

# EXPLAINING STROKE



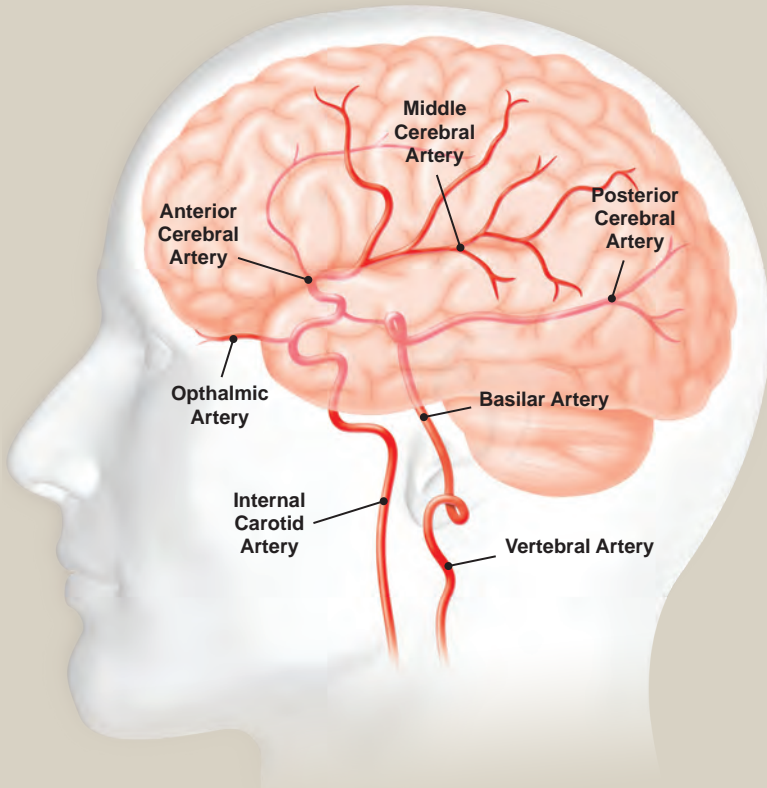
# Introduction

Explaining Stroke is a practical step-by-step booklet that explains how a stroke happens, different types of stroke and how to prevent a stroke. Many people think a stroke happens in the heart, but it actually happens in the brain. [Read on to learn more.](#)

## Contents

Introduction .....	1
Blood Supply to the Brain .....	2
Types of Stroke .....	3
Ischemic Stroke .....	3
Blood Flow in Normal and Blocked Arteries.....	4
Cross-section of a Brain With a Blocked Artery.....	5
Arteriography .....	6
Hemorrhagic Stroke .....	7
Intracerebral Hemorrhage .....	8
Subarachnoid Hemorrhage.....	9
Aneurysm .....	10
Transient Ischemic Attack (TIA).....	11
How a Stroke Affects You.....	12
The Sides of the Brain .....	12
Moving and Sensing Things.....	13
Some Effects of Stroke.....	14
Prevent Another Stroke .....	15
Stroke Symptoms .....	16
Warning Signs of Stroke .....	17

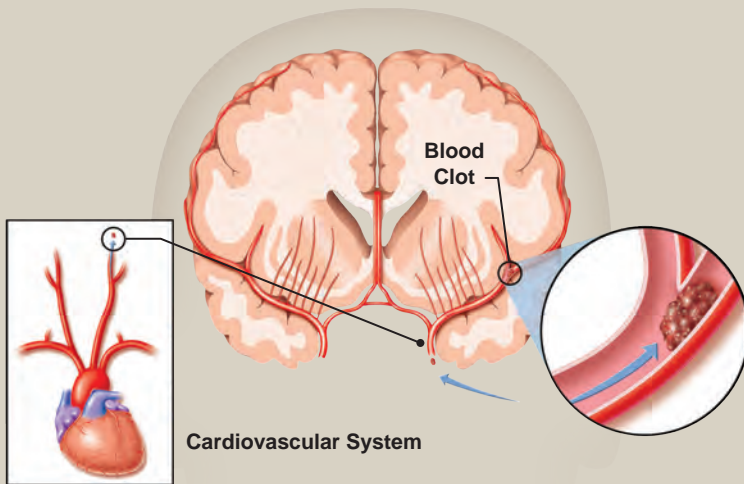
# Blood Supply to the Brain



Blood vessels that carry blood to the brain from the heart are called **arteries**. The brain needs a constant supply of blood, which carries the oxygen and nutrients it needs to function. Each artery supplies blood to specific areas of the brain. A **stroke** occurs when one of these arteries to the brain is either blocked or bursts. As a result, part of the brain does not get the blood it needs, so it starts to die. A transient ischemic attack (TIA) occurs when the blood supply to the brain is blocked for a short time. When this happens, the brain temporarily malfunctions.

