

**IMPORTANT INFORMATION ABOUT**

# Strokes



**American Heart Association  
American Stroke Association**  
**CERTIFICATION**

Meets standards for  
**Primary Stroke Center**

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# Understanding Strokes

A stroke often causes changes in your body and your emotions that can be challenging for you and those around you. We want you to know that despite these difficulties, you can get better and overcome many of the hardships created by your stroke.

This book has been written as a guide to help you and your family understand the effects of your stroke. In it, you will find practical information to assist in your recovery and help prevent complications so you can live as independently as possible.

It also contains important advice and information for your caregivers and resources for more information and support.

## What is a Stroke?

A stroke occurs when a blood vessel to a part of the brain becomes clogged or bursts. When this occurs, the nerve cells in that part of the brain can no longer work the right way, and in turn, the part of the body they control can no longer function normally. This can result in trouble speaking or walking, numbness or weakness, or loss of memory, among other problems.

## Know the Signs of a Stroke







### Learn the warning signs of a stroke and learn to **BE FAST**

Call 9-1-1 immediately at any sign of a stroke. The FAST acronym developed by the American Heart Association is the gold standard for recognizing stroke signs and symptoms. BEFAST is the updated acronym to include additional stroke warning signs which may include a sudden loss of balance or vision loss.

In a Stroke, minutes count. Don't drive yourself or someone else to the hospital. It's always better to call 911 for a suspected stroke, even if you live close to the hospital. The emergency medical technicians will take steps that will speed things up, they will get you to the right Stroke Certified Hospital for stroke treatment and will notify the Emergency Room before you arrive so the stroke team will literally meet you at the door and begin tests right away.

**WHEN IT COMES TO STROKE,  
BE FAST CALL 911**

Any one of these sudden **SIGNS**  
could mean a **STROKE**

-  **Balance**  
Watch for sudden loss of balance
-  **Eyes**  
Check for vision loss
-  **Face**  
Look for an uneven smile
-  **Arm**  
Check if one arm is weak
-  **Speech**  
Listen for slurred speech
-  **Time**  
Call **911** right away

Learn all **10 SYMPTOMS OF STROKE** @ [overreact2stroke.com](http://overreact2stroke.com)

BE FAST was developed by Intermountain Healthcare, as an adaptation of the FAST model implemented by the American Stroke Association. Registered with permission from Intermountain Healthcare. Copyright 2019, Intermountain Healthcare.

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## Types of Strokes

Blood is pumped from the heart to the brain through a network of blood vessels called cerebral arteries. If brain cells are completely without blood for more than a short time, they will die. The blood supply to the brain may be disrupted by different causes. Sometimes it is hard to determine what caused the stroke, so your doctor may need time to make a clear diagnosis.

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 forms, often 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 cuts off blood flow and causes a stroke.

### 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 12) 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 the right way. High blood pressure, also called hypertension, is the most common cause of this type of stroke.

### 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 in the brain or one that goes to the brain is blocked for a short time, blood flow slows down or stops. This can cause a transient ischemic attack, sometimes called a mini-stroke. TIA's major symptoms include sudden:

- Numbness, weakness or paralysis of the face, arm or leg, most often on one side of the body
- Loss of eyesight in one or both eyes or double vision
- Trouble speaking or understanding others
- Loss of balance or coordination
- Severe headache with no known cause

When a TIA happens, the artery either becomes unblocked after a short time or a new path opens up and blood flow is normal. Symptoms last for a short time and then go away. A TIA is a serious warning that you might have a stroke.

# How a Stroke Affects You

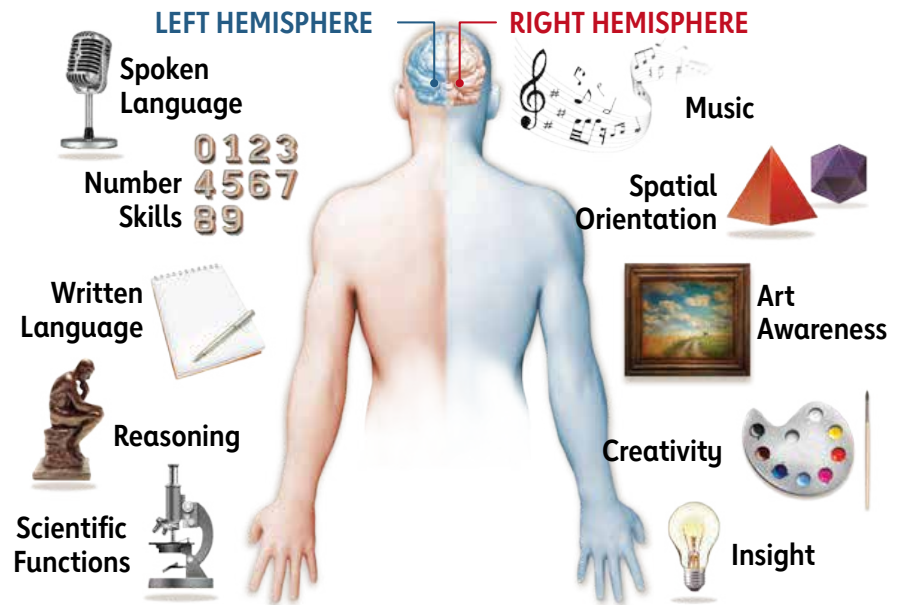
## The Sides of the Brain

A stroke on the left side of the brain affects the right side of the body and you may have some of the following:

- Speech and language problems
- Inability to read, write and learn new information
- Impaired ability to do math or to organize, reason and analyze things

A stroke on the right side of the brain affects the left side of the body and you may have some of following:

- Problems with depth perception or directions, such as up or down, and front and back
- Inability to be creative, such as painting a picture, or to appreciate art and music
- Failure to recognize the emotion in someone's voice



## Moving and Sensing Things

The human brain has areas that control how the body moves and feels. When a stroke harms 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. There may be challenges with basic self-care such as bathing or dressing, eating, swallowing, memory, emotions and understanding surroundings that should be familiar.

## Some Effects of Stroke

After a stroke, you may have emotional and physical changes. Depending on the amount of brain damaged and 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



## Risk Factors

Regular medical checkups are the best protection against a stroke. By asking about your medical history and doing a physical exam, a doctor can find conditions that could make a person at a higher risk for a stroke. Luckily, many of the most serious risk factors for stroke can be treated. Preventive treatment is more useful the sooner it starts.

### Controllable Risk Factors

**High Blood Pressure** (hypertension) is the most common risk factor for a stroke. In fact, the risk of stroke is directly related to high blood pressure. If high blood pressure is controlled, the risk of a stroke is greatly reduced. That's why you should have your blood pressure checked regularly. For many people, eating a healthier diet and maintaining proper weight can often control blood pressure. For others, medications are needed.

**High Cholesterol** increases the risk of blocked arteries. If an artery leading to the brain becomes blocked, it can cause a stroke.

- **Carotid Artery Disease** can increase a person's risk for stroke due to a fatty buildup of plaque inside the artery. This narrowing of the artery that supplies most of the blood to your brain may cause a blockage by a clot, causing a stroke.

**Heart Disease** more than doubles a person's risk of stroke. Fortunately, heart rhythm problems (fast or irregular beating) can be found by a physical exam. Anyone with any type of heart disease should see a doctor regularly. Good care of heart disease lowers the risk of having a stroke.

- **Atrial Fibrillation** is one form of heart disease where the heart's upper chambers quiver rather than beat effectively. This causes the blood to pool and clot, increasing the risk of stroke.

**Diabetes** makes a person much more likely to suffer a stroke. Uncontrolled diabetes causes disease in the blood vessels of the brain leaving them more susceptible to blockage. Many times diabetics also have high blood pressure, increasing their risk of a stroke even more.

