

# basics of alzheimer's disease

What it is and  
what you can do



# what is alzheimer's disease?

Alzheimer's (AHLZ-high-merz) is a disease of the brain that causes problems with memory, thinking and behavior. It is not a normal part of aging.

Alzheimer's gets worse over time. Although symptoms can vary widely, the first problem many people notice is forgetfulness severe enough to affect their ability to function at home or at work, or to enjoy lifelong hobbies.

The disease may cause a person to become confused, lost in familiar places, misplace things or have trouble with language.

**It can be easy to explain  
away unusual behavior,  
especially for someone who  
seems physically healthy.  
Instead, seek a diagnosis as  
early as possible.**



***Basics of Alzheimer's Disease* is intended for anyone who would like to learn more about this disease and related dementias.**

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# 1. when memory loss is a warning sign

Many people worry about becoming more forgetful as they grow older. Our brains change as we age, just like the rest of our bodies.

Most of us eventually notice some slowed thinking and problems remembering certain things. However, serious memory loss, confusion, and other major changes in the way our minds work are not a typical part of aging.

Many conditions can disrupt memory and mental function. Symptoms may improve when the underlying cause is treated.



Contact the Alzheimer's Association if you need assistance finding a doctor with experience evaluating memory problems.

## Possible causes of memory problems include:

- Depression
- Medication side effects
- Excess alcohol use
- Thyroid problems
- Poor diet
- Vitamin deficiencies
- Certain infections
- Alzheimer's disease and related dementias

Anyone experiencing significant memory problems should see a doctor as soon as possible. Methods for early diagnosis are improving dramatically, and treatment options and sources of support can improve quality of life.

An early diagnosis helps individuals receive treatment for symptoms and gain access to programs and support services. It may also allow them to take part in decisions about care, living arrangements, money and legal matters.

### What's the difference?

#### Signs of Alzheimer's/dementia

Poor judgment and decision making

Inability to manage a budget

Losing track of the date or the season

Difficulty having a conversation

Misplacing things and being unable to retrace steps to find them

#### Typical age-related changes

Making a bad decision once in a while

Missing a monthly payment

Forgetting which day it is and remembering later

Sometimes forgetting which word to use

Losing things from time to time

## 2. 10 warning signs of alzheimer's disease

It may be hard to know the difference between a typical age-related change and the first sign of Alzheimer's disease. Ask yourself: Is this something new? For example, if the person was never good at balancing a checkbook, struggling with this task is probably not a warning sign. But if his or her ability to balance a checkbook has changed significantly, it is something to share with a doctor.

Some people recognize changes in themselves before anyone else does. Other times, friends and family are the first to notice changes in the person's memory, behavior or abilities.

To help identify problems early, the Alzheimer's Association has created a list of warning signs for Alzheimer's. Individuals may experience one or more of these signs in different degrees.

### 1. **Memory loss that disrupts daily life**

One of the most common signs of Alzheimer's disease, especially in the early stages, is forgetting recently learned information. Others include forgetting important dates or events; asking for the same information over and over; and increasingly needing to rely on memory aides (e.g., reminder notes or electronic devices) or family members for things they used to handle on their own.

#### **What's a typical age-related change?**

Sometimes forgetting names or appointments, but remembering them later.

### 2. **Challenges in planning or solving problems**

Some people may experience changes in their ability to develop and follow a plan or work with numbers. They may have trouble following a familiar recipe or keeping track of monthly bills. They may have difficulty concentrating and take much longer to do things than they did before.

#### **What's a typical age-related change?**

Making occasional errors when balancing a checkbook.

### **3. Difficulty completing familiar tasks at home, at work or at leisure**

People with Alzheimer's disease often find it hard to complete daily tasks. Sometimes, people have trouble driving to a familiar location, managing a budget at work or remembering the rules of a favorite game.

#### **What's a typical age-related change?**

Occasionally needing help to use the settings on a microwave or to record a television show.

### **4. Confusion with time or place**

People with Alzheimer's can lose track of dates, seasons and the passage of time. They may have trouble understanding something if it is not happening immediately. Sometimes they may forget where they are or how they got there.

#### **What's a typical age-related change?**

Getting confused about the day of the week but figuring it out later.

### **5. Trouble understanding visual images and spatial relationships**

For some people, having vision problems is a sign of Alzheimer's. They may have difficulty reading, judging distance and determining color or contrast, which may cause problems with driving.

#### **What's a typical age-related change?**

Vision changes related to cataracts.

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**KNOW**the  
**10 SIGNS**

EARLY DETECTION MATTERS

## **6. New problems with words in speaking or writing**

People with Alzheimer's may have trouble following or joining a conversation. They may stop in the middle of a conversation and have no idea how to continue or they may repeat themselves. They may struggle with vocabulary, have problems finding the right word or call things by the wrong name (e.g., calling a watch a "hand clock").

