REACT FAST TO STROKE WARNING SIGNS.

FACE
Does one side of the face look uneven? 
Ask them to smile.

ARMS
Does one arm appear to be weak or numb? 
Ask them to raise both of their arms. 
Does one arm hang lower?

SPEECH
Does their speech seem unusual or slurred? 
Ask them to repeat a simple phrase.

TIME
If any of these signs are observed call 9-1-1 immediately!

Every minute matters. React FAST by calling 911 at the first sign of a stroke.
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A member of your health care team will place a checkmark in the boxes below to mark education that has been reviewed with you.

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Stroke Basics

Stroke Emergency Treatment
A stroke occurs when the blood supply to the brain is interrupted or there is bleeding in the brain. Within minutes, brain cells begin to die. It is urgent to seek emergency care at the first sign of a stroke. Early treatment saves many lives and reduces the effects of stroke.

In the Emergency Department
Special procedures are followed as soon as a stroke patient arrives in the emergency department. The patient gets a physical exam. Then tests are done to learn the cause and the extent of the stroke. These tests are called diagnostic (die-ag-NOS-tik) tests.

A CT scan is one of the most important tests. “CT” stands for computed tomography (tuh-MOG-ruff-ee). A CT scan is an x-ray that helps detect the kind of stroke the patient has had. The doctor needs to know the type of stroke to decide on the best treatment for the patient. The stroke patient also may have blood tests and an EKG (electrocardiogram). More tests may be done over the next few days to learn the extent and the effects of the stroke.

The patient may have an intravenous (IV) line inserted. Oxygen also may be given. The patient’s blood pressure and body fluid balance are watched closely. Stroke may lead to increased pressure on the brain. The patient is watched for confusion, drowsiness, and headache, which are early symptoms of increased brain pressure. The patient may be given medicine to prevent or treat this condition.

A stroke can affect the ability to swallow. A stroke patient is not allowed to take anything by mouth until it is clear that he or she is able to swallow.

Emergency Drug Therapy
The most common type of stroke is ischemic (iss-KEY-mik) stroke. This type of stroke occurs when a clot blocks a blood vessel in the brain and blood flow is stopped. When a CT scan shows no signs of bleeding, many patients with ischemic stroke can safely receive drug therapy.

Powerful drugs called “clot busters” can dissolve blood clots that caused the stroke. Clot buster therapy must begin within three hours after the start of a stroke. This is one reason it’s urgent to get to a hospital emergency department immediately for stroke symptoms.

T-PA (Activase)
One of the clot buster drugs is t-PA. It’s short for tissue plasminogen (plaz-MIN-oh-jin) activator. The brand name is Activase®. t-PA helps restore blood flow to the damaged area of the brain. For many patients, t-PA can stop or lessen brain damage from the stroke. There is some risk for bleeding with t-PA. A patient receiving t-PA must be monitored in the intensive care unit (ICU). The drug is given by an IV line for one hour.

Intra-arterial t-PA
A newer method delivers t-PA directly where the damage has occurred. This allows lower doses of t-PA to be used because the drug is inserted directly into the affected artery. The method is called intra-arterial (IN-truh-ar-TEER-ee-ol) t-PA.
The drug is given during a procedure called an arteriogram (ar-TEER-ee-oh-gram). This procedure takes about three hours. Only staff with special medical training can give t-PA in this way.

Drug Research
Researchers are working to create new drugs that can slow down or stop brain cells from dying after a stroke. In the hours or days after a stroke, nerve cells near the part of the brain where the stroke occurred can still become damaged. It is hoped that new drugs will protect brain cells that are at risk for stroke damage that spreads. These drugs would reduce the disabling effects of a stroke. Newly created drugs are tested by research studies. Some of these drug research studies are conducted at UPMC hospitals.

Stroke Medical Treatment
After emergency treatment for a stroke, medical treatment aims to prevent the stroke from getting worse. It also aims to prevent other problems that can develop from the stroke. These types of problems are called complications. The doctor continues to monitor the stroke patient. The doctor also may prescribe more tests for the patient. The tests help to find what caused the stroke and how to prevent another one. These tests are called diagnostic (die-ag-NOS-tik) tests.

Medicines
Drug therapy may be given to patients with ischemic stroke or those at risk of having ischemic stroke. The medicines that are used most often fall into two groups: anticoagulants (an-tee-ko-AG-you-lents) and antiplatelets (an-tee-PLATE-lets).

Heparin
When a CT scan of a stroke patient’s brain shows no signs of bleeding, heparin may be prescribed. Heparin may not dissolve a blood clot that already exists, but it helps to keep the blood clot from getting bigger. This drug also helps to prevent new clots from forming. Heparin is given by intravenous (IV) line or by injection.

When you take heparin, you may have some risk for bleeding. You need frequent blood tests to check how clotting is affected. A dose of heparin is active for only four to six hours, so it is easy to control.

Tell your doctor right away if you have any signs of bleeding:

- Large bruises
- Blood in your urine or stool
- Black or dark stools
- Bleeding gums

Low-Molecular-Weight Heparin
This type of heparin may provide less risk for bleeding. It is given one or two times a day. This form of heparin is given by injection under the surface of the skin (subcutaneous). Some common brand names for this type of heparin are Lovenox® and Fragmin®.

Tell your doctor right away if you have any signs of bleeding:

- Large bruises
- Blood in your urine or stool
- Black or dark stools
- Bleeding gums

Anticoagulants
Drugs in this group help to keep blood clots from forming. Sometimes these drugs are called anti-clotting agents or blood thinners. They work by making your blood take longer to clot.
There is some risk for bleeding when you take anticoagulants, so your doctor will monitor you closely.

**Coumadin®**

Coumadin® can help patients who have high risk for having a stroke. This includes patients who have had a mini-stroke (TIA) or have abnormal heart valves. It also includes patients with an abnormal heart rhythm called “AF” (atrial fibrillation). Coumadin® is the brand name for this drug; Warfarin is the generic name. Coumadin® comes as a pill that is taken by mouth.

This drug works by reducing the effect of vitamin K, a vitamin that helps your blood to clot. Because many foods contain vitamin K, it is very important to keep the same amount of vitamin K in your diet every day when you are taking Coumadin®.

Foods that are high in vitamin K include:
- **Beverages:** herbal teas containing tonka beans, melilot (sweet clover), woodruff, green teas
- **Fats:** mayonnaise
- **Oils:** soybean oil, canola oil
- **Vegetables:** broccoli, brussels sprouts, cabbage, cauliflower, collard greens, green scallions, kale, lettuce, mustard greens, parsley, spinach, turnip greens

You must take Coumadin® exactly as your doctor prescribes. You will need frequent blood tests to check if the dosage needs to be changed.

Tell your doctor right away if you notice any signs of bleeding:
- Black or dark stools
- Bloody urine
- Bleeding gums

Whenever you go to any kind of dentist or doctor, be sure they know that you take Coumadin®. You should also wear a medical alert tag that says you are taking the blood thinner Coumadin®.

**Pradaxa®**

Pradaxa® also can help patients who have high risk of having a stroke. This includes patients who have had a ministroke (TIA) or patients with an abnormal heart rhythm called “AF” or atrial fibrillation. Pradaxa® is the brand name for this drug, and dabigatran is the generic name. Pradaxa® is a capsule that is taken twice daily by mouth.

You must take Pradaxa® exactly as your doctor prescribes. It is important that you know what to do if you miss a dose. It also is important to tell a doctor or pharmacist that you take Pradaxa® before you start a new medicine. If you have certain kidney problems, it is important for you to tell your doctor if you take Pradaxa®. You should not stop taking Pradaxa® unless your doctor tells you that you should.

Tell your doctor right away if you notice any signs of bleeding:
- Black or dark stools
- Bloody urine
- Bleeding gums
- Large or severe bruises

Whenever you go to any kind of dentist or doctor, be sure that they know that you take Pradaxa®. If possible, you also should wear a medical alert tag that says you are taking the blood thinner Pradaxa®.

**Xarelto®**

Xarelto® can also help patients who have high risk for having a stroke. This includes patients who have had a ministroke (TIA) or patients with an abnormal heart rhythm called “AF”, or atrial fibrillation. Xarelto® is the brand name
for this drug; Rivaroxaban is the generic name. Xarelto® comes as a tablet that is taken once daily by mouth.

You must take Xarelto® exactly as your doctor prescribes. It is important that you know what to do if you miss a dose. It also is important to tell a doctor or pharmacist that you take Xarelto® before you start a new medicine. If you have certain kidney problems, it is important for you to tell your doctor if you take Xarelto®. You should not stop taking Xarelto® unless your doctor tells you that you should.

Tell your doctor right away if you notice signs of bleeding:

- Black or dark stools
- Bloody urine
- Bleeding gums
- Large or severe bruises

Antiplatelets
Platelets are blood cells that are sticky and help the blood to clot. Antiplatelets are drugs that keep platelets in the blood from sticking together. This helps to prevent blood clots that could cause stroke. These drugs can help patients who have had a ministroke (TIA) or a past stroke. These drugs may also be given to patients who are at risk for a stroke. Take these drugs with food because they may irritate your stomach. Antiplatelets involve less risk for bleeding than anticoagulants do.

Aspirin
Aspirin helps to keep platelets from “clumping” in patients who have some risk for ministrokes (TIAs) or stroke. Aspirin also is an anti-inflammatory drug. Inflammation in the arteries seems to play a role in stroke. So this is another reason why aspirin helps prevent stroke. You must take aspirin for about 8 days before it starts to slow “clumping.” Many over-the-counter (OTC) drugs contain some aspirin, so it’s important to avoid them when you are taking aspirin. Check with your doctor before you take any OTC drug.

Before you have surgery or other procedures that are invasive, you may need to stop taking aspirin.

Tell your doctor if you have any of the following:

- Ringing in your ears
- Dizziness
- Confusion
- Pain in your belly

Plavix®
Plavix® is a pill taken by mouth once a day to prevent blood clots. This drug may cause headache or dizziness when you first start taking it. Tell your doctor if you have any of the following:

- Skin rashes
- Chest pain
- Fainting
- Severe headache
- Large bruises

Aggrenox®
This new medicine combines two drugs: aspirin and Persantine®. Both drugs in Aggrenox® help to keep blood clots from forming. Together, the drugs are effective in reducing mini-strokes (TIAs) and strokes. This medicine is a capsule taken by mouth two times a day. Tell your doctor if you have any of the following:

- Signs of bleeding, such as black or dark stools, bloody urine, or bleeding gums
- Skin rash
- Stomach upset
Stroke Surgical Treatment

Types of Surgery

After receiving emergency care, some stroke patients may be helped by surgery.

For Strokes from Blockage

Most strokes occur when a blood vessel in the brain is blocked and blood flow stops. This type of stroke is called an ischemic (iss-KEY-mik) stroke. The blockage may be caused by a blood clot, and severe brain swelling may result. Life-saving surgery may be necessary to remove the clot and the brain tissue that has died from lack of oxygen.

