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Ischemic Stroke

Stroke

A stroke happens when blood flow to a part of the brain stops. A stroke is sometimes called a "brain attack."

Causes

If blood flow is stopped for longer than a few seconds, the brain cannot get blood and oxygen. Brain cells can die, causing permanent damage.

There are two major types of stroke: ischemic stroke and hemorrhagic stroke.

Ischemic stroke occurs when a blood vessel that supplies blood to the brain is blocked by a blood clot. This may happen in two ways:

- A clot may form in an artery that is already very narrow. This is called a *thrombotic stroke*.
- A clot may break off from another place in the blood vessels of the brain, or from some other part of the body, and travel up to the brain. This is called cerebral embolism, or an *embolic stroke*.

Ischemic strokes may be caused by clogged arteries. Fat, cholesterol, and other substances collect on the artery walls, forming a sticky substance called plaque.

A hemorrhagic stroke occurs when a blood vessel in part of the brain becomes weak and bursts open, causing blood to leak into the brain. Some people have defects in the blood vessels of the brain that make this more likely.

See also:

- [Aneurysm](#)
- [Arteriovenous malformation](#) (AVM)

STROKE RISK FACTORS

High blood pressure is the number one risk factor for strokes. The other major risk factors are:

- [Atrial fibrillation](#)
- [Diabetes](#)
- Family history of stroke
- [High cholesterol](#)
- Increasing age, especially after age 55
- Race (black people are more likely to die of a stroke)

People who have heart disease or poor blood flow in their legs caused by narrowed arteries are also more likely to have a stroke.

The chance of stroke is higher in people who live an unhealthy lifestyle by:

- Being overweight or obese
- Drinking heavily
- Eating too much fat or salt
- Smoking
- Taking cocaine and other illegal drugs

Birth control pills can increase the chances of having blood clots. The risk is highest in woman who smoke and are older than 35.

For more information, see: [Stroke risk factors](#)

Symptoms

The symptoms of stroke depend on what part of the brain is damaged. In some cases, a person may not know that he or she has had a stroke.

Symptoms usually develop suddenly and without warning. Or, symptoms may occur on and off for the first day or two. Symptoms are usually most severe when the stroke first happens, but they may slowly get worse.

A [headache](#) may occur, especially if the stroke is caused by bleeding in the brain. The headache:

- Starts suddenly and may be severe
- Occurs when you are lying flat
- Wakes you up from sleep
- Gets worse when you change positions or when you bend, strain, or cough

Other symptoms depend on how severe the stroke is and what part of the brain is affected. Symptoms may include:

- Change in alertness (including [sleepiness](#), [unconsciousness](#), and [coma](#))
- Changes in hearing
- Changes in taste
- Changes that affect touch and the ability to feel pain, pressure, or different temperatures
- Clumsiness
- Confusion or loss of memory
- Difficulty swallowing
- Difficulty writing or reading
- Dizziness or abnormal feeling of movement ([vertigo](#))
- Lack of control over the bladder or bowels
- [Loss of balance](#)
- [Loss of coordination](#)
- Muscle weakness in the face, arm, or leg (usually just on one side)
- [Numbness or tingling](#) on one side of the body
- Personality, mood, or emotional changes
- Problems with eyesight, including [decreased vision](#), double vision, or total loss of vision
- Trouble speaking or understanding others who are speaking
- Trouble walking

Exams and Tests

A complete exam should be done. Your doctor will:

- Check for problems with vision, movement, feeling, reflexes, understanding, and speaking. Your doctor and nurses will repeat this exam over time to see if your stroke is getting worse or improving.
- Listen for an abnormal sound, called a "bruit," when using a stethoscope to listen to the carotid arteries in the neck. A bruit is caused by abnormal blood flow.
- Check your blood pressure, which may be high.

Tests can help your doctor find the type, location, and cause of the stroke and rule out other disorders.

- [Angiogram of the head](#) can show which blood vessel is blocked or bleeding
- [Carotid duplex](#) (ultrasound) can show if the carotid arteries in your neck have narrowed
- [CT scan of the brain](#) is often done soon after symptoms of a stroke begin. An [MRI scan of the brain](#) may be done instead or afterwards
- [Echocardiogram](#) may be done if the stroke could have been caused by a blood clot from the heart
- [Magnetic resonance angiography](#) (MRA) or CT angiography may be done to check for abnormal blood vessels in the brain

Other tests include:

- Lab tests will include:
 - [Bleeding time](#)
 - Blood cholesterol and [sugar](#)
 - Blood clotting tests ([prothrombin time](#) or [partial thromboplastin time](#))
 - [Complete blood count](#) (CBC)
- [Electrocardiogram](#) (ECG) and heart rhythm monitoring -- to show whether an irregular heartbeat (such as [atrial fibrillation](#)) caused the stroke

Treatment

A stroke is a medical emergency. Immediate treatment can save lives and reduce disability. Call 911 or your local emergency number or seek urgent medical care at the first signs of a stroke.