### **What's a typical age-related change?**

Sometimes having trouble finding the right word.

## **7. Misplacing things and losing the ability to retrace steps**

A person with Alzheimer's disease may put things in unusual places. They may lose things and be unable to go back over their steps to find them again.

Sometimes, they may accuse others of stealing. This may occur more frequently over time.

### **What's a typical age-related change?**

Misplacing things from time to time, and retracing steps to find them.

## **8. Decreased or poor judgment**

People with Alzheimer's may experience changes in judgment or decision making. For example, they may use poor judgment when dealing with money, giving large amounts to telemarketers. They may pay less attention to grooming or keeping themselves clean.

### **What's a typical age-related change?**

Making a bad decision once in a while.

If you notice any of these warning signs, please see a doctor. Doctors' ability to diagnose Alzheimer's disease and related dementias is improving dramatically.



## 9. Withdrawal from work or social activities

A person with Alzheimer's may start to remove themselves from hobbies, social activities, work projects or sports. They may have trouble keeping up with a favorite sports team or remembering how to complete a favorite hobby. They may also avoid being social because of the changes they have experienced.

### What's a typical age-related change?

Sometimes feeling weary of work, family and social obligations.

## 10. Changes in mood and personality

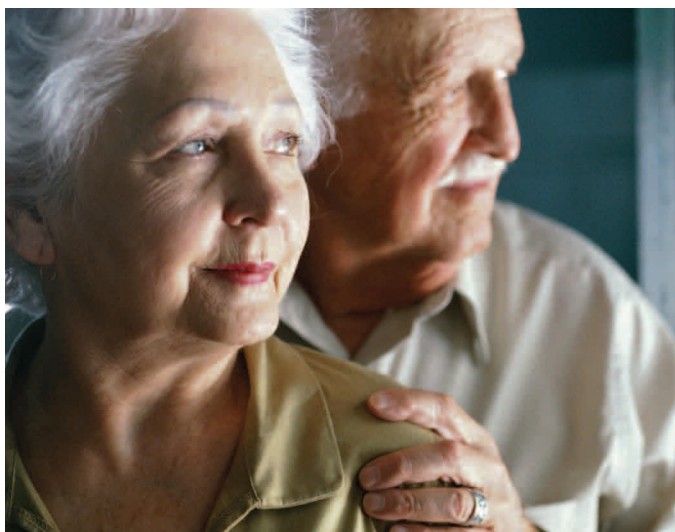
The mood and personality of people with Alzheimer's can change. They can become confused, suspicious, depressed, fearful or anxious. They may be easily upset at home, at work, with friends or in places where they are out of their comfort zone.

### What's a typical age-related change?

Developing very specific ways of doing things and becoming irritable when a routine is disrupted.

*Note: Mood changes with age may also be a sign of some other condition. Consult a doctor if you observe any changes.*

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## 3. alzheimer's disease and other types of dementia

Dementia (dih-MEN-shuh) is a general term for the loss of memory and other intellectual abilities serious enough to interfere with daily life. Alzheimer's is the most common form of dementia.

More than 5 million Americans have Alzheimer's disease. That includes 13 percent of those over age 65 and nearly 50 percent of those 85 and older. By 2050, the number of individuals with the disease may reach 16 million. Because 70 percent of those with Alzheimer's live at home, its impact extends to millions of family members, friends and caregivers.

### Other types of dementia

Alzheimer's accounts for 60 to 80 percent of dementia cases. Other disorders that can cause memory loss, confusion and other symptoms associated with dementia include:

**Vascular dementia**, often considered the second most common type of dementia, refers to impairment caused by reduced blood flow to parts of the brain. One type may develop after a single major stroke blocks blood flow to a large area of brain tissue. Another kind, formerly called multi-infarct dementia, can occur when a series of very small strokes clog tiny arteries. Individually, these strokes are too minor to cause significant symptoms, but over time their combined effect becomes noticeable.

Vascular dementia symptoms can be similar to Alzheimer's disease. They include problems with memory and confusion and difficulty following instructions. In some cases, the impairment associated with vascular dementia can occur in "steps" rather than in the slow, steady decline usually seen in Alzheimer's.

**Mixed dementia** is a condition in which Alzheimer's disease and one or more other dementias occur together. Evidence shows that this type of dementia is much more common than once believed.

**Parkinson's disease** affects control of movement, resulting in tremors, stiffness and impaired speech. Many individuals with Parkinson's also develop dementia in later stages of the disease.

**Dementia with Lewy bodies** often starts with wide variations in attention and alertness. Individuals affected by this illness often experience visual hallucinations as well as muscle rigidity and tremors similar to those associated with Parkinson's disease.

