Stroke Education for Patients and Families
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 make-up
- 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 10 years you live, your risk of having a stroke increases.

Gender
Men have 2 times more risk for stroke than women have. But more women die of stroke than of breast cancer.

Race
African Americans have 2 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 mini-stroke (TIA), your risk for stroke is now greater. TIA stands for transient (TRANS-yent) ischemic (iss-KEY-mik) attack. TIs 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 build-up 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 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), which are fats, 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.

Cardiovascular Disease
The carotid (kuh-RAW-tid) arteries are the 2 main arteries that carry blood to your brain and neck. When plaque build-up narrows these arteries, cardiovascular disease results. Medicine or surgery to clean out plaque in the carotid arteries can reduce the risk for stroke.

Heart Disease
- Atrial (AY-tree-ol) fibrillation (fib-ril-LAY-shun) is a type of irregular heartbeat. It is called “AF” for short. AF is a common cause of stroke. The irregular heart beat makes blood flow through the heart in a sluggish way. Blood clots may form and lead to a stroke.

As with high blood pressure, you can have AF and not know it. You should check your own heart beat regularly. Place the palm of your hand up. On the wrist just below the thumb, place 2 fingers and press lightly. Move the tips of your fingers until you find your pulse. Now count the number of beats for 1 full minute. Feel if the beats come at an even pace or if they are irregular. If you suspect your heart beat is irregular, call your doctor.

When you have AF, the goal of treatment is to restore a regular heart beat. When this is not possible, blood thinners may be prescribed. Getting treatment for AF helps reduce your risk of stroke.

- 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.” 3 percent of people who have a heart attack will also have a stroke.

- Congestive heart failure, or “CHF” for short, 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 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 build-up 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’s 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 3 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 body-building increases risk of stroke.
STROKE RISK FACTORS

Poor Nutrition
A diet high in fat, sugar, and salt puts you at risk for stroke. Studies show that eating 5 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.

Resources
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412-647-8080
www.upmc.com/services/stroke

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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.

**Stroke warning signs**

These are the warning signs that you or someone you know may be having a 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 a fall that is unexplained
- difficulty swallowing
- sudden, severe, unexplained headache
- sudden confusion

Learn the warning signs of stroke, and seek emergency care at the first sign of a stroke.

**In the emergency room**

Special procedures are followed as soon as a stroke patient arrives in the emergency room. 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 busters therapy must begin within 3 hours after the start of a stroke. This is one reason it’s urgent to get to a hospital emergency room 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 over 1 hour.

**Intra-arterial t-PA**

A newer method gives 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-oh) t-PA. The drug is given during a procedure called an arteriogram (ar-TEER-ee-oh-gram). This procedure takes about 3 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.
A stroke occurs when 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 get emergency care at the first sign of a stroke. Early treatment saves many lives and reduces the effects of stroke. 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 may also 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

The most common type of stroke is ischemic (iss-KEY-mik) stroke. This type of stroke occurs when a clot blocks a blood vessel and stops blood flow to the brain.

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 2 groups: anticoagulants (an-tee-ko-AG-you-lents) and antiplatelets (an-tee-PLAY-let-lets).

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.

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 4 to 6 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 give you less risk for bleeding. It is given 1 or 2 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

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), or woodruff; green tea
• 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.
STROKE MEDICAL TREATMENT

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 mini-stroke (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 give you less risk for bleeding than anticoagulants do.

Aspirin
Aspirin helps to keep platelets from “clumping” in patients who have some risk for mini-strokes (TIAs) or stroke. Aspirin is also 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:
- skin rashes
- chest pain
- fainting
- severe headache
- large bruises

Plavix
Plavix is a pill taken by mouth once a day. 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 2 drugs: aspirin and Persantine. Both drugs 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 2 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
- dizziness

Aspirin helps to keep platelets from “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

For Strokes from Blockage
After receiving emergency care, some stroke patients may be helped by surgery.

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 mini-stroke, which is also called a TIA. The operation is called a carotid endarterectomy (en-dar-ter-EK-tuh-mee).

Information for Patients

Stoke Surgical Treatment

A stroke occurs when 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 get emergency care at the first sign of a stroke. Early treatment saves many lives and reduces the effects of stroke. The warning signs of stroke are:
- 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 a fall that is unexplained
- difficulty swallowing
- sudden, severe, unexplained headache
- sudden confusion

For any of the warning signs of stroke, call 911 right away, and get to a stroke center for emergency care.