# Types of Stroke

While all strokes happen in the brain, there are different types. Identifying the type of stroke leads to quicker treatment.



## Ischemic Stroke

Ischemic stroke is the most common type of stroke. An ischemic stroke happens when an artery in the brain is blocked. There are two types of ischemic stroke:

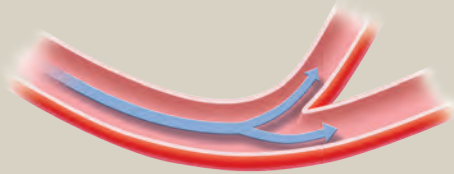
**Embolic Stroke:** In an embolic stroke, a blood clot or plaque fragment forms, usually in the heart or the large arteries leading to the brain, and then moves through the arteries to the brain. In the brain, the clot blocks a blood vessel and leads to a stroke.

**Thrombotic Stroke:** A thrombotic stroke is a blood clot that forms inside an artery that supplies blood to the brain. The clot interrupts blood flow and causes a stroke.

# Blood Flow in Normal and Blocked Arteries

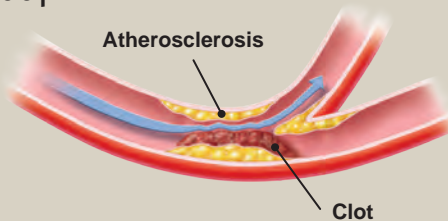
## NORMAL

Blood flows easily through a clear artery.



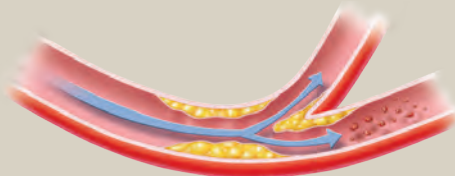
## BLOCKAGE

An artery can become blocked by **plaque** (a fatty substance in the wall of the artery) or a **blood clot**, which reduces blood flow to the brain and causes a stroke. This picture shows **atherosclerosis**, a hardening of the arteries. Atherosclerosis is caused partly by cholesterol or plaque buildup.

