acetylcholine in the brain	Nausea, vomiting, diarrhea

(National Institute on Aging , 2014)

Other medications may be prescribed for treatment of related conditions such as high blood pressure to prevent stroke. Anti-anxiety medications, antidepressants, or sleep aids may help with behavioral difficulties. Side effects and drug interactions need to be monitored.

Supplements: Some doctors prescribe high doses of vitamin E, with careful supervision. Some people take caprylic acid, coconut oil, Coenzyme Q10, coral calcium, ginkgo biloba, huperzine A, omega-3 fatty acids, phosphatidylserine, and tramiprosate. Research has yet to confirm the effectiveness of any of

these, and there is no standardization of supplement formulations. Patients should keep their PCP informed of all of the supplements that they choose to use (Alzheimer's Association, 2014f)

B. Psycho-educational interventions

Many family and professional goals for AD treatment focus on the quality of life for the patient and caregiver(s). There are many ways to maximize independent functioning and assist with declining cognitive impairment and future transitions through support, planning and education. Counseling, structured programs, structured environment and behavior management techniques all play a part.

It may be helpful to periodically administer a FAST Assessment, or something similar, which categorizes symptoms into seven stages and tracks the progression of the AD. Although the stages are not linear, discussions about the stages assist with family education, communication among the interdisciplinary team, and care-giving decisions. Legal planning should occur during the earlier stages, adult day programs and/or assisted living are options in the middle stages, discussions about long-term care options occur in the later stages, and eventual hospice placement may be made at stage seven (Sanders & Osterhaus, 2011).

C. Counseling

Counseling for the person with AD: Psychotherapy hasn't traditionally been recommended for persons with dementia, but may increasingly be seen as an important treatment. Individuals suffering from depression seem to have a higher risk of developing AD and suffer from more severe AD symptoms than those who aren't depressed. Depression prevention and intervention may actually postpone or improve symptoms of AD. In addition, counselors can concretely assist with the initial feelings of denial, anxiety, fear, loss and shame. Throughout the course of the disease, counselors can improve the quality of life by working with stress management, social integration, and developing a comprehensive wellness plan (Rollins, 2008; Mellace, 2011).

Counseling for Caregivers: Although caregiving is not without its rewards and personal satisfaction, caregivers are at high risk for depression, anxiety, high stress, and other mental and physical health issues. They must cope with the demands of frequent changes in the patient's condition and personality, challenging behaviors, emotional and physical exhaustion, isolation, and grief and loss. They often must juggle multiple roles, such as caregiving, family and work. They may find themselves in the center of family conflict around caregiving decisions and struggle with guilt over long-term care placement. In short, they can use all of the coping strategies and support that they can get (Sanders & Osterhaus, 2011).

Structured Programs: Nationally, a number of models have been developed which may become more widely available. Check with care providers or long term care facilities in your area to find programs and services. Examples of structured programs for a person with AD include:

- Group therapy
- Expressive therapies – music, storytelling and art
- Massage
- Memory enhancement day programs, which may include brain exercises, physical exercise, stress reduction, dining, and social contacts
- Personal history documentation through storytelling, dictation, or scrapbooks
- Reality Orientation, which is a program that includes frequent reminders of date, time, weather, current events and family relationships. It is a controversial program, with some believing that the constant drilling of facts causes undue stress and frustration for the person with AD, the staff and family members (Richardson & Barusch, 2006; Duffy, 2002).

Programs for caregivers include:

- Support groups in a traditional format or alternatives more convenient for a caregiver’s life, i.e., via computer, phone, in-home, 24-hour, or with respite assistance
- Educational sessions about AD
- Skills training with problematic behaviors and disease management strategies
- Resource referral systems
- Respite support with paid professionals, volunteers, and/or organized networks such as churches, families and friends, or hospice (Sanders & Osterhaus, 2011).

D. Environmental and behavior management

Professional help may be needed to structure the person’s environment to be conducive to the greatest possible independence, security, care, and quality of life. Over time, there are multiple functional transitions including changes in driving status, home responsibilities, financial responsibilities, health care, self-care, and end-of-life care (National Center on Caregiving, 2012). Specific early interventions may include a home safety assessment, installation of an emergency call system or a medication dispensing system, and financial scam protection.

Caregivers may not intuitively grasp how to alter their relationship with a person with AD. Rational schedules and routines, with emphasis on facts, manners and efficiency, will often backfire and result in resistance, agitation or worse. A little education and modeling can make a significant difference in the emotional environment of the home. Examples are:

- Develop reminder strategies that work for the individual, such as notes, a large calendar, messages on the answering machine, and setting alarms. Structure and routine are often, but not always, helpful.
- Create intimacy, slow down, and stay in the present moment. The psychological connection actually makes task accomplishment possible.