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-je-oh-plass-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 mini-stroke, 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 scrapes 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 2 to 3 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 mini-stroke 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 TIs 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 TIs. During the operation, an artery on the outside of the skull 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 (HEM-er-RAJ-ik). The bleeding may occur when a weakened blood vessel leaks or bursts. This is called an aneurysm (AN-you-rizm). 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.

Resources

UPMC Stroke Institute
412-647-8080
http://stroke.upmc.com

American Stroke Association
toll-free 888-4-STROKE (888-478-7633)
www.strokeassociation.org

National Stroke Association
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www.stroke.org

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UPMC
Pittsburgh, Pa., USA
www.upmc.com

For Strokes from Altered Blood Flow

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
- 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 TIs are called “mini-strokes.”

Having a TIA means there is a problem that should be corrected. TIs 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-lus). 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-nar) infarction (in-FARK-shun)
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 will also ask about your family’s health. You will have a complete physical exam. The doctor will also 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 2 types of diagnostic test. The first type of test is called non-invasive. During a non-invasive test, no foreign object or substance enters your body. For example, an x-ray is a non-invasive 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 non-invasive 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 3 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 ______________________

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STROKE AND TIA FACTS

- infection or inflammation of brain arteries
- irregular heart beat, or atrial (AY-tree-olee) fibrillation (fih-nil-LAY-shun)
- heart attack, or myocardial (my-oh-CAR-dee-olee) infarction (in-FARK-shun)
- small hole in the heart chamber wall, or atrial (AY-tree-olee) septal (SEP-tol) defect
- blood clotting disorder, or hypercoagulability (HI-per-co-AH-ge-ul-uh-BIL-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 4 types of hemorrhagic stroke that commonly occur.

Intracerebral Hemorrhage

A small artery in the brain can break and spill blood into nearby brain tissue. Brain cells in the area are destroyed. This stroke is called an intracerebral (IN-tra-see-eh-brol) hemorrhage (HEM-er-ij), or "ICH" for short. High blood pressure is usually the cause of this type of stroke.

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-you-izz). 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-TEE-er-ee-olee) 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 (see-er-ee-brol) amyloid (AM-ee-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.

Resources

UPMC Stroke Institute
412-647-8080
http://stroke.upmc.com

American Stroke Association
toll-free 888-4-STROKE (888-478-7653)
www.strokeassociation.org

National Stroke Association
toll-free 800-STROKES (800-787-6537)
www.stroke.org
**CT Scan and CTA Scan**

**What is a CT scan?**

“CT” stands for computed tomography (tuhr-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. The picture, called a scan, helps doctors see 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 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 breast-feeding, 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 may also 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.

**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 doctor who is 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: ____________

Place: ____________________________

Phone number: ____________________

Special instructions: ____________________________

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UPMC
Pittsburgh, Pa., USA
www.upmc.com

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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 be asked to lie on your left side. A nurse or technician will put a gel on your chest. These keep track of your heart's rate, rhythm, and electrical activity. 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 heart beat. 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 2 to 3 working days to find out your results.

How is the test done?

There are many reasons your doctor may order this test:

- to help detect irregular heart beats (cardiac arrhythmias, pronounced ay-RITH-me-uhs)
- 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

For help in finding a doctor or health service that suits your needs, call the UPMC Referral Service at 412-647-UPMC (8762) or 1-800-533-UPMC (8762). Select option 1.

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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 activity 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

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.

Time’s up!

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

Results

A computer will analyze the recording and print out 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

Your appointment date: ________________
Please arrive by: ______________________
at: __________________________________

For help in finding a doctor or health service that suits your needs, call the UPMC Referral Service at 412-647-UPMC (8762) or 1-800-533-UPMC (8762). Select option 1.

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MRI and MRA Scan

What are MRI and MRA?

“MRI” stands for magnetic (mag-net-ik) resonance (REZ-oh-nenzt) imaging. MRI uses magnetic fields and radio waves to make pictures of the body without using x-rays. The pictures, called scans, are 3-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-e). 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 2 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 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. 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 1 to 2 hours.

What happens after the test?

The technologist will help you off the bed. You may resume your normal diet. If an enhancing agent was used, drink plenty of fluids to flush the agent out of your body. If you have diarrhea for more than a day, call your doctor.

For help in finding a doctor or health service that suits your needs, call the UPMC Referral Service at 412-647-UPMC (8762) or 1-800-533-UPMC (8762). Select option 1.

You may resume your normal diet. If an enhancing agent was used, drink plenty of fluids to flush the agent out of your body. If you have diarrhea for more than a day, call your doctor.