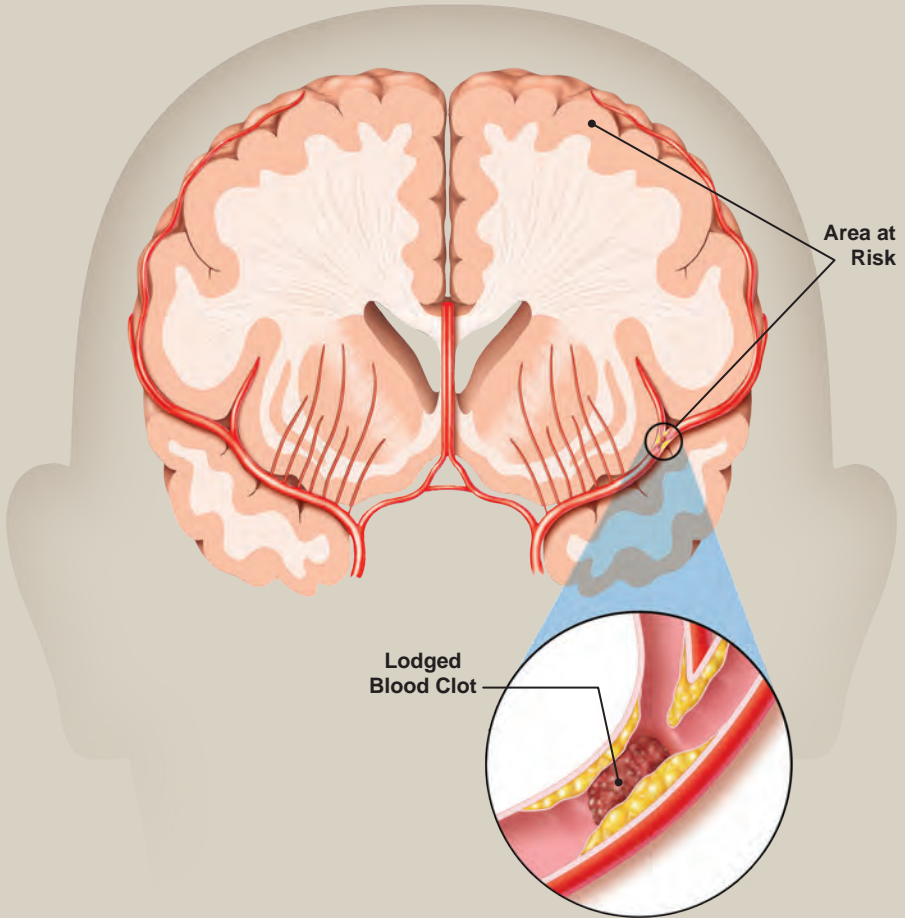


## CLOT DISSOLVES

The plaque or blood clot breaks up and blood flow is restored to the brain. This may happen during a TIA (see page 11), in which brain cells recover and there are no permanent signs of a stroke.