**Physical injury to the brain** caused by an automobile accident or other trauma can damage or destroy brain cells and cause symptoms of dementia such as behavioral changes, memory loss and other cognitive difficulties.

**Huntington's disease** is an inherited, progressive disorder that causes irregular movements of the arms, legs and facial muscles; personality changes; and a decline in the ability to think clearly.

**Creutzfeldt-Jakob disease (CJD)** (CROYZ-feltYAH-kob) is a rare, rapidly fatal disorder that impairs memory and coordination and causes behavior changes. Recently, variant Creutzfeldt-Jakob disease (vCJD) was identified as the human disorder believed to be caused by eating meat from cattle affected by mad cow disease.

**Frontotemporal dementia** is a term describing several conditions (such as Pick's disease and primary progressive aphasia) in which front and side areas of the brain are especially affected. Personality and behavior changes are often the first symptoms.

**Normal pressure hydrocephalus (NPH)** is caused by a buildup of fluid in the brain. The cause of most cases is unknown. Symptoms include difficulty walking, memory loss and inability to control urine. NPH can sometimes be corrected with surgery to drain the excess brain fluid.

**Mild cognitive impairment (MCI)** is a term some doctors use to describe a situation in which a person may have problems with memory or another thinking skill that is serious enough to show up on tests, but not severe enough to interfere with daily life. Research has shown that individuals with MCI have an increased risk of progressing to Alzheimer's disease, especially when their main area of difficulty involves memory. But a diagnosis of MCI does not always mean the person will develop Alzheimer's.

## 4. how alzheimer's affects the brain

The changes that take place in the brain begin at the microscopic level long before the first signs of memory loss.

### What goes wrong in the brain

The brain has 100 billion nerve cells (neurons). Each nerve cell connects to many others to form communication networks. In addition to nerve cells, the brain includes cells specialized to support and nourish other cells.

Groups of nerve cells have special jobs. Some are involved in thinking, learning and memory. Others help us see, hear and smell. Still others tell our muscles when to move.

Brain cells operate like tiny factories. They receive supplies, generate energy, construct equipment and get rid of waste. Cells also process and store information and communicate with other cells. Keeping everything running requires coordination as well as large amounts of fuel and oxygen.

Scientists believe Alzheimer's disease prevents parts of a cell's factory from running well. They are not sure where the trouble starts. But just like a real factory, backups and breakdowns in one system cause problems in other areas. As damage spreads, cells lose their ability to do their jobs and, eventually, die.

### Take a closer look



**Learn how Alzheimer's affects the brain and its functions – take our interactive brain tour at [alz.org/brain](https://alz.org/brain).**

## The role of plaques and tangles

The brains of individuals with Alzheimer's have an abundance of plaques and tangles. Plaques are deposits of a protein fragment called beta-amyloid that build up in the spaces between nerve cells. Tangles are twisted fibers of another protein called tau that build up inside cells.

Though autopsy studies show that most people develop some plaques and tangles as they age, those with Alzheimer's tend to develop far more. They also tend to develop them in a predictable pattern, beginning in the areas important for memory before spreading to other regions.

Scientists do not know exactly what role plaques and tangles play in Alzheimer's disease. Most experts believe that they somehow play a critical role in blocking communication among nerve cells and disrupting processes the cells need to survive.

The destruction and death of nerve cells causes memory failure, personality changes, problems in carrying out daily activities and other symptoms of Alzheimer's disease.

### How Alzheimer's spreads in the brain



Plaques and tangles begin in brain areas involved in memory.



They gradually spread to other areas.



Eventually much of the brain is affected.

Illustrations:

Alzheimer's Disease  
Education and Referral Center,  
a service of the  
National Institute on Aging

## 5. causes and risk factors

While scientists know that Alzheimer's disease involves the failure of nerve cells, why this happens is still unknown. However, they have identified certain risk factors that increase the likelihood of developing Alzheimer's.

### Age

The greatest known risk factor for Alzheimer's disease is increasing age. Most individuals with the illness are 65 and older. One in eight people in this age group has Alzheimer's. Nearly half of people age 85 and older have Alzheimer's.

### Family history and genetics

Another risk factor is family history. Research has shown that those who have a parent, brother or sister with Alzheimer's are more likely to develop the disease than individuals who do not have a first-degree relative with Alzheimer's. The risk increases if more than one family member has the illness.

Scientists have identified three genes that *guarantee* individuals will develop Alzheimer's, but only a very small percentage of people with Alzheimer's (about 1 percent) carry these genes. The  $\epsilon 4$  form of the gene apolipoprotein E (APOE- $\epsilon 4$ ) is carried by about 25 percent of individuals and increases the risk of developing Alzheimer's, *but does not guarantee* that individuals will develop the disease. Experts believe the vast majority of cases of Alzheimer's are caused by a complex combination of genetic and nongenetic influences.

