



Stroke

Symptoms and causes

By Mayo Clinic Staff

Symptoms

Watch for these signs and symptoms if you think you or someone else may be having a stroke. Note when your signs and symptoms begin, because the length of time they have been present may guide your treatment decisions:

- **Trouble with speaking and understanding.** You may experience confusion. You may slur your words or have difficulty understanding speech.
- **Paralysis or numbness of the face, arm or leg.** You may develop sudden numbness, weakness or paralysis in your face, arm or leg, especially on one side of your body. Try to raise both your arms over your head at the same time. If one arm begins to fall, you may be having a stroke. Similarly, one side of your mouth may droop when you try to smile.
- **Trouble with seeing in one or both eyes.** You may suddenly have blurred or blackened vision in one or both eyes, or you may see double.
- **Headache.** A sudden, severe headache, which may be accompanied by vomiting, dizziness or altered consciousness, may indicate you're having a stroke.
- **Trouble with walking.** You may stumble or experience sudden dizziness, loss of balance or loss of coordination.

When to see a doctor

Seek immediate medical attention if you notice any signs or symptoms of a stroke, even if they seem to fluctuate or disappear.

Think "FAST" and do the following:

- **Face.** Ask the person to smile. Does one side of the face droop?
- **Arms.** Ask the person to raise both arms. Does one arm drift downward? Or is one arm unable to raise up?

- **Speech.** Ask the person to repeat a simple phrase. Is his or her speech slurred or strange?
- **Time.** If you observe any of these signs, call 911 immediately.

Call 911 or your local emergency number right away. Don't wait to see if symptoms go away. Every minute counts. The longer a stroke goes untreated, the greater the potential for brain damage and disability.

If you're with someone you suspect is having a stroke, watch the person carefully while waiting for emergency assistance.

Causes

A stroke occurs when the blood supply to your brain is interrupted or reduced. This deprives your brain of oxygen and nutrients, which can cause your brain cells to die.

A stroke may be caused by a blocked artery (ischemic stroke) or the leaking or bursting of a blood vessel (hemorrhagic stroke). Some people may experience only a temporary disruption of blood flow to their brain (transient ischemic attack, or TIA).

Ischemic stroke

About 85 percent of strokes are ischemic strokes. Ischemic strokes occur when the arteries to your brain become narrowed or blocked, causing severely reduced blood flow (ischemia). The most common ischemic strokes include:

- **Thrombotic stroke.** A thrombotic stroke occurs when a blood clot (thrombus) forms in one of the arteries that supply blood to your brain. A clot may be caused by fatty deposits (plaque) that build up in arteries and cause reduced blood flow (atherosclerosis) or other artery conditions.
- **Embolic stroke.** An embolic stroke occurs when a blood clot or other debris forms away from your brain — commonly in your heart — and is swept through your bloodstream to lodge in narrower brain arteries. This type of blood clot is called an embolus.

Hemorrhagic stroke

Hemorrhagic stroke occurs when a blood vessel in your brain leaks or ruptures. Brain hemorrhages can result from many conditions that affect your blood vessels, including uncontrolled high blood pressure (hypertension), overtreatment with anticoagulants and weak spots in your blood vessel walls (aneurysms).

A less common cause of hemorrhage is the rupture of an abnormal tangle of thin-walled blood vessels (arteriovenous malformation) present at birth. Types of hemorrhagic stroke include:

- **Intracerebral hemorrhage.** In an intracerebral hemorrhage, a blood vessel in the brain bursts and spills into the surrounding brain tissue, damaging brain cells. Brain cells beyond the leak are deprived of blood and also damaged.

High blood pressure, trauma, vascular malformations, use of blood-thinning medications and other conditions may cause an intracerebral hemorrhage.

- **Subarachnoid hemorrhage.** In a subarachnoid hemorrhage, an artery on or near the surface of your brain bursts and spills into the space between the surface of your brain and your skull. This bleeding is often signaled by a sudden, severe headache.

