



### What are warning signs of stroke?

You and your family should recognize the warning signs of stroke. You may have some or all of these signs. Note the time when symptoms start and call 9-1-1 or the emergency medical number in your area. Stroke is a medical emergency!

Don't ignore these warning signs, even if they go away. Timing is important.

#### Stroke Warning Signs:

- 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, loss of balance or coordination
- Sudden severe headache with no known cause

**F.A.S.T.** is an easy way to remember how to recognize a stroke and what to do. Spot a stroke **FAST**. **F**ace drooping. **A**rm weakness. **S**peech Difficulty. **T**ime to call 9-1-1.

Before you need to take emergency action, create a list of emergency phone numbers and keep a copy next to your phone and with you at all times.



### My Questions:

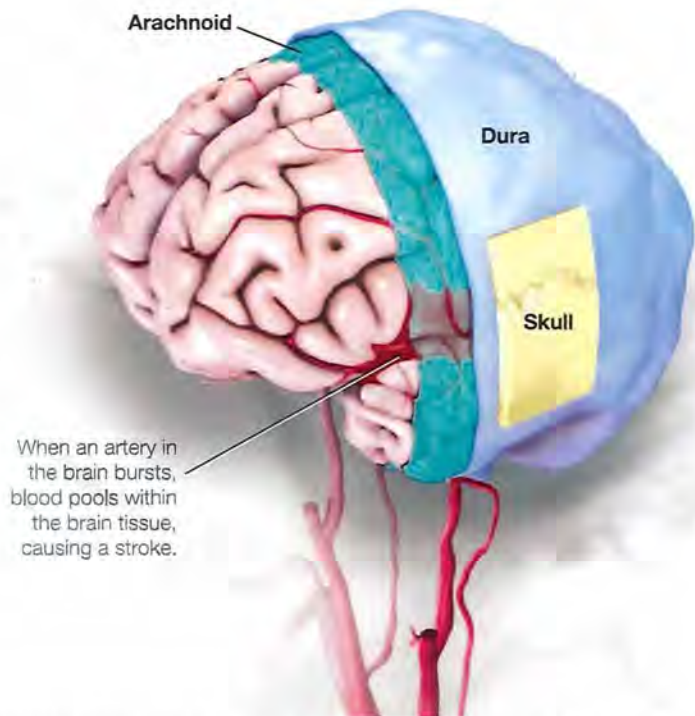


let's talk about

## 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.



# Five Things You Need to Know About Stroke

## 1. What is a stroke?

There are two kinds of stroke:

- **Ischemic** ("is-keem-ik"): this type of stroke occurs when a blood vessel in the brain is blocked and brain cells are damaged because they don't get enough oxygen and nutrients. A **Transient Ischemic attack (TIA)** resembles an ischemic stroke but consists of temporary stroke symptoms caused by a temporary blood vessel blockage.
- **Hemorrhagic** ("hem-o-raj-ik"): this type of stroke occurs when a blood vessel in the brain ruptures and brain cells are damaged by the pressure of the blood. Aneurysms and arteriovenous malformations are specific problems that cause this type of stroke.

The problems experienced after a stroke are the result of this brain damage. The specific problems you feel are related to the parts of the brain damaged by your stroke.

## 2. Warning signs and symptoms of stroke



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 or coordination



Sudden, severe headache with no known cause



### 3. What to do if you're having symptoms and when to call for help

- Not all the warning signs occur in every stroke. **Don't ignore signs** of stroke, even if they go away!
- **Check the time.** When did the first warning sign or symptom start? You, or the person who is with you will be asked this important question later. This is very important! The treatments for stroke are much more effective if used early. Some of these treatments must be started in as little as 3 hours from the time your symptoms begin.
- If you have one or more stroke symptoms that last more than a few minutes, don't delay! Immediately **call 9-1-1** or your local emergency medical service (EMS) number so an ambulance can quickly be sent for you. Do not drive yourself.
- If you are with someone who may be having stroke symptoms, immediately call 9-1-1 or your local EMS. Expect the person to resist going to the hospital. **Don't take no for an answer** because "Time Lost is Brain Lost."
- When communicating with EMS staff or the hospital, make sure to use the word "**STROKE.**"

### 4. What increases your risk for stroke



#### High blood pressure

High blood pressure or hypertension is the number one cause of stroke. High blood pressure can damage the small blood vessels of the brain. High blood pressure is the most important controllable risk factor for stroke. Many people believe the effective treatment of high blood pressure is a key reason for the fast decline in the deaths from strokes.