- Relaxation and patience are needed for the feelings of frustration, anxiety, and grief for the loss of some abilities. Watch for the triggers of frustration and strive for prevention by anticipating needs and making accommodations. Flexibility is needed at all times. A person may quickly forget what caused an emotional response, either positive or negative, but the feeling itself may remain for extended periods of time.
- Accept the lack of memory and identification. Constant corrections can simply frustrate everyone. Listening with reassurance, kindness and redirection may improve interactions.
- Use touch often to connect, to reorient, to comfort.
- Chores, even imagined ones, can bring satisfaction and ease boredom. Encourage what self-care can be managed, help in the kitchen, sorting and folding laundry, and tasks that the person enjoyed earlier.
- Quality of life comes from humor, pleasant activities, exercise, and social and sensory experiences at every stage.
- Seek outside help, support and respite. It is more important than people realize.
- Occupational therapists may be able to suggest ways to adapt movements and daily tasks as AD progresses, and help with behaviors.
- Reducing clutter and noise can help with confusion and frustration. Break tasks and communications into small steps.

As noted by Healthy People 2020, much progress has been made in the understanding and management of dementia, primarily via research on Alzheimer's disease. Further progress in treating and managing dementia lies in research to improve early diagnosis of AD, the development of interventions to delay or prevent the disease, and how to manage dementia when co-morbidities are present. Further research is also needed to understand how lifestyle factors influence the risk of developing AD (USDHHS, 2014).

Cognitive screening is one important step in that process.

VII. Cognitive Screening – Video Review

FOR REVIEW: Watch this 31-minute video from the Hartford Institute for Geriatric Nursing. (required for the 2.5 contact hour module certificate). To view this, you will need the latest version of Adobe Flash Player, plus an audio set up on your computer. It is a ConsultGerIRN.org Hartford Institute Video, from the “How to Try This Video” series (VandenBosch, Kany & Jousma, n.d.).

To view the video, click this link: **[Administering and Interpreting the Mini-Cog](https://consultgeri.org/files/administering-and-interpreting-mini-cog)**
<https://consultgeri.org/files/administering-and-interpreting-mini-cog> or
<https://www.youtube.com/watch?v=Gb4WoOq3aA0>

Click here (<https://consultgeri.org/try-this/general-assessment/issue-3.1.pdf>) for a two page handout on background information and how to score The Mini-Cog. (Doerflinger D. M., 2013).

VIII. Cognitive Impairment Web Resources

[Adult Children of Aging Parents](#)

Alzheimer's Association: Family/community education, resource library, Safe Return (an identification program that assists in the safe and timely return of individuals who wander and become lost), support groups, information and referral, including clinical trial referrals, and care consultation. Their [Alzheimer's Navigator](#) provides guides and helps construct customized action plans. They also support and report on research.

- [National Alzheimer's Disease](#)
- [Inside the Brain: Alzheimer's Brain Tour](#)
- [Montana Service Area](#) located in Billings, Montana - 1-800-272-3900 (24/7 Help Line)

[AlzOnline: Caregiver Support online](#)

[American Academy of Neurology](#)

[American Psychological Association Alzheimer's](#)

[Bright Focus: Alzheimer's Disease Research](#)

[ConsultGerRN.org – Try This Resources](#)

[Eldercare Locator](#)

[Family Caregiving Alliance](#) or 1-800-445-8106. Helps with locating local resources, plus fact sheets for legal issues and choices and online caregiver support groups

[Mayo Clinic Dementia](#)

[Medline PlusDementia](#)

[National Institute on Aging Alzheimer's Disease Education and Referral \(ADEAR\) Center](#)

- [Alzheimer's Disease Medications Fact Sheet](#)

- [ADEAR Center's listing of Clinical Trials](#)
- [Cognitive Toolkit with many screening assessments](#)
- [Patient Advocate Foundation \(PAF\)](#)

IX. Cognitive Impairment Glossary

Acetylcholine: A neurotransmitter crucial to memory and learning.

Diagnostic Procedures:

- **CAT or CT scan:** Computed axial tomography (CAT) - An imaging technique that uses x-rays to create a two-dimensional image of the brain or other parts of the body.
- **EEGs:** An electroencephalogram (EEG) is a test that measures and records the electrical activity of a brain. Electrodes that are attached to the head are hooked by wires to a computer for approximately 20-40 minutes for a recording. Often used to diagnose or monitor epilepsy.
- **MRIs:** Magnetic Resonance Imaging (MRI), which uses magnetic fields to create a 3-D image of the body while a person lies quietly inside a narrow tube. Particularly useful for brain scans because the image shows contrast with soft tissues. Does not use radiation.
- **PET Scan:** Positron emission tomography which uses radiation to create 3-D, color images of the functional processes within the human body.