### Latinos and African-Americans at risk

Research shows that older Latinos are about one-and-a-half times as likely as older whites to have Alzheimer's and other dementias. Older African-Americans are about twice as likely to have Alzheimer's and other dementias as older whites. The reason for these differences is not well understood, but researchers believe that higher rates of vascular disease in these groups may also put them at greater risk for developing Alzheimer's. A growing body of evidence suggests that risk factors for vascular disease — including diabetes, high blood pressure and high cholesterol — may also be risk factors for Alzheimer's.

## Other risk factors

Age, family history and genetics are all risk factors we can't change. Research is beginning to reveal clues about other risk factors that we may be able to influence. There appears to be a strong link between serious head injury and future risk of Alzheimer's. It's important to protect your head by buckling your seat belt, wearing your helmet when participating in sports and fall-proofing your home.

One promising line of research suggests that strategies for overall healthy aging may help keep the brain healthy and may even offer some protection against Alzheimer's. These measures include eating a healthy diet, staying socially active, avoiding tobacco and excess alcohol, and exercising both body and mind.

Some of the strongest evidence links brain health to 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. Work with your doctor to monitor your heart health and treat any problems that arise.

Studies of donated brain tissue provide additional evidence for the heart-head connection. These studies suggest that plaques and tangles are more likely to cause Alzheimer's symptoms if strokes or damage to the brain's blood vessels are also present.

### Aluminum

During the 1960s and 1970s, aluminum emerged as a possible suspect in causing Alzheimer's disease. This suspicion led to concerns about everyday exposure to aluminum through sources such as cooking pots, foil, beverage cans, antacids and antiperspirants. Since then, studies have failed to confirm any role for aluminum in causing Alzheimer's. Almost all scientists today focus on other areas of research, and few experts believe that everyday sources of aluminum pose any threat.

## 6. how to find out if it's alzheimer's disease

People with memory loss or other possible Alzheimer's warning signs may find it hard to recognize they have a problem and may resist following up on their symptoms. Signs of dementia may be more obvious to family members or friends.

The first step in following up on symptoms is finding a doctor with whom a person feels comfortable. (The Alzheimer's Association can help find the right one.)

There is no single type of doctor that specializes in diagnosing and treating memory symptoms or Alzheimer's disease. Many people contact their regular primary care physician about their concerns. Primary care doctors often oversee the diagnostic process themselves.

In many cases, the doctor may refer the patient to a specialist such as a:

- Neurologist who specializes in diseases of the brain and nervous system
- Psychiatrist who specializes in disorders that affect mood or the way the mind works
- Psychologist with special training in testing memory and other mental functions

There is no single test that proves a person has Alzheimer's. The workup is designed to evaluate overall health and identify any conditions that could affect how well the mind is working.

Experts estimate that a skilled physician can diagnose Alzheimer's with more than 90 percent accuracy. Physicians can almost always determine that a person has dementia, but it may sometimes be difficult to determine the exact cause.



## Steps to diagnosis include:

### Understanding the problem

Be prepared for the doctor to ask:

- What kind of symptoms have been occurring
- When they began
- How often they happen
- If they have gotten worse

### Reviewing medical history

The doctor will interview the person being tested and others close to him or her to gather information about current and past mental and physical illnesses. It is helpful to bring a list of all the medications the person is taking. The doctor will also obtain a history of key medical conditions affecting other family members, especially whether they may have or had Alzheimer's disease or related disorders.

### Evaluating mood and mental status

Mental status testing evaluates memory, ability to solve simple problems and other thinking skills.

This testing gives an overall sense of whether a person:

- Is aware of symptoms
- Knows the date, time and where he or she is
- Can remember a short list of words, follow instructions and do simple calculations

The doctor may ask the person his or her address, what year it is or who is serving as president. The individual may also be asked to spell a word backward, draw a clock or copy a design. The doctor will also assess mood and sense of well-being to detect depression or other illnesses that can cause memory loss and confusion.

## Physical exam and diagnostic tests

A physician will:

- Evaluate diet and nutrition
- Check blood pressure, temperature and pulse
- Listen to the heart and lungs
- Perform other procedures to assess overall health

Blood and urine samples will be collected and other laboratory tests may be ordered. Information from these tests can help identify disorders such as anemia, infection, diabetes, kidney or liver disease, certain vitamin deficiencies, thyroid abnormalities, and problems with the heart, blood vessels or lungs. All of these conditions may cause confused thinking, trouble focusing attention, memory problems or other symptoms similar to dementia.

## Neurological exam

A doctor, sometimes a neurologist specializing in disorders of the brain and nervous system, will closely evaluate the person for problems that may signal brain disorders other than Alzheimer's.

