

# UF HEALTH SHANDS COMPREHENSIVE STROKE CENTER

## Patient and Family Stroke Education



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UF Health Shands Comprehensive Stroke Center Team



# INTRODUCTION

Stroke survivors and those close to them should know the signs of stroke, its causes, risk factors, treatments to help prevent future strokes, what to do when a stroke occurs and how to follow up with health care providers.

This guide offers basic stroke information and education. If you have additional questions, please check with a member of your stroke care team.

## Your Stroke Care Team

At UF Health, your stroke care team is dedicated to healing and prevention of future strokes. As a patient, you will have several tests that will help your health care team better understand the type, location and cause of your stroke. The results of these tests will help guide your care while in the hospital and in therapy and decrease risks of future strokes. If you do not fully understand something, always ask questions of your doctors, nurses or other health care providers.

## Your Stroke Care Team may include:

- ▶ *Doctors who specialize in:* emergency medicine, neurology, neurosurgery, neuro-intensive care, radiology (X-ray), general medicine or other specialties
- ▶ Nurses who work in specialty and patient care areas
- ▶ Technicians who assist the doctors and nurses
- ▶ Technologists who specialize in certain procedures
- ▶ Dietitians to help with your nutrition needs
- ▶ Physical therapists to help with your walking, leg movement and balance
- ▶ Occupational therapists to help with arms, hands and self-care needs
- ▶ Speech pathologists to work with swallowing and language needs

- ▶ Case managers, social workers, rehabilitation specialists to help you plan your discharge and continued recovery
- ▶ Pharmacists to help you and your team with medicines
- ▶ A host of personnel from other departments
- ▶ Because UF Health Shands Hospital helps to prepare future health care providers, students may also work with your team.

## MY Stroke Care Team

You can write in the members of your stroke care team that are taking care of you or your loved one.

[illegible]

# WHAT IS A STROKE?

A stroke or “brain attack” occurs when a blood clot blocks an artery (a blood vessel that carries blood from the heart to the body) or a blood vessel (a tube through which the blood moves through the body) breaks, interrupting blood flow to an area of the brain. When either of these things happen, brain cells begin to die and brain damage occurs.

When brain cells die during a stroke, abilities controlled by that area of the brain are lost. These abilities include speech, movement and memory. How a patient is affected depends on where the stroke occurs in the brain and how much the brain is damaged.

The symptoms of a stroke differ depending on where in the brain the stroke happens. Because a stroke is usually due to a *SUDDEN* blockage or *SUDDEN* rupture of an artery, the symptoms of a stroke usually happen very suddenly. Stroke may cause all or some of the usual symptoms.

## There are two types of strokes:

### Ischemic Stroke:

Stroke caused by blocked blood vessel in the brain

### Hemorrhagic Stroke:

Stroke caused by bleeding in the brain

## ISCHEMIC STROKE (LOW BLOOD FLOW STROKE)

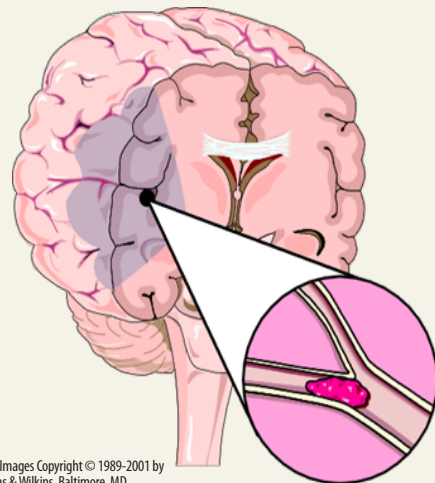
Ischemic strokes occur when there is not enough blood supply in an area of the brain to support the life of the brain tissue. This type of stroke is usually the result of a complete blockage of an artery. In some cases, a drop in blood pressure and/or narrowing of arteries may reduce the blood supply to brain tissue to the point of causing permanent injury.