Cerebral cortex: The convoluted outer layer of gray matter that constitutes the "thinking" portion of the brain.

Glutamate: A neurotransmitter that stimulates nerve cells. High glutamate levels in the brain may contribute to neuron toxicity and death in Alzheimer's dementia.

Hippocampus: A small "S"-shaped structure in the brain that appears to play a major role in the process of forging memories.

Measurement Research Terms:

- **Reliability:** The measure of how stable, dependable, trustworthy, and consistent a test is in measuring the same thing each time, including interrater or rate-rerate consistency.
- **Sensitivity:** The probability of true positives.
- **Specificity:** The probability of true negatives.
- **Validity:** The degree to which the measure accomplishes the purpose for which it is being used; its accuracy.

Psychotropic drugs: Drugs which affect the central nervous system and change emotions, behavior or perception.

Psychosis: A loss of contact with reality, usually including false beliefs about what is taking place or who one is (delusions) and seeing or hearing things that aren't there (hallucinations). May be caused by a variety of substances, or psychiatric and medical conditions, including dementia and depression with psychotic features.

Syndrome: A group or set of symptoms, as opposed to a specific disorder or disease.

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Appendix A: Alzheimer's Association's Ten Warning Signs of Alzheimer's Disease (AD)

- 1) **Memory loss that disrupts daily life:** forgetting recently learned information, important dates or events, asking for the same information repeatedly, heavily relying on family or memory aides more than in the past.
- 2) **Challenges in planning or solving problems:** difficulty developing and following a plan, working with numbers, tracking bills, following recipes or other directions, and concentrating on these activities. These activities may take longer than previously.
- 3) **Difficulty completing familiar tasks at home, work or leisure:** finding it hard to drive to a once-familiar location, remembering how to play a game, or accomplishing common tasks at work.
- 4) **Confusion with time or place:** losing track of dates, seasons, when things may happen, or where they are or how they got there.
- 5) **Trouble understanding visual images and spatial relationships:** having vision problems and difficulty reading, judging distance, or determining color or contrast; may not recognize their own reflection in a mirror.
- 6) **New problems with words in speaking or writing:** joining, following, or holding a conversation, repeating themselves, struggling with vocabulary, or calling things by the wrong name.
- 7) **Misplacing things and losing the ability to retrace steps:** putting things in unusual places, frequently losing items, or accusing others of stealing.
- 8) **Decreased or poor judgment:** falling prey to financial scams, paying less attention to grooming, having difficulty making decisions.
- 9) **Withdrawal from work or social activities:** including work projects, hobbies or sports.
- 10) **Changes in mood and personality:** being confused, suspicious, depressed, fearful or anxious; being easily upset, especially when out of their comfort zone (Alzheimer's Association, 2009).

Appendix B: Additional Screening Tools

- **Alzheimer’s Disease Assessment Scale (ADAS):** This scale consists of 21-items, requiring 30 minutes to complete. It includes cognitive functioning measures, practitioner observations, and caregiver information. It detects early AD, identifies the current stage, and tracks changes over time (Richardson & Barusch, 2006).
- **Blessed Dementia Rating Scale (BDR or BDS):** A combination of mental status testing and informant interview; scores correlate with the number of neuritic plaques in the neocortex in AD (Mendez Ashla, 2000).
- **Brief Alzheimer Screen (BAS):** A shorter version of the MMSE uses three memory items, date orientation, and spelling “world” backwards. It also adds naming animals in 30 seconds. Effective for identifying MCI (Medical Association Communications, 2003).
- **Kingston Standardized Cognitive Assessment Battery:** This test requires 25-45 minutes to administer with 17 sections to evaluate concentration, various aspects of memory and language, spatial and psychomotor skill, calculation, abstract thought, and perseveration (Tuokko & Hadjistavropoulos, 1998).
- **Mattis Dementia Rating Scale (MDRS):** A rating scale equivalent of the extended mental status examination which can distinguish mild cognitive impairment (Mendez Ashla, 2000).
- **Mental Status Questionnaire (MSQ):** The MSQ consists of 10 questions covering orientation, memory, calculation, and general personal information (Tuokko & Hadjistavropoulos, 1998)
- **Multifocus Assessment Scale (MAS) :** A 45 minute assessment, with three rating and five performance subscales covering mental status, orientation, mood, expressive language skills, social behavior skills, receptive language skills, accessibility, and sensory abilities (Tuokko & Hadjistavropoulos, 1998).