A blockage also can occur when the artery itself narrows. A harmful fatty deposit, called plaque (PLAK), may build up in an artery and then block it. Sometimes clots form, which can then break off and travel to block another artery in the brain. Some patients can be helped by a procedure called angioplasty (AN-ji-oh-plas-tee). During the procedure, a tiny balloon at the end of a long, thin tube is pushed through the artery to the blockage. When the balloon is inflated, it opens the artery. In addition, a mesh tube may be placed inside the artery to help hold it open. The tube is called a stent. The procedure usually requires a hospital stay of several days.

For Blockage in the Neck

The main arteries in the neck help supply the brain with blood. They are called the carotid (kuh-RAW-tid) arteries. When patients have a serious blockage in these arteries, surgery may be done to prevent a stroke or a ministroke, which is also called a TIA. The operation is called a carotid endarterectomy (en-dar-ter-EK-tuh-mee). This procedure cleans out and opens up the narrowed artery. During the operation, the surgeon scraps away plaque from the wall of the artery. Blood can then flow freely through the artery to the brain. A patient usually stays in the hospital two to three days for this operation.

For Strokes from Altered Blood Flow

Blood flow to the brain may decrease temporarily in some patients. This is called a ministroke or a TIA, which stands for transient (TRANS-yent) ischemic (iss-KEY-mik) attack. While the brain is not getting enough blood, it cannot work properly. Patients who have TIAs get symptoms for a short time that make it difficult for them to function.

Bypass surgery may be advised for some patients who continue to have TIAs. During the operation, an artery on the outside of the scalp is re-routed to the part of the brain that is not getting enough blood flow. When blood flow is restored, the brain works normally, and the symptoms disappear. The hospital stay for this type of bypass surgery is about one week.

For Strokes from Bleeding

Bleeding in the brain causes some strokes. These strokes are called hemorrhagic (HEMer-RAJ-ik). The bleeding may occur when a weakened blood vessel leaks or bursts. This is called an aneurysm (AN-your-izm). When an aneurysm occurs, the weakened artery may become like a balloon filled with blood. Patients usually describe an aneurysm as the worst headache of their life.

There are several types of surgery to repair an aneurysm. A clip may be placed across the neck of the aneurysm (like a clip at the end of a balloon) to stop the bleeding. A newer approach is to thread a long, thin tube through the artery that leads to the aneurysm. Then a tiny coil is fed through the tube into the aneurysm “balloon” to fill the space and seal
off the bleeding. Based on the type of surgery, the hospital stay ranges from several days to a week or longer.

**Stroke and TIA Facts**

What is a Stroke?
A stroke occurs when the brain’s blood flow stops or when blood leaks into brain tissue. Normally the blood carries oxygen to the brain to nourish brain cells. When the oxygen supply to a part of the brain is interrupted, brain cells in that area die. Death of brain cells means that some parts of the body may not be able to function.

There are different types of stroke:
- Ischemic (iss-KEY-mik) stroke
- Transient (TRANS-yent) ischemic attack, also called TIA, or ministroke
- Hemorrhagic (hem-er-RAJ-ik) stroke

TIA, or Transient Ischemic Attack
A TIA occurs when blood flow to the brain is blocked temporarily. TIA causes stroke symptoms that last for a short time, then go away. This is why TIAs are called “ministrokes.” Having a TIA means there is a problem that should be corrected. TIAs are a warning that a more serious stroke may occur. One-third of all stroke patients had TIA symptoms before their stroke. To prevent a future stroke, you must get treatment for a TIA.

**Symptoms of TIA**
The symptoms you get with a TIA depend on the area of the brain affected. Symptoms may include:
- Numbness, tingling, or weakness on one side of your body (in your face, arm, or leg)
- Trouble talking or understanding others
- Sudden confusion
- Change in vision (double vision, blurred vision, dimmed vision, or loss of vision)
- Trouble with swallowing

Ischemic Stroke
Ischemic stroke occurs when a blood vessel in the brain is blocked and blood flow is stopped. The blockage may be from a blood clot. A clot that forms in an artery is called a thrombus (THROM-bis). A clot that forms in the heart or an artery leading to the brain is an embolus (EM-buh-lis). In ischemic stroke, the clot travels to the brain and blocks a brain artery. Oxygen is then reduced or completely cut off to that part of the brain.

Ischemic stroke has many different causes. The doctor must find the cause of the stroke to know what treatment is best for you.
Causes of Ischemic Stroke
Below is a list of the things that can cause ischemic stroke:

• Hardening of the arteries, or atherosclerosis (ATH-er-oh-skler-OH-sis)
• Narrowing of one of the main arteries in the neck, or carotid (kuh-RAW-tid) disease
• Small vessel disease, or lacunar (lack-YOU-ner) infarction (in-FARK-shun)
• Infection or inflammation of brain arteries
• Irregular heart beat, or atrial (AY-tree-ol) fibrillation (fib-ril-LAY-shun)
• Heart attack, or myocardial (my-oh-CAR-dee-ol) infarction (in-FARK-shun)
• Small hole in the heart chamber wall, or atrial (AY-tree-ol) septal (SEP-tol) defect
• Blood clotting disorder, or hypercoagulability (HI-per-co-AG-you-luh-BILL-it-ee)

Hemorrhagic Stroke
Hemorrhagic stroke occurs when a blood vessel breaks and blood leaks or spills into the brain tissue. As a result, brain cells in the affected area die. There are four types of hemorrhagic stroke that commonly occur.

Intracerebral Hemorrhage
Intracerebral hemorrhage (hem-er-RAJE) or hemorrhagic stroke is a type of stroke that occurs when a blood vessel bursts in the brain or in one of the layers surrounding the brain. When the blood vessel breaks open, the blood leaks out into the surrounding tissue and causes damage. Brain tissue is sensitive to blood. It irritates the tissue, which causes it to swell or enlarge. Swelling is called edema (e-dee-ma) which is a type of fluid. The concern is when the enlarged tissue and fluid collect and cause pressure inside the skull.

The skull is a tight space that does not have extra room for the enlarged tissue and fluid. Sometimes the patient needs treatment for this buildup of fluid or pressure. Treatment can include medicines or surgery. The most common testing that will be performed is called a CT scan. The CT scan is a test that takes a picture of the brain and allows the medical team to see the amount of blood and swelling that are occurring.

Risk factors for developing a hemorrhagic stroke can include:
• High blood pressure
• Cigarette smoking
• Drinking alcohol
• Using illegal drugs

Hemorrhagic Stroke
Signs and symptoms that can occur are:
- Severe headache
- Nausea/vomiting
- Dizziness
- Confusion
- Weakness

Hemorrhagic strokes are not as common as blockage strokes, but hemorrhagic strokes can be more serious and life threatening. Quick management of symptoms and complications are key.

Subarachnoid Hemorrhage
A large artery in the brain may become weak. It may stretch out, like a balloon filling with water. The “balloon” is called an aneurysm (AN-your-izm). The aneurysm may break, spilling blood into the space between the brain tissue and the membrane that covers the brain. This membrane is called the arachnoid (uh-RACK-noyd) membrane. The stroke is called a subarachnoid (sub-uh-RACK-noyd) hemorrhage, or “SAH” for short.

Arterial Venous Malformation
Arteries and veins may be tangled, or malformed, at birth. This is called “AVM,” or arterial (ar-TEER-ee-ol) venous (VEEN-us) malformation. Over time, an AVM may break apart. How serious the damage is depends on where the AVM is located in the brain.

Cerebral Amyloid Angiopathy
In the elderly, small blood vessels in the brain may be weakened by deposits of protein. This condition is cerebral (ser-EE-brol) amyloid (AM-ih-loyd) angiopathy (an-jee-OP-uh-thee), or “CAA.” Frail arteries then may break, and blood leaks into the brain. How serious the damage is depends on the location and amount of bleeding from the breaks.

Stroke and TIA: Finding the Cause
It’s very important to find what causes a stroke or stroke warning signs (TIA). Your doctor must know the cause to decide on the best treatment for you. Your doctor will ask questions about your health now and in the past. He or she also will ask about your family’s health. You will have a complete physical exam. The doctor also will check your nervous system. This is called a neurologic (noor-uh- LOJ-ik) exam. This exam checks your level of alertness, sensation, coordination, reflexes, muscle strength, and response to pain.

Diagnostic Tests
After looking at the results of the physical and neurologic exams, your doctor may send you for one or more tests. These tests are called diagnostic (die-ag-NOS-tik) tests. These tests help to find what caused your stroke or TIA. They also help to detect the type, size, and location of the brain injury that resulted from the stroke or TIA.

There are two types of diagnostic tests. The first type of test is called noninvasive. During a noninvasive test, no foreign object or substance enters your body. For example, an x-ray is a noninvasive test.

The second type of test is invasive. An invasive test makes a puncture or cut (incision), injects a fluid, or inserts an instrument into your body. For example, tests that use an intravenous (IV) line are invasive. Before you have an invasive test, you must sign a consent form.

Diagnostic tests that are done the most often are x-ray, ultrasound, and computer-assisted imaging. Some of these tests combine invasive and noninvasive procedures.
Questions and Concerns
Generally, you have little or no discomfort during a neurologic diagnostic test. You will have no side effects, or the side effects are minor. Here are the three basic rules to follow during your test:

- Relax
- Remain still
- Do what the doctor, nurse, or technician tells you

It’s normal to have some anxiety before and during a test. But a diagnostic test should not be a frightening experience for you. Feel free to express any concerns about your tests. Ask the medical staff any questions you may have.

My doctor’s name: ____________________________
My doctor’s phone: ____________________________

Stroke Risk Factors
What is a risk factor?
A risk factor is anything that increases your chance of illness, accidents, or other negative events. Risk factors may include:

- Medical history
- Genetic makeup
- Personal habits
- Lifestyle
- Aspects of the environment

Stroke and Risk Factors
A stroke occurs when the brain’s blood flow stops or when blood leaks into brain tissue. The oxygen supply to a part of the brain is interrupted by a stroke, causing brain cells in that area to die. This means that some parts of the body may not be able to function.

There are a number of risk factors that increase the chances of having a stroke. Some risk factors cannot be reversed or changed.

They are uncontrollable. But you can do something about most of the risk factors for stroke. Some risk factors you can get rid of — like smoking. There are other risk factors you can’t get rid of, but can control — like diabetes.

Risk Factors You Cannot Change
You cannot reverse the following risk factors for stroke. You should be aware of how these risk factors apply to you.

Age
For every ten years you live, your risk of having a stroke increases.

Gender
Men have two times more risk for stroke than women have. But more women die of stroke than of breast cancer.

Race
African-Americans have two times more risk of stroke than other races have. Hispanics and Asians have the greatest risk for stroke from burst blood vessels. This type of stroke is called hemorrhagic (hem-er-RAJ-ik).

