



A Healthcare Provider's Guide To Alzheimer's Disease (AD):

Diagnosis, pharmacologic management,
non-pharmacologic management, and
other considerations

This material is provided
by UCSF Weill Institute
for Neurosciences as an
educational resource for
health care providers.





A Healthcare Provider's Guide To Alzheimer's Disease (AD):

Diagnosis, pharmacologic management, non-pharmacologic management, and other considerations

Diagnosis

Definition

Dementia is a clinical syndrome defined as a cognitive or behavioral decline that leads to an inability to complete daily tasks independently. Dementia has many causes some of which are reversible, such as metabolic disorders, while some are progressive such as Alzheimer's disease (AD), which is the most common cause of dementia in older adults. Symptoms of dementia may include memory loss, language impairment, loss of social function, parkinsonism, behavioral or personality changes, or visuospatial deficits.

Etiology

The cause of AD is unknown but it is associated with the accumulation of amyloid plaques and tau neurofibrillary tangles as seen at autopsy.

Course

The majority of patients with AD present with mild memory problems that gradually interfere with the patient's ability to manage daily tasks. However, some patients may present with executive, language, visuospatial, or motor symptoms. Patients become increasingly dependent in their performance on daily activities. While AD is very prevalent in older adults, it can affect peoples in their 40s or 50s. As it progresses, the person may develop other symptoms such as difficulty recognizing familiar people, dysphagia, or gait disturbances. The progression usually occurs slowly over decades. The [Clinical Dementia Rating \(CDR\)](#) provides a summary of clinical features by dementia stage.

The reported survival from dementia onset ranges from three to eleven years,¹ although survival can be much longer. An older age of onset of AD (>80 years) may be associated with a slower rate of decline compared with younger patients.² Death typically is not due to AD in a direct way, but rather to other complications such as pneumonia, dehydration, urinary tract infection, extensive pressure ulcers, vascular events, or falls and fractures.

Risk Factors

In general, seven risk factors have been identified that are associated with Alzheimer's disease and other causes of dementia. These risk factors can possibly be reduced or adjusted to help prevent changes in thinking skills and/or memory.³

- Type 2 diabetes
- High blood pressure
- Midlife obesity
- Smoking
- Depression
- Little or no mental activity
- Little or no physical exercise

Differential Diagnosis

Other things to rule out include side effects of medications, delirium, vascular conditions, reversible metabolic disorders, and neurodegenerative conditions with similar symptoms (for example, dementia with Lewy bodies and frontotemporal dementia).

Diagnostic Criteria

A panel of experts developed criteria for a diagnosis of Alzheimer's disease:⁴

Criteria for clinical dementia

- Cognitive or behavioral (neuropsychiatric) symptoms that interfere with usual function, represent a decline from previous levels of performance, are not explained by delirium or major psychiatric disorder. Cognitive impairment is measured through a combination of history taking from the patient and knowledgeable informant and objective cognitive testing
- The cognitive or behavioral impairment involves a minimum of two of the following domains:
 - Impairment in ability to remember new information
 - Impaired reasoning and ability to manage complex tasks
 - Impaired visuospatial abilities
 - Impaired language functions (speaking, reading, writing)
 - Changes in behavior, personality or comportment

Probable AD dementia

The criteria for all-cause dementia are met along with the following:

- Insidious onset of decline and progressive worsening of symptoms and function
- The initial and most prominent cognitive deficits are in one of the following categories:
 - Amnestic (impaired learning and recall of recently learned information) or
 - Nonamnestic (language, visuospatial, executive dysfunction).
- A diagnosis of probable AD is not met if there is evidence of:
 - concomitant cerebrovascular disease OR
 - prominent features of Dementia with Lewy bodies OR
 - behavioral variant frontotemporal dementia OR
 - semantic variant primary progressive aphasia OR
 - evidence of another concurrent, active neurological disease OR
 - a non-neurological medical comorbidity OR
 - use of a medication that could have a substantial effect on cognition.
- Evidence of a causative genetic mutation (in APP, PSEN1, or PSEN2), increases the certainty that the condition is caused by AD pathology.

Probable AD dementia with evidence of the AD pathophysiological process

When the criteria for Probable AD dementia are met, evidence of biomarkers may increase the certainty that the dementia syndrome is based on the AD pathophysiological process.