#### Cigarette smoking

Tobacco use in any form, especially cigarette smoking, is bad for your health. In recent years, studies have shown cigarette smoking to be an important risk factor for stroke. The nicotine and carbon monoxide in cigarette smoke damage the cardiovascular system in many ways. The use of oral contraceptives combined with cigarette smoking greatly increases stroke risk in women. Talk to your doctor about help with quitting smoking.



#### Diabetes

Diabetes is a risk factor for stroke. Many people with diabetes also have high blood pressure, high blood cholesterol and are overweight; all of these increase their risk even more. While diabetes is treatable, having the disease still increases your risk of stroke. Diabetes causes disease of small blood vessels in the brain and can lead to a stroke.



#### Carotid or other artery disease

The carotid arteries in your neck supply blood to your brain. A carotid artery narrowed by fatty deposits from atherosclerosis (plaque build-ups in artery walls) may become blocked by a blood clot. Peripheral arterial disease occurs when the blood vessels that carry blood to leg and arm muscles become narrow. It is also caused by fatty build-ups of plaque in artery walls. People with peripheral artery disease have a higher risk of carotid artery disease, which raises their risk of stroke. Causes of carotid artery disease are high blood pressure, diabetes, a diet high in fat, high cholesterol, and smoking.



### Atrial fibrillation

This heart rhythm disorder raises the risk for stroke. The heart's upper chambers quiver instead of beating regularly, which can let the blood pool and clot. If a clot breaks off, enters the bloodstream and lodges in an artery leading to the brain, a stroke will happen.



### Other heart disease

People with coronary heart disease or heart failure have a higher risk of stroke than those with hearts that work normally. Dilated cardiomyopathy (an enlarged heart), heart valve disease, and some types of congenital heart defects also raise the risk of stroke.



### High blood cholesterol

People with high blood cholesterol have an increased risk for stroke. High blood cholesterol can be reduced by eating right (avoid fried, fatty foods) and exercising regularly. It may also require medication.



### Poor diet

Diets high in saturated fat, trans fat, and cholesterol can raise blood cholesterol levels. Diets high in sodium (salt) can contribute to increased blood pressure. Diets with excess calories can contribute to obesity. A diet containing five or more servings of fruits and vegetables per day may reduce the risk of stroke.



### Physical inactivity and obesity

Being inactive, obese, or both can increase your risk of high blood pressure, high blood cholesterol, diabetes, heart disease, and stroke. So go on a brisk walk, take the stairs, and do whatever you can to make your life more active. Check with your doctor first, but try to get at least 30 minutes of moderate physical activity five days of the week, or 20 minutes of vigorous physical activity, three days a week.



### Age

The chance of having a stroke more than doubles for each decade of life after age 55. While stroke is common among the elderly, a lot of people under 65 also have strokes.



### Heredity (family history) and race

Your stroke risk is greater if a parent, grandparent, sister, or brother has had a stroke. African Americans have a much higher risk of death from a stroke than Caucasians. This is partly due to higher rates of high blood pressure and diabetes in this group.



### Sex (gender)

Stroke is more common in men than in women. In most age groups, more men than women will have a stroke in a given year. However, more than half of total stroke deaths occur in women. At all ages, more women than men die of stroke. Women who take birth control pills, or are pregnant, have special risks for stroke.



### Prior stroke, TIA or heart attack

The risk of stroke for someone who has already had one is far greater than someone who has not had a stroke. Transient ischemic attacks (TIAs) are "warning strokes" that produce stroke-like symptoms but no lasting damage. TIAs are strong predictors of stroke. A person who's had one or more TIAs is almost 10 times more likely to have a stroke than someone of the same age and sex who hasn't. Recognizing and treating TIAs can reduce your risk of a major stroke.

## 5. What to do after you leave the hospital: follow-up care



- You need to continue the medications prescribed after you leave the hospital in order to reduce your risk of stroke or other cardiovascular issue. Medications must be taken as prescribed by your doctor in order for them to be effective.

The medicines are most effective when they help you lower each of the risk factors for stroke. Therefore, the doses of these medicines will likely need to be adjusted in order for them to work correctly, based on blood tests and other measurements made by your doctor after you leave the hospital. Don't stop your medications without speaking to your physician first.

- It is important that you receive regular medical care after you leave the hospital. This is how the doctors can check to see if your treatments are working and make sure that your medicines are adjusted properly.
- Make sure you have a plan for which doctor(s) you will see and when to see them after you leave the hospital and be sure to have your list of medications with you for all doctor visits.
- Recovery after a stroke may continue for many months. You may benefit from working with rehabilitation therapists during your recovery. If a therapy program has not been arranged, please discuss this option with your health care providers.