The physician will also test:

- Reflexes
- Coordination
- Muscle tone and strength
- Eye movement
- Speech
- Sensation

The doctor is looking for signs of small or large strokes, Parkinson's disease, brain tumors, fluid accumulation on the brain and other illnesses that may impair memory or thinking.

The neurological exam may also include a brain imaging study. The most common types are magnetic resonance imaging (MRI) or computed tomography (CT). MRIs and CTs can reveal tumors, evidence of small or large strokes, damage from severe head trauma or a buildup of fluid. Researchers are studying other imaging techniques so they can better diagnose and track the progress of Alzheimer's. Medicare will cover a positron emission tomography (PET) scan as an aid in diagnosis in certain cases.

## 7. when the diagnosis is alzheimer's

Once testing is complete, the doctor will make an appointment to review results and share his or her conclusions. A diagnosis of Alzheimer's reflects a doctor's best judgment about the cause of a person's symptoms, based on the testing performed.

You may want to ask the doctor:

- *Why* the diagnosis is Alzheimer's
- *Where* the person may be in the course of the disease
- *What* to expect in the future

Find out if the doctor will manage care going forward and, if not, who will be the primary doctor. The doctor can then schedule the next appointment or provide a referral.

Alzheimer's disease is life-changing for both the diagnosed individual and those close to him or her. While there is currently no cure, treatments are available that may help relieve some symptoms. Research has shown that taking full advantage of available treatment, care and support options can make life better.

Consider:

- How to provide increasing levels of care as the disease progresses
- How the individual and family members will cope with changes in the person's ability to drive, cook and perform other daily activities
- How to ensure a safe environment

It is also important to begin making legal and financial plans. A timely diagnosis often allows the person with dementia to participate in this planning. The person can also decide who will make medical and financial decisions on his or her behalf in later stages of the disease

To learn more about planning for the future, contact the Alzheimer's Association or visit [alzheimersnavigator.org](http://alzheimersnavigator.org) to create a customized action plan of information, support, and community resources.

## 8. stages of the disease

Alzheimer's disease gets worse over time. Experts have developed “stages” to describe how a person's abilities change from normal function through advanced Alzheimer's.

It's important to keep in mind that stages are general guides, and symptoms vary greatly. Every person is unique, but there are some common patterns of the illness. Those with Alzheimer's live an average of four to eight years after diagnosis, but some live as long as 20 years.

This seven-stage framework is based on a system developed by Barry Reisberg, M.D., clinical director of the New York University School of Medicine's Silberstein Aging and Dementia Research Center.

### **Reliable support**

Your local Alzheimer's Association chapter can connect you with the resources you need to cope with the challenges of Alzheimer's. Many chapters also provide special programs tailored to their communities, including services for African-Americans, Asian-Americans, Latinos, rural residents and those who live alone.

Our 24/7 Helpline ([800.272.3900](tel:800.272.3900)) operates around the clock to provide information, referral and care consultation by master's-level professionals in 170 languages.



## **Stage 1: No impairment**

### **Normal function**

The person does not experience any memory problems. An interview with a medical professional does not show any evidence of symptoms.

## **Stage 2: Very mild decline**

### **May be normal age-related changes or the earliest signs of Alzheimer's**

The individual may feel that he or she is having memory lapses — forgetting familiar words or the location of everyday objects. But no symptoms can be detected during a medical exam or by friends, family or co-workers.

## **Stage 3: Mild cognitive decline**

### **Early-stage Alzheimer's may be diagnosed in some, but not all, individuals at this point**

Friends, family or co-workers begin to notice difficulties. During a detailed medical interview, doctors may be able to detect problems in memory or concentration. Common difficulties at this stage include:

- Noticeable problems coming up with the right word or name
- Trouble remembering names when introduced to new people
- Noticeably greater difficulty performing tasks in social or work settings
- Forgetting material that one has just read
- Losing or misplacing a valuable object
- Increasing trouble with planning or organizing

## **Stage 4: Moderate cognitive decline**

### **Mild or early-stage Alzheimer's**

At this point, a careful medical interview should be able to detect clear-cut problems in several areas:

- Forgetfulness of recent events
- Impaired ability to perform challenging mental arithmetic (e.g., counting backward from 100 by 7s)
- Greater difficulty performing complex tasks, such as planning dinner for guests, paying bills or managing finances
- Forgetfulness about one's own personal history
- Becoming moody or withdrawn, especially in socially or mentally challenging situations

## **Stage 5: Moderately severe cognitive decline**

### **Moderate or mid-stage Alzheimer's**

Gaps in memory and thinking are noticeable, and individuals begin to need help with day-to-day activities. At this stage, those with Alzheimer's may:

