

# Easing the anguish of Alzheimer's Disease

The better you understand this tragic and still-mysterious condition, the more you can help family members and other caregivers.

By Susan Simmons Holcomb, PhD, ARNP-BC

**MOST OF US HAVE SEEN** the alarming figures on Alzheimer's disease (AD): An estimated 4.5 million Americans have it. What's more, this statistic may be an understatement because the disease often goes unrecognized. Some experts put the true incidence at nearly 6.5 million. As the U.S. population ages, the burden of AD is bound to rise substantially. By 2050, AD may affect 16 million Americans.

AD is the leading cause of dementia, accounting for about two-thirds of dementia cases. It strikes approximately 10% of persons older than age 65. Incidence doubles every 5 years until 50% of adults older than age 90 have it.

Although onset usually comes after age 60, some people get a rare familial early-onset form. The disease occurs in three stages—mild, moderate, and severe. (See *Staging Alzheimer's disease*.)

Researchers understand the disease better than they did 20 years ago and are working on ways to prevent it, treat it, and delay its onset. Nonetheless, with its relentless clinical course, AD takes an enormous toll on both caregivers and the healthcare system. This article defines AD, explores risk factors and potential causes, describes its diagnosis and treatment, and discusses how to help family members and others who care for AD patients.

## Theories about the cause

The exact cause of the disease remains unknown, but several theories exist.

- The finding of amyloid plaques in the brains of AD patients led to the *amyloid hypothesis*, which proposes that AD stems from accumulation of amyloid beta-peptide in the brain. Other proteins associated with plaque formation include apolipoprotein E, complement proteins, and cytokines.
- According to the *tau hypothesis*, AD results from dysfunction of the tau protein.
- The *vascular hypothesis* grew out of the finding that many AD patients also have vascular dementia. It proposes that cardiovascular and cerebrovascular disease and other insults cause endothelial damage. Improper balance and function of nerve growth factors and inflammation also may play a part in AD.

## Risk factors

Risk factors for AD include advancing age, female gender, low educational level, and lack of mental stimulation. Other possible factors include diabetes mellitus, alcoholism, depression, head injuries (related to inflammation and endothelial changes stemming from brain trauma), and a history of migraines. Researchers believe AD may run in families, although they don't know why some people with a family history get it while others don't.

## Can AD be prevented?

With the cause of AD still unknown, prevention is a challenge. Minimizing modifiable risk factors may help in some cases.

Staying mentally, physically, and socially active is the mainstay of risk-factor reduction. The Alzheimer's Association emphasizes eating a healthy diet. Some experts recommend controlling cardiovascular risk factors (such as weight, smoking, cholesterol levels, and blood pressure), taking steps to prevent diabetes mellitus, and avoiding head injuries (as by wearing helmets and taking other precautions as necessary).

## Assessment and diagnosis

The sooner AD is diagnosed, the sooner treatment can begin. AD has a gradual onset and may not be apparent for 5 to 15 years. Signs and

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### LEARNING OBJECTIVES

1. Discuss strategies for diagnosing AD.
2. Differentiate the three stages of AD.
3. Describe treatments for AD.
4. Explain how to support caregivers of patients with AD.

## Staging Alzheimer's disease

Although the duration of each stage varies, the moderate stage of Alzheimer's disease typically lasts longest. The chart below lists common manifestations of each stage.

	Stage 1	Stage 2	Stage 3
<b>Severity</b>	Mild	Moderate	Severe
<b>Duration</b>	2 to 4+ years	2 to 10 years	1 to 3+ years
<b>Signs and symptoms</b>	<ul style="list-style-type: none"><li>• Repeats words or actions</li><li>• Has trouble remembering names of common things</li><li>• Gets lost easily</li><li>• Loses things</li><li>• Shows personality changes</li><li>• Shows lack of interest in usual activities</li></ul>	<ul style="list-style-type: none"><li>• Gets confused about recent events</li><li>• Shows decreased ability to perform activities of daily living (ADLs)</li><li>• Argues easily</li><li>• Believes things are real when they aren't</li><li>• Needs close supervision</li><li>• Seems anxious and depressed</li><li>• Paces</li></ul>	<ul style="list-style-type: none"><li>• Uses or understands words improperly</li><li>• Doesn't recognize self in mirror</li><li>• Doesn't recognize family members or others</li><li>• Depends on others totally for ADLs</li></ul>

symptoms typically include progressive deterioration in memory, learning, decision making, communicating, and performing normal daily activities. Many patients also experience behavioral and personality changes, depression, insomnia, delusions, and even hallucinations.