Past Stroke or TIA
If you’ve already had a stroke or a ministroke (TIA), your risk for stroke is now greater. TIA stands for transient (TRANS-yent) ischemic (iss-KEY-mik) attack. TIAs do not cause lasting damage; however, they are a warning sign that a more serious stroke may occur.

Family History
Your risk for stroke is greater when heart attack, stroke, or TIA runs in your family.
Risk Factors You Can Control
You can lower your risk of stroke when you cut out or reduce the other risk factors.

Smoking
Smoking is a major risk for stroke for these reasons:

• Smoking causes your blood to clot easier.
• Smoking increases the buildup of plaque in your arteries.

Every time you smoke, your arteries narrow and your blood pressure increases as a result of the nicotine.

When you quit smoking, you decrease your risk of stroke. For help to quit smoking, call 1-800-533-UPMC (8762).

High Blood Pressure
The number one risk factor for stroke is high blood pressure. Another name for high blood pressure is hypertension (hi-per-TEN-shun).

When you control your blood pressure, you can greatly reduce your risk of stroke.

Talk to your doctor to learn what your blood pressure should be. Starting at age 55, you should get your blood pressure checked twice a year, unless your doctor advises more frequent checks. This helps you keep your blood pressure in the range set by your doctor. You should know your blood pressure numbers. In general, the top number should be less than 120, and the bottom number should be less than 80. The way to say a blood pressure would be “120 over 80,” for example. The top number is called systolic (sis-TOLL-ik) pressure. The bottom number is diastolic (die-es-TOLL-ik) pressure.

High Cholesterol
An unhealthy cholesterol (co-LESS-ter-all) balance can lead to fat deposits in the arteries. These deposits are called plaque (PLAK).

Plaque narrows the arteries and can lead to stroke. You should have your first cholesterol check at age 20. After that, follow your doctor’s guidelines for regular cholesterol testing. The best time for a cholesterol check is after you have not eaten for several hours.

You should learn what your cholesterol numbers are. Here is what your numbers should be:

• Total cholesterol should be lower than 200.
• Good cholesterol (HDL) should be higher than 35.
• Bad cholesterol (LDL) should be less than 100, based on your health history.
• Triglycerides (try-GLISS-er-rides) are fats, and should be below 200.

To reach your goal, you may need diet, exercise, and medicine. If you had a stroke or TIA in the past, it’s very important to work hard to control your cholesterol to prevent stroke or a second stroke.

Carotid Disease
The carotid (kuh-RAW-tid) arteries are the two main arteries that carry blood to your brain and neck. When plaque build-up narrows these arteries, carotid disease results. Medicine or surgery to clean out plaque in the carotid arteries can reduce the risk for stroke.

Heart Disease

Atrial Fibrillation
Atrial fibrillation, or A-fib is an abnormal heart rhythm. The heart’s electrical system normally sends regularly spaced, predictable signals, telling the heart muscle to contract, or beat.

The heart has two upper chambers called atria, and two lower chambers called ventricles. Each signal starts in the atria and travels to the rest of the heart. In atrial fibrillation, the electrical
signals from the atria are fast and irregular. The atria quiver, rather than contract. Some signals do not reach the ventricles, and the ventricles continue pumping, usually irregularly and sometimes rapidly. This uncoordinated rhythm can reduce the heart’s efficiency at pumping blood out to the body.

Blood left in the heart chambers can form clots. These clots may sometimes break away, travel to the brain, and cause a stroke.

In most cases atrial fibrillation is due to an existing heart condition, but atrial fibrillation can occur in people with no structural heart problems. A thyroid disorder or other condition may cause the abnormal rhythm. In some cases the cause is unknown.

**Risk Factors For Heart Disease**

A risk factor is something that increases your chance of getting a disease or condition.

**Cardiovascular**
- High blood pressure
- Coronary artery disease
- Congestive heart failure
- Heart attack
- Heart valve disease
- Endocarditis (end-oh-car-DIE-tiss) (infection of a heart valve)
- Cardiomyopathy (kar-dee-oh-my-OP-a-thee) (disease of the heart muscle)
- Congenital (Kun-jen-a-tal) heart disease
- Prior episode of atrial fibrillation

**Lung**
- Emphysema (em-fuh-zeh-muh)
- Asthma (Az-ma)
- Blood clots in the lungs

**Chronic Medical Conditions**
- Overactive thyroid
- Diabetes

**Other**
- Age 55 or older
- Smoking
- Excessive alcohol intake
- Use of stimulant drugs, including caffeine
- Males
- Undergoing general anesthesia
- Emotional or physical stress

**Symptoms of Heart Disease**

Symptoms can vary from mild to severe, depending on your heart function and overall health. Some people may not notice any symptoms.

- Symptoms include: irregular or rapid pulse or heart beat, racing feeling in the chest, palpitations, or a pounding feeling in the chest, dizziness, lightheadedness or fainting, sweating, pain or pressure in the chest, shortness of breath, fatigue or weakness, exercise intolerance.

**Treatment**

The goal of treatment is to restore a regular rhythm, if possible, keep heart rate as close to normal as possible, and to prevent blood clots from forming. If an underlying cause of atrial fibrillation is found, it may be treated. Some patients return to a normal rhythm without treatment.

**Lifestyle Changes**

Avoid caffeine and other stimulants because they may trigger another episode. Alcohol also may act as a trigger in some people.
Prevention
If you have risk factors for atrial fibrillation, avoid triggers, such as alcohol and caffeine. Follow your doctor’s advice for controlling heart disease, high blood pressure, and other conditions.

Heart Attack
Heart attack occurs when the blood supply to part of the heart is greatly reduced or stopped. The result may be injury to the heart muscle. The heart muscle is called the myocardium (my-oh-CAR-dee-um). Another name for heart attack is myocardial (my-oh-CAR-dee-ol) infarction (in-FARK-shun), or “MI.” Three percent of people who have a heart attack will also have a stroke.

Congestive Heart Failure
Congestive heart failure (CHF) is weakening of the heart muscle. The heart becomes less able to pump the amount of blood the body needs to perform various activities. In most cases, CHF is present along with other risk factors. Some of these are high blood pressure, diabetes, and past heart attack. Getting treatment for these conditions helps reduce your risk for stroke.

Valve Disease
Valve disease prevents the heart valves from working properly. Blood clots can result from valve disease. The blood clots may travel through the arteries to the brain and cause a stroke. Medicine and sometimes surgery can help reduce your stroke risk.

Diabetes
When a blood vessel in the brain becomes blocked and stops blood flow, a stroke occurs. This type of stroke is called an ischemic (iss-KEY-mik) stroke. Diabetes greatly increases your risk for an ischemic stroke.

Some types of diabetes prevent the body from using its insulin to break down blood glucose (sugar). This is called insulin resistance. The result is lower levels of good cholesterol (HDL), which can cause blood clots to form. The blood clots may travel to the brain and cause a stroke.

Diabetes also causes plaque to build up in the arteries at a faster rate. Plaque narrows the arteries. This is called hardening of the arteries, or atherosclerosis (ATH-er-oh-skler-OH-sis). In time, plaque buildup can block an artery and cause a stroke.

People with diabetes also tend to gain weight. Obesity can lead to high blood pressure and high cholesterol, which are both risk factors for stroke. When blood glucose levels are high, damage from a stroke can be even worse. Good control of diabetes can reduce your risk for stroke. For good control, it is important to monitor and control blood glucose levels, follow your diet plan, and exercise.

Obesity
Excess weight increases your risk of stroke. People who have a stroke or heart disease often have excess body fat around their lower belly, or abdomen. This is sometimes called an “apple shape.” Obesity also can bring other risk factors with it, such as high blood pressure, higher bad cholesterol, and diabetes. Weight control and exercise improve your circulation and help reduce other risk factors.

Lack of Physical Activity
Exercise is important to help control weight, blood pressure, cholesterol, and diabetes — all risk factors for stroke.
Alcohol, Coffee, and Drug Use

Heavy alcohol use increases risk for stroke. Drinking three or more cups of coffee a day may increase risk of stroke in older men with high blood pressure. Use of street drugs, especially cocaine and amphetamines, is a major stroke risk for young adults. Using steroids for bodybuilding increases risk of stroke.

Poor Nutrition

A diet high in fat, sugar, and salt puts you at risk for stroke. Studies show that eating five servings of fruit and vegetables a day will reduce your risk of stroke by 30 percent.

Stress

Studies show a link between mental stress and narrowing of the carotid arteries. Learning and practicing ways to reduce stress may help reduce your stroke risk.

Estrogen

Birth control pills and hormone replacement therapy (HRT) contain estrogen. The hormone estrogen may change the blood’s clotting ability. Blood clots may then form, which can cause stroke.

What are the warning signs?

Here are the warning signs of stroke:

- Numbness, weakness, or paralysis of the face, arm, or leg (on one or both sides of the body)
- Vision that suddenly blurs or decreases (in one or both eyes)
- Trouble speaking or understanding
- Dizziness, loss of balance, or an unexplained fall
- Difficulty swallowing
- Sudden, severe headache that is unexplained
- Sudden confusion

When you spot the warning signs and take action, you may be able to prevent a stroke. If a stroke occurs, taking action may mean that the damage is less severe.

Act Fast!

When you or someone you know has one or more warning signs of stroke, take action immediately. Call 911 or your local ambulance service. Contact your doctor right away, too, so proper measures can be taken quickly.

Do not ignore the warning signs — they are very serious! Call 911.

Stroke Warning Signs

Learn The Signs

When a person is about to have a stroke, there are warning signs. Some of the signs are physical, and other signs are mental. Learn the warning signs of stroke.

Some Tests You May Get

CT Scan and CTA Scan

What is a CT Scan?

“CT” stands for computed tomography (tuh-MOG-ruff-ee). CT uses x-rays and a computer
to make a picture of sections of the body. The picture is called a scan. A CT scan shows the body's organs in greater detail and more clearly than regular x-rays.

What is a CTA Scan?
“CTA” stands for computed tomography angiography (AN-jee-OG-ruff-ee). A CTA scan gives a view of specific blood vessels (arteries and veins). CTA is often included in a CT exam.

Why are CT and CTA used?
CT and CTA help find problems in your body and how far disease has spread. They also help show the effects of treatment and how your body is responding to treatment.

CT and CTA scanning can study many parts of the body, such as the brain, neck, chest, abdomen, pelvis, spine, arms, and legs.

How do I prepare for the test?
This section gives you some general guidelines to prepare for your test. Your doctor, nurse, or testing center will give you more detailed instructions.

Medicines
Ask your doctor or testing center for instructions. If you have diabetes, ask your doctor about taking your routine medicine.

Diet
Your testing center will give you instructions. If your doctor or testing center tells you to take your routine medicine, take it only with a small sip of water.

You may be asked to take a liquid preparation and a bowel preparation before you come to the testing center.