**Cigarette Smoking** is an important risk factor for a stroke, especially in longtime smokers. Smoking reduces oxygen in the blood, thickens the blood and makes clots more likely to form. It also increases the buildup of plaque in the arteries and temporarily raises blood pressure. Even smoking as few as four cigarettes a day can harm your blood vessels. If you smoke and have high blood pressure, your risk of a stroke can increase as much as 20 times.

**Physical Inactivity and Obesity** or both can increase your risk of cardiovascular disease.

**Excessive Alcohol Intake** (drinking an average of more than one drink per day for women, more than two drinks a day for men, or binge drinking) can increase your chance of a stroke.

**Diets** high in saturated fat, trans fat and cholesterol can raise blood cholesterol levels. Diets high in sodium (salt) can increase blood pressure. Diets with high calories can lead to obesity. But diets containing five or more servings of fruits and vegetables per day may reduce the risk of stroke.

### Uncontrollable Risk Factors

**Age:** People over 55 have a greater risk of a stroke than younger people.

**Gender:** While males have more strokes than females, the majority of stroke deaths happen in women. Birth control pills and pregnancy are thought to be additional risk factors for women.

**Heredity:** People whose close blood relations have had a stroke have a higher risk of a stroke.

**Prior Stroke:** The risk of a stroke for someone who has already had a stroke is much greater than for someone who has not.

**Race:** African Americans are at higher risk for stroke, followed by Asians and Caucasians.

# Treating a Stroke

## Diagnostic Tests

If you show symptoms of a TIA or a stroke, your doctor will do a physical and neurological exam and may order diagnostic tests.

**CT Scan (Computerized Tomography Scan)** creates a computer-enhanced picture of the brain, to help with a possible diagnosis of a stroke. A CT scan is often one of the first tests given to a stroke patient. Test results can give valuable information about the cause of stroke and the location and amount of brain injury.

**MRI (Magnetic Resonance Imaging)** uses a large magnetic field to produce sharp, detailed pictures of the brain. Like the CT scan, it shows the location and amount of brain injury.

**Certain blood tests** may help determine the cause of stroke. We may check your cholesterol levels, risk for diabetes and possible clotting issues.

**Ultrasound** is a simple test that can be used to study many blood vessels in the body.

## Medical Treatments

Early medical intervention is needed for treatment of a stroke which is a medical emergency. **Time is Brain!** Recent medical advances have increased the ability of health care professionals to prevent a stroke or lessen its damage.

## Ischemic Stroke

**Tissue Plasminogen (t-PA) or Activase** is a clot busting drug given through an IV to help dissolve the clot causing the stroke.

**Mechanical Thrombectomy** is a procedure done in the vessels of the brain to remove the clot causing stroke.

## Hemorrhagic Stroke

Treatment of a hemorrhagic stroke may involve medications or surgery.

## Complications

In addition to the direct effects of a stroke, other problems may develop after a stroke. Many of these problems can be anticipated and prevented.

The effects of a stroke differ with each person and not everyone has complications. However, the most common possibilities are:

- Brain edema (swelling)
- Limb contractures and shoulder pain
- Seizures
- Blood clots in the veins (most often the immobilized limb)
- Pneumonia (possibly linked to trouble swallowing)
- Emotional changes such as depression

### Types of treatment to prevent complications:

- Physical therapy for strength and balance
- Occupational therapy for activities of daily living; dressing, hygiene, grooming, and vision
- Speech language pathology for swallowing, communication, and cognition
- Nutritional support for healing
- Counseling or supportive therapy for emotional changes



# After Discharge

## Followup

Your nurse will let you know about specific follow up recommendations when you receive your discharge paperwork.

You may be advised to follow up with:

- Your Primary Care Physician
- A Neurologist
- A Cardiologist
- Physical Therapy
- Occupational Therapy
- Speech Therapy

Your doctor may recommend other follow up specialists depending on your situation. This will be documented on your Discharge After Visit Summary.

## Medication

Your nurse will let you know of any new medications your doctor prescribes when you receive your discharge paperwork.

Examples of medications you may be prescribed after a stroke are

- Anti-platelets
- Statins
- Anti-coagulants
- Antihypertensive

Your doctor may recommend other new medications depending on your situation. This will be documented on your Discharge After Visit Summary.

## Preventing another stroke

After discharge, I plan to do the following to help prevent having another TIA or stroke

### Check those that apply:

- Monitor and control my blood pressure, taking my medicine as prescribed by my physician.
- Quitting smoking
- Monitor and controlling my diabetes, taking my medicine as prescribed by my physician
- Eating a healthy diet like the Mediterranean diet or Dash diet
- Increasing my physical activity
- Monitoring and controlling my cholesterol, taking my medicine as prescribed by my physician
- Following up with any specialist my discharging physician recommends
- Limiting my alcohol intake

For resources to assist you with any of your goals, go to [www.stroke.org](http://www.stroke.org)

# Rehabilitation

## Rehabilitation Overview

Rehabilitation is an important part of recovery for many stroke survivors. The effects of a stroke may mean that you must change, relearn or redefine how you live your day-to-day life. Rehabilitation is designed to help you return to independent living.

Each person who has had a stroke has a unique outcome based on the size and location of the stroke, the medical course and their path to recovery. Some people are only slightly affected by a stroke. Others get better quickly from what appears to be a more serious stroke. Still others may need a longer period of recovery to get back the functions needed to return to independence. For these people, more rehabilitation will be needed.

Research shows that the sooner rehabilitation is started after a stroke, the better the person's recovery. Rehabilitation services can make a major difference in the outcome from a stroke even when there are serious physical or speech limitations.

The goals of rehabilitation are to build your strength and confidence so that you can continue your daily activities despite the lasting effects of your stroke.

A rehabilitation program and therapy services can improve your function in many areas, such as:

- Self-care skills—feeding, grooming, bathing and dressing (occupational therapy)
- Swallowing skills—safety with eating and drinking (speech therapy)
- Mobility skills—getting in and out of a bed or chair, walking, or self-propelling a wheelchair (physical therapy)
- Communication—speech and language skills (speech therapy)
- Cognitive abilities—memory, problem solving, social skills (speech therapy and occupational therapy)
- Emotional support—counseling, adjustment to change, coping strategies (clinical social work)
- Driving assessment—(rehabilitation team, including doctor and therapy services)

Rehabilitation will start when your doctor determines that you are medically stable and able to benefit from it. Most rehabilitation services need a doctor's order, particularly for insurance coverage.

Services are provided in many different places such as short-term care and rehabilitation hospitals, long-term care facilities, outpatient facilities, and in your home through home health agencies.

You may benefit from rehabilitation in some or all of these settings. With your doctor's direction, rehabilitation specialists come together to provide a treatment program specific to your needs through these different levels of care. The important point to remember is that each person's stroke recovery and rehabilitation process is unique.

## Keys to Success

There are three keys to successful rehabilitation after a stroke.

1. It is best for rehabilitation to start as soon as possible after the stroke.
2. During rehabilitation, your family and/or support system will be a very important resource.
3. Rehabilitation is most useful as a team effort including the doctor, nurses, and other care providers working together with you and your family.

Early rehabilitation measures, such as exercising affected muscles and increasing movement, should start as soon after the stroke as possible. These simple measures improve circulation, keep up the flexibility of joints, and prevent other complications during the hospital stay.

A nurse and/or therapist will initially give care while teaching family and caregivers how to help in daily activities for a successful transition to home. Your friends and family can be the most important source of support during rehabilitation and long-term recovery. They can help increase your participation and motivation for recovery during a difficult time. A good way for family members to learn mobility techniques such as turning and positioning is by practicing these skills while you are still in the hospital. The nurse or therapist can provide training and practice to make sure that activities are performed safely.

Rehabilitation is a team effort. Your doctor evaluates your medical condition and decides your plan of care.