Biomarkers fall into two categories:

- Biomarkers for amyloid deposition: low cerebrospinal fluid (CSF) amyloid levels or positive amyloid positron emission tomography (PET) imaging.

- Biomarkers of downstream neuronal degeneration or injury. The three major bio-markers in this category are elevated CSF tau, both total tau and phosphorylated tau (p-tau); decreased fluorodeoxyglucose (FDG) uptake on PET in temporo–parietal cortex; and disproportionate atrophy on structural magnetic resonance imaging in medial, basal, and lateral temporal lobe, and medial parietal cortex.

Possible AD dementia

Possible AD occurs when the course is atypical or there is insufficient documentation of the decline, OR the presentation appears to be of mixed etiology.

Pharmacologic Management

Medications to Use

There are several classes of medications used to treat disease symptoms or improve cognitive function. Currently, there is no cure for dementia. Cholinesterase inhibitors help preserve levels of acetylcholine, a neurotransmitter that is important for memory. Expected benefits may be mild improvement in memory function, mood, and alertness. Memantine is a N-methyl-D-aspartate (NMDA) receptor antagonist and is approved for use in moderate to severe dementia. It is often used in conjunction with a cholinesterase inhibitor. If the patient has vascular disease or mixed dementia, they should receive management and education regarding modification of cardiovascular risk factors.

Medications to Avoid

Medications with strong anticholinergic side effects, such as sedating antihistamines, narcotics, benzodiazepines, gastrointestinal and urinary antispasmodics, and muscle relaxants should be avoided. Antipsychotics should be used with caution.^{5,6}

Non pharmacologic Management

Healthy Lifestyle

There are lifestyle habits that promote health and well-being. Research suggests that the combination of good nutrition, physical activity, and mental and social engagement may provide benefit in promoting health although more study is needed to determine the actual mechanisms.^{7,8} A heart-healthy diet (lower in sugar and fat and higher in vegetables and fruit) is considered to be good for both the body and the brain. An example is the Mediterranean diet that promotes nutrition based on fruit, vegetables, nuts and grains with limits on consumption of red meat and saturated fats. Physical exercise has been associated with improvement of mood and mobility, and a decrease in the risk for falls.^{9,10} Physical activities that are socially engaging (walking or swimming with a friend and participating in exercise groups) can be especially enjoyable. Engagement in activities that are mentally stimulating (crossword puzzles, Sudoku, computer games) is encouraged as long as the activity is enjoyable.



The Alzheimer's Association has more information on [tips for maintaining your health](#).

Sleep

Disrupted sleep can negatively impact memory and thinking, though the mechanisms are not well understood.¹⁰

Components of sleep hygiene include:

- Avoid napping during the day,
- Avoid stimulants such as caffeine, nicotine, and alcohol too close to bedtime
- Get regular exercise
- Avoid eating right before sleep
- Ensure adequate exposure to natural light
- Establish a regular relaxing bedtime routine
- Associate your bed with sleep. It's not a good idea to use your bed to watch TV, listen to the radio, or read

For more details on sleep hygiene, you can refer to the National Sleep Foundation at sleepfoundation.org/ask-the-expert/sleep-hygiene.

Other Considerations

Support Resources

- Alzheimer's Association: www.alz.org
- Family Caregiver Alliance: caregiver.org
- National Institute of Health/National Institute on Aging: nia.nih.gov/alzheimers

Research and Clinical Trials

The National Institutes of Health maintains an extensive listing of clinical trials at clinicaltrials.gov. Academic medical centers may be engaged in research and clinical trials.

Safety

If wandering or getting lost is a concern, refer the patient and family to the [MedicAlert +Alzheimer's Association Safe Return program](#) (operated by the Alzheimer's Association).

Other strategies for ensuring safety concerns may include door alarms and increased supervision.

Driving

Depending on cognitive and motor findings, the patient may be requested to stop driving, complete test of driving abilities through the Department of Motor Vehicles (DMV), or be referred to a driver's safety course that will assess driving ability. Reporting to the DMV should be consistent with state laws. Some states have mandatory reporting requirements: the diagnosis is reported to local health departments who then report to the DMV. Individual state requirements can be found at: dmvusa.com.

