alzheimer's association®

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 as part of normal aging, especially for someone who seems physically healthy. Any concerns about memory loss should be discussed with a doctor.

Basics of Alzheimer's Disease **is a guide for anyone who would like to learn about the disease and other dementias.**

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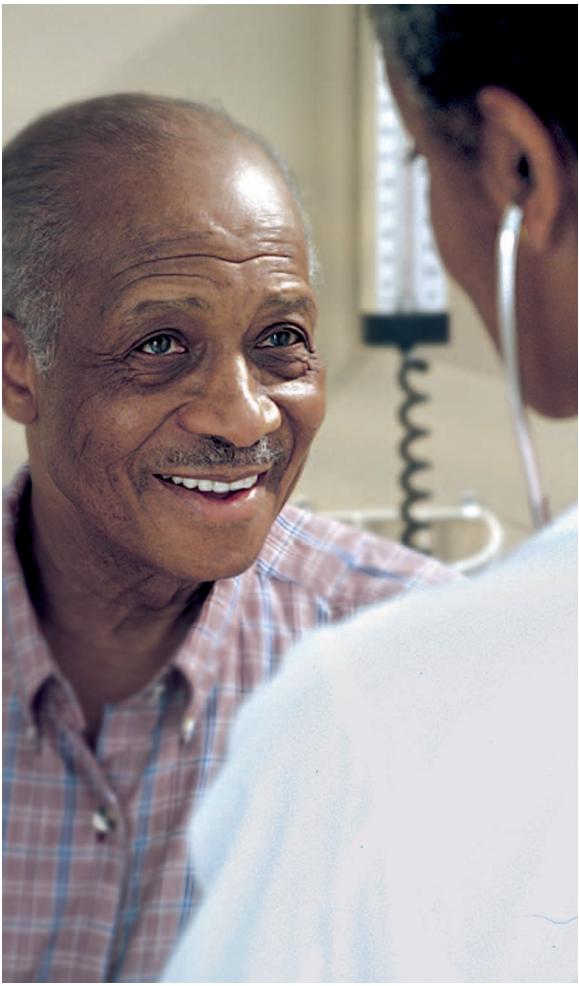
1. when memory loss is a warning sign

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



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 other dementias.

Anyone experiencing significant memory problems should see a doctor as soon as possible. It could be Alzheimer's disease or another condition.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	**Typical age-related changes**
Poor judgment and decision making.	Making a bad decision once in a while.
Inability to manage a budget.	Missing a monthly payment.
Losing track of the date or the season.	Forgetting which day it is and remembering later.
Difficulty having a conversation.	Sometimes forgetting which word to use.
Misplacing things and being unable to retrace steps to find them.	Losing things from time to time.

2. 10 warning signs of alzheimer's disease

It may be hard to know the difference between age-related changes and the first signs of Alzheimer's disease. Some people recognize changes in themselves before anyone else notices. Other times, friends and family are the first to observe 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 and other dementias. 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; repeatedly asking for the same information; and increasingly needing to rely on memory aids (e.g., reminder notes) or family members for things people with Alzheimer's 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.

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KNOW the 10 SIGNS

EARLY DETECTION MATTERS

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 can cause problems with driving.

What's a typical age-related change?

Vision changes related to cataracts.

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 retrace 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, but able to retrace 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.

See a doctor

If you experience any of the 10 warning signs, please see a doctor. The ability to diagnose Alzheimer's disease and other 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.

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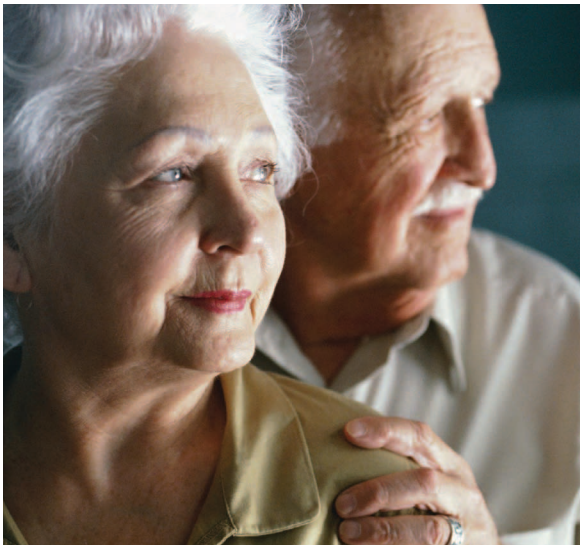


3. alzheimer's disease and other types of dementia

Alzheimer's disease

More than 5 million Americans have Alzheimer's disease, which is the most common form of dementia accounting for 60 to 80 percent of all cases. That includes 11 percent of those age 65 and older and one-third of those 85 and older. The disease also. The disease also impacts more than 15 million family members, friends and caregivers.

