

Share:    

Parkinson's Disease: Causes, Symptoms, and Treatments

[Español](#)

Parkinson's disease is a brain disorder that causes unintended or uncontrollable movements, such as shaking, stiffness, and difficulty with balance and coordination.

Symptoms usually begin gradually and worsen over time. As the disease progresses, people may have difficulty walking and talking. They may also have mental and behavioral changes, sleep problems, depression, memory difficulties, and fatigue.

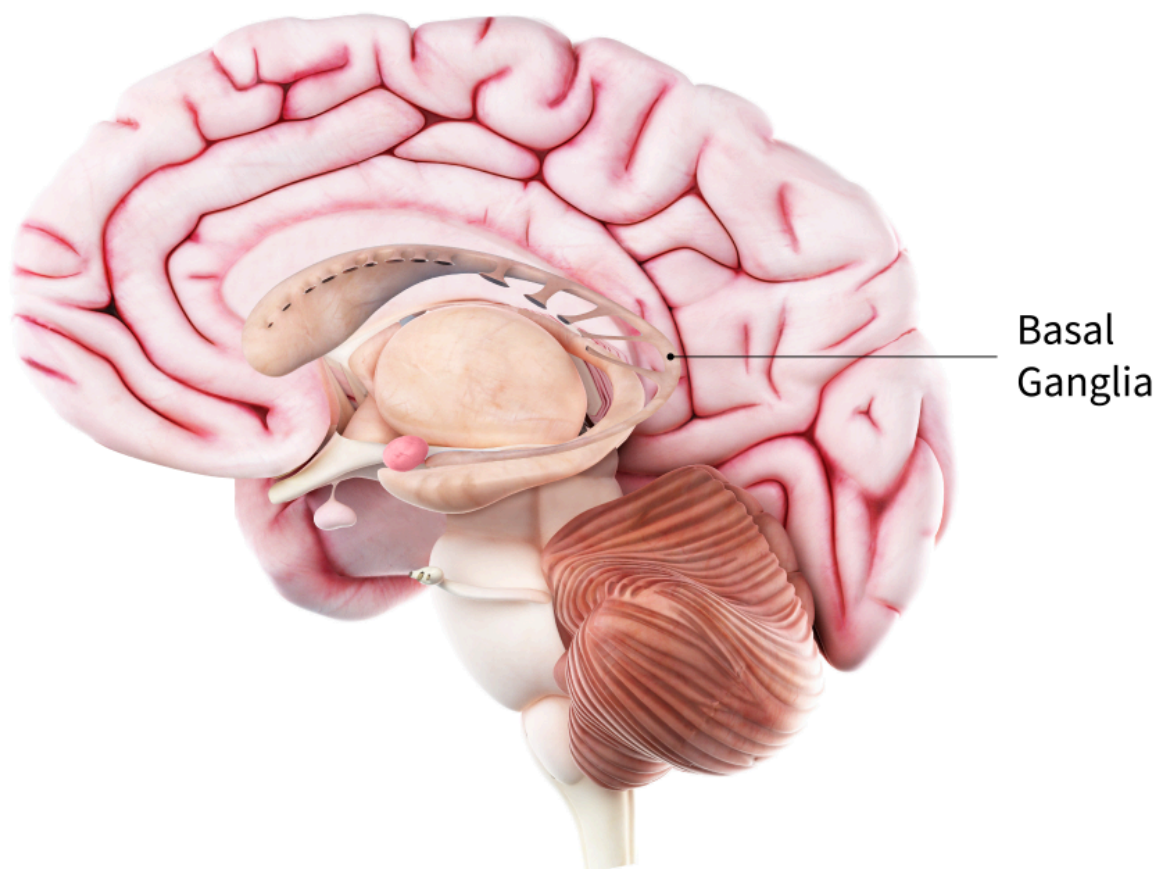
While virtually anyone could be at risk for developing Parkinson's, some research studies suggest this disease

affects more men than women. It's unclear why, but studies are underway to understand factors that may increase a person's risk. One clear risk is age: Although most people with Parkinson's first develop the disease after age 60, about 5% to 10% experience onset before the age of 50. Early-onset forms of Parkinson's are often, but not always, inherited, and some forms have been linked to specific alterations in genes.