### Common causes of low blood flow (ischemic) stroke:

- ▶ Large vessel disease (atherosclerosis)
- ▶ Small vessel disease (thickening walls of very small, deep vessels)
- ▶ Other blood vessel problems (Non-atherosclerotic vasculopathy)
- ▶ Cardioembolism (clot from heart)
- ▶ Watershed (low blood flow affecting areas between major blood vessels)
- ▶ Blood clotting problems (hypercoagulable states)
- ▶ Unknown (cryptogenic)

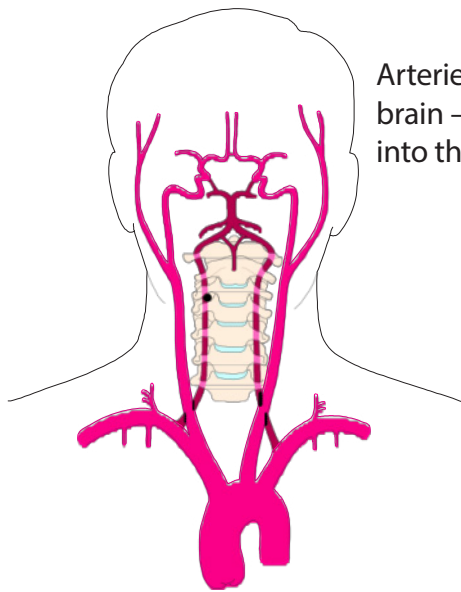
### Transient Ischemic Attack (TIA)

If an artery to the brain is blocked for a short time, the patient will have symptoms of a stroke for a few minutes but may not have lasting symptoms or damage to the brain. For example, if someone’s speech becomes slurred, but a few minutes later their speech has completely returned to normal, this person may have had a transient ischemic attack (temporary low blood flow attack) or TIA. *A TIA is an important warning that a person may have a stroke in the future.*

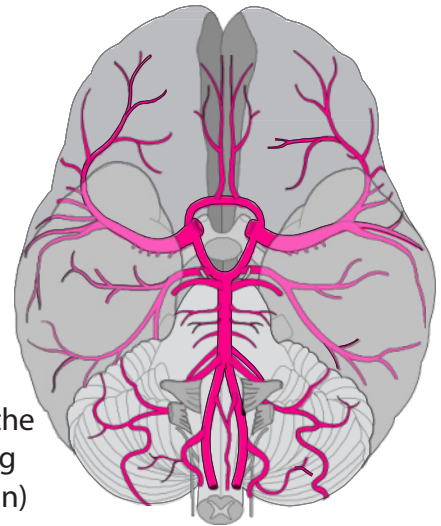


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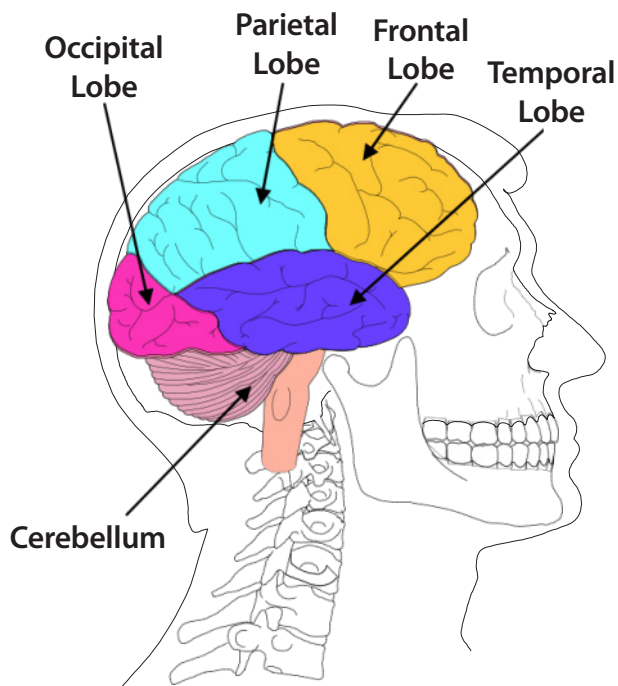
**Examples of images that may be used to help you better understand the problems with your arteries and the effects from having a stroke.**