Your doctor will call on other specialists to help with your rehabilitation based on your needs.

Physical therapists, speech-language pathologists,

occupational therapists, case managers and social workers can all make vital contributions to your care and help with your discharge plan. These specialists usually work in hospitals, rehabilitation centers, long term care facilities, and in the home setting.

## Resources

### Rehabilitation Services Offered at Boulder Community Health

A wide variety of services are available for rehabilitation following a stroke including:

- Occupational therapy
- Physical therapy
- Speech therapy
- Case management
- Counseling
- Driving evaluations

For more information regarding Boulder Community Health Stroke Rehabilitation Services, contact the following:

#### BCH Inpatient Rehabilitation

CARF Accredited Comprehensive Inpatient Rehabilitation Program

#### UC Health Broomfield Hospital

11820 Destination Dr., 3rd Floor  
Broomfield, CO 80021

Admissions Coordinator: 303-938-3168  
bch.org/inrehab

#### Adult Outpatient Rehabilitation

Comprehensive outpatient therapy services

#### Community Medical Center

1000 W. South Boulder Rd., Suite. 210  
Lafayette, CO 80026

Scheduling: 303-415-4400  
bch.org/outrehab

### Stroke Support Groups

To locate the nearest stroke support group please visit [strokecolorado.org](http://strokecolorado.org) and navigate to the services tab.

### Regional Stroke Resources

#### Rocky Mountain Stroke Center

5666 S. Bannock Street  
Littleton, CO 80120  
303-730-8800  
[strokecolorado.org](http://strokecolorado.org)

For local and updated support group listings in your area, please call Rocky Mountain Stroke Center or check the website for available resources.

### National Stroke Resources

#### American Stroke Association

800-242-8721  
[stroke.org](http://stroke.org)

#### National Aphasia Association

[aphasia.org](http://aphasia.org)

#### Association American Speech-Language-Hearing Association

800-638-8255  
[asha.org/public](http://asha.org/public)

#### American Occupational Therapy Association

301-652-6611  
[aota.org](http://aota.org)

#### American Physical Therapy Association

800-999-2782  
[moveforwardpt.com](http://moveforwardpt.com)



## Caregiver Resources

### **Family Caregiver Alliance**

800-445-8106  
caregiver.org

### **Well-Spouse Foundation**

800-838-0879  
wellspouse.org

### **Caregiver Action Network**

202-454-3970  
caregiveraction.org

### **Caregiver Newsletter**

caregiver.com

### **Stroke Awareness for Everyone (SAFE)**

strokesafe.org

## Financial Services

If you need financial aid, food stamps or medical insurance, apply at your local Department of Social Services. Your social worker or case manager in the hospital can help you with this.

### **Insurance Coverage**

**Medicaid** is another form of medical insurance that can help you with these needs if you are eligible. Your eligibility is determined by guidelines based on your income and savings. Medicaid benefits vary widely from state to state.

For more details, contact your local Department of Social Services office for information about benefits available in your state. You will need a doctor's written order to get the services you need.

Medicaid payments always go directly to the doctor or the person providing the service.

**Medicare** is a form of medical coverage that may help you. Eligibility is based on age and the length of time a person has been disabled.

In general, Medicare covers short-term, skilled services. These can include skilled nursing care, physical therapy, occupational therapy, speech therapy and social work. Physician services and some equipment can also be covered. Long-term care is generally not covered. It is important to review your individual plan to determine coverage and your financial responsibility.

For more details about Medicare benefits, contact your local Social Security office or the Office of Health, Education and Welfare in Washington, D.C. You may also call the Medicare or Social Security hotlines.

**Private Insurance** If you have private insurance, read your policy carefully or contact your insurance company to determine what services you need.

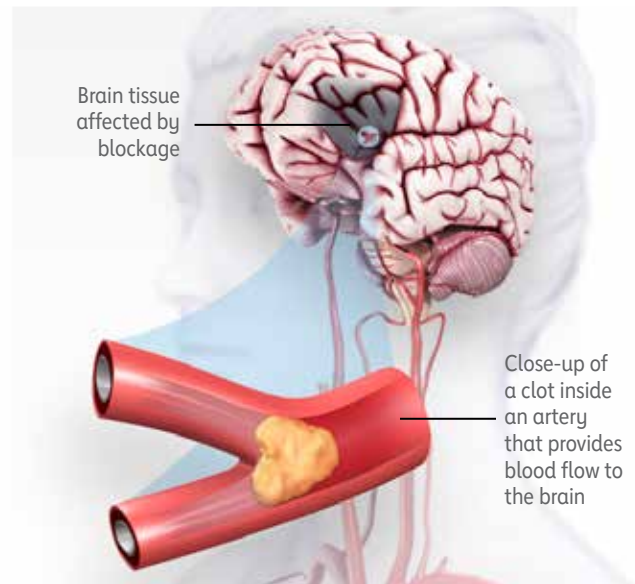
# Stroke Prevention and Treatment Information from the American Stroke Association



let's talk about

# Ischemic Stroke

The majority of strokes (87%) occur when blood vessels to the brain become narrowed or clogged with fatty deposits called plaque. This cuts off blood flow to brain cells. A stroke caused by lack of blood reaching part of the brain is called an ischemic stroke. High blood pressure is a leading risk factor for ischemic stroke.



An ischemic stroke occurs when a clot or a mass blocks a blood vessel, cutting off blood flow to a part of the brain.

## Are all ischemic strokes the same?

There are two main types of ischemic stroke.

- **Cerebral thrombosis** is caused by a blood clot (thrombus) in an artery going to the brain. The clot blocks blood flow to part of the brain. Blood clots usually form in arteries damaged by plaque.
- **Cerebral embolism** is caused by a wandering clot (embolus) that's formed elsewhere (usually in the heart or neck arteries). Clots are carried in the bloodstream and block a blood vessel in or leading to the brain. A main cause of embolism is an irregular heartbeat called atrial fibrillation.

## How are ischemic strokes diagnosed?

When someone has shown symptoms of a stroke or a TIA (transient ischemic attack), a doctor will gather information and make a diagnosis. They will review the events that have occurred and will:

- Ask when the symptoms of stroke started.
- Get a medical history from you or a family member.
- Do a physical and neurological examination.
- Have certain lab (blood) tests done.
- Get a CT (computed tomography) or MRI (magnetic resonance imaging) scan of the brain.
- Study the results of other diagnostic tests that might be needed.

## How are ischemic strokes treated?

**Acute treatment** is the immediate treatment given by the health care team when a stroke happens. The goal of acute treatment is to keep the amount of brain injury as small as possible. This is done by restoring blood flow to the part of the brain where the blockage was quickly.

There is a clot-busting drug called alteplase (IV r-tPA) used to treat ischemic stroke. It can reduce disability from stroke by breaking up a blood clot that is stopping the blood flow to the brain. To be eligible to receive alteplase, a doctor must diagnose your stroke as an ischemic stroke and treat you within **3 to 4.5 hours** of onset of stroke symptoms. Medication may also be used to treat brain swelling that sometimes occurs after a stroke.

For people with larger blood clots, alteplase may not dissolve them completely. In this case, a procedure, called **mechanical thrombectomy**, may be considered. In eligible patients with large clots in an artery, the procedure should be done as soon as possible within up to 24 hours of stroke symptom onset. Patients eligible for alteplase should receive it prior to undergoing mechanical thrombectomy.

To remove the clot, doctors thread a catheter (thin tube) with a stent through an artery in the groin up to the blocked artery in the brain. The stent opens and grabs the clot. The doctors then remove the stent with the trapped clot. If necessary, other devices may also be used. Patients must meet certain criteria to be eligible for this procedure.