What causes Parkinson's disease?

The most prominent signs and symptoms of Parkinson's disease occur when nerve cells in the basal ganglia, an area of the brain that controls movement, become impaired and/or die. Normally, these nerve cells, or neurons, produce an important brain chemical known as dopamine. When the neurons die or become impaired, they produce less dopamine, which causes the movement problems associated with the disease. Scientists still do not know what causes the neurons to die.



People with Parkinson's disease also lose the nerve endings that produce norepinephrine, the main chemical messenger of the sympathetic nervous system, which controls many functions of the body, such as heart rate and blood pressure. The loss of norepinephrine might help explain some of the non-movement features of Parkinson's, such as [fatigue](#), irregular blood pressure, decreased movement of food through the digestive tract, and sudden drop in blood pressure when a person stands up from a sitting or lying position.

Many brain cells of people with Parkinson's disease contain Lewy bodies, unusual clumps of the protein alpha-synuclein. Scientists are trying to better understand the normal and abnormal functions of alpha-synuclein and its relationship to genetic variants that impact Parkinson's and [Lewy body dementia](#).

Some cases of Parkinson's disease appear to be [hereditary](#), and a few cases can be traced to [specific genetic variants](#). While genetics is thought to play a role in Parkinson's, in most cases the disease does not seem to run in families. Many researchers now believe that Parkinson's results from a combination of genetic and environmental factors, such as exposure to toxins.

Symptoms of Parkinson's disease

Parkinson's has four main symptoms:

- Tremor in hands, arms, legs, jaw, or head

- Muscle stiffness, where muscle remains contracted for a long time
- Slowness of movement
- Impaired balance and coordination, sometimes leading to falls

Other symptoms may include:

- [Depression](#) and other emotional changes
- Difficulty swallowing, chewing, and speaking
- [Urinary problems](#) or [constipation](#)
- Skin problems

The symptoms of Parkinson's and the rate of progression differ among individuals. Early symptoms of this disease are subtle and occur gradually. For example, people may feel mild tremors or have difficulty getting out of a chair. They may notice that they speak too softly, or that their handwriting is slow and looks cramped or small. Friends or family members may be the first to notice changes in someone with early Parkinson's. They may see that the person's face lacks expression and animation, or that the person does not move an arm or leg normally.

People with Parkinson's disease often develop a parkinsonian gait that includes a tendency to lean forward; take small, quick steps; and reduce swinging their arms. They also may have trouble initiating or continuing movement.

Symptoms often begin on one side of the body or even in one limb on one side of the body. As the disease progresses, it eventually affects both sides. However, the symptoms may still be more severe on one side than on the other.

Many people with Parkinson's disease note that prior to experiencing stiffness and tremor, they had sleep problems, constipation, loss of [smell](#), and restless legs. While some of these symptoms may also occur with normal aging, talk with your doctor if these symptoms worsen or begin to interfere with daily living.

Changes in cognition and Parkinson's disease

Some people with Parkinson's may experience changes in their cognitive function, including problems with memory, attention, and the ability to plan and accomplish tasks. Stress, depression, and some medications may also contribute to these changes in cognition.

Over time, as the disease progresses, some people may develop dementia and be diagnosed with Parkinson's dementia, a type of [Lewy body dementia](#). People with Parkinson's dementia may have severe memory and thinking problems that affect daily living.

Talk with your doctor if you or a loved one is diagnosed with Parkinson's disease and is experiencing problems with thinking or memory.

Diagnosis of Parkinson's disease

There are currently no blood or laboratory tests to diagnose non-genetic cases of Parkinson's. Doctors usually diagnose the disease by taking a person's medical history and performing a neurological examination. If symptoms improve after starting to take medication, it's another indicator that the person has Parkinson's.

A number of disorders can cause symptoms similar to those of Parkinson's disease. People with Parkinson's-like symptoms that result from other causes, such as multiple system atrophy and dementia with Lewy bodies, are sometimes said to have parkinsonism. While these disorders initially may be misdiagnosed as Parkinson's, certain medical tests, as well as response to drug treatment, may help to better evaluate the cause. Many other diseases have similar features but require different treatments, so it is important to get an accurate diagnosis as soon as possible.