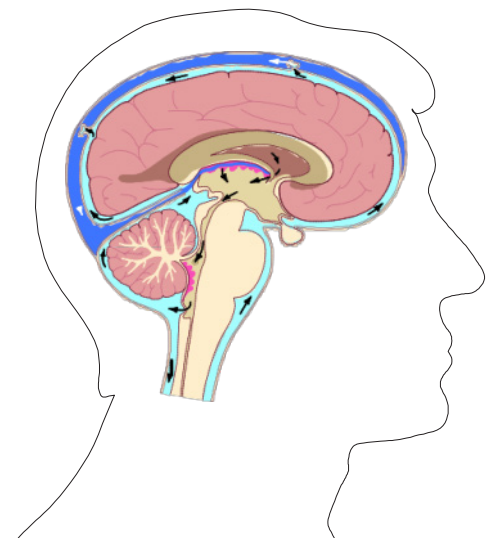
Arteries that take blood to the brain – frontal view (looking into the face)



Arteries that take blood to the brain – inferior view (looking from the bottom of the brain)



Lateral view of brain showing lobes (side view)



Mid-sagittal view of brain (looking as though sliced down the middle from back to front)

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# HEMORRHAGIC (BLEEDING) STROKE

A hemorrhagic or bleeding stroke occurs when an artery within the skull ruptures. Brain damage due to a bleeding stroke mainly happens because the brain is surrounded by the skull and there is very little room for the blood to build up or for the brain to swell when it is injured. Sudden bleeding within the skull causes pressure on the brain and may cause lasting damage.

## There are two main types of hemorrhagic (bleeding) strokes:

### Intracerebral Hemorrhage:

Bleeding into the brain tissue

### Subarachnoid Hemorrhage:

Stroke caused by bleeding around the brain

### Intracerebral Hemorrhage (ICH)

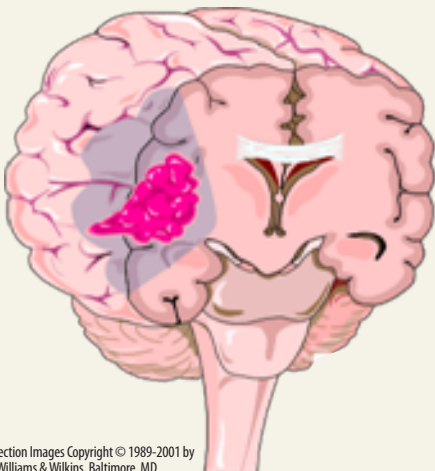
When an **intracerebral hemorrhage** (bleeding within the brain tissue) occurs, a small artery deep in the brain ruptures and causes direct pressure on a specific part of the brain. The most common cause is damage to the small arteries in the brain due to long-standing high blood pressure (hypertension). Many years of constant pounding by high blood pressure

causes the walls of small brain arteries to become weak and, in some cases, to burst. The best way to prevent an intracerebral hemorrhage is to have your blood pressure checked and, if it's high, take the treatment that your doctor advises.

### Subarachnoid Hemorrhage (SAH)

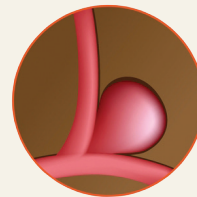
Another kind of hemorrhagic stroke is called a **subarachnoid hemorrhage**. In this type of stroke, a blood vessel bursts near the surface of the brain and blood leaks in between the brain and its covering. This blood may cause nearby arteries to spasm, and that reduces blood flow to the brain and causes a stroke. This type of stroke can be caused by different things, but is usually caused by a burst aneurysm. An aneurysm is an area of the artery wall that becomes weak and balloons out. This ballooning leads to thinning of the artery wall, and makes it more likely to burst. Doctors are not sure why some people have aneurysms (a weak place in a vessel wall that lets it balloon out). Some people have them all their lives and they never burst, but, if an aneurysm does burst, the results are usually very serious.

### Intracerebral Hemorrhage (ICH):

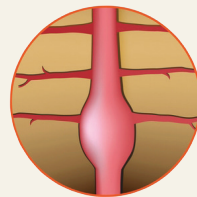


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### The images below may be used to show problems in arteries related to Subarachnoid Hemorrhage (SAH).



Saccular Aneurysm



Fusiform Aneurysm

### Arteries within the brain



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# STROKE RISK FACTORS

There are many stroke risk factors that are directly related to lifestyle choices. These risk factors can be changed, treated or controlled.

