



HONORHEALTH®

STROKE

— KNOW THE **SIGNS**,

ACT IN **TIME**, IMPROVE **OUTCOMES**

Learning about stroke

We know this is a difficult time for you and your family. This booklet provides information to help you and your loved ones understand what happens during a stroke, what to expect during recovery and where to find help along the way. You'll also find information on how to prevent strokes because having one puts you at risk for another.

Rehabilitation begins right away

In the U.S., more than 795,000 people have a stroke each year and most require rehabilitation afterward. A rehab program helps you change or relearn your daily routine so you can become as independent as possible and prevent another stroke from happening. However, rehab is not a cure and cannot reverse brain damage.

Rehab begins in the hospital — often one or two days after the stroke — and may continue for months after you leave. Although this may seem like a long time, sticking with your rehab program improves your quality of life in the long run.

Stroke recovery is different for every patient. It depends on what part of the brain was damaged and how much damage occurred.

Your HonorHealth team will design your stroke rehab program so you can achieve best possible results.

They will work with you and your family to make sure you're ready for the changes ahead.

Rehabilitation Services

HonorHealth Scottsdale
Osborn Medical Center
480-882-4480

HonorHealth
Rehabilitation Hospital
480-800-3900

What is a stroke?

Strokes block blood flow to the brain

A stroke is serious — just like a heart attack. In fact, you might hear a stroke called a “brain attack.” Most happen because a blood clot blocks blood flow to the brain. With no blood flow, brain cells near the clot die because they’re not getting the oxygen they need to live.

Every minute counts when getting a stroke victim to the hospital. The longer blood flow is cut off to the brain, the greater the damage.

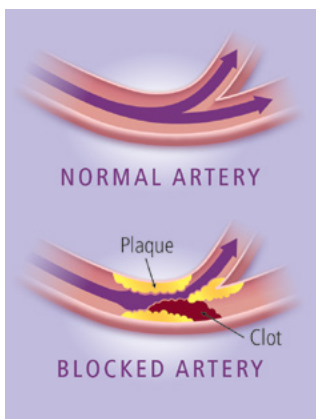
Don’t guess — call 9-1-1.

What is an ischemic stroke?

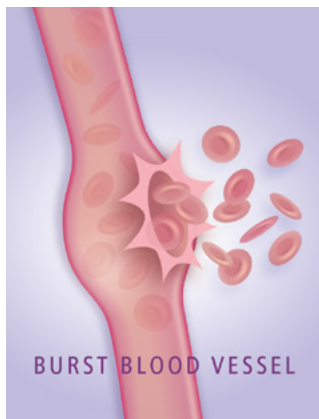
The most common type of stroke is an ischemic stroke — a blood clot that blocks or plugs a blood vessel in the brain. Given quickly, a clot-dissolving drug can treat an ischemic stroke.

What is a hemorrhagic stroke?

A hemorrhagic stroke occurs when a blood vessel in the brain breaks and bleeds.



Ischemic stroke



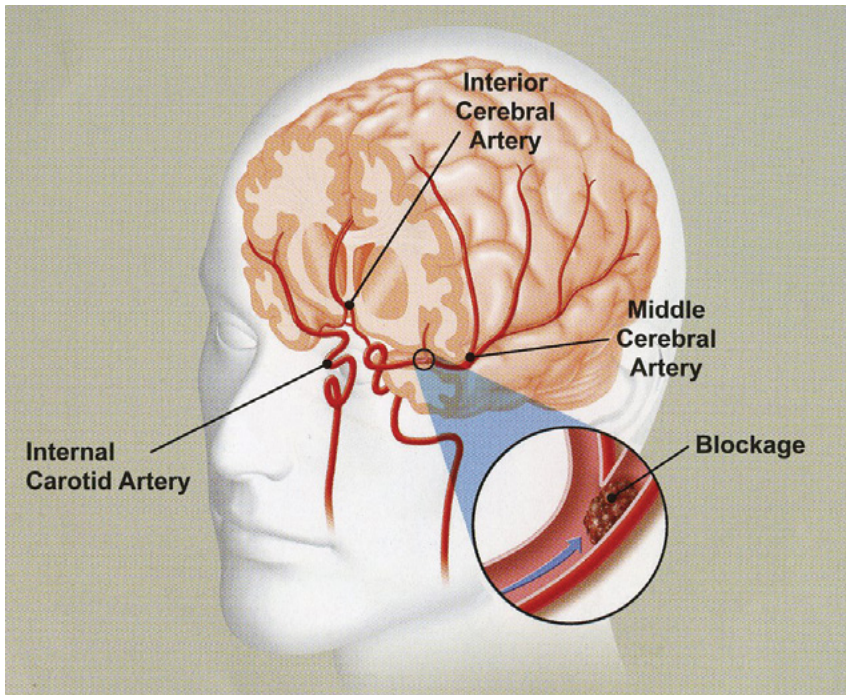
Hemorrhagic stroke

What is a transient ischemic attack or TIA?