What to Bring
When you come for your test, please bring:

• A prescription slip or requisition from your doctor
• Insurance forms, referrals, or both
• A list of your medicines, including any special glucophage (GLU-ko-faj) instructions, over-the-counter drugs, and herbal drugs
• A list of allergies to food, latex, or medicine

Precautions
Tell the doctor or technologist if you’ve ever had an allergic reaction to a contrast enhancing agent, iodine, or shellfish, or if you have asthma.

CT and CTA scanning exposes you to some radiation. If you are pregnant or think you might be, or if you are breastfeeding, tell the doctor and technologist before your test.

What happens during the test?
You will put on a hospital gown and remove all metal objects that might interfere with the scan. If a contrast enhancing agent is used, you’ll receive it in one of the following ways:

• By drinking it
• By an enema (inserted through the rectum)
• By an intravenous (IV) line in your arm

The IV enhancing agent may give you a brief sensation that moves up your arm. You also may get a warm, flushed feeling, a taste of salt or metal in your mouth or nausea for a few minutes. This is normal, but you should tell the technologist about these or other reactions.

You also may experience nausea, shortness of breath, itchiness, or sneezing. If any of these occur, tell the doctor or technologist right away.
The CT scanner has a very large ring, like a donut standing upright. A narrow table moves through the center hole.

The technologist will help you onto the table and then will go into a room behind a large window. The staff will watch you carefully through the window. You’ll be able to talk to the staff through an intercom. You will be asked to hold your breath for a short time during the CT scan. You will hear whirring sounds and the table will move during the exam.

CT and CTA scanning usually takes less than 30 minutes. Some tests are shorter or longer, based on the number of areas tested and the equipment used. If an enhancing agent is used, the test will take longer.

What happens after the test?
When your scan is over, the technologist will help you off the table. If you had a change in diet before the scan, you may resume your normal diet. If you received an enhancing agent, you should drink plenty of fluids to flush it out of your body. If you cannot drink, you will be given fluids by IV. If you have diarrhea that lasts for longer than a day, call your doctor.

How do I get my test results?
A radiologist will study your scans and report the results to your doctor. Your doctor will discuss the results with you. Talk with your doctor or testing center about how to get your test results.

My Test Appointment
Date: _______________________
Time: _______________________
Location: _____________________
Phone number: ______________________
Special instructions: ______________________

Echocardiogram

What is an echocardiogram?
An echocardiogram (ek-oh-KAR-dee-oh-gram), or “echo,” is a test that checks how well your heart is working. It uses sound waves to produce a picture of your heart.

Why is an echo done?
This test is done to help your doctor check:

• The size of your heart’s pumping chambers (ventricles).
• How well your heart muscle is pumping.
• How well your heart valves are working.

The Day of Your Test
• No special preparation is necessary.
• You may eat or drink anything you like.
• Go about your normal activities.
• Take any medicines you normally would take, unless your doctor tells you otherwise.
• Do not apply oil or lotions to your chest area.
• Plan to arrive 30 minutes before the scheduled time of the test.
• The test may take from 30 to 60 minutes.

During the Echo
You will remove any clothing above the waist and put on a hospital gown.

Sticky patches (called electrodes) will be placed on your chest. These keep track of your heart’s rate, rhythm, and electrical activity. The electrodes will be connected to a machine that will record the electrical activity of your heart. This recording is called an EKG (electrocardiogram).

You will be asked to lie on your left side. A nurse or technician will put a gel on your chest. The gel may feel cold. A small plastic device, called a transducer (trans-DOO-sir), will be placed on your chest, over your heart. The transducer sends and receives high-frequency sound waves. As the sound waves bounce off different parts of your heart, they are picked up by the transducer and sent to a monitor. The monitor shows a picture of your beating heart. You may hear a “whooshing” sound, timed with your heartbeat. This is the sound of blood moving through your heart.

After the Exam
After the echo is completed, you may go back to your normal daily activities. Technologists and nurses are not allowed to discuss your test results. Your doctor will go over your test results with you. Call your doctor’s office in two to three working days to find out your results.

Holter Monitor
A Holter monitor is a device that continuously records your heart’s rhythm during daily activities (usually for 24 hours). This also is called an ambulatory electrocardiogram. The monitor records your heart’s rhythm through electrodes that are placed on your chest. Electrodes are small adhesive patches attached by wires to a monitor. This test helps show how your heart responds to normal activity or to certain medications.

Why is this test done?
There are many reasons your doctor may order this test:
• To help detect heartbeats and any cardiac arrhythmias (ay-RITH-me-uhhs).
• To help evaluate chest pain.
• To help check the heart’s activity after a heart attack.
• To help check the heart’s activity after a pacemaker has been inserted.
• To help check how certain medicines are working.
• To help discover the cause of certain symptoms such as difficulty breathing, dizziness, light-headedness, or fainting.

How should I prepare for the test?
Wear loose-fitting clothing with a shirt or blouse that buttons down the front. This will keep the electrodes from becoming loose. Other than that, there is no special preparation for this test. You may eat and drink before the test.
How is this test done?
You will be told where and when to have the Holter monitor put on and taken off.

First, your chest will be cleansed. It also may be shaved. Having clean skin will help the electrodes stay on until the test is done. Electrodes will be stuck to your chest. This is painless. You will be told what to do if any of the electrodes loosen or fall off during the test.

The electrodes are attached with wires to a portable (battery operated) monitor. The monitor is worn in a pouch, which might be on a strap around your waist, shoulder, or neck.

While wearing the monitor, continue to go about your daily activities in your usual way. You will be asked to keep a diary of your activity, medicines, and symptoms while wearing the monitor.

It is important to keep the monitor dry.
• Do not shower or take a bath until the monitor is removed.
• It is OK to take a sponge bath, but be careful not to get the monitor wet.

Do not disconnect the lead wires or electrodes. This will interfere with the recording.

Keeping Your Diary
It is very important that you fill in the diary. Write down any activities that you do and the time you do them. Some examples of activities are:
• Walking
• Stair climbing
• Exercise
• Sexual activity

You also must include:
• Eating and drinking
• Medicines taken
• Periods of stress
Write down any symptoms you have and what time you experienced them. The following symptoms are important to record:
• Chest pain or discomfort
• Any other pain
• Shortness of breath
• Dizziness or light-headedness
• Fainting
• Heart palpitations (racing or pounding heart beat)
• Tiredness or fatigue
• Nausea

Some Holter monitors have an “EVENT” button. Press this button when you experience any symptoms. When the EVENT button is pressed, it “marks” the recording. If your monitor has this button, you will be shown how to use it.

What to Avoid
Certain things can interfere with your Holter monitor’s recording. While wearing the Holter monitor, avoid the following:
• Magnets
• Metal detectors
• Electric blankets
• High voltage areas

Time’s Up!
Return to the place where you received your monitor, at the time you were told. The electrodes and monitor will be removed.

Results
A computer will analyze the recording and print a report. Your doctor will analyze the report and your diary. He or she will talk with
you about the results. Depending on the results of this test, additional tests or treatments may be ordered. Your doctor will discuss these with you.

Your Appointment

Date: ____________________________
Time: ____________________________
Location: ____________________________
Phone number: ____________________________
Special instructions: ____________________________

MRI and MRA Scan

MRI stands for magnetic (mag-NET-ik) resonance (REZ-oh-nentz) imaging. MRI uses magnetic fields and radio waves to make pictures of the body without using x-rays. The pictures, called scans, are three-dimensional and are shown on a screen.

MRI lets doctors see very detailed images of the inside of your body. MRI passes through bone and takes pictures of soft tissue, such as tendons, blood vessels, and the brain. MRA stands for magnetic resonance angiography (AN-jee-OG-ruff-ee). An MRA scan gives a view of specific blood vessels (arteries and veins). MRA may be included with an MRI exam.

Checklist

The checklist below helps to show if you can have MRI and MRA. The magnetic fields used are extremely powerful, so it’s very important that we know about any metal in your body. Many items listed below are safe, but some mean that you cannot have MRI or MRA.

Check all the items that apply to you:

☐ Have a history of working with metal.
☐ Have metal in your eye or have ever had metal removed from your eye.
☐ Have shrapnel, BBs, or bullets anywhere in your body.
☐ Have a pacemaker, cardioverter, or defibrillator.
☐ Have aneurysm clips.
☐ Have embolization coil.
☐ Have had heart valve replacement or cardiac stents.
☐ Have hearing devices of any kind.
☐ Have implants of any kind (for example, dental, breast, penile, or ear).
☐ Have had surgery in the past two months.
☐ Have fear of tight or enclosed spaces (claustrophobia).
☐ Think you may be pregnant.
☐ Have had problems with past MRI or MRA.

If you checked any of these items, call and tell your testing center before the day of your MRI exam. Do not assume that your doctor’s office knows about your metal implants or any other item. You are responsible to alert us to these items.

How do I prepare for the test?

For an MRI exam, no special preparation is needed. On the day of the MRI, you may eat or drink fluids, go about your normal activities, and take your routine medicines, unless your doctor says otherwise. For an MRA exam, your testing center will tell you about any special preparation needed. If the area of your body being tested is above the shoulder, do not wear any makeup, jewelry, hair pins, or hair products, such as mousse, gel, or hair spray. These items may affect the scan.
Tell the doctor or technologist if you’ve ever had an allergic reaction to a contrast enhancing agent, shellfish, or iodine, or if you have asthma.

What happens before the test?
Plan to arrive 30 minutes before your scheduled exam time to register. You may be asked to change into a hospital gown and pants. If so, you must remove all jewelry and store personal belongings in a locker. It’s best to leave all valuables at home.

For some MRI and MRA exams, a contrast enhancing agent is used. If you are to receive an enhancing agent, an intravenous line (IV) will be inserted in your arm or hand. The enhancing agent may give you a brief sensation that moves up your arm. You may get a warm, flushed feeling, a taste of salt or metal in your mouth, or nausea for a few minutes. This is normal, but you should tell the technologist about these or other reactions.

What happens during the test?
Most MRI and MRA exams are done inside a closed scanner. The magnet is like a tunnel, open at both ends, allowing light and air inside. If you are large or have a fear of enclosed spaces (claustrophobia), please tell your doctor in advance so arrangements can be made.

The technologist will help you onto a scanning bed. You will lie flat on the bed. The scanning bed will move into the center of the magnet. Inside the scanner, you should lie quietly, breathe normally, and relax. You must stay as still as possible, so the pictures are clear. You’ll have ear plugs to block out the machine’s loud knocking noise.

The technologist will be in a room behind a large window and will see and hear you at all times. You’ll be able to talk through an intercom. The exam usually lasts one to two hours.

How do I get my test results?
A doctor who is a radiologist will study your scans and report the results to your doctor. Your doctor will discuss the results with you. Ask your doctor or testing center about how to get your test results.