*(continued)*



## Let's Talk About Ischemic Stroke

### What other treatments may I receive?

When someone has a stroke, they are at risk of another. Once the medical team identifies what caused the stroke, they may prescribe treatments or procedures to reduce the risk of a second stroke, such as:

- **Medications** such as aspirin and clopidogrel (antiplatelets) and anticoagulants interfere with the blood's ability to clot. This can play an important role in preventing a stroke.
- **Carotid endarterectomy** is a procedure in which blood vessel blockage (blood clot or fatty plaque) is surgically removed from the carotid artery in the neck. This reopens the artery and the blood flow to the brain. This is only done in people who have a large blockage.
- Doctors sometimes use **angioplasty** and **stents** to treat and reduce fatty buildup clogging a blood vessel. The fatty plaques may make it easier for clots to form.

Sometimes a stroke is the first sign a person has of other health conditions, such as high blood pressure, diabetes, atrial fibrillation (a heart rhythm disorder) or other vascular disease. If any of these are diagnosed, the health care team will prescribe appropriate treatment.



Aspirin can play an important role in preventing stroke because it helps keep blood from clotting.

### HOW CAN I LEARN MORE?

- 1 Call 1-888-4-STROKE (1-888-478-7653) or visit [stroke.org](http://stroke.org) to learn more about stroke or find local support groups
- 2 Sign up for **Stroke Connection**, a free digital magazine for stroke survivors and caregivers, at [strokeconnection.org](http://strokeconnection.org).
- 3 Connect with others who have also had an experience with stroke by joining our Support Network at [stroke.org/supportnetwork](http://stroke.org/supportnetwork).

### Do you have questions for your doctor or nurse?

Take a few minutes to write down your questions for the next time you see your health care provider.

For example:

**What can I do to help prevent another stroke?**

**What medications may I be given?**

### MY QUESTIONS:

We have many other fact sheets to help you make healthier choices, manage your condition or care for a loved one. Visit [stroke.org/letstalkaboutstroke](http://stroke.org/letstalkaboutstroke) to learn more.

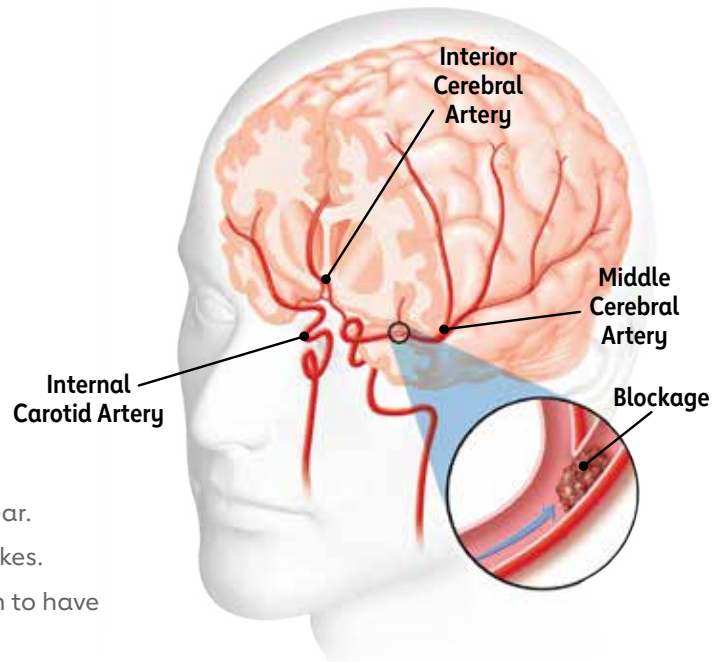


let's talk about

## Transient Ischemic Attack (TIA)

A transient ischemic attack (TIA) is often called a mini-stroke, but it's really a warning stroke. TIA and stroke symptoms are the same, although most TIA symptoms last only a few minutes (but up to 24 hours). While TIAs generally do not cause permanent brain damage, they are major warnings and should not be ignored.

- A TIA occurs before about 15 percent of all strokes.
- About 240,000 Americans experience a TIA every year.
- Mini-strokes are often followed by more severe strokes.
- About one-third of the people who have a TIA go on to have a more severe stroke within a year.
- People who have severe strokes often report having earlier warning strokes.



### What is a stroke?

A stroke is a "brain attack" that occurs when the blood bringing oxygen to your brain stops flowing and brain cells die. On average, someone in the United States has a stroke every 40 seconds.

### What causes a TIA?

When a blood vessel in the brain becomes blocked for a short period of time, the blood flow to that area of the brain slows or stops. This lack of blood (and oxygen) often leads to temporary symptoms such as slurred speech or blurry vision. TIAs are usually caused by one of three things:

- Low blood flow in a major artery carrying blood to the brain.
- A blood clot in another part of the body (such as the heart) that breaks off, travels to the brain and blocks a blood vessel.
- The narrowing of a smaller blood vessel in the brain, usually caused by plaque (a fatty substance) build-up.

### What are the symptoms of a TIA?

The symptoms of a TIA are the same as a stroke and often include sudden onset of any of the following:

- Weakness, numbness or paralysis of the face, arm or leg, usually on one side of the body.
- Trouble speaking or difficulty understanding others.
- Loss of vision in one or both eyes or double vision.
- Loss of balance or coordination.
- Severe headache with no known cause.

You may have a series of TIAs, and the repeated signs and symptoms may be similar or different, depending on which area of the brain is involved.

To help you remember some of the signs of a TIA or stroke, use F.A.S.T.:

# F.A.S.T.

Face Drooping	Arm Weakness	Speech Difficulty	Time to Call 911
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(continued)

## Transient Ischemic Attack (TIA)

### How is a TIA diagnosed and treated?

You cannot tell whether you are having a stroke or a TIA, so you should call 911 right away. A diagnosis of TIA can only be determined after an assessment by a health care provider, which can include blood tests, X-rays, ultrasound scanning, a magnetic resonance imaging (MRI), a computed tomography (CT) scan and tests to find out whether there are heart-related problems, such as an irregular heartbeat.

Since TIA symptoms resolve on their own, your health care provider will likely work with you to address the underlying causes to prevent additional TIAs or a stroke. Treatment options will depend upon the cause or causes, your medical history, and the results of any testing. Treatment often includes medication and lifestyle changes and could include surgery. Effective treatment may help reduce your risk for stroke or another TIA.

### TIA risk factors:

Anyone can have a TIA, but the risk increases with age. Some of the controllable risk factors for TIAs include high blood pressure, smoking, cardiovascular disease, diabetes, blood clots and alcohol abuse.



If you've previously had a stroke, pay careful attention to the signs of TIA, because they could signal a second stroke in your future. If you've already had at least one TIA, you are almost 10 times more likely to have a stroke than someone of the same age and sex who hasn't.

## HOW CAN I LEARN MORE?

- 1 Call 1-888-4-STROKE (1-888-478-7653) or visit [stroke.org](https://stroke.org) to learn more about stroke or find local support groups.
- 2 Sign up for the **Stroke Connection**, a free digital magazine for stroke survivors and caregivers, at [strokeconnection.org](https://strokeconnection.org).
- 3 Connect with others who have also had an experience with stroke by joining our Support Network at [stroke.org/supportnetwork](https://stroke.org/supportnetwork).

### Do you have questions for the doctor or nurse?

Take a few minutes to write your questions for the next time you see your health care provider.

For example:

**Which facility close to me is best equipped to treat me if I am having TIA symptoms?**

**What medical conditions do I have that put me at higher risk for TIA?**

**How can I reduce my risk for TIA?**

## MY QUESTIONS:

We have many other fact sheets to help you make healthier choices to manage your condition or care for a loved one. Visit [stroke.org/letstalkaboutstroke](https://stroke.org/letstalkaboutstroke) to learn more.