When people have risk factors that **CANNOT** be changed, it is even more important that they control the stroke risks that **CAN** be controlled.

## Some risk factors **CANNOT** be changed:

- ▶ **Age** – The chance of having a stroke more than doubles for each decade of life after age 55. Although stroke is most common among the elderly, many people under 65 also have strokes.
- ▶ **Genetics (family history)** – 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 from stroke. Use of birth control pills and pregnancy pose special stroke risks for women.
- ▶ **Having had a stroke, TIA or heart attack in the past** – Stroke is a disease that damages blood vessels in the brain and once damaged, increases the risk for another stroke.

## Some risk factors **CAN** be changed!

*Ask your nurse or doctor to help you answer the questions listed below to see if there are risk factors you can control.*

**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.

**What is your usual blood pressure?**

\_\_\_\_\_/\_\_\_\_

**Cigarette smoking** – Tobacco use in any form, especially cigarette smoking, is very 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. Additionally, the use of oral contraceptives combined with cigarette smoking greatly increases stroke risk in women.

**Do you use tobacco products?** \_\_\_\_\_

**Diabetes mellitus** – Many people with diabetes also have high blood pressure, high blood cholesterol and are overweight. This increases their risk even more. While diabetes is treatable, the presence of the disease still increases your risk of stroke. Diabetes causes disease of small blood vessels in the brain and can lead to a stroke. The HgA1C test is a common blood test used to diagnose type 1 and type 2 diabetes and then to gauge how well you're managing your diabetes. The goal for your HgA1C is 6.5% or below.

**What is your HgA1C level?** \_\_\_\_\_

**Atrial fibrillation (A-fib)** – 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 the clot breaks off, enters the bloodstream and lodges in an artery leading to the brain, a stroke results.

### Have you been told you have A-fib?

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**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 routinely. It may also require medication. *There are two types of cholesterol in your blood:* LDL is the bad cholesterol and HDL is the good cholesterol. The goal is to lower the LDL and raise the HDL. The best way to lower your LDL is to eat a low fat diet, keep your weight down, and/or take a statin drug as directed by your doctor. The best way to raise your HDL is through regular exercise – at least 20 minutes of exercise at least three days per week. Some medications can also help. The goal for LDL should be less than 70 and the goal for HDL should be greater than 40.

**What is your HDL?** \_\_\_\_\_

**What is your LDL?** \_\_\_\_\_

**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.

**Sickle cell disease (also called sickle cell anemia)** – This is a genetic disorder that mainly affects African-American and Hispanic children. “Sickle-shaped” red blood cells are less able to carry oxygen to the body’s tissues and organs. These cells also tend to stick to blood vessel walls, which can block arteries to the brain and cause a stroke.

**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. 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, with your doctor’s approval.

**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. Carotid artery disease is also called carotid artery stenosis. **Peripheral artery disease** is the narrowing of blood vessels carrying blood to leg and arm muscles. It’s 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.





Use the space below to list your stroke risk factors.

[illegible]

**Talk with your doctor or nurse about ways to help with managing these risk factors.**

Age ■ Family History and Ethnicity  
Sex (Gender) ■ Previous Strokes and TIAs  
Smoking ■ High Blood Pressure ■ Diabetes  
Heart Disease ■ Atrial Fibrillation  
High Cholesterol ■ Obesity/Unhealthy Eating  
Oral Contraception and Hormone Replacement Therapy  
Binge Drinking and Substance Misuse

# CHANGES CAUSED BY STROKE

Your brain controls how you move, feel, communicate, think and act. Brain injury from a stroke may affect any of these abilities. Some changes are common no matter which side of the brain the injury is on. Others are based on which side of the brain the stroke injures.