It is very important for people who are having stroke symptoms to get to a hospital as quickly as possible. If the stroke is caused by a blood clot, a clot-busting drug may be given to dissolve the clot.

Most of the time, patients must reach a hospital within 3 hours after symptoms begin. Some people may be able to receive these drugs for up to 4 - 5 hours after symptoms begin.

Treatment depends on how severe the stroke was and what caused it. Most people who have a stroke need to stay in a hospital.

TREATMENT IN THE HOSPITAL

Clot-busting drugs (thrombolytic therapy) may be used if the stroke is caused by a blood clot. This medicine breaks up blood clots and helps bring back blood flow to the damaged area. However, not everyone can get this type of medicine.

- For these drugs to work, a person must be seen and treatment must begin within 3 hours of when the symptoms first started. A CT scan must be done to see whether the stroke is from a clot or from bleeding.
- If the stroke is caused by bleeding instead of clotting, clot-busting drugs (thrombolytics) can cause more bleeding.

Other treatments depend on the cause of the stroke:

- Blood thinners such as heparin or warfarin (Coumadin) may be used to treat strokes due to blood clots. Aspirin or clopidogrel (Plavix) may also be used.
- Other medicine may be needed to control symptoms such as high blood pressure.
- In some situations, a special stroke team and skilled radiologists may be able to use angiography to highlight the clogged blood vessel and open it up.
- If bleeding occurred, surgery is often needed to remove blood from around the brain and to fix damaged blood vessels.
- [Surgery on the carotid artery](#) may be needed.

See also:

- [Carotid artery disease](#)
- [Carotid artery surgery](#)

Nutrients and fluids may be needed, especially if the person has trouble swallowing. These may be given through a vein (intravenously) or a feeding tube in the stomach (gastrostomy tube). Swallowing trouble may be temporary or permanent.

Physical therapy, occupational therapy, speech therapy, and swallowing therapy will all begin in the hospital.

LONG-TERM TREATMENT

The goal of treatment after a stroke is to help the patient recover as much function as possible and prevent future strokes.

The recovery time and need for long-term treatment is different for each person. Problems moving, thinking, and talking often improve in the weeks to months after a stroke. A number of people who have had a stroke will keep improving in the months or years after the stroke.

See: [Stroke recovery](#) for information about:

- Bladder and bowel problems
- Living at home instead of a nursing facility
- Muscle and nerve problems
- Speech problems

- Stroke rehabilitation
- Swallowing and eating problems
- Thinking and memory problems

Support Groups

Support and resources are available from the American Stroke Association -- www.strokeassociation.org.

Outlook (Prognosis)

The outlook depends on:

- The type of stroke
- How much brain tissue is damaged
- What body functions have been affected
- How quickly you get treated

You may recover completely, or have some permanent loss of function.

Over half of people who have a stroke are able to function and live at home. Other people are not able to care for themselves.

If treatment with clot-busting drugs is successful, the symptoms of a stroke may go away. However, patients often do not get to the hospital soon enough to receive these drugs, or they cannot take these drugs because of a health condition.

People who have a stroke due to a blood clot (ischemic stroke) have a better chance of surviving than those who have a stroke due to bleeding in the brain (hemorrhagic stroke).

The risk for a second stroke is highest during the weeks or months after the first stroke. Then the risk begins to decrease.

Possible Complications

- Breathing food into the airway ([aspiration](#))
- [Dementia](#)
- Falls
- Loss of mobility
- Loss of movement or feeling in one or more parts of the body
- [Muscle spasticity](#)
- Poor nutrition
- [Pressure sores](#)
- Problems speaking and understanding
- Problems thinking or focusing

When to Contact a Medical Professional

Stroke is a medical emergency that needs to be treated right away. Call your local emergency number (such as 911) if someone has symptoms of a stroke.

Prevention

See: [Stroke risk factors and prevention](#)

Alternative Names

Cerebrovascular disease; CVA; Cerebral infarction; Cerebral hemorrhage; Ischemic stroke; Stroke - ischemic; Cerebrovascular accident; Stroke - hemorrhagic

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