In a patient with suspected AD, the history is crucial and should reflect a gradual cognitive decline. Diagnosis rests on history, physical and mental assessment findings, and diagnostic test results. (See *Diagnostic criteria for Alzheimer's disease*.)

Memory impairment and other cognitive problems may make the patient an unreliable information source, so if necessary obtain the history from family members or friends.

Neurologic testing, including cognition testing, should be performed as part of the complete physical assessment. (See *Key cognitive tests for Alzheimer's disease*.) If the patient's history, physical examination, and cognitive test results suggest AD, the following laboratory tests may be done to aid diagnosis and rule out common medical

causes of cognitive decline:

- complete blood count and vitamin B<sub>12</sub> level, to rule out anemia
- thyroid studies, to rule out thyroid disease
- chemistry panel, to rule out diabetes mellitus and renal and hepatic dysfunction
- human immunodeficiency virus

and syphilis testing (in at-risk patients)

- toxicology panel, urinalysis, and lumbar puncture (depending on signs and symptoms)
- brain imaging studies, such as computed tomography or magnetic resonance imaging.

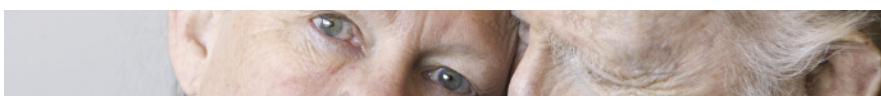
However, no truly reliable ante-mortem test for AD exists. So even after these tests are done, diagnosis rests on clinical findings.

### Treatment

Although AD can't be cured, several drugs may help improve cognitive function for a limited time. If given early enough in the disease course, they may help the patient continue functioning as long as possible and prolong the time that he or she can be cared for at home. Other drugs may be given to manage mood and behavioral problems. Despite these pharmacologic treatments, though, AD eventually progresses.

### Drugs to slow disease progression

Two major groups of drugs are used to slow AD progression—acetylcholinesterase inhibitors (AChEIs) and N-methyl-D-aspartate (NMDA) receptor antagonists.



## Diagnostic criteria for Alzheimer's disease

The *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.) lists the following criteria for Alzheimer's disease:

1. The patient has multiple cognitive impairments, including memory impairment, plus at least one of the following:
  - *aphasia*—impaired ability to speak or to understand spoken or written language
  - *apraxia*—impaired ability to perform purposeful acts or to manipulate objects
  - *agnosia*—impaired ability to recognize familiar objects or persons through sensory stimuli
  - disturbances in executive functioning (planning, organizing, abstract thought, and sequencing).
2. Cognitive decline is gradual and continual, leading to significant impairment in social or occupational functioning.
3. Other physiologic and psychological causes for cognitive decline have been ruled out.

## Key cognitive tests for Alzheimer's disease

After a thorough history and physical examination, the clinician usually performs a baseline measurement of the patient's cognitive function, which may include the following tests.

Test	Purpose	Description
Folstein Mini-Mental State Examination (MMSE)	To assess memory	<ul style="list-style-type: none"><li>• Assesses orientation, registration, attention, calculation, recall, and language</li><li>• Fast and easy to administer and reproduce</li><li>• Widely accepted</li><li>• Doesn't assess behavior or ability to perform activities of daily living (ADLs)</li></ul>
Alzheimer's Disease Assessment Scale	To assess more severe cognitive impairment	<ul style="list-style-type: none"><li>• More comprehensive than the MMSE</li><li>• Assesses memory, speech, language, depression, psychosis, and vegetative symptoms</li><li>• Takes about 45 minutes</li></ul>
Functional Activities Questionnaire	To assess ability to perform ADLs	<ul style="list-style-type: none"><li>• Measures six ADLs: bathing, toileting, dressing, transferring, continence, feeding</li><li>• Aids in care planning and determining if patient needs to be institutionalized</li><li>• Used widely for more than 40 years</li></ul>
Clock drawing test	To detect progression of cognitive decline	<ul style="list-style-type: none"><li>• Requires patient to draw a clock</li><li>• No special training needed to administer</li><li>• Quick; can easily track cognitive changes over time</li></ul>
Geriatric Depression Rating Scale	To detect depression, which may mimic or contribute to dementia	<ul style="list-style-type: none"><li>• Asks questions regarding feelings of hopelessness, helplessness, happiness, and enjoyment of life</li><li>• Self-report assessment</li><li>• Quick and easy to administer</li></ul>

In most clinical trials showing benefits from AChEIs, therapy was short-term (up to 3 or 6 months) and used only in patients with mild to moderate AD. These studies found the drugs brought modest cognitive improvement and slowed disease progression; however, long-term studies haven't shown the same benefit. Donepezil (Aricept) is the only AChEI with some benefit in severe AD, but no AChEI has clear benefits over another. To help

determine if an AChEI will be effective, a trial of at least 6 months is recommended. These drugs cost \$6 a day on average, which may be prohibitively expensive for uninsured patients.

