

Alzheimer's disease

A topic in the Alzheimer's Association® series on understanding dementia.

About dementia

Dementia is a general term for a decline in mental ability severe enough to interfere with daily life. Dementia is not a single disease; it's the umbrella term for an individual's changes in memory, thinking or reasoning. There are many possible causes of dementia, including Alzheimer's. Disorders grouped under the general term "dementia" are caused by abnormal brain changes. These changes trigger a decline in thinking skills, also known as cognitive abilities, severe enough to impair daily life and independent function. They also affect behavior, feelings and relationships.

Brain changes that cause dementia may be temporary, but they are most often permanent and worsen, leading to increasing disability and a shortened life span. Survival can vary widely, depending on such factors as the cause of the dementia, age at diagnosis and coexisting health conditions.

Alzheimer's disease

Alzheimer's disease is not a normal part of aging — it is a progressive brain disease that causes problems with memory, thinking and behavior. Alzheimer's is the most common cause of dementia, accounting for 60% to 80% of dementia cases. Although there is currently no cure for Alzheimer's, researchers are paving the way for future treatments by uncovering new insights into the biology of the disease.

Risk factors

Researchers believe there is not a single cause of Alzheimer's disease. It likely develops from multiple factors, such as genetics, lifestyle and environment. Scientists have identified factors that increase the risk of Alzheimer's. While some risk factors like age, family history and genetics can't be changed, emerging evidence suggests there may be other factors people can influence.

Age

The greatest risk for Alzheimer's disease is age. After age 65, a person's risk of developing the disease increases dramatically. About a third of people age 85 or older have Alzheimer's.

Family history

Researchers have learned that people who have a parent, brother or sister with Alzheimer's are more likely to develop it than those who do not. The risk increases if more than one family member has the disease.

Genetics

Two types of genes influence whether a person develops a disease: risk genes and deterministic genes. Risk genes increase the chance of developing a disease but do not guarantee it will happen. Deterministic genes cause a disease. This means anyone who inherits a deterministic gene will develop a disorder.

Rare deterministic genes cause Alzheimer's in a few hundred extended families worldwide. Scientists estimate these genes cause less than 1% of cases. Individuals with these genes usually develop symptoms in their 40s or 50s.

Hispanic people, Black Americans and women

Research shows Black Americans are about twice as likely as White Americans to have Alzheimer's or another dementia, and Hispanic Americans are one-and-a-half times as likely. Though no one knows the exact reason for these differences, researchers believe they are related to disparities produced by the historic and continued marginalization of Black and Hispanic people in the United States — disparities between older Black and Hispanic populations and older White populations in life experiences, socioeconomic indicators and, ultimately, health conditions.

Additionally, women are more likely to develop Alzheimer's than men. This difference may be explained, in part, by the fact that women live longer. However, researchers are exploring how genetic differences may impact Alzheimer's risk differently in men and women.

Lowering the risk of cognitive decline

Age, family history and genetics are all risk factors that can't be changed. However, research is offering clues about other risk factors that people may be able to influence. Studies show a strong connection between serious head injury and future risk of Alzheimer's. For this reason, it is important to protect against head injury by

wearing a seat belt in the car, wearing a helmet when playing sports and making sure the home is safe to avoid falls.

Research also shows there are healthy lifestyle habits that people can adopt to help keep their brain healthy and lower their risk of cognitive decline. These include eating a healthy diet, staying socially active and exercising the body and mind. Not using tobacco and avoiding excess alcohol is also good for brain health.

Science tells us there is a strong connection between brain health and heart health. The risk of developing Alzheimer's or vascular dementia appears to be increased by many conditions that damage the heart and blood vessels. These include heart disease, diabetes, stroke, high blood pressure and high cholesterol.

Symptoms and signs

The symptoms of Alzheimer's disease are more than simple lapses in memory or age-related changes. People living with Alzheimer's disease experience memory loss as well as difficulties communicating, learning, thinking and reasoning. These are problems severe enough to interfere with an individual's work, social activities and family life.

As the disease progresses, individuals may also experience changes in personality and behavior, such as anxiety, suspicion or agitation, as well as delusions or hallucinations.

In collaboration with experts in the field, the Alzheimer's Association® created a list of warning signs to help people identify symptoms that may be related to Alzheimer's or another form of dementia (**alz.org/10signs**). It is possible for individuals to experience one or more of these signs in varying degrees. It is not necessary to experience every sign in order to raise concern.

If you're concerned that you or someone you know is displaying any of these signs, take action. It can be helpful to confide in a friend or family member. For tips on how to have a conversation, visit **alz.org/memoryconcerns**.

Diagnosis

Multiple conditions can cause cognitive changes, so it's essential to obtain a full medical evaluation to determine whether symptoms are related to Alzheimer's or something else. If the cause is not Alzheimer's or another dementia, it could be a

treatable condition. If it is dementia, there are many benefits to receiving an early and accurate diagnosis, including an opportunity to plan for the future, access support services and explore medication that may address some symptoms for a time.

There is no single diagnostic test that can determine if a person has Alzheimer's disease. However, diagnostic tools and criteria make it possible for physicians to make a diagnosis of Alzheimer's with about 90% accuracy. The diagnostic process may involve a thorough medical history, mental status and mood testing, a physical and neurological exam, and tests (such as blood tests and brain scans) to rule out other causes of dementia-like symptoms. This process may take more than one day or visit. To learn more about the diagnostic process, visit alz.org/evaluatememory.