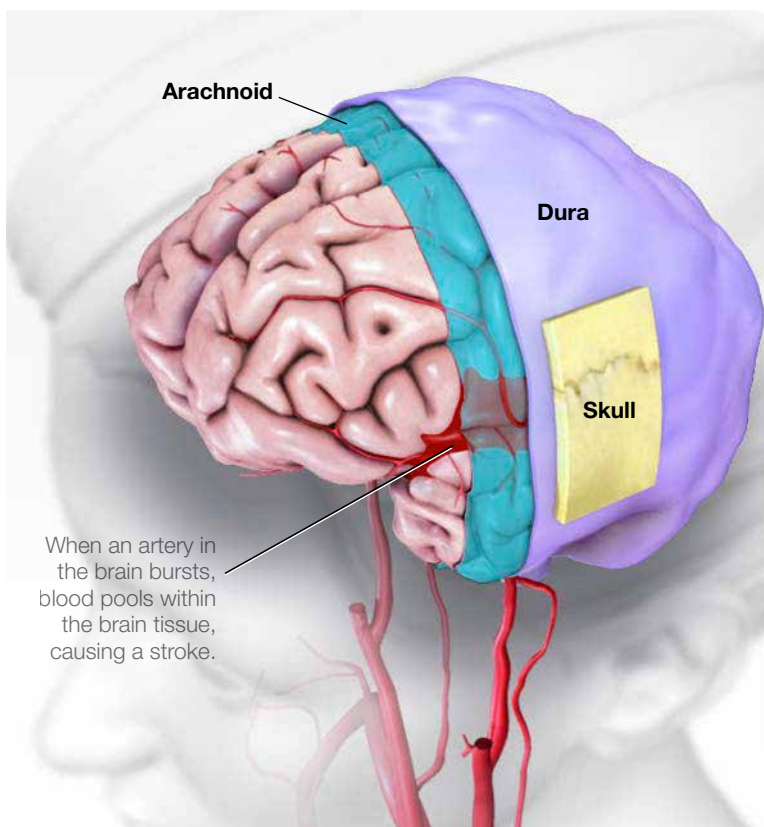


let's talk about

## Hemorrhagic Stroke

About 13 percent of strokes happen when a blood vessel ruptures in or near the brain. This is called a hemorrhagic stroke as shown at right.

When a hemorrhagic stroke happens, blood collects in the brain tissue. This is toxic for the brain tissue causing the cells in that area to weaken and die.



A type of hemorrhagic stroke, known as a subarachnoid hemorrhage, can occur when an aneurysm (a blood-filled pouch that balloons out from an artery) on or near the surface of the brain ruptures, flooding the space between the skull and the brain with blood.

### Are all hemorrhagic strokes the same?

There are two kinds of hemorrhagic stroke. In both, a blood vessel ruptures, disrupting blood flow to part of the brain.

**Intracerebral hemorrhages** (most common type of hemorrhagic stroke):

- Occur when a blood vessel bleeds or ruptures into the tissue deep within the brain.
- Are most often caused by chronically high blood pressure or aging blood vessels.
- Are sometimes caused by an arteriovenous malformation (AVM). An AVM is a cluster of abnormally formed blood vessels. Any one of these vessels can rupture, also causing bleeding into the brain.

### Subarachnoid hemorrhages:

- Occur when an aneurysm (a blood-filled pouch that balloons out from an artery) on or near the surface of the brain ruptures and bleeds into the space between the brain and the skull.
- Are often caused by high blood pressure.

In addition to high blood pressure, factors that increase the risk of hemorrhagic strokes include:

- cigarette smoking
- use of oral contraceptives (particularly those with high estrogen content)
- excessive alcohol intake
- use of illegal drugs

*(continued)*

### How are hemorrhagic strokes diagnosed?

When someone has shown symptoms of a stroke or a TIA (transient ischemic attack), a doctor will gather information and make a diagnosis. He or she will review the events that have occurred and will:

- get a medical history
- do a physical and neurological examination
- have certain laboratory (blood) tests done
- get a CT or MRI scan of the brain
- study the results of other diagnostic tests that might be needed

Diagnostic tests examine how the brain looks, works and gets its blood supply. They can outline the injured brain area. Diagnostic tests fall into three categories.

- Imaging tests give a picture of the brain similar to X-rays.
- Electrical tests record the electrical impulses of the brain (also called an EEG).
- Blood flow tests show any problem that may cause changes in blood flow to the brain.

### How are hemorrhagic strokes treated?

Because hemorrhages may be life-threatening, hospital care is required. Medication is used to control high blood pressure. Other medicine may be given to reduce the brain swelling that follows a stroke.

Surgery may be needed depending on the cause and type of the hemorrhage. Surgery is often recommended to either place a metal clip at the base of an aneurysm or to remove the abnormal vessels that make up an AVM.

Some procedures are less invasive and use of a catheter that goes in through a major artery in the leg or arm. The catheter is guided to the aneurysm or AVM where it places a device, such as a coil, to prevent rupture.

### HOW CAN I LEARN MORE?

- 1 Call **1-888-4-STROKE** (1-888-478-7653) to learn more about stroke or find local support groups, or visit **StrokeAssociation.org**.
- 2 Sign up to get Stroke Connection magazine, a free magazine for stroke survivors and caregivers at **strokeconnection.org**.
- 3 Connect with others sharing similar journeys with stroke by joining our Support Network at **strokeassociation.org/supportnetwork**.

### Do you have questions for the doctor or nurse?

Take a few minutes to write your questions for the next time you see your healthcare provider.

For example:

**What can I do to help prevent another stroke?**

**How can I control high blood pressure?**

### My Questions:

We have many other fact sheets to help you make healthier choices to reduce your risk, manage disease or care for a loved one. Visit **strokeassociation.org/letstalkaboutstroke** to learn more.

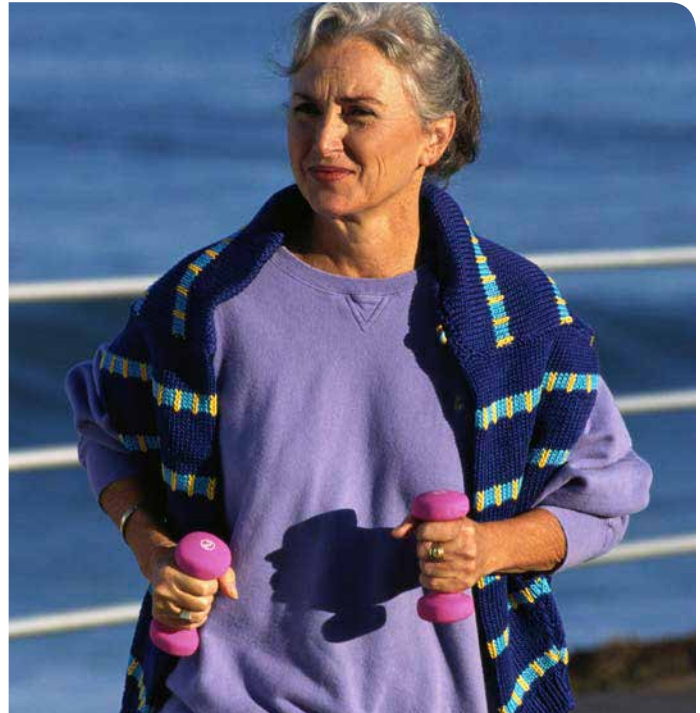




let's talk about

## Lifestyle Changes To Prevent Stroke

You can do plenty to make your heart and blood vessels healthy, even if you've had a stroke. A healthy lifestyle plays a big part in decreasing your risk for disability and death from stroke and heart attack.



### How can I make my lifestyle healthier?

Here are steps to take to be healthier and reduce your risk of stroke:

- Don't smoke and avoid second-hand smoke.
- Improve your eating habits. Eat foods low in saturated fat, *trans* fat, sodium and added sugars.
- Be physically active.
- Take your medicine as directed.
- Get your blood pressure checked regularly and work with your healthcare provider to manage it if it's high.
- Reach and maintain a healthy weight.
- Decrease your stress level.
- Seek emotional support when it's needed.
- Have regular medical checkups.