Memantine (Namenda), the only NMDA receptor antagonist currently available, can be used alone, as monotherapy, or in combination with donepezil; the combination seems to have synergistic effects. In a patient currently receiving an

AChEI, the clinician may decide memantine would bring greater benefit. If so, the patient should take both drugs for 1 month before stopping the AChEI to avoid discontinuation syndrome. Memantine is nearly as expensive as an AChEI—about \$5 a day. (See *Drugs used to treat Alzheimer's disease*.)

### Managing psychotic and depressive symptoms

Psychotic behavior and depressive symptoms must be treated cautiously. In some cases, AD drugs improve psychotic behavior. But some antipsychotics may worsen AD symptoms, increase the risk of stroke (possibly by causing weight gain and promoting diabetes development), and prolong the QTc interval.

What's more, combining AChEIs with antipsychotics may heighten the risk of extrapyramidal symptoms. First-generation antipsychotics are likely to cause neuroleptic malignant syndrome and tardive dyskinesia as well as extrapyramidal symptoms. Because of these potential concerns and lack of definitive studies showing superior benefit from antipsychotics, experts recommend avoiding these drugs in AD patients.

Selective serotonin reuptake inhibitors may be useful in patients with suspected or diagnosed major depression.

### Controlling risk factors

Uncontrolled cardiovascular disease and uncontrolled diabetes may speed amyloid deposition, possibly accelerating AD development or causing AD to worsen. Therefore, many clinicians recommend measures to control cardiovascular disease (especially hypertension and hyperlipidemia) to help minimize its effects on dementia. To help stave off stroke, some recommend low-dose aspirin.

### Helping the family manage home care

A family that plans to care for an

## Drugs used to treat Alzheimer's disease

To slow disease progression, some patients with Alzheimer's disease (AD) may take acetylcholinesterase inhibitors (AChEIs) or an N-methyl-D-aspartate (NMDA) receptor antagonist. This chart provides details on these drugs.

Drug class and specific agents	Proposed mechanism in AD	Indications	Adverse effects	Interacting drugs
<b>AChEIs:</b> <ul style="list-style-type: none"> <li>donepezil (Aricept)</li> <li>galantamine (Razadyne)</li> <li>rivastigmine (Exelon)</li> <li>tacrine (Cognex)*</li> </ul>	Promotes acetylcholine retention by preventing its breakdown	<ul style="list-style-type: none"> <li>Mild to moderate AD (galantamine, rivastigmine, tacrine)</li> <li>Mild, moderate, or severe AD (donepezil)</li> </ul>	<ul style="list-style-type: none"> <li>Nausea, vomiting, and diarrhea</li> <li>Urinary incontinence</li> <li>Vivid dreams</li> <li>Bradycardia</li> <li>Dizziness</li> <li>Syncope</li> <li>Anorexia</li> <li>Weight loss</li> </ul>	<ul style="list-style-type: none"> <li>Anticholinergics (such as diphenhydramine, tolterodine)</li> <li>Tricyclic antidepressants</li> <li>Succinylcholine</li> </ul>
<b>NMDA receptor antagonist</b> <ul style="list-style-type: none"> <li>memantine (Namenda)</li> </ul>	Binds preferentially to NMDA receptor-operated cation channels, helping to slow neuronal death	<ul style="list-style-type: none"> <li>Moderate to severe AD</li> </ul>	<ul style="list-style-type: none"> <li>Dizziness</li> <li>Confusion</li> <li>Hallucinations</li> <li>Delusions</li> <li>Insomnia</li> </ul>	<ul style="list-style-type: none"> <li>Amantadine</li> </ul>

\* Not recommended due to dosing complexity and risk of hepatotoxicity

### What else may work—or not

Other prescription and nonprescription preparations have been used to treat AD, with mixed results.