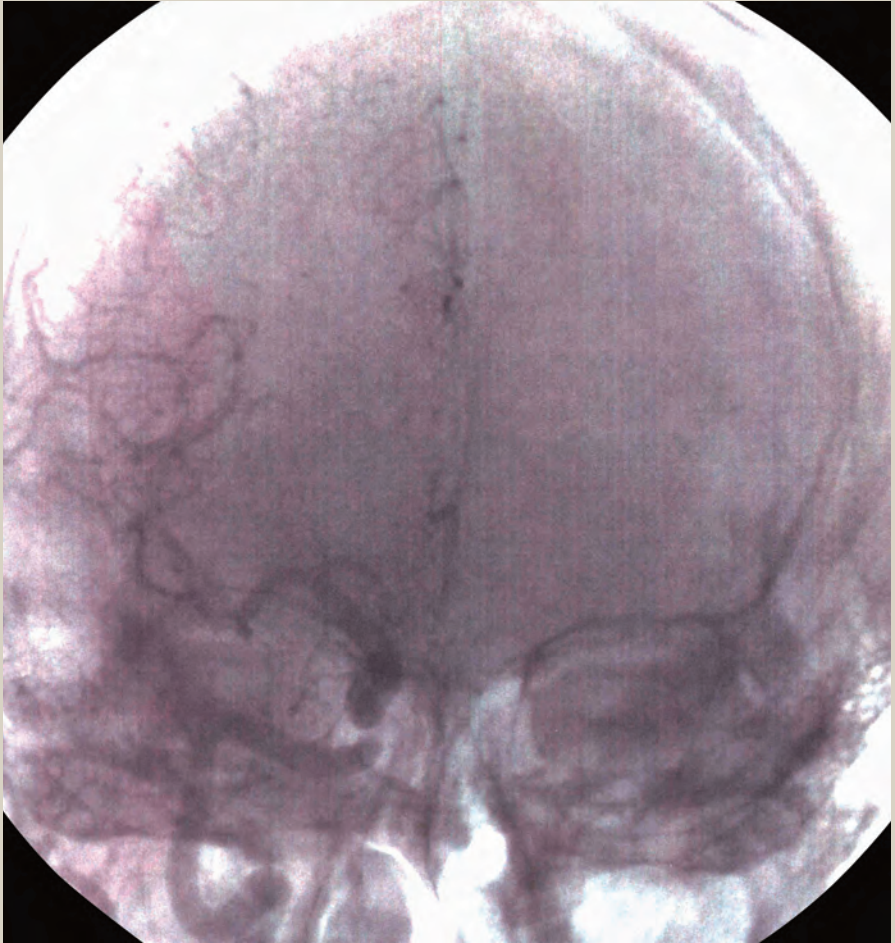


# Types of Stroke



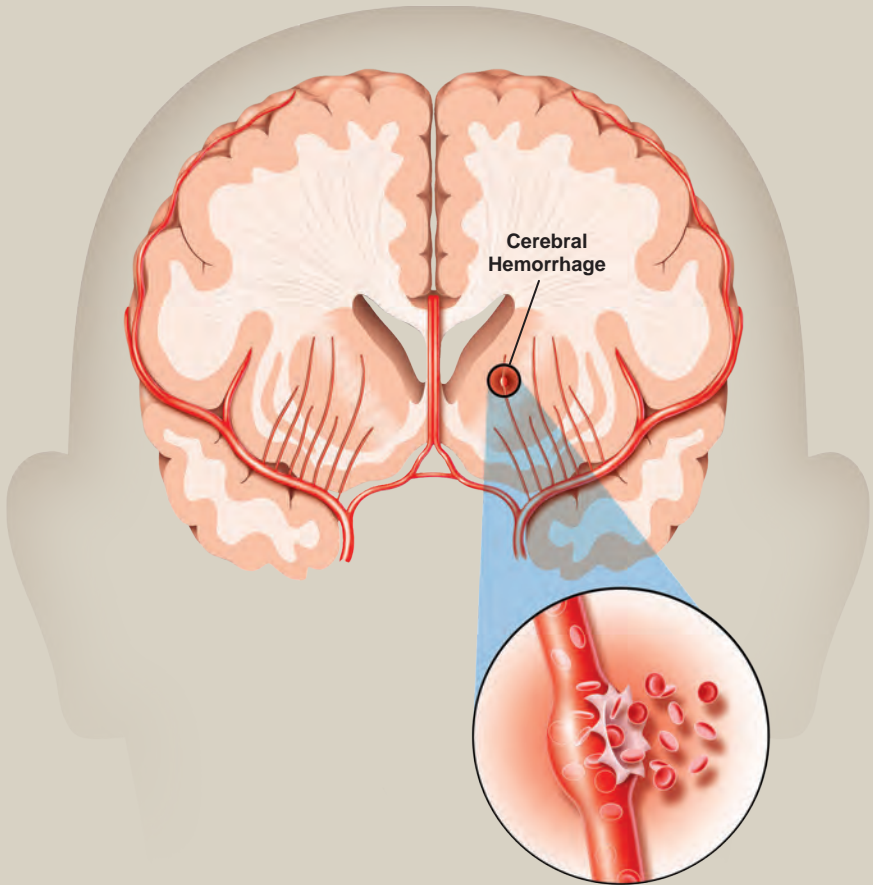
This picture shows a blood clot blocking an artery in the brain. Without enough blood flow, brain cells begin to die.

# Arteriography



The doctor will take an x-ray picture of your brain, called an **arteriogram** or **angiogram**. A dye is injected into the arteries of the brain. The dye will show up on the x-ray. This test can help locate blocked blood vessels in the brain.