## What are the most common general effects of stroke?

- ▶ Hemiparesis (weakness on one side of the body) or hemiplegia (paralysis on one side of the body)
- ▶ Dysarthria (difficulty speaking or slurred speech) or dysphagia (trouble swallowing)
- ▶ Fatigue
- ▶ Loss of emotional control and changes in mood
- ▶ Cognitive changes (problems with memory, judgment, problem-solving or a combination of these)
- ▶ Behavior changes (personality changes, improper language or actions)
- ▶ Decreased field of vision (inability to see peripheral vision) and trouble with visual perception

## What are common changes with a left-brain injury?

- ▶ Paralysis or weakness on the right side of the body
- ▶ Aphasia (difficulty getting your words out or understanding what is being said)
- ▶ Behavior that may be more reserved and cautious than before

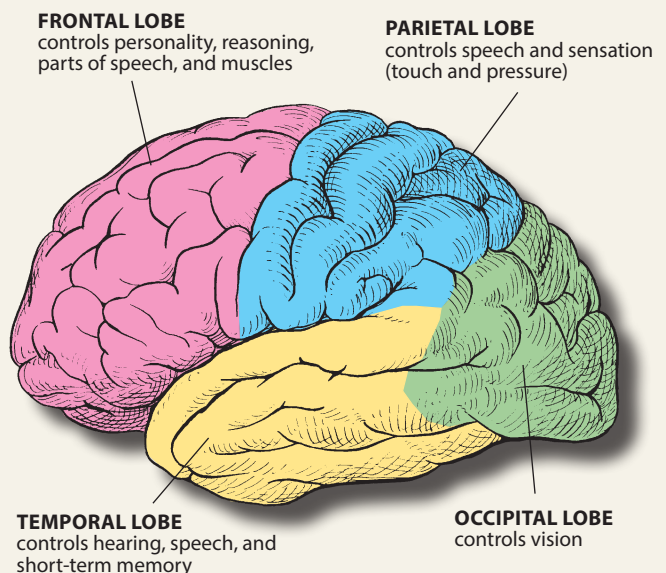
## What are common changes with a right-brain injury?

- ▶ Paralysis or weakness on the left side of the body

- ▶ One-sided neglect which is a lack of awareness of the left side of the body. It may also be a lack of awareness of what is going on to the survivor's left. For example, they may only eat from the right side of their plate, ignoring the left side
- ▶ Behavior may be more impulsive and less cautious than before
- ▶ It may be harder for the survivor to understand facial expressions and tone of voice. They also may have less expression in their own face and tone of voice when communicating

## What are common emotional effects of stroke?

- ▶ Depression
- ▶ Apathy and lack of motivation
- ▶ Frustration, anger and sadness
- ▶ Pseudobulbar affect, also called reflex crying or emotional lability (emotions may change rapidly and sometimes not match the mood)
- ▶ Denial of the changes caused by the brain injury



## Will I get better?

In most cases people do get better over time. The effects of a stroke are greatest right after the stroke. From then on, you may start to get better. How fast and how much you improve depends on the extent of the brain injury and your rehabilitation.

- ▶ Some improvement occurs spontaneously and relates to how the brain works again after it's been injured

- ▶ Stroke rehabilitation (rehab) programs help you improve your abilities and learn new skills and coping techniques
- ▶ Rehab begins after the stroke is over and you're medically stable
- ▶ Depression after stroke can interfere with rehab. It's important to treat depression
- ▶ Improvement often occurs most quickly in the first months after a stroke. Then it continues over years, perhaps at a slower pace, with your continued efforts

## KNOW THE SIGNS AND SYMPTOMS OF A 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, loss of balance or coordination

**SUDDEN** severe headache with no known cause

### If you have one or more stroke symptoms that last more than a few minutes:

**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, because if given within three hours of the start of symptoms, a clot-busting drug can reduce long-term disability for the most common type of stroke.***

**Don't delay!** Immediately call 9-1-1 so an ambulance can quickly be sent for you. **DO NOT TRY TO DRIVE YOURSELF.**

**Not all the warning signs occur in every stroke. Don't ignore signs of stroke, even if they go away!**

**If you are with someone who may be having stroke symptoms, immediately call 9-1-1.** Expect the person to resist going to the hospital. Do not take "no" for an answer because **Time Lost is Brain Lost.**



**WITH A STROKE,  
TIME LOST IS BRAIN LOST.**

Learn more at [StrokeAssociation.org](http://StrokeAssociation.org) or 1-888-4-STROKE.