### How do I stop smoking?

- The first and more important step is making a decision to quit — and commit to stick to it.

- Ask your healthcare provider for information, programs and medications that may help.
- Fight the urge to smoke by going to smoke-free facilities. Avoid staying around people who smoke.
- Keep busy doing things that make it hard to smoke, like working in the yard.
- Remind yourself that smoking causes many diseases, can harm others and is deadly.
- Ask your family and friends to support you.

### How do I change my eating habits?

- Ask your doctor, nurse or a licensed nutritionist or registered dietician for help.
- Be aware of your special needs, especially if you have high blood pressure, high cholesterol or diabetes.
- Avoid foods like fatty meats, butter and cream, which are high in saturated fat.
- Eat moderate amounts of food and cut down on saturated fat, *trans* fat, sugar and salt.
- Bake, broil, roast and boil foods instead of frying.

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- Read nutrition labels on packaged meals. Many are very high in sodium.
- Limit alcohol to one drink a day for women; two drinks per day for men.
- Eat more fruit, vegetables, whole-grains, dried peas and beans, pasta, fish, poultry and lean meats.

### What about physical activity?

- If you have a chronic medical condition, check with your doctor before you start.
- Start slowly and build up to at least 150 minutes of moderate physical activity (such as brisk walking) a week. Or, you can do 75 minutes of vigorous-intensity physical activity, or a combination of the two, to improve overall cardiovascular health.
- Look for even small chances to be more active. Take the stairs instead of an elevator and park farther from your destination.



If you have a chronic medical condition, check with your doctor before starting an exercise program.

### HOW CAN I LEARN MORE?

- 1 Call **1-888-4-STROKE** (1-888-478-7653) to learn more about stroke or find local support groups, or visit **StrokeAssociation.org**.
- 2 Sign up to get *Stroke Connection* magazine, a free magazine for stroke survivors and caregivers at **strokeconnection.org**.
- 3 Connect with others sharing similar journeys with stroke by joining our Support Network at **strokeassociation.org/supportnetwork**.

### Do you have questions for the doctor or nurse?

Take a few minutes to write your questions for the next time you see your healthcare provider.

For example:

**What is the most important change I can make?**

**What kind of physical activity can I do safely?**

### My Questions:

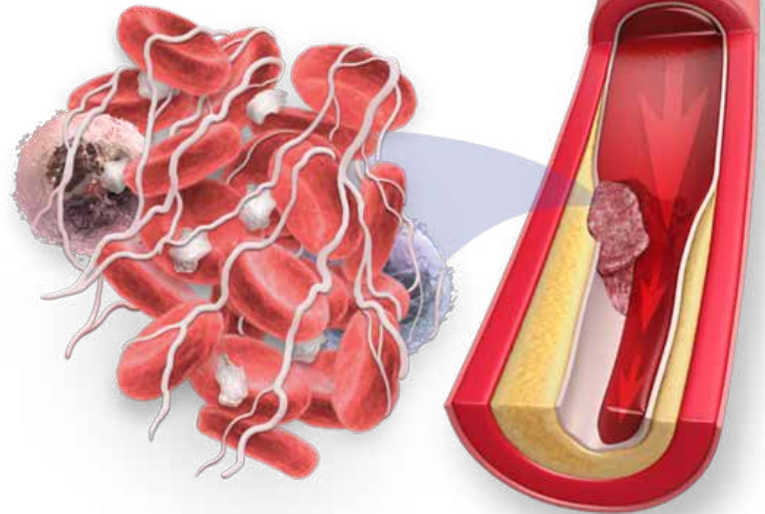
We have many other fact sheets to help you make healthier choices to reduce your risk, manage disease or care for a loved one. Visit **strokeassociation.org/letstalkaboutstroke** to learn more.



## What are Anticoagulants and Antiplatelet Agents?

Anticoagulants and antiplatelets are medicines that reduce blood clotting in an artery, vein or the heart. Doctors prescribe these to help prevent heart attacks and strokes caused by blood clots. Blood clots can block blood flow to your heart or your brain causing a heart attack or stroke.

Blood clots are made up of red blood cells, platelets, fibrin, and white blood cells (shown below). Anticoagulants and antiplatelets keep these parts from sticking together and forming a clot.



### What should I know about anticoagulants?

Anticoagulants (sometimes known as “blood thinners”) are medicines that delay the clotting of blood. Examples are heparin, warfarin, dabigatran, apixaban, rivoraxaban and edoxaban.

Anticoagulants make it harder for blood clots to form in your heart, veins and arteries. They also can keep existing clots from growing larger. It’s important to follow these tips while on anticoagulants:

- Take your medications exactly as prescribed.
- If you take warfarin, have regular blood tests so your health care provider can tell how the medicine is working.
  - The test for people on warfarin is called a prothrombin time (PT) or International Normalized Ratio (INR) test.
- Never take aspirin with anticoagulants unless your doctor tells you to.
- Make sure all your health care providers know that you’re taking anticoagulants.
- Always talk to your health care provider before taking any new medicines or supplements. This includes aspirin, vitamins, cold medicine, pain medicine, sleeping pills or antibiotics. These can affect the way anticoagulants work by strengthening or weakening them.

- Discuss your diet with your health care providers. Foods rich in Vitamin K can reduce the effectiveness of warfarin. Vitamin K is in leafy, green vegetables, fish, liver, lentils, soybeans and some vegetable oils.
- Tell your family that you take anticoagulant medicine.
- Always carry your emergency medical ID card.

### Could anticoagulants cause problems?

If you do as your doctor tells you, there probably won’t be problems. But you must tell them right away if:

- You think you’re pregnant or you’re planning to get pregnant.
- Your urine turns pink, red or brown. This could be a sign of urinary tract bleeding.
- Your stools turn red, dark brown or black. This could be a sign of intestinal bleeding.
- You bleed more than normal when you have your period.
- Your gums bleed.
- You have a very bad headache or stomach pain that doesn’t go away.

## What are Anticoagulants and Antiplatelet Agents?

- You get sick or feel weak, faint or dizzy.
- You often find bruises or blood blisters.
- You have an accident, such as a bump on the head, a cut that won't stop bleeding or a fall of any kind.

### What should I know about antiplatelet agents?

Antiplatelets keep blood clots from forming by keeping blood platelets from sticking together.

Almost everyone with coronary artery disease, including those who have had a heart attack, stent, or CABG, are treated with aspirin. Aspirin can help prevent an ischemic stroke. It can also help if you have had a TIA or if you have heart problems.

Many heart attack and stroke patients – and people seeking to avoid these events may get dual antiplatelet therapy (DAPT). With DAPT, two types of antiplatelets— aspirin and a P2Y<sub>12</sub> inhibitor—are used to prevent blood clots.

P2Y<sub>12</sub> inhibitors are usually prescribed for months or years along with aspirin therapy. You may be prescribed one of three of these medications -- clopidogrel, prasugrel or ticagrelor. Prasugrel should not be prescribed if you have



had a stroke or a transient ischemic attack (TIA). Your doctor will prescribe the best one for you based on your risk of blood clots and bleeding.

### Do I need an emergency medical ID?

Yes, always keep it with you. It needs to include:

- The name of the drugs you're taking.
- Your name, phone number and address.
- The name, address and phone number of your doctor.

## HOW CAN I LEARN MORE?

- 1 Call 1-800-AHA-USA1 (1-800-242-8721), or visit [heart.org](http://heart.org) to learn more about heart disease and stroke.
- 2 Sign up to get *Heart Insight*, a free e-newsletter for heart patients and their families, at [HeartInsight.org](http://HeartInsight.org).
- 3 Connect with others sharing similar journeys with heart disease and stroke by joining our Support Network at [heart.org/SupportNetwork](http://heart.org/SupportNetwork).