TEE (Transesophageal Echocardiogram)
The TEE test takes a detailed picture of your heart and its major blood vessels. This test helps to detect heart valve disease, heart tumors, and blood clots inside the heart. It also helps detect an aneurysm (AN-your-izm), which is a swelling, like a balloon, in a blood vessel. TEE stands for transesophageal (trans-ee-SOFF-uh-jee-ul) echocardiogram (ek-oh-CAR-dee-oh-gram).

How does a TEE work?
The TEE test combines several procedures. It makes a picture by using sound waves that pass through skin and tissue without being heard or felt. This is called ultrasound (UL-truh-sound). The special instrument that sends and receives the sound waves is called a transducer (trans-DOO-sir).

A tiny transducer is attached to the end of a flexible tube with a light. The tube is called an endoscope (EN-doh-skope). The scope is passed into your mouth, through your esophagus (food pipe), and down behind your heart. The word “transesophageal” means “through the esophagus.”
The transducer sends sound waves into your heart and blood vessels and then receives the signals that bounce back, or “echo.” The signals are converted into pictures that show on a screen. This part of the test is called an echocardiogram.

How do I prepare for the test?

- Do not eat or drink anything, not even water, for six hours before the test. If your doctor says so, you may take your medicine with a very small sip of water.
- Remove any full or partial dentures.
- Tell your doctor or nurse before the test if any of your teeth are loose.
- You will need to sign a consent form.

What happens during the test?

A doctor will perform your TEE test with the help of a nurse or technician. The technician will help you onto a bed and ask you to lie on your left side. You will be connected to machines that monitor your blood pressure, heart rate, and oxygen levels during the test. You will be given a mild sedative by an intravenous line (IV) to help you relax. You’ll remain somewhat alert so you can cooperate with the doctor and staff.

The TEE test may cause some mild discomfort, but it should not be painful. The back of your throat will be numbed with an anesthetic spray. Your throat will feel cool, and you may get a bitter taste in your mouth. You will need to remove any full or partial dentures. To protect your teeth, a plastic mouth guard will be placed in your mouth. You’ll need to press your lips around the guard.

The doctor then will insert the scope into the back of your mouth. You will be asked to swallow the scope, and you may gag for a few moments. The doctor will advance the scope into your esophagus about 12 to 14 inches. The transducer will take a picture of the top right chamber of your heart. This is called the right atrium (AY-tree-um).

Next, the doctor will advance the scope four to six inches farther. The transducer will now get a picture of the lower left chamber, which is called the left ventricle (VEN-trih-col).

The scope will be in place at each site for five to 10 minutes. If saliva collects in your mouth, a small plastic suction tube will remove it.

What happens after the test?

You cannot eat or drink for at least 1 hour after the test. The numbing effect of the anesthetic takes this long to wear off. Your nurse will check your gag reflex often by touching the back of your mouth with a tongue depressor. You must be able to gag to keep from choking on food or fluid.

You may have a mild sore throat for up to 24 hours after the test. This is normal.

Your doctor may prescribe throat lozenges to relieve the mild soreness in your throat.

You may have to stay in bed for 1 to 2 hours while the mild sedative wears off.

You must have a responsible adult drive you home. You must arrange it in advance.

When do I call the doctor?

Tell your doctor or nurse if you experience any of the following:

- Choking on foods, fluids, or saliva.
- Severe pain or bleeding from your mouth or throat.
How do I get my results?
Your doctor will discuss the results of the test with you. Check with your doctor or the testing center about how and when to get your test results.

Questions and Concerns
It’s normal to have some anxiety before and during a test. But a diagnostic test should not be a frightening experience. Feel free to express concerns about your TEE test. Please ask the medical staff any questions you have.

For Your Good Health

Blood Pressure
What is blood pressure?
Blood pressure is vital to life. Blood pressure makes it possible for blood to circulate throughout our bodies. With each beat of the heart, blood is pumped out of the heart into our blood vessels. The blood carries oxygen and food to our vital organs — such as the brain, heart, and kidneys — so they can work. Blood pressure is the force (tension) that the blood exerts in our blood vessels.

How is blood pressure measured?
A blood pressure check measures two things, so your blood pressure reading will have two numbers. The first, or top, number shows systolic (sis-TOLL-ik) pressure. It shows the pressure of blood against the artery walls when your heart contracts and pumps out blood. The second, or bottom, number shows diastolic (dye-es-TOLL-ik) pressure.

It shows the pressure of blood against the artery walls when your heart rests between pumps and fills with blood. An example of a blood pressure reading is 130/80 (read as “130 over 80”). The systolic pressure is 130. The diastolic pressure is 80.

Why should I know my blood pressure numbers?
You should learn and remember your blood pressure numbers. Blood pressure numbers fall into three ranges. The ranges show if your blood pressure is healthy or if you have a health problem.

Normal Blood Pressure
Your blood pressure is normal when the first number is less than 120, and the second number is less than 80. When your blood pressure is normal, work to keep it normal by adopting a healthy lifestyle.

Hypertension
Hypertension (HI-per-TEN-shun) is the medical name for high blood pressure. Your blood pressure is high when the first number is 140 or higher, or the second number is 90 or higher. When blood pressure remains in this range, it is dangerous to your health. It takes several readings at different times to determine if you have high blood pressure.

Pre-hypertension
Your blood pressure may not be normal or high. A first number between 120 and 139, or a second number between 80 and 89, is a warning. The medical name for this range is “pre-hypertension.” This means that you don’t have high blood pressure now, but you’re likely to have it in the future.
<table>
<thead>
<tr>
<th>Blood Pressure</th>
<th>Systolic</th>
<th>Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>under 120</td>
<td>or under 80</td>
</tr>
<tr>
<td>Pre-hypertension</td>
<td>120 to 139</td>
<td>80 to 89</td>
</tr>
<tr>
<td>Stage 1 Hypertension</td>
<td>140 to 159</td>
<td>90 to 99</td>
</tr>
<tr>
<td>Stage 2 Hypertension</td>
<td>160 or over</td>
<td>or 100 or over</td>
</tr>
</tbody>
</table>

What causes high blood pressure?
The cause of high blood pressure is often not clear. We know a physical cause of high blood pressure for only 5 percent of patients in treatment. For example, kidney disease may be the cause of their high blood pressure. But for 95 percent of patients in treatment, we do not know a physical cause of their high blood pressure.

Why is high blood pressure dangerous?
High blood pressure is dangerous because it puts a strain on your body. It can harm your body in a number of ways. First of all, it adds to your heart’s work load. Over time as your heart works harder than normal, it tends to get bigger. A slightly bigger heart may still work well, but a heart that is too enlarged may not be able to meet your body’s needs.

High blood pressure also affects your arteries and arterioles (are-TEER-ee-ols), which are the smaller arteries. As we grow older, the arteries harden and become less flexible, even if we don’t have high blood pressure. But having high blood pressure tends to speed up this process. Another name for hardening of the arteries is arteriosclerosis (are-TEER-ee-oh-skler-OH-sis).

When high blood pressure damages the arteries, they may not be able to supply the amount of blood the body needs. When the body’s organs don’t get enough oxygen and food from the blood, they cannot work properly. High blood pressure may contribute to kidney disease or eye problems.

Sometimes a hardened artery becomes narrowed by a buildup of material called plaque (PLAK). This is called atherosclerosis (ATH-er-oh-skler-OH-sis). A blood clot may lodge in a narrowed artery, cutting off normal blood supply to part of the body.

Another danger is that high blood pressure usually has no warning signs or symptoms. People can think they have perfectly normal blood pressure until suddenly they have a heart problem or a stroke. High blood pressure may have silently damaged their heart and blood vessels over a long time.

Am I at risk for high blood pressure?
Everyone has some risk for high blood pressure. Our risk increases as we age. About 25 percent of adult Americans have high blood pressure. Some people have greater risk than others. They are:

- Men
- Americans of African descent

Other factors that increase your risk for high blood pressure are:

- Family history of high blood pressure
- Obesity
- Cigarette smoking
- High cholesterol
- Diabetes
- Lack of exercise
- High alcohol use
- High salt intake
- Aging
- Stress
Why should I be concerned?
You can prevent serious health problems if you take the proper steps to prevent or control high blood pressure. It’s the most important thing you can do to reduce your chance of a stroke. When you do not control high blood pressure, you are:
- Seven times more likely to have a stroke.
- Six times more likely to get congestive heart failure.
- Three times more likely to get coronary heart disease.

What should I do?
You should have your blood pressure checked as often as you can. If your doctor tells you to have your blood pressure checked once a month or several times a year, be sure to do so. In addition, attend free blood pressure screenings for the public whenever possible. You can have a blood pressure check by a doctor, nurse, nurse practitioner, physician assistant, or medical assistant at:
- Your doctor’s office
- A clinic where you work or go to school
- A health fair, fitness center, or community center
If your blood pressure reading is high at a public screening (for instance, at a mall or health fair), get it confirmed by your doctor or other health care professional. It is very important to see your doctor if you have a high blood pressure reading. You could have other health problems that need to be treated. Early detection and treatment are key.

What exams and tests will I need to have?
Your doctor will give you a routine physical exam and ask you questions about your health. If your blood pressure reading is high, he or she will give you three or more blood pressure checks several weeks apart. If your blood pressure reading is high on three or more careful readings, the doctor will diagnose high blood pressure. In severe cases, a doctor may diagnose high blood pressure based on a single reading.
To see if high blood pressure has damaged any organs in your body, routine blood and urine tests and an EKG (electrocardiogram) will be done. Most people with high blood pressure receive “normal” test results, indicating no signs of organ damage. For some people, the test results will indicate that they may have kidney disease, diabetes, or a hormone disorder. This is why it is so important to see your doctor when you have high blood pressure. Other health problems can be detected and treated before they get worse.

Can high blood pressure be cured?
High blood pressure can be controlled, but not cured. It is a lifelong disease. If you have high blood pressure, you can learn to control it. It’s important to work with your doctor to find the best treatment for you.

How do I control high blood pressure?
There’s a lot you can do to control high blood pressure. Changing your diet and living habits can help lower blood pressure. Quitting smoking reduces blood pressure and risk for heart attack and stroke. Reducing your alcohol intake helps. For some people, taking medicine also helps to reduce and control high blood pressure. When you follow the treatment plan
your doctor gives you, it becomes easier to maintain a lower blood pressure.

How does the doctor decide my treatment?
To draw up a treatment plan for you, your doctor will look at a number of factors. He or she will look at your blood pressure range. There also may be signs that high blood pressure has damaged organs such as your heart, arteries, kidneys, or eyes. You may already be in treatment for other health problems, such as high cholesterol, diabetes, or heart, kidney, or lung disease. Your treatment plan may involve lifestyle changes alone. Or your treatment plan may combine lifestyle changes with medicine.

Lifestyle Changes
Lifestyle changes alone are usually tried first for people with:
• Blood pressure in the pre-hypertension range.
• No other risk factors for heart disease.
• No evidence of damage to other organs.