A subarachnoid hemorrhage is commonly caused by the bursting of a small sack-shaped or berry-shaped outpouching on an artery known as an aneurysm. After the hemorrhage, the blood vessels in your brain may widen and narrow erratically (vasospasm), causing brain cell damage by further limiting blood flow.

Transient ischemic attack (TIA)

A transient ischemic attack (TIA) — also known as a ministroke — is a brief period of symptoms similar to those you'd have in a stroke. A temporary decrease in blood supply to part of your brain causes TIAs, which often last less than five minutes.

Like an ischemic stroke, a TIA occurs when a clot or debris blocks blood flow to part of your brain. A TIA doesn't leave lasting symptoms because the blockage is temporary.

Seek emergency care even if your symptoms seem to clear up. Having a TIA puts you at greater risk of having a full-blown stroke, causing permanent damage later. If you've had a TIA, it means there's likely a partially blocked or narrowed artery leading to your brain or a clot source in the heart.

It's not possible to tell if you're having a stroke or a TIA based only on your symptoms. Up to half of people whose symptoms appear to go away actually have had a stroke causing brain damage.

Risk factors

Many factors can increase your risk of a stroke. Some factors can also increase your chances of having a heart attack. Potentially treatable stroke risk factors include:

Lifestyle risk factors

- Being overweight or obese
- Physical inactivity
- Heavy or binge drinking
- Use of illicit drugs such as cocaine and methamphetamines

Medical risk factors

- High blood pressure — the risk of stroke begins to increase at blood pressure readings higher than 120/80 millimeters of mercury (mm Hg). Your doctor will help you decide on a

target blood pressure based on your age, whether you have diabetes and other factors.

- Cigarette smoking or exposure to secondhand smoke.
- High cholesterol.
- Diabetes.
- Obstructive sleep apnea — a sleep disorder in which the oxygen level intermittently drops during the night.
- Cardiovascular disease, including heart failure, heart defects, heart infection or abnormal heart rhythm.

Other factors associated with a higher risk of stroke include:

- Personal or family history of stroke, heart attack or transient ischemic attack.
- Being age 55 or older.
- Race — African-Americans have a higher risk of stroke than do people of other races.
- Gender — Men have a higher risk of stroke than women. Women are usually older when they have strokes, and they're more likely to die of strokes than are men. Also, they may have some risk from some birth control pills or hormone therapies that include estrogen, as well as from pregnancy and childbirth.

Complications

A stroke can sometimes cause temporary or permanent disabilities, depending on how long the brain lacks blood flow and which part was affected. Complications may include:

- **Paralysis or loss of muscle movement.** You may become paralyzed on one side of your body, or lose control of certain muscles, such as those on one side of your face or one arm. Physical therapy may help you return to activities hampered by paralysis, such as walking, eating and dressing.
- **Difficulty talking or swallowing.** A stroke may cause you to have less control over the way the muscles in your mouth and throat move, making it difficult for you to talk clearly (dysarthria), swallow or eat (dysphagia). You also may have difficulty with language (aphasia), including speaking or understanding speech, reading or writing. Therapy with a speech and language pathologist may help.
- **Memory loss or thinking difficulties.** Many people who have had strokes experience some memory loss. Others may have difficulty thinking, making judgments, reasoning and understanding concepts.
- **Emotional problems.** People who have had strokes may have more difficulty controlling their emotions, or they may develop depression.
- **Pain.** People who have had strokes may have pain, numbness or other strange sensations in parts of their bodies affected by stroke. For example, if a stroke causes you to lose feeling

in your left arm, you may develop an uncomfortable tingling sensation in that arm.

People also may be sensitive to temperature changes, especially extreme cold after a stroke. This complication is known as central stroke pain or central pain syndrome. This condition generally develops several weeks after a stroke, and it may improve over time. But because the pain is caused by a problem in your brain, rather than a physical injury, there are few treatments.

- **Changes in behavior and self-care ability.** People who have had strokes may become more withdrawn and less social or more impulsive. They may need help with grooming and daily chores.

As with any brain injury, the success of treating these complications will vary from person to person.