If a blood vessel leading to the brain — or inside the brain — is blocked for a short time, the blood flow to an area of the brain slows or stops.

This temporary lack of blood and oxygen causes a transient ischemic attack (TIA) or “ministroke.” A TIA usually has symptoms like a stroke, such as numbness, difficulty speaking and loss of balance or coordination. These symptoms usually last for a short time, then disappear.

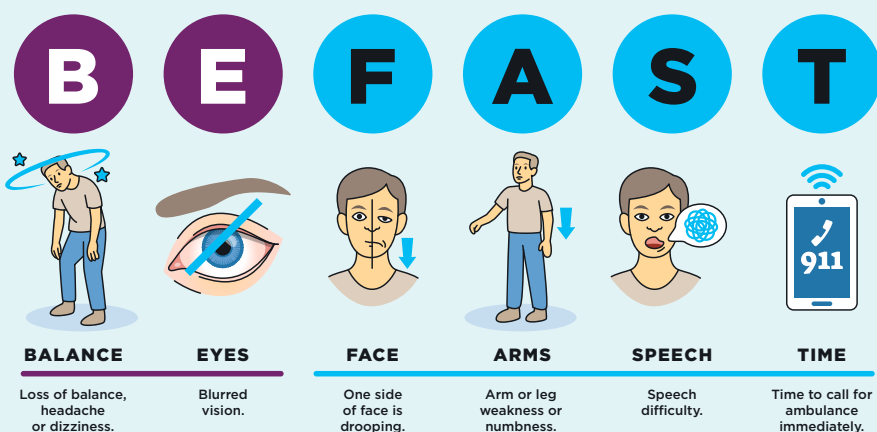
While a TIA causes no permanent brain damage, it's a serious warning sign of stroke. Do not ignore it.



Transient ischemic attack

Signs & symptoms of a stroke

The warning signs of a stroke - BE FAST



What should you do if you think you're having a stroke?

Call 9-1-1 immediately. This can make a major difference in avoiding a lifelong disability. Do not wait for the symptoms to improve or worsen.

Every minute counts.

Since stroke damages your brain, you may not realize you're having one or be able to call 9-1-1 on your own. The people around may think you are just confused, which is why everyone should learn the signs.

Know the signs. Act in time.

Stroke is the fifth leading cause of death in the U.S. and causes more serious, long-term disabilities than any other disease. More strokes happen to people 65 or older, however, they can and do occur at any age. After age 55, your risk of stroke increases every year.

Learning about stroke symptoms can help you act in time to save yourself, a co-worker, friend or relative.

Stroke symptoms include sudden:

- Numbness or weakness of the face, arm or leg — especially on one side of the body
- Confusion, trouble speaking or understanding speech
- Trouble seeing in one or both eyes, blurred vision
- Trouble walking, dizziness, loss of balance or coordination
- Severe headache with no known cause

Less common symptoms may include:

- Sudden nausea and vomiting with no warning signs, such as fever or stomach cramps (different from a viral illness)
- Brief loss of consciousness or period of decreased consciousness, such as fainting, confusion, convulsions or coma

Effects of a stroke

The left part of your brain is the logic side and is associated with math, science and language comprehension. It also controls the right side of your body.

The right part of your brain is the creative side, involving art, music, imagination and emotion. It also controls the left side of your body.