Appendix C: Post-test Screening for Cognitive Impairment

1. Dementia is under-diagnosed and under- treated in older adults for all of the following reasons EXCEPT:
 - a. Healthcare providers consider screening a low priority because of the lack of effective treatment options.
 - b. A diagnosis of dementia can only be made after death with an autopsy.
 - c. People try to avoid talking about their memory loss and compensate for it so others won't notice.
 - d. People believe "senior moments" are normal and to be expected.
2. Delirium, dementia, and depression:
 - a. Are interchangeable terms.
 - b. Are different degrees of severity of the same symptoms.
 - c. Cannot be accurately diagnosed except through an autopsy after death.
 - d. Are different disorders but may have similar symptoms.
3. Which of the following statements is NOT true?
 - a. The incidence of dementia is expected to dramatically decline over the next thirty years because of improved health care.
 - b. A significant number people with dementia worldwide have not been diagnosed.
 - c. About a third of people over the age of 85 have dementia.
 - d. Alzheimer's is the only cause of death among the top 10 in America without a way to prevent, cure, or even slow its progression.
4. Important risk factors for the development of Alzheimer's disease include:
 - a. Family history and genetics.
 - b. Changes in the brain, including plaques, tangles, and fewer nerve cells.
 - c. Other medical conditions and poor health.
 - d. All of the above.
5. Which of these is NOT usually a symptom of cognitive impairment?
 - a. Difficulty completing familiar tasks
 - b. Excessive sleeping
 - c. Forgetting recently learned information
 - d. Withdrawal from work or social activities
6. Which physiologic condition(s) can produce dementia-like symptoms?
 - a. Depression
 - b. Reactions to medications
 - c. Urinary tract infection
 - d. All of the above
7. The Mini-Cog screening test is composed of which two activities:
 - a) Word recall and clock drawing test
 - b) Reverse serial sevens and word recall
 - c) Mood assessment and clock drawing test
 - d) Reverse serial sevens and clock drawing test

8. If dementia is suspected on a screening, the person should be referred :
 - a. To a neurologist for a complete neurological exam.
 - b. To a psychiatrist for medications.
 - c. To a primary health care provider for further evaluation of the symptoms.
 - d. To a lawyer to name a durable power of attorney for medical affairs.

9. After a diagnosis of dementia is confirmed, all of the following may be recommended EXCEPT:
 - e. Cholinesterase inhibitor medication to slow the progression of the disease.
 - f. Electroconvulsive therapy (ECT) to improve communication between brain cells.
 - g. Support groups for both the patient and caregiver.
 - h. Environmental and behavioral management training for the caregiver.

10. Dementia research is currently focused on:
 - a. Early diagnosis of Alzheimer's disease with brain imaging scans, spinal fluid tests and blood tests.
 - b. Developing evidenced-based effective psycho-educational programs for patients and caregivers.
 - c. Clinical trials of drugs that delay or prevent dementia.
 - d. All of the above.

POST-TEST: Examination Form

Screening for Cognitive Impairment

Participant Information

1. Name: _____
2. Mailing address: _____

3. Date exam completed _____

Questions: (Please circle one response per question)

1	A	B	C	D
2	A	B	C	D
3	A	B	C	D
4	A	B	C	D
5	A	B	C	D
6	A	B	C	D
7	A	B	C	D
8	A	B	C	D
9	A	B	C	D
10	A	B	C	D

For credit, please return this completed page to:

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 Skaggs Building Room 318
 University of Montana
 32 Campus Drive
 Missoula MT, 59812-1522
 Phone# (406) 243-2339 & Fax# (406) 243-4353

Appendix D: Evaluation: Screening for Cognitive Impairment

Please indicate your major									
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know
1. Based on the module description and stated objectives, this module met my expectations of the content it would deliver.				○	○	○	○	○	○
2. How effective were the following in helping you understand the material?				Very Effective	Effective	Neutral	Somewhat Effective	Not Effective	Not Applicable
Pre-test				○	○	○	○	○	○
Written Text				○	○	○	○	○	○
Videos/Photos				○	○	○	○	○	○
Websites/Web Links				○	○	○	○	○	○
References				○	○	○	○	○	○
Case Studies				○	○	○	○	○	○
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know
3. I learned something I can use in my practice/employment or personal setting.				○	○	○	○	○	○
				Provide new information to patients/clients	Adjust practices with geriatric patients/clients	New program development or program enhancement	Provide new information to family/friends/co-workers	Train staff or provider	Other implementation*

4. How do you plan to implement the information from this module to strengthen your practice, employment or personal goals? (check any that apply)	0	0	0	0	0	0			
	* Describe 'other' implementation plan here:								
				<1 hour	1-2 hours	2-3 hours	3-4 hours	4-5 hours	>5 hours
5. How long did it take you to complete the module? (including pre-test, module review, post-test and evaluation)	0	0	0	0	0	0			
				Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't Know
6. The test questions were relevant to the module content.									
7. Please provide suggestions to improve the online learning experience to meet your needs.									
8. Please offer ideas or suggestions for new modules.									

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