- Vitamin E.** In patients with moderate (but not mild) AD, dosages of 2,000 IU/day have been shown to slow disease progression. However, vitamin E may increase the bleeding risk, so experts suggest a maximum of 400 IU/day, especially in the elderly.
- Ginkgo biloba.** Although this herb has garnered attention for its potential memory-boosting benefits, it's not currently recommended for AD patients. The potential risks of bleeding and nonstandardized formulations outweigh potential benefits, which have been no better than modest in studies.
- Nonsteroidal anti-inflammatory drugs (NSAIDs).** Although some experts believe NSAIDs may slow AD development, their benefit in treating it is unproven. They aren't recommended because they may cause GI bleeding and cardiovascular and renal toxicity.
- Hormone replacement therapy (HRT).** For postmenopausal women, HRT previously was thought to help prevent AD. But HRT has fallen out of favor, and some studies show it actually increases the dementia risk.

AD patient at home will need a great deal of support. As appropriate, arrange for a visit by a home health nurse, an occupational therapist, or another healthcare professional to evaluate the home for safety concerns (such as dangerous stairs, poor lighting, and loose rugs).

To help family members establish a routine for activities of daily living (ADLs), provide simple instructions on bathing, dressing, feeding, taking medications, exercising, and bedtime rituals. Write down the steps of each routine and post the instructions in an obvious place.

### Providing ongoing care

When a patient has AD, you have two sets of patients—the one diag-

nosed with AD and the family members or others providing care at home. Giving caregivers support and information is an essential part of managing AD. Help them obtain social services and the other resources they need to assess living conditions, develop home care plans, and evaluate and perform ongoing assessment of both the patient and caregiver.

Caring for a patient with AD takes an enormous mental, emotional, physical, and financial toll. Family members witness their loved one—once full of life, vigor, and intelligence—grow progressively more impaired, become increasingly agitated, manifest abusive behavior, and eventually depend on others completely. Family members caring for AD patients have extremely high rates of

depression and “burnout” and suffer more frequent illnesses than the general population.

As the patient drains time, resources, and energy, family members' personal, social, and work lives deteriorate. They may need support and medication for depression. The increased stress and burden they're under may even cause them to become physically abusive toward the patient, so be sure to assess for this problem regularly.

**The right approach.** Teach caregivers the right way to approach the AD patient—by moving and speaking slowly, using simple words, and repeating these words frequently if needed. If the patient becomes agitated when performing a task, advise caregivers to back off, take deep

# Remind caregivers that AD patients don't remember that they forgot.

breaths, and begin the task again, but more slowly this time. Caution them not to argue with the patient, correct the patient's delusions, try to teach the patient new things, or get upset in front of the patient. Point out that the patient may internalize the caregiver's frustration or outburst of emotions and then display these feelings outwardly as agitation, aggression, or anger.

Remind caregivers that AD patients don't remember that they forgot or can't remember. Point out that reorienting the patient is acceptable to a point, but should be kept to the "here and now." If the patient asks the same question repeatedly, recommend that the caregiver answer simply each time, then step away for a moment (if it's safe to do so) or use another diversionary technique to avoid getting upset with the patient. Advise caregivers to find a place where they can go or someone they can call if they feel they're nearing the point of abusing the patient or "going crazy." Urge them to seek or accept assistance from relatives, friends, church members, or other available sources.

## Does the patient belong in a long-term care facility?

Deciding whether to place a patient in an extended-care facility can be agonizing for the family, arousing feelings of guilt and imposing a financial burden. To help objectify the need for such placement, healthcare providers may use assessment tools such as the Katz Index of Independence in ADLs and the Instrumental ADL scale. These tools assess six areas—bathing, toileting, dressing, transferring, continence, and feeding.

## Relentless disease, rising burden

AD involves many body systems other than the neurologic. The disease and its eventual effects on all ADLs (including nutrition, exercise, and hygiene) may directly influence the musculoskeletal, integumentary, and cardiovascular systems. The patient's decline may be slow, increasing caregiver burden. With our aging population and the rising AD incidence, this burden is likely to affect all of us in some way and to some degree.

As nurses, we sometimes get

caught up in giving caregivers standard information about AD and the patient's prescribed medications. Try to go at least one step further by providing simple instructions on how to manage the patient on a day-to-day basis and how to take care of themselves. Such practical advice may benefit them even more than your cognitive nursing knowledge and skills. ★

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- Visit [www.AmericanNurseToday.com](http://www.AmericanNurseToday.com) for a complete list of selected references and a list of resources on AD.

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### Easing the anguish of Alzheimer's disease

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**Purpose/goal:** To provide registered nurses with information to help them care for patients with Alzheimer's disease (AD)