Living Situation and Environment

It is important to determine if the patient's residential setting best meets his or her functional and cognitive abilities. Areas of concern may include personal safety (ability to manage medications safely, ability to manage nutritional requirements, ability to manage personal hygiene) and quality of life (activities and engagement that match the person's needs and abilities).

Types of living situations range from living at home alone or living at home with supervision, to board and care, assisted living, or memory care units.

Elder Abuse

Patients with dementia and their caregivers are vulnerable to abuse. Refer to Adult Protective Services (APS) if there is concern for the well-being of the patient or the caregiver. To locate an APS office in your state, see: napsa-now.org/get-help/help-in-your-area/.

Legal Planning

Provide information about advance directives and durable power of attorney while the patient is in the early stages of disease and able to articulate his or her wishes. Make referrals for legal and financial advice, especially if there are concerns about the patient's judgment, decision-making, or vulnerability. A formal evaluation for capacity may be warranted. The Alzheimer's Association provides a [brochure that covers legal planning](#).

- **Advanced Directives**

These documents allow individuals to state their preferences for medical treatments and to select an agent or person to make health care decisions in the event they are unable to do so or if they want someone else to make decisions for them.

- **Power Of Attorney**

A Power of Attorney (POA) is a legal document that gives someone of an individual's choosing the power to act in their place. POAs can be for medical or financial matters.

- **Living Will**

A living will is a written, legal document that spells out medical treatments that an individual would and would not want to be used to keep them alive, as well as other decisions such as pain management or organ donation.

Teaching Video for Providers

An example of a physician telling a patient she has dementia: alz.org/health-care-professionals/dementia-diagnosis-diagnostic-tests.asp#alzheimer diagnosis.



References

1. Todd S, Barr S, Roberts M, Passmore AP. Survival in dementia and predictors of mortality: a review. *International journal of geriatric psychiatry*. <http://www.ncbi.nlm.nih.gov/pubmed/23526458>. Published November 2013. Accessed March 27, 2017.
2. Bernick C, Cummings J, Raman R, Sun X, Aisen P. Age and rate of cognitive decline in Alzheimer disease: implications for clinical trials. *Archives of neurology*. <http://www.ncbi.nlm.nih.gov/pubmed/22431834>. Published July 2012. Accessed March 27, 2017.
3. Barnes DE, Yaffe K. The projected effect of risk factor reduction on Alzheimers disease prevalence. *The Lancet Neurology*. 2011;10(9):819-828.
4. McKhann GM, Knopman DS, Chertkow H, et al. The diagnosis of dementia due to Alzheimer's disease: recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease. *Alzheimer's & dementia : the journal of the Alzheimer's Association*. <http://www.ncbi.nlm.nih.gov/pubmed/21514250>. Published May 2011. Accessed March 27, 2017.
5. Han L, McCusker J, Cole M, Abrahamowicz M, Primeau F, Elie M. Use of medications with anticholinergic effect predicts clinical severity of delirium symptoms in older medical inpatients. *Archives of internal medicine*. <http://www.ncbi.nlm.nih.gov/pubmed/11322844>. Published April 23, 2001. Accessed March 27, 2017.
6. Roe CM, Anderson MJ, Spivack B. Use of anticholinergic medications by older adults with dementia. *Journal of the American Geriatrics Society*. <http://www.ncbi.nlm.nih.gov/pubmed/12028169>. Published May 2002. Accessed March 27, 2017.
7. Barnes DE. The mental activity and exercise (MAX) trial: A randomized, controlled trial to enhance cognitive function in older adults with cognitive complaints. *Alzheimer's & Dementia*. 2010;6(4).
8. Jedrzewski MK, Ewbank DC, Wang H, Trojanowski JQ. The Impact of Exercise, Cognitive Activities, and Socialization on Cognitive Function. *American Journal of Alzheimer's Disease & Other Dementias*. 2014;29(4):372-378.
9. Howe T, Waters M, Dawson P, Rochester L. Exercise for improving balance in older people. *Cochrane Database of Systematic Reviews*. 2004.
10. Podewils LJ. Physical Activity, APOE Genotype, and Dementia Risk: Findings from the Cardiovascular Health Cognition Study. *American Journal of Epidemiology*. 2005;161(7):639-651.
10. Yaffe K, Falvey CM, Hoang T. Connections between sleep and cognition in older adults. *The Lancet Neurology*. 2014;13(10):1017-1028.