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.

My test appointment

Date: ____________ Time: ____________
Place: ____________
Phone number: ____________
Special instructions: ____________

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IPR 10003 DATE 1.23

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**TEE (Trans-Eosophgeal 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 trans-esophageal (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 “trans-esophageal” 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 6 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 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 4 to 6 inches farther. The transducer will now get a picture of the lower left chamber, which is called the left ventricle (VEN-truh-col).

The scope will be in place at each site for 5 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.

**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.

**My test appointment**

Date: ____________ Time: ____________

Place: ______________________________

Report to: __________________________

Phone number: ____________

Special instructions: ____________

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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 2 things, so your blood pressure reading will have 2 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 3 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.

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.
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:

- 7 times more likely to have a stroke
- 6 times more likely to get congestive heart failure
- 3 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 3 or more blood pressure checks several weeks apart. If your blood pressure reading is high on 3 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 5 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 several 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>Zaroxlyn</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 blockers. 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>
**FOR PATIENTS**

**BLOOD PRESSURE**

**Tips for high blood pressure**

1. Get regular blood pressure checks. Write down the numbers, and know them.
2. Know what your weight should be. Keep it at that level or below.
3. Do not use too much salt in cooking or at meals.
5. Do not smoke cigarettes or use tobacco products.
6. Take your medicine exactly as prescribed. Do not run out of pills, even for one day.
7. Make and keep your doctor appointments.
8. Exercise regularly.
9. Make sure your family gets regular blood pressure checks.
10. Reduce stress in your life, and develop ways to cope with stress.

**For more information**

Some useful resources include:

- **National Heart, Lung, and Blood Institute**
  Health Information Center Web Site
  P.O. Box 30105
  Bethesda, MD 20824-0105
  phone: 301-592-8573
  www.nhlbi.nih.gov/hbp

- **American Heart Association**
  10 Duff Road, Suite 304
  Pittsburgh, PA 15235
  phone: 412-824-3122
  www.americanheart.org/presenter.jhtml?identifier=2114

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**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:

- **Generic name**
  - carvedilol
  - labetalol

**Vasodilators.** Vasodilators (vay-zoh-DYE-lay-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>
<tbody>
<tr>
<td>hydralazine</td>
<td>Apresoline</td>
</tr>
<tr>
<td>minoxidil</td>
<td>Loniten</td>
</tr>
</tbody>
</table>

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.

**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:

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td>clonidine</td>
<td>Catapres</td>
</tr>
<tr>
<td>methyldopa</td>
<td>Aldomet</td>
</tr>
</tbody>
</table>

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UPMC is an equal opportunity employer. Policy prohibits discrimination or harassment on the basis of race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, disability, or veteran status. Further, UPMC will continue to support and promote equal employment opportunity, human dignity, and racial, ethnic, and cultural diversity. This policy applies to admissions, employment, and access to and treatment in UPMC programs and services. This commitment is made by UPMC in accordance with federal, state, and/or local laws and regulations.

This information is not intended to be used as a substitute for professional medical advice, diagnosis, or treatment. You should not rely entirely on this information for your health care needs. Ask your own doctor or health care provider any specific medical questions that you have.
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 4 calories per gram, and fat contains 9 calories per gram. This is why cutting down on the amount of fat you eat can help you lose weight.

You can lose about 1 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. If you cut 500 calories each day for a week, that adds up to 3,500 calories (7 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 a day. 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 3 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 6 and 8 (8-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 6 ounces a day.** A 3-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.

For help in finding a doctor or health service that suits your needs, call the UPMC Referral Service at 412-647-UPMC (8762) or 1-800-533-UPMC (8762). Select option 1.

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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.)

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.)

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 5 to 6 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 3 or 4 per week.
• Roast, bake, or broil meats and other foods instead of frying.

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.

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.)

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.
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 poly-unsaturated fat should be no more than</th>
<th>Total mono-unsaturated fat should be no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>33 g</td>
<td>11 g</td>
<td>11 g</td>
<td>11 g</td>
</tr>
<tr>
<td>1200</td>
<td>40 g</td>
<td>13 g</td>
<td>13 g</td>
<td>13 g</td>
</tr>
<tr>
<td>1500</td>
<td>50 g</td>
<td>16 g</td>
<td>16 g</td>
<td>16 g</td>
</tr>
<tr>
<td>1800</td>
<td>60 g</td>
<td>20 g</td>
<td>20 g</td>
<td>20 g</td>
</tr>
<tr>
<td>2000</td>
<td>65 g</td>
<td>22 g</td>
<td>22 g</td>
<td>22 g</td>
</tr>
<tr>
<td>2200</td>
<td>73 g</td>
<td>24 g</td>
<td>24 g</td>
<td>24 g</td>
</tr>
<tr>
<td>2500</td>
<td>83 g</td>
<td>27 g</td>
<td>27 g</td>
<td>27 g</td>
</tr>
</tbody>
</table>

For help in finding a doctor or health service that suits your needs, call the UPMC Referral Service at 412-647-UPMC (8762) or 1-800-533-UPMC (8762). Select option 1.
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.