American Stroke  
Association.  
A Division of American  
Heart Association





# STROKE IS AN EMERGENCY!


## B.E.F.A.S.T. AND CALL 9-1-1


# SPOT A STROKE


LEARN THE WARNING SIGNS AND ACT FAST





**B**

**E**

**F**

**A**

**S**

**T**

**BALANCE**  
LOSS OF BALANCE,  
HEADACHE  
OR DIZZINESS


**EYES**  
BLURRED VISION


**FACE**  
ONE SIDE OF THE  
FACE IS DROOPING

**ARMS**  
ARM OR LEG  
WEAKNESS

**SPEECH**  
SPEECH DIFFICULTY

**TIME**  
TIME TO CALL  
FOR AMBULANCE  
IMMEDIATELY

**CALL 911 IMMEDIATELY**



UFHealth  
UNIVERSITY OF FLORIDA HEALTH

UF HEALTH SHANDS  
COMPREHENSIVE STROKE CENTER  
[Stroke.UFHealth.org](http://Stroke.UFHealth.org)

Few people in the U.S. know the warning signs of a stroke. Learning them and acting **F.A.S.T.** when they occur could save your life or the life of a loved one.

Use the F.A.S.T. test to remember the warning signs of a stroke.

- B = BALANCE** Loss of balance, headache or dizziness
- E = EYES** Blurred vision
- F = FACE** Ask the person to smile. Does one side of their face droop?
- A = ARMS** Ask the person to raise both arms. Does one arm drift downward?
- S = SPEECH** Ask the person to repeat a simple sentence. Does their speech sound slurred or strange?
- T = TIME** If you observe ANY of these signs, call 9-1-1 **IMMEDIATELY!**

## MEDICATIONS



In addition to this guide, you will receive other materials before you leave the hospital. You need to continue the medications prescribed after you leave the hospital in order to reduce your risk of another stroke. Medications must be taken as prescribed by your doctor in order for them to be effective in reducing your risk of another stroke. The medicines are most effective when they help you reach the goal of lowering each of your risk factors. Therefore, the doses of these medicines will likely need to be changed in order for them to be effective, based on blood tests and other measurements made by your doctor after you leave the hospital. Don't stop your medication without speaking to your physician first. Feel free to ask any questions that you have about why some medicines have been changed or stopped and others have been started during your stay.

You can use the chart below to record your medications.

NAME OF MEDICATION	DOSE	WHEN?	SPECIAL INSTRUCTIONS	TAKEN FOR WHAT RISK FACTOR?	PRESCRIBING DOCTOR	GOAL
Example: Lipitor	40mg	At night	Take without food	cholesterol	Doctor's Name	LDL less than 100

## WHAT HAPPENS NEXT?

### Rehabilitation

The effects from a stroke usually improve some over time, depending upon the nature, size and location of the stroke. After a stroke, rehabilitation therapy helps people reach higher levels of function and helps them adjust to the changes that have taken place. Your doctor(s), case manager(s), social worker(s) and rehabilitation specialist(s) will discuss this with you and help make arrangements when therapy (rehabilitation) is needed after you leave the hospital.

UF Health Shands Rehab Hospital is located in northwest Gainesville. It brings together a multidisciplinary team of doctors, nurses, physical, occupational and recreational therapists, speech-language pathologists, rehab psychologists, case managers and dietitians to help people recovering from stroke. The clinical team at UF Health Shands Rehab Hospital works with people to help them gain as much independence as possible, as quickly as possible after stroke. Specialists develop individualized treatment plans for every patient and work with each person to accomplish his/her goals, providing a level of rehab care not available

anywhere else in the area. For more information about UF Health Shands Rehab Hospital, call 352.265.8938, or visit [UFHealth.org/rehab](http://UFHealth.org/rehab).