Your brain has different areas that control how your body moves and feels. When a stroke damages a certain part of your brain, that part may not work as well as it did before, and you may experience emotional and physical changes. Depending on the part of your brain that was affected, you might have problems with:

- | | |
|----------------------------|---------------|
| • Seeing | • Thinking |
| • Sleeping | • Memory |
| • Seizures | • Depression |
| • Bladder or bowel control | • Behavior |
| • Movement | • Emotions |
| • Pain | • Personality |
| • Fatigue | |

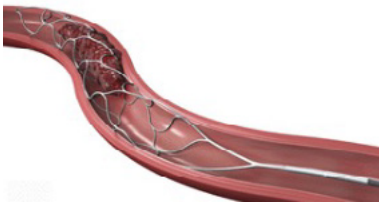
When you arrive at the hospital

Suspected strokes are an emergency. Team members will take you for imaging of your brain when you arrive at the hospital called a computed tomography (CT) test. A CT test is an X-ray of your head that allows doctors to see your brain tissue. You may have additional scans that use contrast (dye injected into your veins) to see the blood vessels in your brain if your doctor needs more images to make treatment decisions. These are called a computed tomography angiography (CTA) and/or computed tomography perfusion (CTP). Team members will check your vital signs (blood pressure, oxygen level, heart rate and temperature), draw blood for labs and check the rhythm of your heart. These test results will help your doctor decide on a treatment plan.

Treatment options for ischemic stroke

Mechanical thrombectomy

Mechanical thrombectomy is a procedure using a special tube, called a catheter, that is inserted through an incision into a large blood vessel, called an artery, at the groin or at the wrist. The tube is guided to the brain. This tube is used to clear blocked arteries and return blood flow to the brain. Suction or a device, called a retriever, removes the clot.



**Thrombectomy stent retriever
in vessel**

Both methods are sometimes used in the same procedure. This does not work for everyone so the doctor will decide if this is the procedure you need. A team member will call to follow up with you on your healing progress in about three months if you receive this treatment.

I received a mechanical thrombectomy: ☐ Yes ☐ No

Intravenous thrombolytic

A medicine that dissolves the blood clot, called a thrombolytic, is another treatment. An example of this medicine is known as tissue plasminogen activator (TPA). It is given through a small tube placed in your vein called an IV catheter. The clot may not dissolve completely if it is in larger arteries. The medicine is often given along with mechanical thrombectomy (see description). This medicine does not work for everyone so the doctor will decide if this is the treatment you need.

The names of the thrombolytic medications used at HonorHealth are tenecteplase and alteplase. Tenecteplase is given over a few seconds as a single dose through the IV catheter in your vein. Alteplase is given as a quick dose through the IV catheter as well as an IV infusion, which is a controlled delivery of the medicine over a period of time. You may qualify for one of these medications if your time last seen normal is less than four and a half hours from the time you arrive at the hospital.

Team members will monitor your neurological status, heart rhythm and vital signs, including blood pressure, frequently for at least 24 hours if you receive one of these powerful medicines. You may bleed more easily with this medicine. Avoid activities that may increase your risk of bleeding or injury. Pay careful attention when brushing your teeth or shaving. Report any bleeding, headache, nausea/vomiting or increased weakness to your healthcare team. A team member will call to follow up with you on your healing progress in about three months if you receive this treatment.



I received a thrombolytic:

☐

Yes

☐

No

If yes, I received:

☐

Tenecteplase

☐

Alteplase

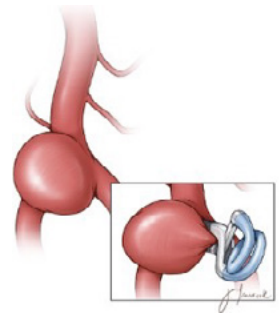
Treatment options for hemorrhagic stroke

Brain aneurysm

A brain aneurysm is a weakened blood vessel in the brain that forms a bulge. An aneurysm can occur anywhere in the brain. An aneurysm may leak or burst causing blood to move into surrounding brain tissue, putting pressure on nerves and tissue.

Surgical clipping for aneurysm

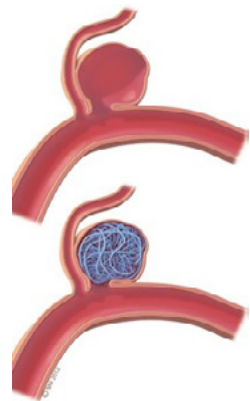
A surgical procedure in which blood flow to an aneurysm is cut off by placing a small clip at its base.



Aneurysm clipping

Endovascular coiling for aneurysm

A minimally invasive treatment that blocks blood flow to aneurysms. The procedure uses a tube, or catheter, inserted through an incision into the artery, (at the femoral artery at the groin or the radial artery at the wrist) and guided towards the brain. Once in position, soft metal coils are pushed through the tube and released into the aneurysm. The tiny coils block the space and begin clotting to cut off blood flow to the problem site. Intracranial stents guide blood flow away from the aneurysm and can be used in combination with endovascular coiling.