8 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).

3 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 1 week after your last cigarette:
- Your mood improves.
- You are less irritable.

2 weeks after your last cigarette:
- Your circulation improves.
- Your lung function increases.

1 to 9 months after your last cigarette:
- Smoker’s cough decreases.
- Your lungs’ cleansing function returns to normal.
- Your risk for infection decreases.

1 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.

5 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, bladder, etc.).

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

If you want help to stop smoking:
- Classes may be available in your community. Call 1-800-533-UPMC (8762) to find out more.
- If you are an inpatient at a UPMC hospital:
  - Ask your nurse if the hospital has the UPMC patient education TV channel, which features a video about quitting smoking.
  - Ask to talk one-on-one with a smoking cessation counselor.
- Go to UPMC’s patient education website (http://patienteducation.upmc.com). Under the Smoking category is Journey to a Smoke-Free Life, a 42-page guide that can help you devise a successful strategy to quit smoking, as well as other materials about the dangers of smoking and other health topics.
  - You can print out any or all of these materials.
- Additional resources are available from the toll-free Pennsylvania Department of Health Quit Line. Call 1-877-724-1090.
Diabetes: Your Management Plan

When you have diabetes, it’s very important to keep your blood sugar (glucose) in good control. To do so, you need a personal plan to help you manage your diabetes. This patient education sheet tells you how to control your blood glucose level and manage your diabetes.

**What is good control?**

Good control of diabetes means that your blood glucose stays at certain levels. These levels are based on guidelines from the American Diabetes Association (ADA). Here are the numbers that show where your blood glucose should be:

**Self-Test**

**Before meals:**
Normal is less than 100. Recommended goal is 90 to 130. You need to improve if your level is often under 90 or over 150.

**At bedtime:**
Normal is under 120. Recommended goal is 110 to 150. You need to improve if your level is often under 110 or over 180.

**A1c Test (A-one-C)**

This test measures the amount of hemoglobin with sugar attached. The results show your average blood glucose level over 3 months. The light areas on the chart show the acceptable range for A1C.

**Average blood glucose level over 3 months:**
Normal is 4 to 6 percent. Recommended goal is 7 percent or less.

Goals may vary from person to person. Talk to your doctor or diabetes educator about what goals are best for you.

For more information, see the UPMC patient education sheet Diabetes: Testing Your Blood Glucose.

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**Good control is important**

Why is good control of your blood glucose so important? Good control of your blood glucose level reduces your chance of getting complications (COM-pli-KAY-shuns). Complications are other health problems you can get from having diabetes. A large research study shows that when people with Type 1 diabetes keep their blood glucose in good control, they are less likely to have complications. The people in the study reduced their risk of eye problems by 76 percent, kidney problems by 56 percent, and nerve problems by 60 percent. The study was called the Diabetes Control and Complications Trial (DCCT).

Another large research study was the United Kingdom Prospective Diabetes Study. This study shows that good control of blood glucose helps people with Type 2 diabetes reduce their risk of eye problems, kidney problems, and heart and blood vessel disease. The research also shows that keeping blood pressure in a good range is important to prevent complications. According to the ADA guideline, recommended blood pressure range is 130 / 80 (read “130 over 80”) or less.

For more information about possible complications, see the UPMC patient education sheets Diabetes: Short-Term Problems and Diabetes: Long-Term Problems.

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**Your health care team**

It’s important to work closely with your health care team. Your health care team usually includes several members who have training in different fields:

- **Your primary care doctor** provides your exams and makes sure you get all aspects of diabetes care.
- **An endocrinologist** (EN-do-crin-OL-oh-jist) is a doctor with special training in the care of people with diabetes.
- **A diabetes educator** gives you the skills and information you need to manage your diabetes every day.
- **A dietitian** helps you decide on a meal plan that works best for you.
- **A pharmacist, social worker, exercise specialist, psychologist, or other specialists** help you with specific problems that relate to diabetes.