Dementia

Dementia is a general term for the loss of memory and other intellectual abilities serious enough to interfere with daily life.

Other types of dementia

Vascular dementia is a decline in thinking skills caused by conditions that block or reduce blood flow to the brain, depriving brain cells of vital oxygen and nutrients. These changes in thinking skills sometimes occur suddenly following strokes that block major brain blood vessels. It is widely considered the second most common cause of dementia after Alzheimer's disease, accounting for 20 to 30 percent of cases.

Mixed dementia is a condition in which abnormalities characteristic of more than one type of dementia occur simultaneously. Symptoms may vary, depending on the types of brain changes involved and the brain regions affected, and may be similar to or even indistinguishable from those of Alzheimer's or another dementia.

Parkinson's disease dementia is an impairment in thinking and reasoning that eventually affects many people with Parkinson's disease. As brain changes gradually spread, they often begin to affect mental functions, including memory and the ability to pay attention, make sound judgments and plan the steps needed to complete a task.

Dementia with Lewy bodies is a type of progressive dementia that leads to a decline in thinking, reasoning and independent function due to abnormal microscopic deposits that damage brain cells. It is estimated to be the third most common cause of dementia, accounting for 10 to 25 percent of cases.

Traumatic brain injury results from an impact to the head that disrupts normal brain function. A traumatic brain injury may affect a person's cognitive abilities, including learning and thinking skills.

Huntington's disease is a progressive brain disorder caused by a defective gene. It causes changes in the central area of the brain, which affect movement, mood and thinking skills.

Creutzfeldt-Jakob disease is the most common human form of a group of rare, fatal brain disorders known as prion diseases. Misfolded prion protein destroys brain cells, resulting in damage that leads to rapid decline in thinking and reasoning as well as involuntary muscle movements, confusion, difficulty walking and mood changes.

Frontotemporal dementia (FTD) is a group of disorders caused by progressive cell degeneration in the brain's frontal lobes (the areas behind the forehead) or its temporal lobes (the regions behind the ears). FTD, once considered rare, is now thought to account for up to 10 to 15 percent of all dementia cases.

Normal pressure hydrocephalus is a brain disorder in which excess cerebrospinal fluid accumulates in the brain's ventricle, causing thinking and reasoning problems, difficulty walking and loss of bladder control.

Mild cognitive impairment (MCI) causes a slight but noticeable and measurable decline in cognitive abilities, including memory and thinking skills. A person with MCI is at an increased risk of developing Alzheimer's or another dementia.

Down syndrome is a condition in which a person is born with extra genetic material from chromosome 21, one of the 23 human chromosomes. As individuals with Down syndrome age, they have a greatly increased risk of developing a type of dementia that's either the same as or very similar to Alzheimer's disease.

Korsakoff syndrome is a chronic memory disorder caused by severe deficiency of thiamine (vitamin B-1). It is most commonly caused by alcohol misuse, but certain other conditions also can cause the syndrome.

Posterior cortical atrophy (PCA) is the gradual and progressive degeneration of the outer layer of the brain (the cortex) located in the back of the head (posterior). It is not known whether PCA is a unique disease or a possible variant form of Alzheimer's disease.

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

Take our Inside the Brain: An Interactive Tour at alz.org/brain to learn how Alzheimer's affects the brain and its functions.

The role of plaques and tangles

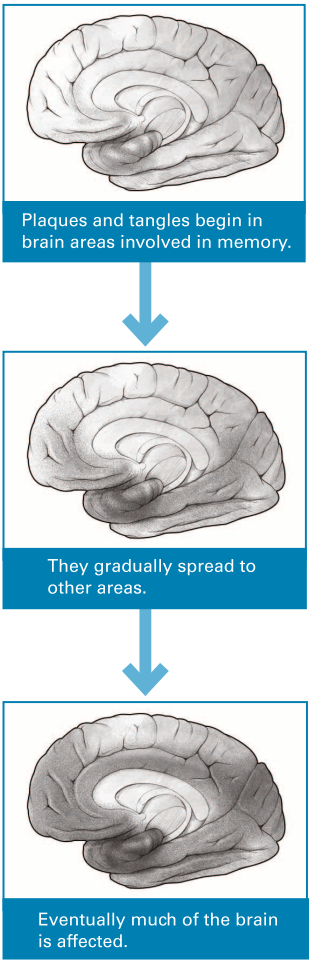
The brains of individuals with Alzheimer's have an abundance of plaques and tangles. Plaques are deposits of a protein fragment called beta-amyloid that build up in the spaces between nerve cells. Tangles are twisted fibers of another protein called tau that build up inside cells.