Treatments for Parkinson's disease

Although there is no cure for Parkinson's disease, medicines, surgical treatment, and other therapies can often relieve some symptoms.

Medicines for Parkinson's disease

Medicines can help treat the symptoms of Parkinson's by:

- Increasing the level of dopamine in the brain
- Having an effect on other brain chemicals, such as neurotransmitters, which transfer information between brain cells
- Helping control non-movement symptoms

The main therapy for Parkinson's is levodopa. Nerve cells use levodopa to make dopamine to replenish the brain's dwindling supply. Usually, people take levodopa along with another medication called carbidopa. Carbidopa prevents or reduces some of the side effects of levodopa therapy — such as nausea, vomiting, low blood pressure, and restlessness — and reduces the amount of levodopa needed to improve symptoms.

People living with Parkinson's disease should never stop taking levodopa without telling their doctor. Suddenly stopping the drug may have serious side effects, like being unable to move or having difficulty breathing.

The doctor may prescribe other medicines to treat Parkinson's symptoms, including:

- Dopamine agonists to stimulate the production of dopamine in the brain
- Enzyme inhibitors (e.g., MAO-B inhibitors, COMT inhibitors) to increase the amount of dopamine by slowing down the enzymes that break down dopamine in the brain
- Amantadine to help reduce involuntary movements
- Anticholinergic drugs to reduce tremors and muscle rigidity

Deep brain stimulation

For people with Parkinson's disease who do not respond well to medications, the doctor may recommend deep brain stimulation. During a surgical procedure, a doctor implants electrodes into part of the brain and connects them to a small electrical device implanted in the chest. The device and electrodes painlessly stimulate specific areas in the brain that control movement in a way that may help stop many of the movement-related symptoms of Parkinson's, such as tremor, slowness of movement, and rigidity.

Other therapies

Other therapies that may help manage Parkinson's symptoms include:

- Physical, occupational, and speech therapies, which may help with gait and voice disorders, tremors and rigidity, and decline in mental functions
- A healthy diet to support overall wellness
- Exercises to strengthen muscles and improve balance, flexibility, and coordination

- Massage therapy to reduce tension
- Yoga and tai chi to increase stretching and flexibility

Support for people living with Parkinson's disease

While the progression of Parkinson's is usually slow, eventually a person's daily routines may be affected. Activities such as working, taking care of a home, and participating in social activities with friends may become challenging. Experiencing these changes can be difficult, but support groups can help people cope. These groups can provide information, advice, and connections to resources for those living with Parkinson's disease, their families, and caregivers. The organizations listed below can help people find local support groups and other resources in their communities.

You may also be interested in

- Learning more about [fatigue](#)
- Reading about [Lewy body dementia](#)
- Finding out about [safe driving for older adults](#) and when it might be time to stop driving

Sign up for email updates

Receive weekly tips and resources on Alzheimer's disease and related dementias from NIA's Alzheimers.gov

*Email Address

Subscribe

For more information about Parkinson's disease

National Institute of Neurological Disorders and Stroke (NINDS)

800-352-9424

braininfo@ninds.nih.gov

www.ninds.nih.gov

National Institute of Environmental Health Sciences (NIEHS)

919-541-3345

webcenter@niehs.nih.gov

www.niehs.nih.gov/health/topics/conditions/parkinson

American Parkinson Disease Association (APDA)

800-223-2732

apda@apdaparkinson.org

www.apdaparkinson.org

Davis Phinney Foundation

866-358-0285

info@davisphinneyfoundation.org

www.davisphinneyfoundation.org

Michael J. Fox Foundation for Parkinson's Research

212-509-0995

www.michaeljfox.org

Parkinson Alliance

800-579-8440

contact@parkinsonalliance.org

www.parkinsonalliance.org

Parkinson's Resource Organization

877-775-4111

info@parkinsonsresource.org

www.parkinsonsresource.org

Parkinson's Foundation

800-473-4636

helpline@parkinson.org

www.parkinson.org

This content is provided by the NIH National Institute on Aging (NIA). NIA scientists and other experts review this content to ensure it is accurate and up to date.

Content reviewed: April 14, 2022

[Return to top](#)

Newsletters

Sign up to receive updates and resources delivered to your inbox.

Sign up

nia.nih.gov

An official website of the [National Institutes of Health](#)