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What Is Dementia? Symptoms, Types, and Diagnosis

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Dementia is the loss of cognitive functioning — thinking, remembering, and reasoning — to such an extent that it interferes with a person's daily life and activities. Some people with dementia cannot control their emotions, and their personalities may change. Dementia ranges in severity from the mildest stage, when it is just beginning to affect a person's functioning, to the most severe stage, when the person must depend completely on others for basic activities of daily living, such as feeding oneself.

Dementia affects millions of people and is more common as people grow older (about one-third of all people age 85 or older may have some form of dementia) but it is **not** a normal part of aging. Many people live into their 90s and beyond without any signs of dementia.

There are several different forms of dementia, including Alzheimer’s disease, which is the most common.

What are the signs and symptoms of dementia?

Signs and symptoms of dementia result when once-healthy neurons (nerve cells) in the brain stop working, lose connections with other brain cells, and die. While everyone loses some neurons as they age, people with dementia experience far greater loss.

The signs and symptoms can vary depending on the type and may include:

- Experiencing memory loss, poor judgment, and confusion
- Difficulty speaking, understanding and expressing thoughts, or reading and writing
- Wandering and getting lost in a familiar neighborhood
- Trouble handling money responsibly and paying bills
- Repeating questions
- Using unusual words to refer to familiar objects
- Taking longer to complete normal daily tasks
- Losing interest in normal daily activities or events
- Hallucinating or experiencing delusions or paranoia
- Acting impulsively
- Not caring about other people’s feelings
- Losing balance and problems with movement

People with intellectual and developmental disabilities can also develop dementia as they age, and in these cases, recognizing their symptoms can be particularly difficult. It's important to consider a person's current abilities and to monitor for changes over time that could signal dementia.

What causes dementia?

Dementia is the result of changes in certain brain regions that cause neurons (nerve cells) and their connections to stop working properly. Researchers have connected changes in the brain to certain forms of dementia and are investigating why these changes happen in some people but not others. For a small number of people, rare genetic variants that cause dementia have been identified.

Although we don't yet know for certain what, if anything, can prevent dementia, in general, leading a healthy lifestyle may help reduce risk factors.

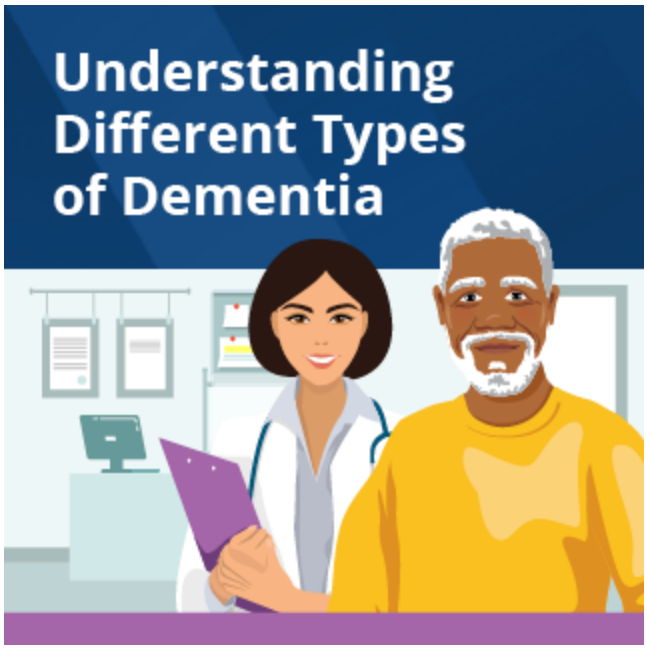
Clinical trials on dementia

Volunteers are needed for clinical trials that are exploring how to reduce risk of developing dementia. By joining one of these studies, you may learn more about dementia risk factors and contribute useful information to help yourself and others reduce their risk of dementia.

Find clinical trials near you

What are the different types of dementia?

Various neurodegenerative disorders and factors contribute to the development of dementia through a progressive and irreversible loss of neurons and brain functioning. Currently, there is no cure for any type of dementia.