Treatments

The U.S. Food and Drug Administration (FDA) has approved medications that fall into two categories: drugs that may delay clinical decline in people living with Alzheimer's, and drugs that may temporarily mitigate some symptoms of Alzheimer's disease.

When considering any treatment, it is important to have a conversation with a health care professional to determine whether it is appropriate. A physician who is experienced in using these types of medications should monitor people who are taking them and ensure that the recommended guidelines are strictly observed.

Drugs that delay clinical decline

Two FDA-approved drugs — aducanumab (Aduhelm™) and lecanemab (Leqembi™) — slow disease progression by changing the underlying biology of the disease. They remove beta-amyloid from the brain and slow cognitive and functional decline in people living with early Alzheimer's.

Beta-amyloid is a microscopic protein fragment that accumulates in the brain and forms into plaques. These plaques disrupt communication between nerve cells and may activate immune system cells that trigger inflammation and devour disabled nerve cells. While beta-amyloid's exact role in the disease process is still not completely understood, research has demonstrated that drugs that remove beta-amyloid from the brain can slow the progression of the disease for people in the early stages.

Neither of these drugs are cures for Alzheimer’s disease, and they are not appropriate for all individuals living with the disease. They may be appropriate for individuals with early Alzheimer’s disease who have confirmation of elevated beta-amyloid levels in the brain based on brain scans or analysis of cerebrospinal fluid (the biological fluid surrounding the brain and spinal cord).

Name (Generic/Brand)	Approved for	Side effects
Aducanumab Aduhelm™	Alzheimer's disease	ARIA, headache and fall
Lecanemab Leqembi™	Alzheimer’s disease	ARIA, infusion-related reactions and headache

Drugs that treat symptoms

(Cognitive — memory and thinking — symptoms)

These medications are prescribed to treat symptoms related to memory and thinking. While these drugs cannot stop the damage Alzheimer’s causes to brain cells, they may help lessen or stabilize symptoms for a limited time by affecting certain chemicals involved in carrying messages between the brain’s nerve cells.

The drugs currently approved to treat cognitive symptoms are cholinesterase inhibitors and glutamate regulators.

Name (Generic/Brand)	Approved for	Side effects
Donepezil Aricept®	Mild to severe dementia due to Alzheimer’s	Nausea, vomiting, loss of appetite, muscle cramps and increased frequency of bowel movements.
Galantamine Razadyne®	Mild to moderate dementia due to Alzheimer’s	Nausea, vomiting, loss of appetite and increased frequency of bowel movements.
Rivastigmine Exelon®	Mild to moderate dementia due to Alzheimer’s or Parkinson’s	Nausea, vomiting, loss of appetite and increased frequency of bowel movements.

Memantine Namenda®	Moderate to severe dementia due to Alzheimer's	Headache, constipation, confusion and dizziness.
Memantine + Donepezil Namzaric®	Moderate to severe dementia due to Alzheimer's	Nausea, vomiting, loss of appetite, increased frequency of bowel movements, headache, constipation, confusion and dizziness.

Non-cognitive (behavioral and psychological) symptoms

Alzheimer's affects more than just memory and thinking. A person's quality of life may be impacted by a variety of behavioral and psychological symptoms that accompany dementia, such as sleep changes.

Sleep changes may include difficulty sleeping, taking daytime naps and/or experiencing other shifts in sleep pattern. Learn more about sleep changes and available drug and non-drug treatments to address symptoms.

Suvorexant (Belsomra®) is the first medication approved specifically to treat insomnia in people living with Alzheimer's. It works by blocking the activity of a chemical messenger involved in the sleep-wake cycle. It is important to try non-drug strategies to manage non-cognitive symptoms — like sleep changes — before adding medications.

Name (Generic/Brand)	Approved for	Side effects
Suvorexant Belsomra®	Insomnia in people living with mild to moderate Alzheimer's disease	Impaired alertness and motor coordination, worsening of depression or suicidal thinking, complex sleep behaviors, sleep paralysis, compromised respiratory function.

Progression

Alzheimer's disease typically progresses slowly in three general stages: early, middle and late (sometimes referred to as mild, moderate and severe in a medical context). Since Alzheimer's affects people in different ways, each person may experience symptoms — or progress through the stages — differently. On average, people age 65 and older live four to eight years after diagnosis, while some live with the disease for as long as 20 years. Aside from the presence of additional health problems such as heart disease or diabetes that can shorten life span, researchers do not know why some people live longer than others.

The thinking, memory, behavioral and functional problems associated with Alzheimer's reflect the areas of the brain affected by the disease. Areas involved with learning and memory are usually affected first. Later, regions involved in planning and carrying out tasks are affected. Ultimately, the brain regions involved in carrying out basic bodily activities such as walking and swallowing are impaired, causing people in this stage to be bed-bound.

In general, those diagnosed when thinking and memory problems are still mild are likely to live with the disease for many years. Those diagnosed when problems are more pronounced, such as when the individual struggles to remember where they are or to dress correctly for the season, are likely to live with the disease for fewer years. Those diagnosed when problems are severe, such as needing help with dressing and eating, generally live for the shortest period. Eventually, the person with Alzheimer's will need around-the-clock care. The disease is ultimately fatal.

Current Alzheimer's statistics

- More than 6 million Americans are living with Alzheimer's disease.
- Alzheimer's kills more than breast cancer and prostate cancer combined.
- One in 3 seniors dies with Alzheimer's disease.
- By 2060, the number of people age 65 and older living with Alzheimer's is projected to reach 13.8 million.

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