### Do you have questions for your doctor or nurse?

Take a few minutes to write down your questions for the next time you see your health care provider.

For example:

**What kind of aspirin or other antiplatelet agent should I take?**

**What is the right dose for me?**

## MY QUESTIONS:

We have many other fact sheets to help you make healthier choices to reduce your risk, manage your condition or care for a loved one. Visit [heart.org/AnswersByHeart](http://heart.org/AnswersByHeart) to learn more.



## What Are Cholesterol-Lowering Medicines?

If your doctor decided you need cholesterol-lowering medicine, it's because you're at high risk for heart attack or stroke. Treatment usually combines healthy lifestyle changes, including diet and physical activity, and medicine.

Most heart attacks and many strokes are caused by a buildup of fat, cholesterol and other substances called **plaque** in the inner walls of your arteries. The arteries become clogged and narrowed, and blood flow is reduced. If a blood clot forms and blocks blood flow to your heart, it causes a heart attack. If a blood clot blocks an artery leading to or in the brain, a stroke results.

You can help prevent a heart attack or stroke by working with your doctor to reduce your cholesterol levels and other risk factors.



### What medicine may I be prescribed?

Various medicines can lower blood cholesterol levels. Statins are recommended for most patients. They have been directly associated with reducing risk for heart attack and stroke. Statins continue to provide the most effective LDL-lowering treatment in most cases.

**Statins (HMG-CoA reductase inhibitors)** prevent the production of cholesterol in the liver. Their major effect is to lower LDL (bad) cholesterol. Some names are lovastatin, pravastatin, simvastatin, fluvastatin and atorvastatin.

Talk to your doctor about the risks and benefits of statin therapy if you are in one of the following groups:

- Adults with known cardiovascular disease (CVD), including stroke, caused by atherosclerosis
- Adults aged 40-75 years with diabetes
- Adults with LDL-cholesterol (LDL-C) level of greater than or equal to 190 mg/dL
- Adults, aged 40 - 75 years, with LDL-C level of 70-189 mg/

dL and a 5% to less than 20% 10-year risk of developing CVD from atherosclerosis, with risk enhancing factors

- Adults aged 40 - 75 years, with LDL-C level of 70-189 mg/dL and a 20% or greater 10-year risk of developing CVD from atherosclerosis

Some people who aren't in these groups also may benefit from statin therapy.

### What other drugs may be prescribed?

Your doctor will monitor your progress on your statin therapy. If you're having serious side effects or don't have the desired response to statin therapy and lifestyle changes, your doctor may change the dose or consider adding on other medicines.

If you have CVD and are already taking the highest statin you can tolerate and your LDL-C is still 70 mg/dL or above, one or more of the following medicines may be prescribed. They all can be given with a statin.

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## What Are Cholesterol-Lowering Medicines?

**Ezetimibe (cholesterol absorption inhibitors)** works by preventing cholesterol from being absorbed in the intestine. It's the most commonly used non-statin agent.

**Bile acid sequestrants** cause the intestine to get rid of more cholesterol. Some names are cholestyramine, cholestipol and colesevelam.

**PCSK9 inhibitors** are powerful LDL-lowering drugs. They bind to and inactivate a protein in liver to lower LDL (bad) cholesterol. Some names are alirocumab and evolocumab.

**Fibrates** and **niacin** are triglyceride-lowering drugs that have mild LDL-lowering action, but data does not support their use as an add-on to statins. Take niacin only if it's prescribed.

Your doctor will work with you to decide which medicine, or combination of medicines, is best for you. Always follow your doctor's instructions, and let them know if you have any side effects. Never stop taking your medicine on your own!

### How do I know if my medicine is working?

Your doctor will test your blood cholesterol levels as needed to monitor your progress.



## HOW CAN I LEARN MORE?

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- 2 Sign up for our monthly *Heart Insight* e-news for heart patients and their families, at [HeartInsight.org](http://HeartInsight.org).
- 3 Connect with others sharing similar journeys with heart disease and stroke by joining our Support Network at [heart.org/SupportNetwork](http://heart.org/SupportNetwork).

### Do you have questions for your doctor or nurse?

Take a few minutes to write down your questions for the next time you see your health care professional.

For example:

- What if I forgot a dose?**
- Should I avoid any foods or other medicines?**

### MY QUESTIONS:

We have many other fact sheets to help you make healthier choices to reduce your risk, manage your condition or care for a loved one. Visit [heart.org/AnswersByHeart](http://heart.org/AnswersByHeart) to learn more.



let's talk about

# Risk Factors for Stroke

Knowing your risk factors for stroke is the first step in preventing a stroke. You can change or treat some risk factors, but others you can't. By having regular medical checkups and knowing your risk, you can focus on what you can change and lower your risk of stroke.



## What risk factors can I change or treat?

- **High blood pressure.** This is the single most important risk factor for stroke because it's the leading cause of stroke. Know your blood pressure and have it checked every year. Normal blood pressure is below 120/80. If you have been told that you have high blood pressure, work with your healthcare provider to reduce it.
  - **Smoking.** Smoking damages blood vessels. This can lead to blockages within those blood vessels, causing a stroke. Don't smoke and avoid second-hand smoke.
  - **Diabetes.** Having diabetes more than doubles your risk of stroke. Work with your doctor to manage diabetes.
  - **High cholesterol.** High cholesterol increases the risk of blocked arteries. If an artery leading to the brain becomes blocked, a stroke can result.
  - **Physical inactivity and obesity.** Being inactive, obese, or both, can increase your risk of heart disease and stroke.
  - **Carotid or other artery disease.** The carotid arteries in your neck supply most of the blood to your brain.
- A carotid artery damaged by a fatty buildup of plaque inside the artery wall may become blocked by a blood clot. This causes a stroke.
- **Transient ischemic attacks (TIAs).** Recognizing and treating TIAs can reduce the risk of a major stroke. TIAs produce stroke-like symptoms but most have no lasting effects. Know the warning signs of a TIA and seek emergency medical treatment immediately.
  - **Atrial fibrillation (AFib) or other heart disease.** In AFib the heart's upper chambers quiver (like a bowl of gelatin) rather than beating in an organized, rhythmic way. This can cause the blood to pool and clot, increasing the risk of stroke. AFib increases risk of stroke five times. People with other types of heart disease have a higher risk of stroke, too.
  - **Certain blood disorders.** A high red blood cell count makes clots more likely, raising the risk of stroke. Sickle cell anemia increases stroke risk because the "sickled" cells stick to blood vessel walls and may block arteries.
  - **Excessive alcohol intake.** Drinking an average of more than one drink per day for women or more than two drinks a day for men can raise blood pressure. Binge drinking can lead to stroke.

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- **Illegal drug use.** Drugs including cocaine, ecstasy, amphetamines, and heroin are associated with an increased risk of stroke.
- **Sleep apnea.** Sleep-disordered breathing contributes to risk of stroke. Increasing sleep apnea severity is associated with increasing risk.

### What are the risk factors I can't control?

- **Increasing age.** Stroke affects people of all ages. But the older you are, the greater your stroke risk.
- **Gender.** Women have a higher lifetime risk of stroke than men do. Use of birth control pills and pregnancy pose special stroke risks for women.
- **Heredity and race.** People whose close blood relations have had a stroke have a higher risk of stroke. African Americans have a higher risk of death and disability from stroke than whites. This is because they have high blood pressure more often. Hispanic Americans are also at higher risk of stroke.
- **Prior stroke.** Someone who has had a stroke is at higher risk of having another one.



Age, gender, heredity and race are among the stroke risk factors that you can't control.