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 disable or block communication among nerve cells and disrupt 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



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 nine people in this age group has Alzheimer's. Nearly one-third of people age 85 and older have Alzheimer's.

Family history

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. The risk increases if more than one family member has the illness.

Familial Alzheimer's and genetics

Two categories of genes influence whether a person develops a disease: risk genes and deterministic genes. Risk genes increase the likelihood of developing a disease but do not guarantee it will happen. Deterministic genes directly cause a disease, guaranteeing that anyone who inherits one will develop a disorder.

Researchers have found several genes that increase the risk of Alzheimer's. APOE-e4 is the first risk gene identified and remains the one with strongest impact. Other common forms of the APOE gene are APOE-e2 and APOE-e3. Everyone inherits a copy of some form of APOE from each parent. Those who inherit one copy of APOE-e4 have an increased risk of developing Alzheimer's; those who inherit two copies have an even higher risk but not a certainty.

Rare deterministic genes cause Alzheimer's in a few hundred extended families worldwide. These genes, estimated to account for less than 5 percent of cases, cause familial younger-onset Alzheimer's in which symptoms usually develop between a person's early 40s and mid-50s.

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.

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 a helmet when participating in sports and proofing your home to avoid falls.

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

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

Not everyone experiencing memory loss or other possible Alzheimer's warning signs recognizes that they have a problem. Signs of dementia are sometimes 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. 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 some cases, the doctor may refer the individual 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. When other conditions are ruled out, the doctor can then determine if it is Alzheimer's or another dementia.

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 occurred.
- 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 other dementias.

Evaluating mood and mental status

Mental status testing evaluates memory, the 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.

The physician will collect blood and urine samples and may order other laboratory tests. 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 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.

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 improve quality of life.

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.

Create an action plan

To learn more about planning for the future, visit Alzheimer's Navigator® (**alz.org/alzheimersnavigator**). Create a customized action plan that provides information, support, community resources and more.

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

The Alzheimer's Association can connect you with the resources you need to cope with the challenges of Alzheimer's. Our chapters offer educational workshops, support groups and care consultation in communities nationwide (**alz.org/findus**).

Our 24/7 Helpline (**800.272.3900**) operates around the clock to provide information and care consultation by specialists and master's-level professionals in more than 170 languages and dialects.

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 4s).
- Need help choosing proper clothing for the season.
- 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.
- 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.

› Be at risk for wandering or becoming lost.

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 and using the toilet. They may also lose the ability to smile, to sit without support and hold their heads up. Reflexes become abnormal. Muscles grow rigid. Swallowing is impaired.

Wandering

Six out of 10 people with Alzheimer's disease will wander and become lost. People can wander or become confused about their location at any stage of the disease. If not found within 24 hours, up to half of those who get lost risk serious injury or death.

The Alzheimer's Association offers services to help ensure safety. Medic Alert® + Alzheimer's Association Safe Return® is a 24-hour emergency response service that provides assistance when a person with dementia becomes lost or has a medical emergency. Another great service is Alzheimer's Association Comfort Zone®, a comprehensive Web-based location management system that allows families to monitor a person with Alzheimer's.

Visit **alz.org/safety** to learn more.

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.

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 treatment other than medication that helps relieve symptoms of Alzheimer's disease.

Cognitive symptoms

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®), approved in 1996 to treat mild-to-moderate Alzheimer's and in 2006 for the severe stage.
- Rivastigmine (Exelon®), approved in 2000 for mild-to-moderate Alzheimer's.
- Galantamine (Razadyne®), 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®), approved in 2003 for moderate-to-severe stages, 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.

Behavioral symptoms

Many find behavioral changes like anxiety, agitation, aggression and sleep disturbances to be the most challenging and distressing effect of Alzheimer's disease. These changes can greatly impact the 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

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 treatments. 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.

Some medications, called atypical antipsychotics, are associated with an increased risk of serious side effects. The benefits and risks of these medications should be carefully weighed when deciding whether they should be used.

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 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.
- Ask yes-or-no rather than open-ended questions.
- 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 from the home.

10. hope for the future

The Alzheimer's Association is the world's largest nonprofit funder of Alzheimer's research. Since 1982, we have awarded over $315 million to more than 2,200 research investigations worldwide.