Types of dementia include:

- Alzheimer's disease, the most common dementia diagnosis among older adults. It is caused by changes in the brain, including abnormal buildups of proteins known as amyloid plaques and tau tangles.
- Frontotemporal dementia, a rare form of dementia that tends to occur in people younger than 60. It is

associated with abnormal amounts or forms of the proteins tau and TDP-43.
- Lewy body dementia, a form of dementia caused by abnormal deposits of the protein alpha-synuclein, called Lewy bodies.
- Vascular dementia, a form of dementia caused by conditions that damage blood vessels in the brain or interrupt the flow of blood and oxygen to the brain.
- Mixed dementia, a combination of two or more types of dementia. For example, through autopsy studies involving older adults who had dementia, researchers have identified that many people had a combination of brain changes associated with different forms of dementia.

Share this infographic and help spread the word about understanding different types of dementia.

Scientists are investigating how the underlying disease processes in different forms of dementia start and influence each other. They also continue to explore the variety of disorders and disease processes that contribute to dementia. For example, based on autopsy studies, researchers recently characterized another form of dementia known as LATE. Further knowledge gains in the underlying causes of dementia will help researchers better understand these conditions and develop more personalized prevention, treatment, and care strategies.

Learn more about how researchers are using neuropathology to address questions and complexities of dementia diseases in *Inside the Brain: The Role of Neuropathology in Alzheimer's Disease Research*.

What is LATE?

Researchers who investigate what's happening inside the brain after death recently helped characterize a new form of dementia: limbic-predominant age-related TDP-43 encephalopathy (LATE). LATE causes symptoms similar to Alzheimer's, including problems with thinking, remembering, and reasoning, but has different underlying causes involving abnormal clusters of a protein called TDP-43. This protein is also involved in frontotemporal dementia, but LATE exhibits a different pattern of brain changes and tends to affect people over the age of 80. For example, a team of researchers analyzed the brains of 6,196 people with an average age at death of 88 years and found that almost 40% of them may have had LATE.

> Currently, there is no way to diagnose LATE in living people. Researchers are working to further explore the causes of and risk factors for LATE and to identify pathways that could help develop methods for doctors to diagnose LATE.
>
> To learn more about LATE, visit ***What Is Limbic-Predominant Age-Related TDP-43 Encephalopathy (LATE)?***

Other conditions that cause dementia or dementia-like symptoms include:

- Normal pressure hydrocephalus, an abnormal buildup of cerebrospinal fluid in the brain
- Creutzfeldt-Jakob disease, a rare brain disorder
- Huntington's disease, an inherited, progressive brain disease
- Chronic traumatic encephalopathy, caused by repeated traumatic brain injury
- HIV-associated dementia, a rare disease that occurs when the HIV virus spreads to the brain
- Heavy alcohol use over a long period of time
- Head injury, such as a concussion from a fall or accident
- Emotional problems, such as stress, anxiety, and depression
- Delirium, a sudden state of confusion and disorientation

In addition, medical conditions such as tumors, vitamin deficiencies, medication side effects, or problems with the thyroid, kidney, or liver can also cause serious memory problems that resemble dementia. Some causes of dementia symptoms can be halted or even reversed with treatment. For example, normal pressure hydrocephalus often resolves with treatment.

The similarity in symptoms of various dementias can make it difficult to get an accurate diagnosis. But a proper diagnosis is important to get appropriate treatment.

How is dementia diagnosed?

To diagnose dementia, doctors first assess whether a person has an underlying, potentially treatable, condition that may relate to cognitive difficulties. A physical exam to measure blood pressure and other vital signs, as well as laboratory tests of blood and other fluids to check levels of various chemicals, hormones, and vitamins, can help uncover or rule out possible causes of symptoms.

A review of a person's medical and family history can provide important clues about risk for dementia. Typical questions might include asking about whether dementia runs in the family, how and when symptoms began, changes in behavior and personality, and if the person is taking certain medications that might cause or worsen symptoms.

The following procedures also may be used to diagnose dementia:

- **Cognitive and neurological tests.** Used to evaluate thinking and physical functioning, these tests include assessments of memory, problem solving, language skills, and math skills, as well as balance, sensory

response, and reflexes.