Aneurysm coiling

I received a surgical clip:

☐

Yes

☐

No

I received an endovascular coil:

☐

Yes

☐

No

Medical management

Blood pressure management

While in the hospital, blood pressure is controlled to prevent increased bleeding into the brain tissue. You and your doctor will work together to find a medication that will help control your blood pressure when you go home.

Reversing anticoagulants

When you have a brain bleed, doctors may give you medicine that stops the thinning of the blood (especially if taking blood thinners or anticoagulants). The goal is to help prevent the bleeding in your brain from getting worse.

Surgery

Craniectomy

Bleeding in your brain can cause pressure to build up and lead to more damage in the brain. A craniectomy removes a small piece of bone that surrounds your brain, (the skull) to help relieve pressure or remove trapped blood. The doctor determines when it is safe to reattach the skull piece.

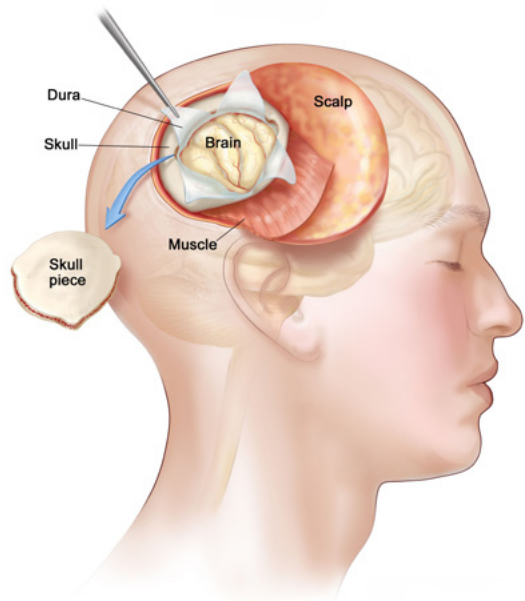


Image from National
Cancer Institute

Preventing a stroke

What are your stroke risk factors?

Talk to your doctor about your personal risk factors for having a stroke. Common risk factors include:

High blood pressure

Know your blood pressure. High blood pressure — hypertension — is one of the most common causes of stroke. If your blood pressure is high, work with your doctor to lower it. You can check your blood pressure at your doctor's office, at a health fair, at home with an automatic blood pressure machine, or at your local pharmacy or supermarket.

Atrial fibrillation

Find out if you have atrial fibrillation — an irregular and often rapid heart rate that causes blood to pool in different parts of your heart. The pooled blood can form clots and cause a stroke. If you have this diagnosis, work with your doctor to lower your risk.

Smoking

If you smoke, stop. Smoking doubles your risk for stroke. If you stop smoking today, your risk will begin to drop immediately. Within five years of quitting, your stroke risk may be the same as that of someone who never smoked.



Drinking alcohol

If you don't drink, don't start. If you do, you should limit yourself to only one drink (e.g., four ounces of wine, 12 ounces of beer or one ounce of hard liquor) per day. Talk to your doctor about what is best for your health and safety.



High cholesterol

Know your cholesterol level. If it's high, work with your doctor to lower it. High cholesterol puts you at greater risk for heart disease, which can increase your stroke risk. Often, you can control high cholesterol with diet and exercise. Some people may require medication.

Lack of exercise

Include exercise in your daily routine. Even a little — a brisk walk, bicycle ride, swim or yard work — can improve your health and may reduce your stroke risk. Adults should do moderate exercise for at least 30 minutes a day, five days a week. Before starting a vigorous exercise program, check with your doctor.





Eat a low-salt, low-fat diet

- Eating less salt and fat may lower your blood pressure, which reduces your risk for stroke.
- Eat plenty of fruits, vegetables and whole grains every day.
- Eat a moderate amount of protein, such as meat, fish, chicken, eggs, nuts, milk and tofu.
- For more information, visit the American Heart Association at heart.org.

Diabetes

If you have diabetes, follow your doctor's advice to maintain a normal blood sugar level. Regularly test your blood glucose (blood sugar). Know your HbA1C (the average blood sugar over two to three months). You are at higher risk for a stroke if your blood sugar is not controlled. For more information visit the American Diabetes Association at diabetes.org.