# Hemorrhagic Stroke

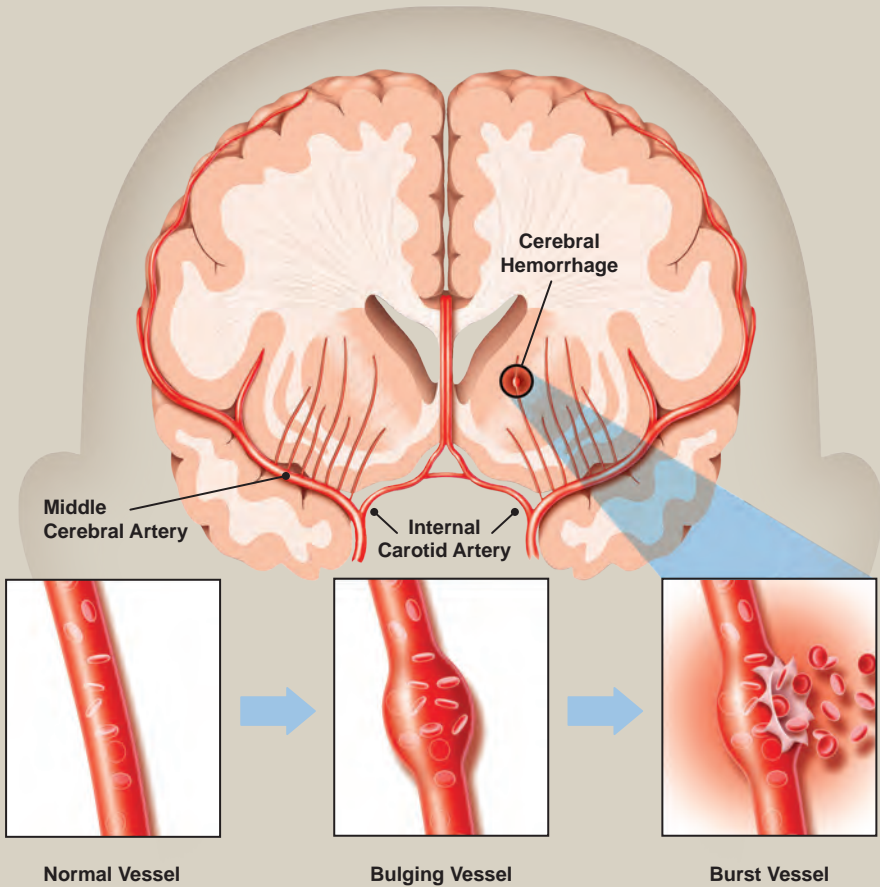


A **hemorrhagic stroke** happens when a blood vessel in the brain bursts and spills blood into or around the brain. High blood pressure and aneurysms (see page 10) can make blood vessels weak enough to burst.

There are different types of hemorrhagic stroke, including intracerebral hemorrhage and subarachnoid hemorrhage.