### Follow-up Appointments

You will have follow-up appointments with your doctor(s). You likely will need to see your family doctor and may need to see the neurologist or neurosurgeon who took care of you at UF Health Shands Hospital. **Keeping your appointments is VERY IMPORTANT.** Your doctors are interested in how you are recovering from your stroke and need to evaluate your progress. They also want to make sure that you are doing what is needed to help prevent complications and future strokes. **If you are not able to keep appointments, please call 1.855.4UF.HEALTH (1.855.483.4325) to change to an appointment time that works for you.**

If you are discharged home after your hospitalization, one of our stroke team members will call you within the following week to see how you are doing. Please be sure to provide your nurse with a phone number where we can reach you. ***We are very interested in how you are recovering.***

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## STROKE SUPPORT GROUPS

Visit [Stroke.UFHealth.org](http://Stroke.UFHealth.org) for the most up-to-date information about stroke support groups in the Gainesville area.

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**Stroke is the fifth most common cause of death and the leading cause of neurological disability in the United States.**

If you are looking for a way to make a difference for future stroke patients, then please consider partnering with us in our mission. Scientists and physicians at UF Neurology make progress every day in understanding and treating conditions affecting the brain, including cutting-edge research in optimal stroke care. The work of these dedicated physicians and scientists is greatly enhanced and sustained through private donations.

Gifts can be made via credit card, check, transfers of stock, real estate, or planned gifts such as wills, trusts, and annuities. ***Even small donations can make a big difference to advance our understanding of stroke!***

**For information on philanthropic opportunities, please contact Stephen Figueroa, at 352.273.5882 or [sfig@ufl.edu](mailto:sfig@ufl.edu).**



# INFORMATIONAL RESOURCES

## Questions?

If you need to talk with a doctor after you are discharged, you may contact your family doctor, or you may contact the doctor with whom you will have follow-up care at UF Health. You can also call 1.855.4UF.HEALTH (1.855.483.4325) between 8 a.m. - 5 p.m., Monday - Friday and ask to be connected to your doctor's office.

## Resources

For more information, visit any of the following websites for reliable stroke information. If you do not have internet access at home, check with your local library as most have several computers with internet access available for public use.

American Heart Association (AHA)  
[americanheart.org](http://americanheart.org)

American Stroke Association  
[strokeassociation.org](http://strokeassociation.org)

Brain Aneurysm Foundation  
[bafound.org](http://bafound.org)

Centers for Disease Control and Prevention  
[cdc.gov/stroke](http://cdc.gov/stroke)

National Stroke Association  
[stroke.org](http://stroke.org)

National Institute of Health  
[nlm.nih.gov/medlineplus/stroke.html](http://nlm.nih.gov/medlineplus/stroke.html)

Prescription Assist  
[www.PPARX.org](http://www.PPARX.org) or call 1.800.477.2669

Social Security Administration  
[socialsecurity.gov](http://socialsecurity.gov) or call 1.800.772.1213

Stroke Health Center  
[webmd.com/stroke](http://webmd.com/stroke)

Tobacco Free Florida  
[tobaccofreeflorida.com](http://tobaccofreeflorida.com)

UF Health Shands Rehab Hospital  
[UFHealth.org/rehab](http://UFHealth.org/rehab)

UF Health Stroke Program  
[stroke.UFHealth.org](http://stroke.UFHealth.org)

**Medications are available for \$4 co-pay at some local pharmacies.** Not all pharmacies carry all the same drugs. Your Case Manager will be happy to provide you with a list for each pharmacy at your request. **\$4 medications are available at the following pharmacies:**

- ▶ Wal-Mart
- ▶ Target
- ▶ K-Mart
- ▶ Albertsons
- ▶ Winn Dixie

## Informational sources used for this publication:

"Coalition Initiatives." Retrieved November 30, 2013, from Brain Attack Coalition website: [www.stroke-site.org](http://www.stroke-site.org)

"Diseases and Conditions." Retrieved December 1, 2013, from Centers for Disease Control and Prevention website: [www.cdc.gov](http://www.cdc.gov)

"Learn About Stroke, Warning Signs." Retrieved December 1, 2013, from American Stroke Association website: [www.strokeassociation.org](http://www.strokeassociation.org)

*Website information and patient information content compiled by the UF Health Shands Comprehensive Stroke Center stroke care team at UF Health Shands Hospital.*



**American Heart Association  
American Stroke Association  
CERTIFICATION**

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Meets standards for  
**Comprehensive Stroke Center**

Nationally certified by The Joint Commission and the American Heart Association/American Stroke Association.