Lifestyle changes mean that you must:
• Achieve or maintain a healthy weight.
• Get regular exercise.
• Avoid too much sodium.
  > Do not add table salt to your foods or eat salty foods.
  > Ask your doctor about the DASH diet.
• Eat a low-fat diet.
  > Follow guidelines of the American Heart Association.
• Get enough fiber in your diet.
  > Eat five servings of fruits and vegetables every day.
• Limit your use of alcohol.
• Stop smoking.
• Learn to check your blood pressure at home.
• Reduce stress in your life.

Blood Pressure Medicines
Medicine combined with lifestyle changes is often tried first for people with:
• Blood pressure in the hypertension range.
• Other risk factors for heart disease.
• Evidence of damage to other organs.

When blood pressure is in the hypertension range, lifestyle changes plus a single, low-dose medicine usually are tried first. If this first attempt does not lower your blood pressure, then higher doses of the medicine may be tried. Or several medicines combined may be tried.

Types of Medicines
It often takes time to find the medicine that best controls your blood pressure with the fewest side effects. It may take some weeks for your body to adjust to a certain medicine and for mild, annoying side effects to fade.

Diuretics
Diuretics (dye-uh-RET-iks) work in the kidneys to rid the body of excess water and salt by increasing the flow of urine. They are often called “water pills.” These drugs help to lower blood pressure. Examples are:

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td>furosemide</td>
<td>Lasix®</td>
</tr>
<tr>
<td>hydrochlorothiazide</td>
<td>HydroDIURIL®</td>
</tr>
<tr>
<td>metolazone</td>
<td>Zaroxolyn®</td>
</tr>
<tr>
<td>bumetanide</td>
<td>Bumex®</td>
</tr>
</tbody>
</table>
**Beta Blockers**  
Beta (BAY-tuh) blockers help to slow the heart beat. They work by reducing the nerve impulses to the heart and blood vessels. Then the heart does not have to work so hard. As a result, blood pressure goes down. Examples are:

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td>atenolol</td>
<td>Tenormin®</td>
</tr>
<tr>
<td>metoprolol</td>
<td>Lopressor®</td>
</tr>
<tr>
<td>propranolol</td>
<td>Inderal®</td>
</tr>
</tbody>
</table>

**ACE Inhibitors**  
“ACE” stands for angiotensin (an-jee-oh-TEN-sin) converting enzyme. ACE inhibitors prevent a certain hormone from forming. This hormone is called angiotensin II. It can cause the blood vessels to narrow. ACE inhibitors relax the blood vessels, and then blood pressure goes down. Examples are:

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td>captopril</td>
<td>Capoten®</td>
</tr>
<tr>
<td>enalapril</td>
<td>Vasotec®</td>
</tr>
<tr>
<td>lisinopril</td>
<td>Prinivil®</td>
</tr>
</tbody>
</table>

**Angiotensin II Receptor Blockers (antagonists)**  
Angiotensin II receptor blockers prevent the effect of angiotensin II on the blood vessels. As a result, the blood vessels become wider, and blood pressure goes down. Another name for these medicines is angiotensin II antagonists. Examples are:

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td>losartan</td>
<td>Cozaar®</td>
</tr>
<tr>
<td>valsartan</td>
<td>Diovan®</td>
</tr>
</tbody>
</table>

**Calcium Channel Blockers**  
Calcium channel blockers (CCBs) prevent calcium from entering the heart muscle and the blood vessels. This makes the blood vessels relax, and blood pressure goes down. Examples are:

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td>amlodipine</td>
<td>Norvasc®</td>
</tr>
<tr>
<td>diltiazem</td>
<td>Cardizem®</td>
</tr>
<tr>
<td>nifedipine</td>
<td>Adalat®</td>
</tr>
</tbody>
</table>

**Alpha Blocks**  
Alpha (AL-fuh) blockers reduce nerve impulses to the blood vessels. Blood can then pass through more easily, and blood pressure goes down. Examples are:

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td>doxazosin</td>
<td>Cardura®</td>
</tr>
<tr>
<td>prazosin</td>
<td>Minipress®</td>
</tr>
<tr>
<td>terazosin</td>
<td>Hytrin®</td>
</tr>
</tbody>
</table>

**Alpha-beta Blockers**  
Alpha-beta blockers work like alpha blockers, reducing nerve impulses to the blood vessels so that blood passes through more easily. They also work like beta blockers, slowing the heart beat. As a result, less blood is pumped through the blood vessels, and the blood pressure goes down. Examples are:

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td>labetalol</td>
<td>Normodyne®</td>
</tr>
</tbody>
</table>

**Nervous System Inhibitors**  
Nervous system inhibitors control nerve impulses to relax the blood vessels. This allows the blood vessels to become wider, and blood pressure goes down. Examples are:
Generic name | Brand name
---|---
clonidine | Catapres®
methyldopa | Aldomet®

**Vasodilators**
Vasodilators (vay-zoh-DYElay-terz) open blood vessels directly by relaxing the muscle in the vessel walls. This causes blood pressure to go down. Examples are:

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
</tr>
</thead>
</table>
| hydralazine | Apresoline®
minoxidil | Loniten®

Always review with your doctor any other medicines you take. This includes over-the-counter medicines, such as aspirin, NSAIDs (non-steroidal anti-inflammatory drugs), and herbal medicines. Some medicines may make your blood pressure medicine less effective.

**Tips for High Blood Pressure**
- Get regular blood pressure checks. Write down the numbers, and know them.
- Know what your weight should be. Keep it at that level or below.
- Do not use too much salt in cooking or at meals.
- Eat a low-fat diet. Follow American Heart Association guidelines.
- Do not smoke cigarettes or use tobacco products.
- Take your medicine exactly as prescribed. Do not run out of pills, even for one day.
- Make and keep your doctor appointments.
- Exercise regularly.
- Make sure your family gets regular blood pressure checks.
- Reduce stress in your life, and develop ways to cope with stress.

**Weight Management Tips: Diet**
Successful weight management involves reducing the amount of calories you eat, increasing your exercise level, and making lifestyle changes. This information will help you understand how you can make changes in your diet to affect your weight.

A calorie is a measurement of energy. Just about everything we eat has some calories, and we need a certain amount of calories every day to keep us going. Some types of foods have more calories than others. Carbohydrates and protein contain four calories per gram, and fat contains nine calories per gram. This is why cutting down on the amount of fat you eat can help you lose weight.

You can lose about one pound a week if you reduce your calorie intake by 500 calories a day. To lose one pound, you need to cut 3,500 calories out of your meal plan or exercise enough to burn off 3,500 calories a week. If you cut 500 calories each day for a week, that adds up to 3,500 calories (seven days times 500 calories = 3,500 calories).

Adding exercise to your daily routine can speed up the process.

Most people need a daily diet of at least 1,200 calories. If you eat less, you could be missing important nutrients your body needs. It’s important to take a multivitamin and calcium supplement if you are on a weight loss plan.

Here are some important tips to follow to lose weight:
- Eat at least three times a day. Smaller meals spaced throughout the day can reduce the urge to snack on high-calorie foods.
• Start with a good breakfast every morning. Remember, it’s important to “break the fast” and jump-start your metabolism for the day. Skipping meals can lead to eating extra calories at the end of the day.
• Bake, broil, grill, poach, or steam all of your meats, instead of frying.
• Steam your vegetables. Use some different herbs and vinegar or lemon juice to season them, or steam them over chicken broth for extra flavor.
• Drink between six and eight (eight-ounce) glasses of water a day. Choose low-calorie or no-calorie drinks, such as tea, diet soda, or diet fruit drinks.
• Juice, regular soda, and some sparkling waters can be high in calories.
• Limit your meat intake to six ounces a day. A three-ounce piece of meat is about the size of a deck of cards.
• Choose healthy, low-fat snacks. Nonfat yogurt, non-fat cottage cheese, fruit, vegetables, pretzels, and low-fat popcorn are good choices.
• Pay attention to portion sizes. One of the easiest ways to lose weight is simply to reduce your portion sizes by one-quarter.
• Eat more fruits, vegetables, and whole grains. These foods are high in fiber, fill you up, and give you lots of nutrients your body needs.
• Read labels. If the label says an item has 190 calories per serving, and you eat three servings, you are actually eating 570 calories.
• Limit the amount of fatty foods you eat, like fried foods, cheese, snack foods, and desserts.
• Reduce the amount of butter, margarine, and oil you use by one-quarter to one-half.
• Remember, “low-fat” does not necessarily mean “low-calorie.” Often, low-fat items have extra sugar. They may be lower in fat, but may have the same amount of calories as the regular item.

Cholesterol

What is Cholesterol?
Cholesterol is an odorless, soft, fat-like substance found in all of the body’s cells. It is used to form cell membranes, hormones, and necessary tissues. Cholesterol is made by the body, and we get additional cholesterol from foods. Cholesterol is an important part of a healthy body.

Why is cholesterol discussed as a health risk?
Having too much cholesterol in your blood (more than 200mg/dl) is a risk factor for heart disease. When people talk about their cholesterol level, they mean the amount of cholesterol in their blood. High blood cholesterol levels can affect the heart by building up cholesterol, in a form called plaque, in the lining of the heart’s blood vessels. Over time, this build-up can block the vessels. If blood cannot get to the heart, this causes a heart attack.

What causes high blood cholesterol?
A family history of high blood cholesterol puts you at risk for high blood cholesterol. Some of the foods you eat can increase your risk. If you eat foods high in dietary cholesterol and saturated fat, you will raise your cholesterol level. Saturated fat (animal fats) can raise blood cholesterol more than anything else in your diet. Being overweight or obese also raises your risk for high cholesterol.
For most people, eating foods lower in saturated fats and cholesterol can reduce their blood cholesterol levels.

Where does dietary cholesterol come from?
Cholesterol is found only in foods that come from animals. Foods that have very high amounts of cholesterol are egg yolks, organ meats (liver, kidney, heart), and whole milk products.

Cholesterol is never found in plant foods, such as fruits and vegetables. Your diet should contain less than 300 mg of cholesterol per day.

**Unsaturated Fats**
Unsaturated fats come from vegetables. They are liquid at room temperature and are divided into two types: monounsaturated and polyunsaturated.

**Polyunsaturated fats** are found in corn oil, sunflower seeds and oil, safflower seeds and oil, and soybeans and soybean oil. These fats should make up no more than 10 percent of the total calories in your diet. (See chart on the next page.)

**Monounsaturated fats** are found in canola oil, olive oil, and peanut oil. Monounsaturated fats should make up 10 percent to 15 percent of the total calories in your diet. (See chart on the next page.)

**Saturated Fats**
Saturated fats come from animal sources such as beef, veal, lamb, pork, ham, butter, cream, cheese made from cream, and whole milk. They are usually solid at room temperature and are often used in store-bought bakery items, candies, fried foods, and non-dairy creamers.