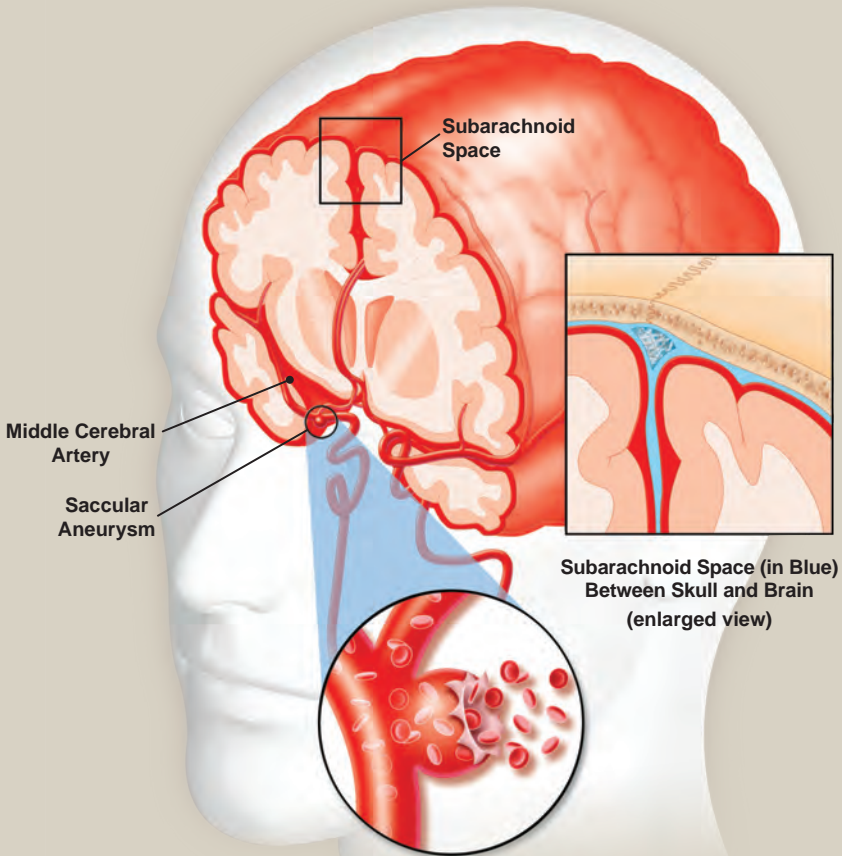


# Intracerebral Hemorrhage



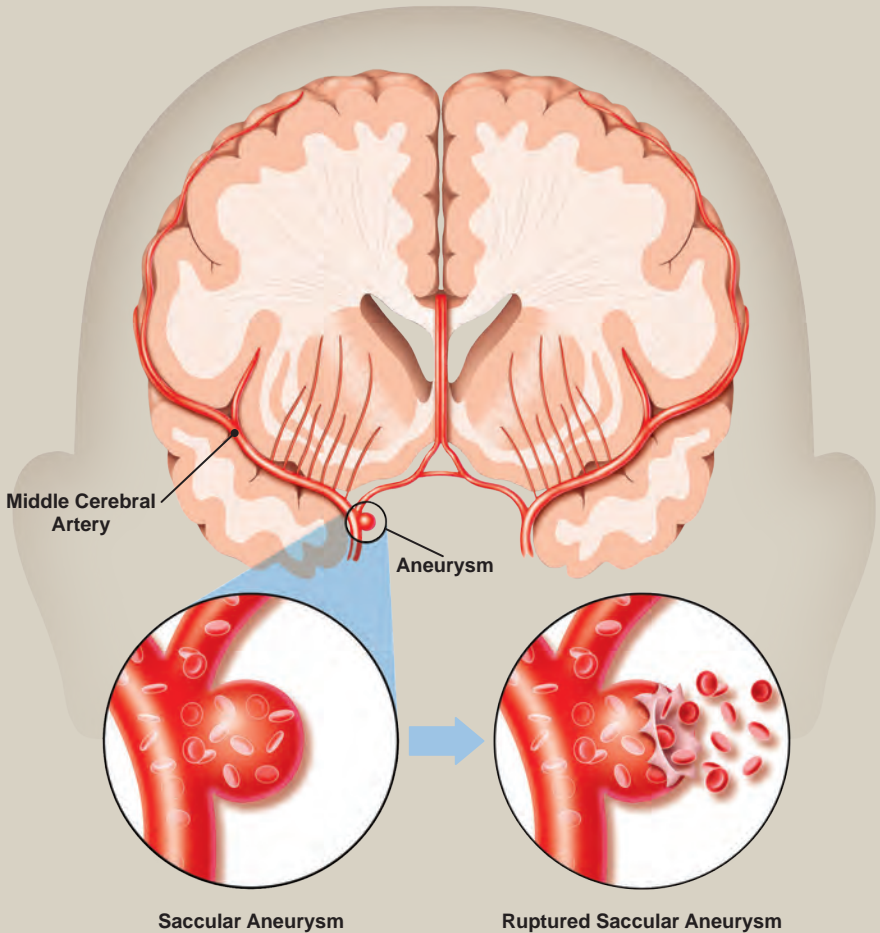
One kind of hemorrhagic stroke is called an **intracerebral hemorrhage**. This kind of stroke is caused when a burst blood vessel bleeds into brain tissue. The bleeding causes brain cells to die and the part of the brain that is affected stops working correctly. High blood pressure, also called **hypertension**, is the most common cause of this type of stroke.

# Subarachnoid Hemorrhage



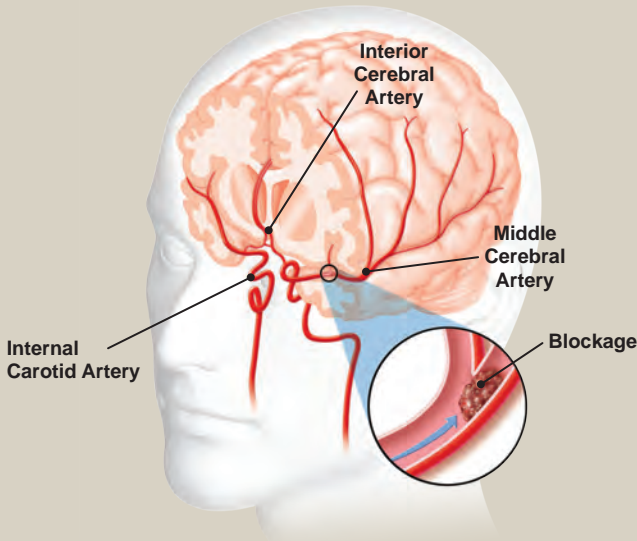
Another kind of hemorrhagic stroke is called a **subarachnoid hemorrhage**. In this type of stroke, a blood vessel bursts near the surface of the brain and blood leaks in between the brain and the skull. This blood may cause nearby arteries to spasm, and that reduces blood flow to the brain and causes a stroke. This type of stroke can be caused by different things, but is usually caused by a burst aneurysm.

# Aneurysm



An **aneurysm** is a weak spot on the wall of an artery that bulges out into a thin bubble. As it gets bigger, the wall may weaken and burst. If it bursts, blood leaks inside or around the brain.