**Questions or Concerns?** If you have questions about stroke care at DHMC, please call **Neurology at 603.650.5104 or Neurosurgery at 603.650.5109**

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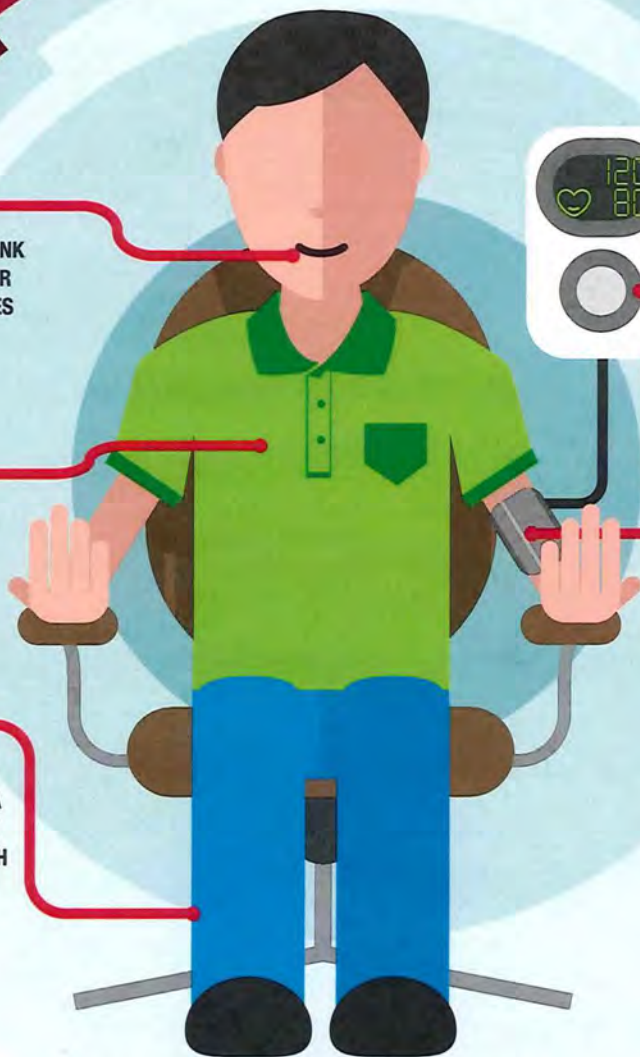
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More information can be found on our website: [d-h.org/stroke](http://d-h.org/stroke)

# BLOOD PRESSURE MEASUREMENT INSTRUCTIONS



**DON'T SMOKE, EXERCISE, DRINK CAFFEINATED BEVERAGES OR ALCOHOL WITHIN 30 MINUTES OF MEASUREMENT.**

**TAKE AT LEAST TWO READINGS 1 MIN. APART IN MORNING BEFORE TAKING MEDICATIONS, AND IN EVENING BEFORE DINNER. RECORD ALL RESULTS.**

**REST IN A CHAIR FOR AT LEAST 5 MINUTES WITH YOUR LEFT ARM RESTING COMFORTABLY ON A FLAT SURFACE AT HEART LEVEL. SIT CALMLY AND DON'T TALK.**

**USE PROPERLY CALIBRATED AND VALIDATED INSTRUMENT. CHECK THE CUFF SIZE AND FIT.**

**MAKE SURE YOU'RE RELAXED. SIT STILL IN A CHAIR WITH YOUR FEET FLAT ON THE FLOOR WITH YOUR BACK STRAIGHT AND SUPPORTED.**

**PLACE THE BOTTOM OF THE CUFF ABOVE THE BEND OF THE ELBOW.**

## American Heart Association recommended blood pressure levels


BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
<b>NORMAL</b>	<b>LESS THAN 120</b>	<b>and</b>	<b>LESS THAN 80</b>
<b>ELEVATED</b>	<b>120-129</b>	<b>and</b>	<b>LESS THAN 80</b>
<b>HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1</b>	<b>130-139</b>	<b>or</b>	<b>80-89</b>
<b>HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2</b>	<b>140 OR HIGHER</b>	<b>or</b>	<b>90 OR HIGHER</b>
<b>HYPERTENSIVE CRISIS (consult your doctor immediately)</b>	<b>HIGHER THAN 180</b>	<b>and/or</b>	<b>HIGHER THAN 120</b>



\* Wait a few minutes and take blood pressure again. If it's still high, contact your doctor immediately.

**LEARN MORE AT [HEART.ORG/HBP](http://HEART.ORG/HBP)**






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