---

No more than 30 percent of your total daily calories should come from fat. Converting this into grams can be confusing. The following chart lists common daily calorie totals and goals for total fat, saturated fat, polyunsaturated fat, and monounsaturated fat in grams. Use this chart as a guide when making your food selections.

<table>
<thead>
<tr>
<th>If you normally eat this many calories each day</th>
<th>Total fat should be no more than</th>
<th>Total saturated fat should be no more than</th>
<th>Total unsaturated fat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,000</td>
<td>33 g</td>
<td>11 g</td>
<td>11 g</td>
</tr>
<tr>
<td>1,200</td>
<td>40 g</td>
<td>13 g</td>
<td>13 g</td>
</tr>
<tr>
<td>1,500</td>
<td>50 g</td>
<td>16 g</td>
<td>16 g</td>
</tr>
<tr>
<td>1,800</td>
<td>60 g</td>
<td>20 g</td>
<td>20 g</td>
</tr>
<tr>
<td>2,000</td>
<td>65 g</td>
<td>22 g</td>
<td>22 g</td>
</tr>
<tr>
<td>2,000</td>
<td>73 g</td>
<td>24 g</td>
<td>24 g</td>
</tr>
<tr>
<td>2,500</td>
<td>83 g</td>
<td>27 g</td>
<td>27 g</td>
</tr>
</tbody>
</table>
Saturated fats are also found in coconut, palm and palm kernel oils, cocoa butter, hydrogenated oils, and shortening. These are known as saturated vegetable fats. Saturated fats should make up less than 10 percent of the total calories in your diet. (See chart on previous page.)

Tubs Are Better Than Sticks
The more firm the fat, the more saturated. For example, stick margarine and shortenings are more saturated than soft tub-type margarines. As with all saturated fats, intake should be limited to less than 10 percent of the total calories in your diet.

How can I reduce fat and cholesterol in my diet?
- Use vegetable fats instead of animal fats when cooking.
- Select lean meats, and trim visible fat from meat before cooking.
- Limit meat portions. Your total meat intake should be five to six ounces per day.
- Eat fish or skinless poultry more often than beef or pork.
- Limit liver and other organ meats in your diet.
- Choose low-fat or non-fat dairy products and cheese.
- Eat more grains, fruits, vegetables, dried beans, and peas.
- Limit the number of egg yolks you eat to three or four per week.
- Roast, bake, or broil meats and other foods instead of frying.

Smoking Facts
Bad News About Smoking
- Smoking and second-hand smoke cause more than 430,000 preventable deaths each year.
- Cigarettes and cigarette smoke contain more than 4,000 harmful ingredients. Many of these cause cancer.
- Cigarette smoke ruins clothing, furniture, and car seats, as well as family and social relationships.
- Cigarette smoking and second-hand smoke cause:
  > Shortness of breath
  > Decreased energy
  > Bone loss
  > Damage to blood vessels
  > Lung cancer and other types of cancers
  > High blood pressure
  > Digestive disorders
  > Diabetes complications
  > Chronic lung diseases
  > Heart disease
  > Poor circulation
- Cigarettes are costly, at about $6 per pack.
- Smoking-related diseases generate more than $50 billion a year in medical costs.
- Lost wages and lost productivity from smoking-related diseases cost another $50 billion a year.
- Smoking during pregnancy puts babies at risk for low birth weight, premature death, and sudden infant death syndrome, as well as for learning disabilities.
- Asthma, bronchitis, and respiratory and ear infections increase in children of smokers.
• More than 6,200 children die each year from infections and burns because of parents who smoke.
• Cigarette smoking is a major cause of fire-related deaths.
• Matches and lighters are a major cause of house fires.
• Each day, more than 5,000 children try smoking, and 3,000 become hooked.

Good News About Quitting Smoking

**Immediately after your last cigarette:**
• No more burns in your clothes, furniture, and car.
• Your body’s healing processes begin.

**20 minutes after your last cigarette:**
• Your blood pressure lowers.
• Your hands and feet warm up.

**Eight hours after your last cigarette:**
• The carbon monoxide level in your blood returns to normal.

**24 hours after your last cigarette:**
• Your heart attack risk decreases.
• You are less short of breath.
• You save money ($6 per pack).

**Three days after your last cigarette:**
• Your family and friends are happier.
• Your senses of taste and smell improve.
• Your skin begins to look and feel better.
• You have increased energy.

**About one week after your last cigarette:**
• Your mood improves.
• You are less irritable.

**Two weeks after your last cigarette:**
• Your circulation improves.
• Your lung function increases.

**One to nine months after your last cigarette:**
• Smoker’s cough decreases.
• Your lungs’ cleansing function returns to normal.
• Your risk for infection decreases.

**One year after your last cigarette:**
• Your heart attack risk is half that of a smoker.
• You’ve saved $2,190 or more from not buying cigarettes.
• Freedom! You’re not a slave to smoking any longer.

**Five to 15 years after quitting:**
• Your stroke risk is equal to that of a non-smoker.

**10 years after quitting:**
• Your lung cancer risk is half that of a smoker.
• Your risk of cancer decreases, including cancer of the mouth, throat, and bladder.

**15 years after quitting:**
• Your risk of heart disease is equal to that of a non-smoker.
Understanding Your Emotions

Depression

Depression is an emotion in which the person feels sad, low, and discouraged. Depression can also be a normal psychological reaction to stroke.

You may feel sad or low after your stroke. These feelings may get better, but if they continue or interfere with your normal activities, you may be experiencing depression.

Depression can slow your recovery from stroke. You may be less likely to follow your treatment plan if you’re suffering from depression.

Signs of depression may include:
• Persistent sad or anxious feelings.
• Feelings of hopelessness or pessimism.
• Feelings of guilt, worthlessness, or helplessness.
• Loss of interest or pleasure in hobbies and activities that were once enjoyed.
• Decreased energy.
• Difficulty concentrating, remembering, or making decisions.
• Insomnia, early-morning awakening, or oversleeping.
• Appetite and/or weight changes.
• Thoughts of death or suicide.

If you think you may be depressed:
• Talk to your health care professional.
• Ask about treatment for depression. Treatment options include counseling, anti-depressant medicine, or a combination of both.
• Confide in someone you trust, such as a family member, friend, or a clergy person. Those close to you may already know you’re depressed and want to help.
• Be active. Regular physical activity helps release endorphins that make you feel better. Physically active adults have lower risk of depression and cognitive decline.
• Recognize that depression is part of your condition rather than feeling as though it’s one more thing wrong with you. Consider recovering from depression to be part of your overall treatment plan.

Adapted from the American Heart Association. View more at www.heart.org.
If You Have Diabetes

Definition Of Diabetes
Diabetes is a chronic condition, meaning it does not go away.

With diabetes, the body does not make enough insulin, or the body cells have trouble using insulin. Insulin is a hormone made in the pancreas that helps the body use the blood glucose (sugar) from the foods you eat for energy and fuel for your cells. Blood glucose should be in the normal range of 60 mg/dl to 99 mg/dL for persons without diabetes.

The acceptable blood glucose range for someone with diabetes is usually 70 to 130 mg/dL before you eat, and less than 180mg/dL two hours after eating. Talk to your doctor about a good range for your blood glucose.

Diabetes: Your Management Plan

The good range for my diabetes type is ___________________________

There are two main types of diabetes:
Type 1: Usually occurs in young people, under age 30. They must take insulin shots to live.

Type 2: Usually occurs after age 40. The body has trouble using insulin; therefore, the person may follow an exercise or diet plan, take medicine for diabetes, or an insulin shot(s).

Some symptoms of diabetes:
• Very thirsty
• Feeling very tired or weak
• Achy, cramping muscles

The best way to control your blood glucose (sugar):
• Is to develop a plan to manage your diabetes.
• This should include physical activity, meal planning for healthy eating, testing blood sugars, getting tests done on time, stopping smoking, taking medicine, controlling stress, and problem solving.

Testing Your Blood Glucose

Keeping your blood glucose in the recommended target range can prevent or delay the long-term health problems caused by diabetes. An important part of managing your diabetes is keeping track of your blood glucose numbers using a blood glucose meter and the results of your A1C checks. (See next section.)

• You may test your blood glucose before or after meals, before or after exercising, at bedtime, or any other time you want to know what your blood glucose level is.
• Most people test before breakfast, before lunch, before supper, and at bedtime.
• Your doctor may ask you to check your blood glucose after meals or, on occasion, during the night.
• Talk to your doctor, nurse, or diabetes educator about the best times to check your blood glucose level.
• If you check your blood glucose before your meal, check it before taking your insulin shot or diabetes pills.
• Talk to your doctor about what level (number) your blood glucose should be. The goal for many people with diabetes is less than 150 mg/dl and more than 70 mg/dl, but your goal may be different.
You will want to discuss with your doctor what actions to take if your blood glucose is out of the range the doctor has told you they would like you to aim for.

- Be sure to follow the testing directions that came with your meter. If there are codes on your test strips, match them to the code of your meter.
- Write down all of your test results in your log book.
- Keep all unused strips in the original bottle, with the cap on tight.
- Write the date you opened the test strip bottle on the label of the bottle. Do not use test strips more than three months or six months after opening the bottle (follow the directions that came with the meter).
- Be sure to clean your meter and change the battery when you need to. Follow the directions that came with your meter.
- Date the control solution for three months ahead after opening. Discard after three months.

Hemoglobin A1c or HbA1C or A1c
This is a test the doctor can order. The result tells you about your blood glucose control, called hemoglobin A1c or just “A1c.” This test measures an average of your blood glucose (sugars) over a two-to-three month period.

This test should be done every three months until the results are under 7 percent, and never longer than every six months.

This test is very important in letting you know how well your treatment is working. You need to monitor your blood sugars at home and have the A1c done regularly.

Studies show that if your A1c is near normal, your diabetes is under control.

If your score is too high, you may need to talk to your doctor about changing your diabetes plan. Your risk of diabetes complications can be reduced by lowering your A1c by just 1 percent. Decreasing your A1c from 8 to 7 percent reduces your risk of eye, kidney, and nerve damage by 35 percent, and heart attack and stroke by 18 percent.