# Transient Ischemic Attack (TIA)



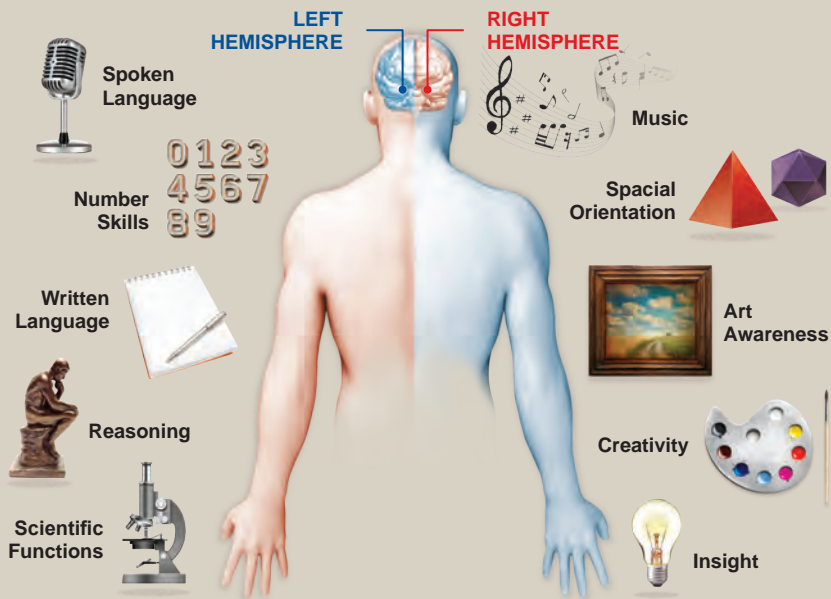
If an artery within the brain or one that goes to the brain is blocked for a short time, the blood flow to that area of the brain slows down or stops. This can cause a **transient ischemic attack (TIA)**, sometimes called a mini-stroke.

Major symptoms of a TIA include:

- Numbness, weakness or loss of vision
- Trouble speaking
- Loss of balance or coordination

When a TIA happens, the artery either becomes unblocked after a short time or a new path opens up and blood flow goes back to normal. Because of that, the symptoms last for a short time and then disappear. A TIA is a serious warning sign that you might have a stroke. If you've had a TIA, you should see a doctor immediately.

# How a Stroke Affects You

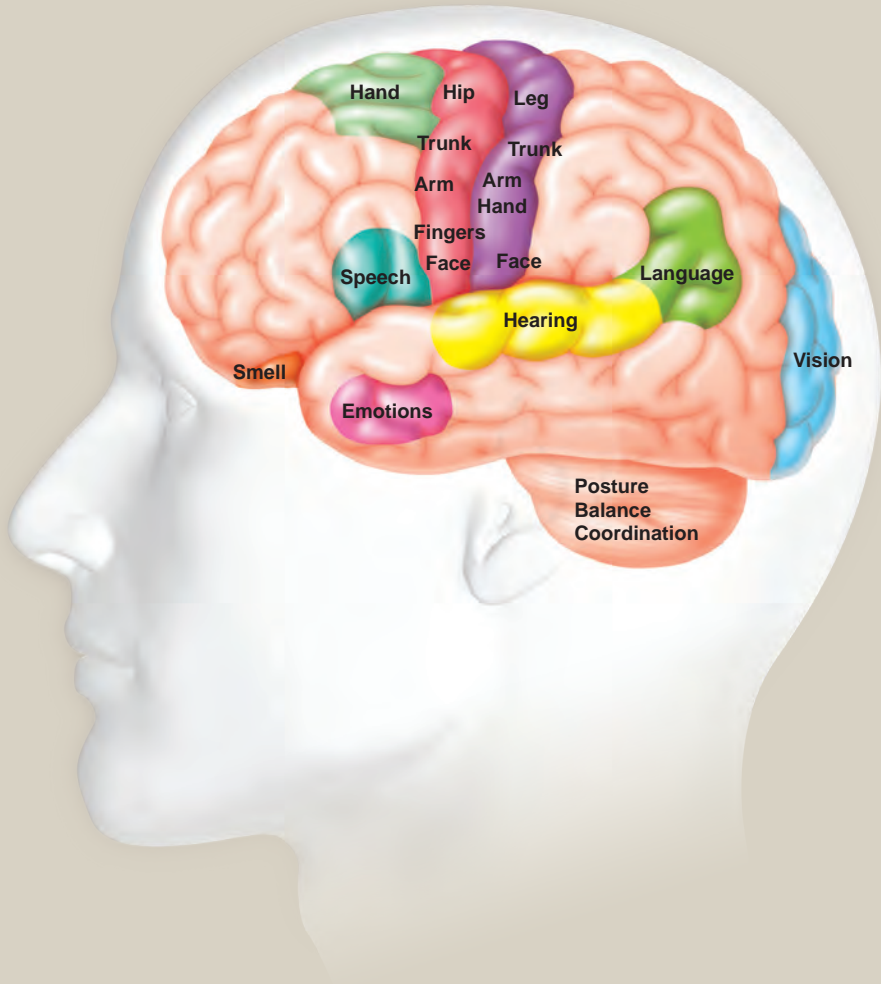


## The Sides of the Brain

**The left side of the brain controls the right side of the body.** You use the left side of your brain to move the right side of your body, figure out math and science problems and understand what you read and hear. You may have trouble doing these things if you have a stroke that damages parts of the left side of your brain.