### HOW CAN I LEARN MORE?

- 1 Call **1-888-4-STROKE** (1-888-478-7653) to learn more about stroke or find local support groups, or visit **StrokeAssociation.org**.
- 2 Sign up to get *Stroke Connection* magazine, a free magazine for stroke survivors and caregivers at **strokeconnection.org**.
- 3 Connect with others sharing similar journeys with stroke by joining our Support Network at **strokeassociation.org/supportnetwork**.

### Do you have questions for the doctor or nurse?

Take a few minutes to write your questions for the next time you see your healthcare provider.

For example:

**What are my risk factors for stroke?**

**What are the warning signs of TIAs and stroke?**

### My Questions:

We have many other fact sheets to help you make healthier choices to reduce your risk, manage disease or care for a loved one. Visit **strokeassociation.org/letstalkaboutstroke** to learn more.





let's talk about

# High Blood Pressure and Stroke

## What is high blood pressure (HBP)?

High blood pressure means that the force of the blood pushing against the sides of your arteries is consistently in the high range. This can lead to stroke, heart attack, heart failure or kidney failure.

Two numbers represent blood pressure. The higher (systolic) number shows the pressure while the heart is beating. The lower (diastolic) number shows the pressure when the heart is resting between beats. The systolic number is always listed first. Blood pressure is measured in millimeters of mercury (mm Hg).

Normal blood pressure is below 120/80 mm Hg. If you're an adult and your systolic pressure is 120 to 129, and your diastolic pressure is less than 80, you have elevated blood pressure. High blood pressure is a pressure of 130 systolic or higher, or 80 diastolic or higher, that stays high over time.

## How does high blood pressure increase stroke risk?

High blood pressure is the single most important risk factor for stroke because it's the leading cause of stroke.

HBP adds to your heart's workload and damages your arteries and organs over time. Compared to people whose blood pressure is normal, people with HBP are more likely to have a stroke.

About 87 percent of strokes are caused by narrowed or clogged blood vessels in the brain that cut off the



blood flow to brain cells. This is an **ischemic stroke**. High blood pressure causes damage to the inner lining of the blood vessels. This adds to any blockage that is already within the artery wall.

About 13 percent of strokes occur when a blood vessel ruptures in or near the brain. This is a **hemorrhagic stroke**. Chronic HBP or aging blood vessels are the main causes of this type of stroke. HBP puts more pressure on the blood vessels until they can no longer maintain the pressure and the blood vessel ruptures over time.

## Am I at higher risk for HBP?

There are risk factors that increase your chances of developing HBP. Some you can control, and some you can't.

Those that can be controlled are:

- Smoking and exposure to secondhand smoke
- Diabetes
- Being obese or overweight
- High cholesterol
- Unhealthy diet (high in sodium, low in potassium, and drinking too much alcohol)

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- Physical inactivity

Factors that cannot be modified or are difficult to control are:

- Family history of high blood pressure
- Race/ethnicity
- Increasing age
- Gender (males)
- Chronic kidney disease
- Obstructive sleep apnea

Socioeconomic status and psychosocial stress are also risk factors for HBP. These can affect access to basic living necessities, medication, healthcare providers, and the ability to adopt lifestyle changes.

### How can I control high blood pressure?

- Don't smoke and avoid secondhand smoke.
- Lose weight if you're overweight.
- Eat a healthy diet that's low in sodium (salt), saturated fat, and *trans* fat.
- Eat fruits and vegetables, whole grains and low-fat dairy products. Include foods rich in potassium.



The only way to know if your blood pressure is high is to check it regularly. Know what your blood pressure should be and try to keep it at that level.

- Enjoy regular physical activity.
- Limit alcohol to no more than two drinks a day if you're a man and one drink a day if you're a woman.
- Take all medicines as prescribed to control your blood pressure.

### HOW CAN I LEARN MORE?

- 1 Call **1-888-4-STROKE** (1-888-478-7653) to learn more about stroke or find local support groups, or visit **StrokeAssociation.org**.
- 2 Sign up to get *Stroke Connection* magazine, a free magazine for stroke survivors and caregivers at **strokeconnection.org**.
- 3 Connect with others sharing similar journeys with stroke by joining our Support Network at **strokeassociation.org/supportnetwork**.

### Do you have questions for the doctor or nurse?

Take a few minutes to write your questions for the next time you see your healthcare provider.

For example:

**What should my blood pressure be?**

**How often should my blood pressure be checked?**

### My Questions:

We have many other fact sheets to help you make healthier choices to reduce your risk, manage disease or care for a loved one. Visit **strokeassociation.org/letstalkaboutstroke** to learn more.



let's talk about

## The Connection Between Diabetes and Stroke

Diabetes, also called diabetes mellitus, is a condition that causes blood sugar to rise. A fasting blood glucose (sugar) level of 126 milligrams per deciliter (mg/dL) or higher is dangerous.

- More than 30 million Americans have diabetes.
- Diabetes is the 7th leading cause of death in the U.S.
- Occurrence of diabetes is higher among American Indians, Alaska Natives, non-Hispanic blacks, and Hispanics/Latinos.
- Adults who have diabetes are two times as likely to have a stroke compared to people who do not have diabetes.
- People with diabetes tend to develop heart disease or have a stroke at an earlier age than people without diabetes.
- People with prediabetes have an increased risk not only for developing Type 2 diabetes, but also for heart disease and stroke.
- Every two minutes an American adult with diabetes is hospitalized for stroke.

***Knowing this, it's important to understand the connection between diabetes and stroke, recognize the risk factors and take steps to stay healthy.***



### Why does diabetes often lead to stroke?

The connection between diabetes and stroke has to do with the way the body handles blood glucose to make energy. Most of the food we eat is broken down into glucose to give us energy. Glucose enters a person's bloodstream after food is digested and travels to cells throughout the body. For glucose to enter cells and provide energy, it needs a hormone called insulin. The pancreas is responsible for producing this insulin in the right amounts. In people who have Type 1 diabetes, the pancreas does not make insulin. In people who have Type 2 diabetes, the pancreas makes too little insulin, or muscles, the liver and fat do not use insulin in the right way.

As a result, people with untreated diabetes accumulate too much glucose in their blood, and their cells don't receive enough energy. Over time, excessive blood glucose can result in increased fatty deposits or clots in blood vessels. These

clots can narrow or block blood vessels in the brain or neck, cutting off the blood supply, stopping oxygen from getting to the brain and causing a stroke.

### Stroke risk factors

- Diabetes or prediabetes.
- Excessive belly fat:
  - Men: waist more than 40 inches.
  - Women: waist more than 35 inches.
- High blood pressure.
- High blood glucose levels.
- High cholesterol.
- Cigarette smoking.

*(continued)*

## The Connection Between Diabetes and Stroke

### What You Can Do

If you have diabetes, you can ward off the risk of stroke by taking steps to keep your heart and blood vessels healthy.

1. Maintain a heart-healthy diet.
2. Don't smoke.
3. Maintain a healthy weight.
4. Exercise every day.
5. Limit alcohol.
6. Learn to manage stress.
7. Talk to your health care provider.



### BE INFORMED, BE HEALTHY

People with diabetes can live long, healthy lives, free from heart disease, stroke and other health problems. Recognizing the connection between diabetes and stroke is the first step toward lowering stroke risk.

### HOW CAN I LEARN MORE?

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- 3 Connect with others who have also had an experience with stroke by joining our Support Network at [stroke.org/supportnetwork](https://stroke.org/supportnetwork).

### Do you have questions for the doctor or nurse?

Take a few minutes to write down your questions for the next time you see your health care provider.

For example:

**How can I reduce my risk of stroke?**

### MY QUESTIONS:

We have many other fact sheets to help you make healthier choices, manage your condition or care for a loved one. Visit [stroke.org/letstalkaboutstroke](https://stroke.org/letstalkaboutstroke) to learn more.





[bch.org/stroke](http://bch.org/stroke)