<table>
<thead>
<tr>
<th>A1c</th>
<th>Average blood glucose</th>
</tr>
</thead>
<tbody>
<tr>
<td>13%</td>
<td>330 mg/dL</td>
</tr>
<tr>
<td>12%</td>
<td>298 mg/dL</td>
</tr>
<tr>
<td>11%</td>
<td>269 mg/dL</td>
</tr>
<tr>
<td>10%</td>
<td>240 mg/dL</td>
</tr>
<tr>
<td>9%</td>
<td>212 mg/dL</td>
</tr>
<tr>
<td>8%</td>
<td>183 mg/dL</td>
</tr>
<tr>
<td>7%</td>
<td>154 mg/dL</td>
</tr>
<tr>
<td>6%</td>
<td>126 mg/dL</td>
</tr>
<tr>
<td>5%</td>
<td>97 mg/dL</td>
</tr>
</tbody>
</table>

Record Your Results Below:

<table>
<thead>
<tr>
<th>A1c Results</th>
<th>Level of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 7%</td>
<td>Good</td>
</tr>
<tr>
<td>7%-8%</td>
<td>Fair</td>
</tr>
<tr>
<td>Greater than 8%</td>
<td>Poor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>A1c</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Medicines
The two main kinds of diabetes medicine are insulin and pills. If you have type 1 diabetes, you must take insulin by shots (injection). If you have type 2 diabetes, you may be able to start with healthy eating and exercise. Most people with type 2 diabetes also need pills to keep their blood glucose in a good range. Others may need to take insulin. The doctor will help you decide which plan is best for you.

Tell your doctor, diabetes educator, and pharmacist all of the medicines that you are taking. Include prescription and over-the-counter medicines, herbal products, vitamins, and minerals.

It is important to know what medicines you are taking, how they work, and possible side effects.

Home Blood Glucose Tests
You need to check your blood glucose levels at home. A simple testing meter measures the amount of sugar in a drop of blood. The blood glucose numbers show that your management plan is working. Knowing your blood glucose levels will help you and your health care team decide if your plan needs any changes. You will be able to see how exercise affects your blood glucose. You will be able to see if your medicines need to be adjusted.

Your doctor will tell you how often to check your blood glucose level. Some people check their blood glucose before meals, before and after exercise, when they feel sick, or when they feel their blood glucose is low. Your doctor also will tell you what to do about the results of this test.

Problem Solving
Having diabetes means you often need to make decisions about your care. The more you know about diabetes and how your daily activities affect your blood glucose level, the easier it is to make wise decisions. Testing your blood glucose and keeping good track of your readings is essential to know how different activities, food, medicine, and stress levels affect your blood glucose readings.

Learning what affects your blood glucose level and what to do when they are higher or lower than desired takes practice. Looking for patterns and trends can help you determine what is causing the blood glucose levels to go high or low, and can help you target what might need some adjusting. For more information, ask your doctor or diabetes educator.

Risk Reduction
To stay healthy with diabetes, it is important to reduce your risk of developing problems. There are several things you can do to reduce your risk. Maintaining a healthy weight, keeping active, healthy eating, and taking medicines as ordered by your doctor can help to keep control your blood glucose, blood pressure, and cholesterol levels in the recommended ranges. Having annual eye exams, frequently examining your feet, seeing your doctor regularly, and not smoking, also are important.

Healthy Coping
Dealing with diabetes can be difficult and stressful. Stress can have a negative impact on your immune system, increase your blood pressure and heart rate, and increase your chance of illness. Stress also can affect your blood glucose levels when you have diabetes. Some techniques to help you relax include making quiet time for yourself, listening to soft
music, reading a book, and discussing a problem with a friend or family member. Exercise also can help relieve stress and tension. Different things work for different people. You need to practice what works best for you.

**Additional Things To Consider**

**Changes in Lifestyle**
You cannot help the fact that you have diabetes. But you can do a lot to control it. You may need to make some changes in your lifestyle. These changes are important for a long and healthy life and to reduce the chance of complications.

- Follow a healthy meal plan. Space your meals evenly about the same number of hours apart. Eat around the same time each day and about the same amounts.
- Take your medicines, and take them on time.
- Make physical activity a part of your daily life. Chart the effect that exercise has on your blood glucose level. You may need to make some changes to keep your blood glucose from going too high or too low. For example, you may need to adjust your schedule for exercise, for meals and snacks, or for medicines.
- Do not smoke. Talk to your doctor or other members of your health care team if you need help to quit smoking.
- Talk to your doctor about the use of alcohol. Alcohol may affect your blood glucose level. If you decide to have an occasional alcoholic drink, ask your dietician how to fit it into your meal plan.

You may not be able to make all of these changes at once. You can work on some of these changes over time. Ask your doctor or diabetes educator to help you set goals that are right for you.

As you succeed in making some changes, you can plan new goals.

When you have diabetes, you have to think about the routine things you do every day. But diabetes should not keep you from doing the things you like to do. When you keep your diabetes under good control, you can feel better and avoid getting other problems from diabetes.

**Intensive Therapy**
Intensive insulin therapy means that you check your blood glucose many times during a day. Then adjustments are made with medicines, food, and physical activity based on the blood glucose level. These frequent changes keep the blood glucose in tight control. Tight control can help reduce your chance of complications. If you are interested in intensive insulin therapy, talk to your doctor.

**During Pregnancy**
If you have diabetes and plan to become pregnant or think that you might be pregnant, see a doctor. It is best to have good control of your blood glucose before you become pregnant. Good control can reduce your chance of problems during pregnancy. While you are pregnant, it is important to have your diabetes monitored very closely. When you control your blood glucose level, you help keep yourself and your baby healthy.

If you are pregnant, you may be able to control your blood glucose with a meal plan recommended by your doctor, dietitian, or diabetes educator. You also may need to take insulin. Your doctor will help you decide what is best for you. Do not take diabetes pills during pregnancy until you check with your doctor. Most diabetes pills have not been studied enough in pregnant women and may be harmful.
Your diet, medicine, and exercise plans may need changes during each stage of your pregnancy. You must check your blood glucose often during pregnancy. After the birth of your baby, other changes may be needed. If you plan to breast-feed your baby, changes usually must be made to your management plan. Keep in constant touch with your health care team to ensure a successful pregnancy.

A type of diabetes that some women get only while pregnant is called gestational (jess-TAY-shun-ul) diabetes. Gestational diabetes usually goes away after pregnancy.

If You Have Questions
If you have any questions, call a member of your diabetes care team. For more information, go to UPMC.com/HealthLibrary.

Caregiver Support

Here are some helpful tips to follow:

- **Caregiving is a choice.** We fall into this role unexpectedly, but you need not feel like a victim. Take charge of your life. Do not let your loved one’s illness or disability always take center stage.

- **Recognize how extraordinary you are.** Your own good health is the best gift you can give your loved one. You deserve quality time. It is your right. Determine your priorities, ask family members and friends to help so you can get enough rest, exercise, and enjoy outside activities. Call on nurses, psychologists, social workers, counselors, and clergy for help to reduce feelings of isolation or suggestions of other people who might help.

- **Caregiving is more than a one-person job.**
  > Look for help, ask for help, and at times, demand it. Don’t be ashamed to ever ask for help. If people offer help, accept it and suggest things that they can do.

  > Be aware of what you are able to do and what you are not able to do. Set realistic goals. Give yourself credit; celebrate the large and small gains. Allow yourself to make mistakes. Trust your own instincts.

  > Information is very helpful.

  > Educate yourself about your loved one’s medical condition. Learn about new medical treatments and ideas.

  > Encourage independence in your loved one.

- **Look for signs of depression:**

  > Loss of energy.

  > Change in appetite causing weight loss or gain.

  > Loss of enjoyment from things that were once pleasurable.

  > Difficulty with concentration or making difficult decisions.

Caregiver Information and Support

Caregivers are parents, spouses, children, brothers, sisters, partners, and friends. They are the mainstays in caring for the stroke patient and play an important role in the recovery process. A stroke patient’s recovery may last for a few short months, or it may last for three to five years, depending on the degree of the brain injury.

Providing care for a stroke patient can be a rewarding and satisfying experience. However, it can be stressful and frustrating. It is important to remember as a caregiver to take care of yourself.
Inability to sleep or too much sleeping.
Feeling of hopelessness or worthlessness.
Don’t delay in getting professional help. Referral to a psychologist for counseling or antidepressant medicine may be helpful.

Seek support from other caregivers. There is strength in knowing that you are not alone. Talk with a friend or confidant every day, and stick to topics other than the illness or disability you face every day. Remember that laughter will ease the stress and frustration.

Families Caring for Stroke Patients Have Real Concerns and Fears
We may feel an intense sadness because our loved one has suffered a brain injury, has lost mobility, and possibly may never achieve normal life functioning due to stroke. This sadness comes from wanting the miracle of a normal life.

There may be a sense of isolation even with everyday activities of life, which everyone else takes for granted.

There may be a fear of inability to care for the patient adequately, not understanding the emotional needs and behavioral changes of the stroke patient, feeling impatient with your loved one, feeling guilt, frustration, and fear of abandonment by family and friends.

Regardless of which label you give them, recognize that all these feelings are normal. Admit they exist, accept them, and put your efforts into dealing with them. Realize that your situation is not unique. There are many caregivers who have the same feelings about their situations.

Words from the Heart
• You will find inner strength that most of us never knew we had, to get through the difficult caregiving days.
• You have the power to make a difference.
• You have the understanding that caregiving tests our abilities, our faith, and our character.
• You can define family caregivers by their emotions, their spirit, and the sadness in their eyes, and also the determination in their hearts. Caregivers are very special people.

Support Groups for Stroke Survivors
The UPMC Institute for Rehabilitation and Research at UPMC Mercy and the UPMC Stroke Institute offers a stroke support group for stroke survivors.

True Life After Stroke
A support group for survivors is available for those who are interested in return-to-work issues, recreational opportunities, and other issues. Meetings are held the second Saturday of every month. Invitations are mailed out before each meeting to inform members about the speaker of the month. Other activities may be scheduled instead of a meeting, such as outings to local sports events, or to local restaurants.

Call 412-232-8738 for more information, or to be added to the mailing list for the True Life
After Stroke group.

Other Support Groups:
American Stroke Association “Stroke Family Warmline”: Information on support groups nationwide.

Call 1-888-4-STROKE (1-888-478-7653)

Altoona Stroke Support Group
Station Medical Center
17th Street and 9th Avenue
Altoona, PA 16601
Meets from 12 to 2 p.m. the second Tuesday of every month.
814-889-2356

Erie Stroke Support Group
For more information call 814-878-1200.

Stroke Resources

UPMC Stroke Institute
412-647-8080
UPMC.com/Stroke

American Stroke Association
7272 Greenville Ave.
Dallas, TX 75231
1-888-4-STROKE
1-888-478-7653

www.strokeassociation.org

Erie
Erie County Agency on Aging
18 W. 9th St.
Erie, PA 16501
814 459-4581
www.gecac.org

National Stroke Association
9707 E. Easter Lane
Centennial, CO 80112
1-800-STROKES (1-800-787-6537)
www.stroke.org

National Institutes of Health (NIH)
9000 Rockville Pike
Bethesda, MD 20892
1-800-352-9424
www.stroke.nih.gov

National Family Caregivers Association
10605 Concord St., Suite 501
Kensington, MD 20895-2504
1-800-896-3650 or 301-942-6430
www.nfcacares.org

National Alliance for Caregiving
4720 Montgomery Lane
Bethesda, MD 20814
info@caregiving.org
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