**The right side of the brain controls the left side of the body.** You use the right side to move the left side of your body and do creative things like paint a picture, appreciate art or music, recognize the emotion in someone's voice or find where you plan to go. You may have trouble doing these things if you have a stroke in the right side of your brain.

# Moving and Sensing Things



The human brain has different areas that control how the body moves and feels. When a stroke damages a certain part of the brain, that part may not work as well as it did before. This can cause problems with walking, speaking, seeing or feeling.

# Some Effects of Stroke

After a stroke, you may have emotional and physical changes. Depending on the part of your brain that was affected, you might have problems with:

seeing	sleeping
having seizures	controlling your bladder or bowels
moving parts of your body	pain
fatigue	thinking
memory	depression

# Prevent Another Stroke

**If you've had a stroke, you're at risk of having another one. Do these things to prevent another stroke.**

**If you have high blood pressure, lower it.** For people over age 18, high blood pressure is a measurement of 140/90 or higher.

**Find out if you have atrial fibrillation (Afib).** Atrial fibrillation is an irregular heartbeat that can cause blood to pool in parts of your heart. This blood can form clots that break off and cause a stroke. Your doctor can tell you if you have Afib and help you manage it.

**If you smoke, stop.** Smoking doubles the risk for stroke.

**If you drink alcohol, do so in moderation.** Heavy drinking can increase your risk for stroke.

**Lower your cholesterol (the fat-like substance in your blood).** Your total cholesterol should be under 200 and your LDL or "bad" cholesterol should be between 50 and 70, or about half your LDL cholesterol level before you had a stroke.

**If you are diabetic, follow your doctor's advice carefully to get your blood sugar level under control.** Having diabetes puts you at an increased risk for stroke.

**Exercise daily.** Even a little exercise—a brisk walk, bicycle ride, swim or yard work—can improve your health and may reduce your stroke risk. Check with your doctor to find out what level of exercise is appropriate for you.

**Cut down on sodium and fat.** Less salt and fat can lower your blood pressure and your risk for stroke.



# Stroke Symptoms



## Some signs of stroke include:

- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness or loss of balance
- Sudden severe headache with no known cause



If you have any of these symptoms or see someone else having them, call 9-1-1 immediately! Fast treatment at the hospital can have better results.

See pages 17-18 for a test you can use to tell if someone might be having a stroke.

# Warning Signs of Stroke

Learn the many warning signs of a stroke. Act **FAST** and **CALL 9-1-1 IMMEDIATELY** at any sign of a stroke. Use **FAST** to remember the warning signs.

# F

**FACE:** Ask the person to smile. Does one side of the face droop? \_\_\_\_\_

# A

**ARMS:** Ask the person to raise both arms. Does one arm drift downward? \_\_\_\_\_

# S

**SPEECH:** Ask the person to repeat a simple phrase. Is their speech slurred or strange? \_\_\_\_\_

# T

**TIME:** If you observe any of these signs, call 9-1-1 immediately. \_\_\_\_\_

## NOTE THE TIME WHEN ANY SYMPTOMS FIRST APPEAR.

If given within **three hours** of the first symptom, there is an FDA-approved clot-buster medication that may reduce long-term disability for the most common type of stroke.

LEARN MORE ABOUT SUDDEN SIGNS OF STROKE AT:

[www.stroke.org/syn](http://www.stroke.org/syn)



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National Stroke Association's mission is to reduce the incidence and impact of stroke by developing education and programs on stroke prevention, treatment, rehabilitation and support.

**CALL 9-1-1 IMMEDIATELY IF YOU SEE ONE OR MORE SIGNS OF A STROKE.**



**STROKE  
HELP LINE<sup>SM</sup>**  
1-800-STROKES  
(787-6537)

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Find resources  
and information  
at [www.stroke.org](http://www.stroke.org)

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