- Be unable to recall their own address or phone number or the high school or college they attended
- Become confused about where they are or what day it is
- Have trouble with less challenging mental arithmetic (e.g., counting backward from 40 by subtracting fours)
- Need help choosing proper clothing for the season or occasion
- Still remember significant details about themselves and their family
- Continue to eat or use the toilet unassisted

## **Stage 6: Severe cognitive decline**

### **Moderately severe or mid-stage Alzheimer's**

Memory continues to worsen, personality changes may take place and individuals need significant help with daily activities. The person may:

- Lose awareness of recent experiences as well as their surroundings
- Remember their own name but have difficulty with their personal history
- Distinguish familiar and unfamiliar faces but have trouble remembering the name of a spouse or caregiver
- Need help dressing properly and may, without supervision, make mistakes such as putting pajamas over daytime clothes or shoes on the wrong feet
- Experience major changes in sleep patterns — sleeping during the day and becoming restless at night
- Need help handling details of the toilet (e.g., flushing the toilet, wiping or disposing of tissue properly)
- Have increasingly frequent trouble controlling their bladder or bowels
- Experience major personality and behavioral changes, including suspiciousness and delusions (e.g., believing the caregiver is an impostor) or compulsive, repetitive behavior like hand-wringing or tissue shredding
- Tend to wander or become lost

## Wandering

Six out of 10 people with Alzheimer's disease will wander and become lost. If not found within 24 hours, up to half of those who wander risk serious injury or death.

Medic Alert<sup>®</sup> + Alzheimer's Association Safe Return<sup>®</sup> is a 24-hour emergency response service that provides assistance when a person with dementia becomes lost or has a medical emergency. Alzheimer's Association Comfort Zone<sup>®</sup> is a comprehensive Web-based location management system that allows families to monitor a person with Alzheimer's.

Visit [alz.org/safety](http://alz.org/safety) to learn more.

## Stage 7: Very severe cognitive decline

### Severe or late-stage Alzheimer's

In the final stage of this disease, individuals lose the ability to respond to the environment, to carry on a conversation and, eventually, to control movement. They may still say words or phrases.

At this stage, individuals need help with much of their daily personal care, including eating or using the toilet. They may also lose the ability to smile, to sit without support and to hold their heads up. Reflexes become abnormal. Muscles grow rigid. Swallowing is impaired.



## 9. treating the symptoms

Currently, there is no cure for Alzheimer's and no way to stop the underlying death of brain cells. But drugs and non-drug treatments may help with both cognitive and behavioral symptoms.

A comprehensive care plan for Alzheimer's disease:

- Considers appropriate treatment options
- Monitors treatment effectiveness as the disease progresses
- Changes course and explores alternatives as necessary
- Respects individual and family goals for treatment and tolerance for risk

### Cognitive symptoms

#### FDA-approved treatments

Two types of drugs are currently approved by the U.S. Food and Drug Administration (FDA) to treat cognitive symptoms of Alzheimer's disease.

The first type, cholinesterase (KOH-luh-NES-ter-ays) inhibitors, prevents the breakdown of acetylcholine (a-SEA-til-KOH-lean), a chemical messenger important for memory and learning. By keeping levels of acetylcholine high, these drugs support communication among nerve cells.

Three cholinesterase inhibitors are commonly prescribed:

- Donepezil (Aricept<sup>®</sup>), approved in 1996 to treat mild-to-moderate Alzheimer's, and in 2006 for the severe stage
- Rivastigmine (Exelon<sup>®</sup>), approved in 2000 for mild-to-moderate Alzheimer's
- Galantamine (Razadyne<sup>®</sup>), approved in 2001 for mild-to-moderate stages

The second type of drug works by regulating the activity of glutamate, a different messenger chemical involved in information processing:

- Memantine (Namenda<sup>®</sup>) is the only currently available drug in this class

The effectiveness of both types of treatments varies from person to person. While they may temporarily help symptoms, they do not slow or stop the brain changes that cause Alzheimer's to become more severe over time.



## Vitamin E

Doctors sometimes prescribe vitamin E for cognitive symptoms of Alzheimer's disease. One large federally funded study showed that vitamin E slightly delayed loss of ability to carry out daily activities and placement in residential care.

Scientists think that vitamin E may work because it is an antioxidant (an-tee-OX-uh-dent), a substance that may protect cells from certain kinds of chemical wear and tear.

No one should use vitamin E to treat Alzheimer's disease except under the supervision of a physician. The doses used in the federal study were relatively high, and vitamin E can negatively interact with other medications, including those prescribed to prevent blood from clotting.

## Key Terms

### Symptoms

**Cognitive:** Symptoms that affect memory, awareness, language, judgment and ability to plan, organize and carry out other thought processes.