Check for blood circulation (blood flow) problems

- Fatty deposits can block your arteries, which carry blood from your heart to your brain. If left untreated, this blockage can cause a stroke.
- Ask your doctor if you have circulation problems that increase your stroke risk. If so, work with your doctor to control them.
- Certain medicines can treat circulation problems. If your doctor prescribes medicine, take it exactly as recommended.

Sometimes, surgery is necessary to correct circulation problems, such as a blocked artery.

Watch for a tingling sensation in your hands or feet and cold extremities. This could be a sign of poor circulation. If you have these symptoms, talk with your doctor.



Resources

Stroke education websites

The websites below provide current and reliable information about stroke prevention and recovery, and additional resources for families and stroke survivors.

American Heart Association and National Stroke Association:

Dedicated to prevention, diagnosis and treatment to save lives. The organizations also assist patients and their families with life after stroke, including caregiver support. Educational materials, including programs focusing on stroke prevention, rehabilitation and support are also included. The local office phone number is 602-414-5353.

heart.org and stroke.org

Brain Aneurysms: Information and resources for patients and physicians. brainaneurysm.com

Brain Attack Coalition (BAC): Dedicated to improving prevention, advancing treatment and enhancing recovery to eliminate the burden of stroke. brainattackcoalition.org

National Stroke Association: Information about the warning signs of a stroke and life after. Their Stroke Connection Magazine offers information on stroke conditions and tips for daily living from healthcare professionals and stroke survivors. stroke.org

National Institute of Neurological Disorders and Stroke: Information about stroke, treatment, prognosis and the latest research. For more information, call 1-800-352-9424.

ninds.nih.gov/disorders/All-Disorders/Stroke-Information-Page

National Aphasia Association: Information for both the stroke survivor and caregiver about speech changes, communication tools and tips, education and support services. aphasia.org

Penumbra: Information for both healthcare providers and patients about brain conditions and treatment options for stroke.

penumbrainc.com

Other resources for patients and families

StrokeNet: An online support network of stroke information.
strokecaregiver.org

Family Caregiver Alliance: Founded in 1977, the first community-based, nonprofit organization in the country to address the needs of families and friends providing long-term care at home. Long recognized as a pioneer in health services, the Alliance offers programs at national, state and local levels to support and sustain caregivers. caregiver.org

Today's Caregiver: A leading provider of information and resources for family and professional caregivers. caregiver.com

Caregiver and stroke support groups

HonorHealth caregiver and stroke support groups:
For more information, please call **480-882-5996**.

The contents of the stroke booklet, such as text, graphics, images and other material contained in this pamphlet ("Content") are for informational purposes only. The Content is not intended to be a substitute for professional medical advice, diagnosis or treatment. Always seek the advice of your physician or other qualified health provider with any questions you may have regarding a medical condition. Never disregard professional medical advice or delay in seeking it because of something you have read in this pamphlet.

If you think you may have a medical emergency, call your doctor or 9-1-1 immediately. HonorHealth does not recommend or endorse any specific tests, physicians, products, procedures, opinions or other information that may be mentioned in the pamphlet. Reliance on any information provided by HonorHealth is solely at your own risk.

Welcome to HonorHealth, your partner in care

Your health is a journey, and we're here to partner with you on every step. Rooted in nearly 100 years of expertise, our mission is to improve the health and wellness of those we serve. The HonorHealth network encompasses:

Nine acute-care hospitals:

- HonorHealth Deer Valley Medical Center
- HonorHealth Florence Medical Center
- HonorHealth Four Peaks Medical Center
- HonorHealth John C. Lincoln Medical Center
- HonorHealth Scottsdale Shea Medical Center
- HonorHealth Scottsdale Thompson Peak Medical Center
- HonorHealth Scottsdale Osborn Medical Center
- HonorHealth Sonoran Crossing Medical Center
- HonorHealth Tempe Medical Center

Specialized patient care:

- Bob Bové Neuroscience Institute
- HonorHealth Cancer Care
- HonorHealth Heart Care
- HonorHealth Medical Group
- HonorHealth Research Institute

Extensive specialty care physician practices, outpatient treatment and surgery centers, rehabilitation, medical imaging and much more.

Foundation and community services:

- Adult Day Health Care
- Desert Mission Food Bank
- HonorHealth Foundation
- Lincoln Learning Center

High-quality care delivered by experts. Learn more at [HonorHealth.com](https://www.honorhealth.com).

HONORHEALTH®