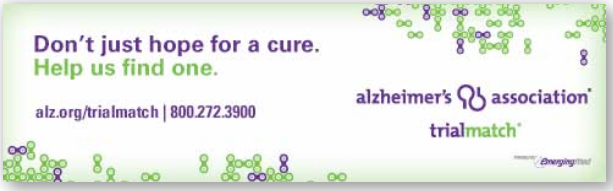
When Alois Alzheimer first described the disease in 1906, a person in the United States lived an average of about 50 years. Few people reached the age of greatest risk. As a result, the disease was considered rare and attracted little scientific interest. That attitude changed as life span increased 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 an average person's life expectancy to be 78.7 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 affects the brain. Better understanding of its impact may lead to better treatments.

Clinical studies drive progress

Scientists are constantly working to advance research. But without clinical research and the help of human volunteers, we cannot treat, prevent or cure Alzheimer's. Clinical studies, also known as clinical trials, test new interventions or drugs to prevent, detect or treat disease for safety and effectiveness. A clinical study is any type of clinical research involving people. Clinical studies can also look at other aspects of care, such as improving quality of life. Every clinical trial or study contributes valuable knowledge, regardless if favorable results are achieved.

Visit **alz.org/trialmatch** to learn more about Alzheimer's Association TrialMatch®, a clinical studies matching service that connects individuals living with Alzheimer's, caregivers, healthy volunteers and physicians with current Alzheimer's-related clinical studies.



New directions in treatment and prevention

One promising target is beta-amyloid. 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 clumping together into plaques. 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, emerging 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.

24/7 Helpline

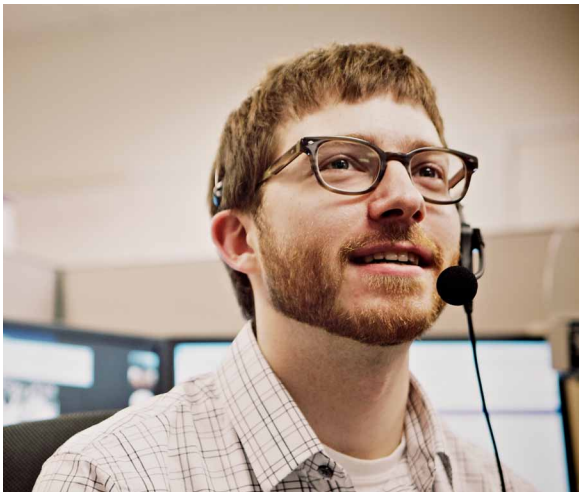
The Alzheimer's Association 24/7 Helpline (**800.272.3900**) provides free, reliable information and support to all those who need assistance — people with dementia, caregivers, health care professionals and the public.

Our 24/7 Helpline features:

- Confidential care consultation provided by master's-level clinicians who can help with decision-making support, crisis assistance and education on issues families face every day.
- Help in a caller's preferred language through our translation service, which accomodates more than 170 languages and dialects.
- Referrals to local community programs, services and ongoing support.

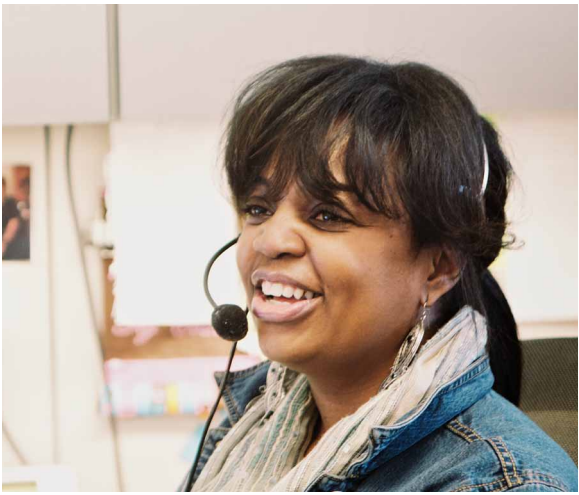
Our highly trained and knowledgeable staff can provide information in regard to:

- Memory loss, dementia and Alzheimer's.
- Medications and other treatment options.
- General information about aging and brain health.
- Skills for providing quality care and finding the best care from professionals.
- Legal, financial and living-arrangement decisions.



We're here for you all day, every day.

800.272.3900



alz.org®

Access reliable information and resources, such as:

- Alzheimer's Navigator® — Assess your needs and create customized action plans.
- Community Resource Finder — Find local resources.
- ALZConnected® — Connect with other caregivers or persons with dementia.
- Alzheimer's and Dementia Caregiver Center — Get information for all stages of the disease.
- Safety Center — Access information and tools.

alz.org/elearning

Free online workshops, including:

- *The Basics: Memory Loss, Dementia and Alzheimer's Disease*

alz.org/findus

Chapters in communities nationwide provide support groups, education programs and more.

800.272.3900

24/7 Helpline — Available all day, every day.

alzheimer's association®

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®.

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