**Behavioral:** A group of additional symptoms that occur to at least some degree in many individuals with Alzheimer's. In early stages, people may experience personality changes such as irritability, anxiety or depression. In later stages, individuals may develop sleep disturbances; wandering impulses; agitation (physical or verbal aggression, general emotional distress, restlessness, pacing, shredding paper or tissues, yelling); delusions (firmly held belief in things that are not real); or hallucinations (seeing, hearing or feeling things that are not there).

### Treatments

**FDA-approved:** Medication approved by the U.S. Food and Drug Administration (FDA) that specifically treats a symptom of Alzheimer's disease.

**Non-drug:** A strategy other than medication that helps relieve a symptom of Alzheimer's disease.

## Behavioral symptoms

Many find behavioral changes to be the most challenging and distressing effect of Alzheimer's disease. These include anxiety, agitation, aggression and sleep disturbances. They can have an enormous impact on care and quality of life for individuals living in both family situations and long-term residential care.

As with cognitive symptoms of Alzheimer's, the chief underlying cause of behavioral and psychiatric symptoms is the progressive damage to brain cells. Other possible causes of behavioral symptoms include:

### ■ Drug side effects

Side effects from prescription medications may be at work. Drug interactions may occur when taking multiple medications for several conditions.

### ■ Medical conditions

Symptoms of infection or illness, which may be treatable, can affect behavior. Pneumonia or urinary tract infections can bring discomfort. Untreated ear or sinus infections can cause dizziness and pain.

### ■ Environmental influences

Situations affecting behavior include moving to a new private residence or residential care facility; misperceived threats; or fear and fatigue from trying to make sense of a confusing world.

There are two types of treatments for behavioral symptoms: non-drug treatments and prescription medications. Non-drug treatments should be tried first.

## Non-drug treatments

Steps to developing non-drug treatments include:

- Identifying the symptom
- Understanding its cause
- Changing the caregiving environment to remove challenges or obstacles

Identifying what has triggered behavior can often help in selecting the best approach. Often the trigger is a change in the person's environment, such as:

- New caregivers
- Different living arrangements
- Travel
- Admission to a hospital

- Presence of houseguests
- Being asked to bathe or change clothes

Because people with Alzheimer's gradually lose the ability to communicate, it is important to regularly monitor their comfort and anticipate their needs.

## **Prescription medications**

Medications can be effective in managing some behavioral symptoms, but they must be used carefully and are most effective when combined with non-drug strategies. Medications should target specific symptoms so that response to treatment can be monitored. Prescribing any drug for a person with Alzheimer's is medically challenging. Use of drugs for behavioral and psychiatric symptoms should be closely supervised.

## **Behavior: Some Tips for Caregivers**

**Create a calm, safe environment that may be better suited for the person's abilities:**

- Eliminate clutter, noise, glare and excessive background noise
- Develop soothing rituals with regular daily routines, comforting objects, gentle music and a reassuring touch
- Provide opportunities for exercise and satisfying activities geared to the person's abilities
- Monitor personal comfort: ensure a comfortable temperature and check regularly for pain, hunger, thirst, constipation, full bladder, fatigue, infection and skin irritation
- Be sensitive to frustration about expressing wants and needs
- Rather than argue or disagree, redirect the person's attention
- Simplify tasks and routines
- Avoid open-ended questions; ask yes or no questions instead
- Allow enough rest between stimulating events, such as visits from friends or neighbors
- Use labels to cue or remind the person
- Equip doors and gates with safety locks
- Remove guns

# 10. hope for the future

The Alzheimer's Association is the largest nonprofit funding resource for Alzheimer's research. Since 1982, we have awarded over \$292 million to more than 2,000 research investigations worldwide.

When Alois Alzheimer first described the disease in 1906, a person in the United States lived an average of about 50 years. Few people reached the age of greatest risk. As a result, the disease was considered rare and attracted little scientific interest.

That attitude changed as life span increased and scientists began to realize how often Alzheimer's strikes people in their 70s and 80s. The Centers for Disease Control and Prevention recently estimated average life expectancy to be 78.5 years.

Today, Alzheimer's is at the forefront of biomedical research, with 90 percent of what we know discovered in the last 20 years. Some of the most remarkable progress has shed light on how Alzheimer's disease affects the brain. Better understanding of its impact may lead to better ways to treat it.

## **Clinical studies drive progress**

Although many ideas about Alzheimer's treatment and prevention begin in the laboratory, the final stage of testing involves clinical (human) studies. New treatments are evaluated in humans only if laboratory tests and animal studies show good results.

In early clinical studies, a treatment is tested for safety in a small group of volunteers. Later studies, involving thousands of participants, test how well the treatment works. Hundreds of researchers are currently exploring potential methods of treating and preventing Alzheimer's in dozens of studies around the globe.