- **Brain scans.** These tests can identify strokes, tumors, and other problems that can cause dementia. Scans also identify changes in the brain's structure and function. The most common scans are:
  - Computed tomography (CT), which uses X-rays to produce images of the brain and other organs
  - Magnetic resonance imaging (MRI), which uses magnetic fields and radio waves to produce detailed images of body structures, including tissues, organs, bones, and nerves
  - Positron emission tomography (PET), which uses radiation to provide pictures of brain activity — such as energy use — or specific molecules in different brain regions.
- **Psychiatric evaluation.** If someone is experiencing behavioral or mood changes, a psychiatric evaluation may be recommended to help determine if depression or another mental health condition is causing or contributing to a person's symptoms.
- **Genetic tests.** Some forms of dementia are caused by a person's genes. In these rare cases, a genetic test ordered by a doctor can help people know if they have the altered genes. It is important to talk with a genetic counselor before and after getting tested, along with family members and the doctor. There are also genetic tests that look for genetic variations that affect someone's risk of developing dementia, but these tests cannot be used to diagnose dementia.
- **Cerebrospinal fluid (CSF) tests.** CSF is a clear fluid that surrounds the brain and the spinal cord, providing protection, insulation, and nutrients. Doctors collect CSF by performing a lumbar puncture, also called a spinal tap. Measuring the levels of proteins or other substances in CSF may be used to help diagnose Alzheimer's or other types of dementia.
- **Blood tests.** It is now possible for many doctors, dependent on state-specific availability reflecting U.S. Food and Drug Administration guidelines, to order a blood test to measure levels of beta-amyloid, a protein that accumulates abnormally in people with Alzheimer's. Several other blood tests are in development. At present, blood test results alone should not be used to diagnose dementia, but may be taken into consideration along with other tests. However, the availability of these diagnostic tests is still limited.

Some of the tests and procedures used to diagnose dementia may not be covered by health insurance. Check with your insurance provider and talk with your health care team to determine what options may work best for you.

Early detection of symptoms is important as some causes can be successfully treated. However, in many cases, the cause of dementia is unknown and cannot be effectively treated. Still, obtaining an early diagnosis can help with managing the condition and planning ahead. In the early stages of dementia, it may be possible for people to

continue with their everyday activities. As the disease progresses, people will need to adopt new strategies to help adjust.

Planning ahead may also include deciding what happens if and when the disease becomes more severe. Sometimes, a person with dementia will volunteer to donate their brain after they have died. Brain donation helps researchers study brain disorders such as Alzheimer's disease and related dementias. By studying the brains of people who have died, researchers have already learned a great deal about how types of dementia affect the brain and how we might better treat and prevent them. But much more remains to be understood. When donating as part of a research study or to the NIH NeuroBioBank, there is no cost to the family for the donation and an autopsy report. Learn more about brain donation.

Who can diagnose dementia?

Visiting a primary care doctor is often the first step for people who are experiencing changes in thinking, movement, or behavior. However, neurologists — doctors who specialize in disorders of the brain and nervous system — are often consulted to diagnose dementia. Geriatric psychiatrists, neuropsychologists, and geriatricians may also be able to diagnose dementia. Your primary care doctor can help you find a specialist.

If a specialist cannot be found in your community, contact the nearest medical school neurology department for a referral. A medical school hospital also may have a dementia clinic that provides expert evaluation. You can also visit the Alzheimer's Disease Research Centers directory to see if there is an NIA-funded center near you. Researchers at these centers can help with obtaining a diagnosis and medical management of conditions.

You may be interested in

- Learning ways to live alone with Early-Stage Dementia
- Checking out this video on dementia
- Sharing an infographic about age-related forgetfulness and dementia

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The NIA ADEAR Center offers information and free print publications about Alzheimer's and related dementias for families, caregivers, and health professionals. ADEAR Center staff answer telephone, email, and written requests and make referrals to local and national resources.

Alzheimers.gov

www.alzheimers.gov

Explore the Alzheimers.gov website for information and resources on Alzheimer's and related dementias from across the federal government.

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