Choosing to participate in a clinical trial is an important personal decision. Treatment studies typically last at least several months, and prevention research can run for years. Most treatment studies require the involvement

of a caregiver as well as the person with the disease. And joining a study is not a surefire way to get an experimental drug, as most studies randomly assign participants to receive either the drug or an inactive treatment, called a placebo. Still, many people find hope and comfort in participating. Others are motivated knowing that they are helping future patients by contributing to medical research.

Visit [alz.org/trialmatch](https://www.alz.org/trialmatch) to learn more about Alzheimer's Association TrialMatch<sup>®</sup>, a clinical studies matching service that connects individuals living with Alzheimer's, caregivers, healthy volunteers and physicians with current Alzheimer's-related clinical trials.

## **New directions in treatment and prevention**

One promising target is beta-amyloid (BAY-tuh AM-uh-loyd). This protein fragment builds up into the plaques considered one hallmark of the disease. Researchers have developed several ways to clear beta-amyloid from the brain or prevent it from forming. Experimental drugs that zero in on beta-amyloid are now being tested.

Many other new approaches to treatment are also under investigation worldwide. We don't yet know which of these strategies may work, but scientists say that, with the necessary funding, the outlook is good for developing treatments that slow or stop Alzheimer's.

While there is no known way to prevent Alzheimer's disease, research suggests that the steps people take to maintain brain health may also reduce the risk of Alzheimer's. Eating a low-fat diet rich in fruits and vegetables, exercising regularly, and staying mentally and socially active may all help protect the brain.

Some of the strongest evidence links brain health to heart health. This connection makes sense, because the brain is nourished by one of the body's richest networks of blood vessels, and the heart is responsible for pumping blood through these blood vessels to the brain. It's especially important for people to do everything they can to keep weight, blood pressure, cholesterol and blood sugar within recommended ranges to reduce the risk of heart disease, stroke and diabetes.

## 11. we can help

The Alzheimer's Association is the trusted resource for reliable information, education, referral and support to the millions of people affected by the disease, their families and caregivers, and healthcare professionals.

- Our nationwide network of more than 70 chapters is the core of our support lifeline.
- Our 24/7 Helpline, **800.272.3900**, provides information, referrals and care consultation in more than 170 languages and dialects.
- Our website, **alz.org**, provides comprehensive information about Alzheimer's disease and how the Association can help those affected.
- Our online Safety Center, **alz.org/safety**, features information, tips and resources to assist you with safety inside and outside of the home, wandering and getting lost, and driving and dementia.
- Our support groups, conducted at hundreds of locations nationwide, provide people with Alzheimer's and their families a confidential, open forum to share concerns and receive support.
- ALZConnected (**alzconnected.org**), powered by the Alzheimer's Association, is a social networking community that connects people with Alzheimer's, their caregivers and others affected by the disease.
- Alzheimer's Association Alzheimer's Navigator™ (**alzheimersnavigator.org**) is an online assessment program that creates customized action plans and works in conjunction with Alzheimer's Association Community Resource Finder (**communityresourcefinder.org**), an online search engine for locating community programs, services and resources.
- Educational workshops led by trained professionals on topics such as caregiving, brain health, Alzheimer's basics and living with dementia, as well as a number of free e-learning courses available at **elearning.alz.org**.
- The Alzheimer's Association Green-Field Library is the nation's largest resource center devoted to Alzheimer's disease and dementia.

## Alzheimer's Association Educational Materials

Whether you're an individual with Alzheimer's, a caregiver, health professional or someone who wants to learn more about the disease, the Alzheimer's Association can help. Visit [alz.org](http://alz.org) or call **800.272.3900** to request our consumer education materials that provide information about all aspects of Alzheimer's.

### Popular Titles Include:

#### For individuals with Alzheimer's

- *If You Have Alzheimer's Disease: What you should know, what you should do*
- *Younger-Onset Alzheimer's: I'm too young to have Alzheimer's disease*

#### For Spanish-speaking audiences

- *The Latino Family and Alzheimer's Disease: A bilingual telenovela*
- *If You Have Alzheimer's Disease: What you should know, what you should do*

#### For African-American audiences

- *Staying Strong: Stress relief for the African-American caregiver*
- *Is It Alzheimer's or Just Signs of Aging? 10 signs every African-American should know*

#### For caregivers

- *Behaviors*
- *Caregiver Stress*
- *Communication*
- *Legal Plans*
- *Activities at Home*
- *Money Matters*
- *End-of-Life Decisions*



The Alzheimer's Association is the world's leading voluntary health organization in Alzheimer's care, support and research. Our mission is to eliminate Alzheimer's disease through the advancement of research; to provide and enhance care and support for all affected; and to reduce the risk of dementia through the promotion of brain health.

**Our vision is a world without Alzheimer's®.**

For information and support,  
contact the Alzheimer's Association:

**800.272.3900**  
**alz.org**

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