Talk with your team members anytime you have problems or questions. You are not alone in dealing with your diabetes. You can control your diabetes with help from your health care team. Keep in mind, the most important member of the team is you.
Your personal plan

To work toward good control of your blood glucose, you need a plan. Your health care team will help you develop a “self-management plan.” Self-management means that you are responsible to carry out the plan. Your plan should provide for:

- education
- healthy eating
- exercise
- medicines
- blood glucose testing
- problem solving
- reducing risks
- coping

Education

Diabetes is a life-long disease. You will always have it, so education about your diabetes is very important. The more you learn about diabetes, the better you can control your blood glucose level and avoid complications. To learn how to manage your diabetes, work closely with your health care team.

Healthy eating

To control your blood glucose level, you must have healthy eating habits. A healthy diet has other benefits too. Healthy eating can lead to weight loss. Losing small amounts of weight can often make a big difference in your health. Healthy eating can improve your blood glucose, blood pressure, and cholesterol levels.

When you have diabetes, a meal plan is important. A meal plan tells you when to eat, how much to eat, and what kinds of food to eat for meals and snacks. You need to eat a variety of vegetables, fruits, and whole-grain foods. The meal plan can include sugar, salt, and saturated fats, but in a way that fits into the overall plan.

If you take diabetes pills or insulin, your meal plan should have about the same number of calories every day. Meals should be spaced throughout the day. It’s important not to skip meals or “double up” on meals.

A dietitian can help with your meal plan. The dietitian will take into account your schedule and foods you like and dislike. Each person is different, so every meal plan is different. For more information, refer to the UPMC patient education sheet Basic Diabetes Meal Plan or Basic Carbohydrate Counting. You can also refer to www.mypyramid.gov.

Physical activity

For most people with diabetes, exercise is very important. Exercise helps your body use sugar better. As a result, your blood glucose level goes down. An exercise plan can be as simple as taking a walk every day. Get a friend to walk with you. When you do things with a buddy, it’s easier. You’ll be less tempted to skip a day.

Before you start an exercise program, talk to your doctor. Exercise tends to lower blood glucose level, so your doctor may need to make some changes to your management plan.

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 drugs, herbal products, vitamins, and minerals.

Do not take any new medicines or herbal treatments until you check with your doctor. For more information about medicines for diabetes, refer to the UPMC patient education sheet Diabetes: Medicines.

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 if 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 the test. For more information, refer to the UPMC patient education sheet Diabetes: Testing Your Blood Glucose.

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 levels, 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, medication and stress levels affect your blood glucose readings.

Learning what affects your blood glucose levels 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. Also, refer to the UPMC patient education sheets Diabetes: Testing Your Blood Glucose, Nutrition and Physical Activity for People with Diabetes, and Diabetes: Short-Term Problems.

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 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 are also important. For more information, refer to the UPMC patient education sheet Diabetes: Health Care Tips.

**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 can also 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 can also help relieve stress and tension. Different things work for different people. You need to practice what works best for you. For more information, refer to the UPMC patient education sheet Coping with Stress.

**Additional things to consider**

**Changes in lifestyle**

You cannot help the fact that you have diabetes. But you can do a lot to help 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 dietitian 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 in good control, you can feel better and avoid getting other problems from diabetes. For more information, refer to the UPMC patient education sheet Diabetes: Health Care Tips.

**Intensive therapy**

Intensive insulin therapy means that you check your blood glucose many times during the 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.

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Basic Diabetes Meal Plan

Diabetes meal planning starts with eating a well-balanced diet that includes carbohydrates (carbs), protein, and fat. These nutrients turn into sugar (glucose), which gives energy. Carbs (found in starches, fruit, vegetables, dairy foods, and sweets) raise blood glucose more than the other nutrients. Eating too many carbs can raise blood glucose levels, but you should not cut out these foods. Eating too few carbs may cause your blood glucose to go too low. Eating a moderate amount of carbs at each meal, with a balanced intake of protein and fat, will help your blood glucose stay in a healthy range. Here are some tips to get you started. Your dietitian will give you more specific information when you meet with him or her.

Limit your intake of high-sugar foods to 2 or 3 times a week or less. These include:
- cakes (frosted, layer, plain), pies, and cookies
- candy (hard tack, chocolate, nougats, etc.)
- jelly, jam, and preserves
- table sugar, honey, molasses, and syrup
- regular ice cream, sherbet, regular and frozen yogurt, fruit ices, and Popsicles
- regular soft drinks, fruit drinks (canned or concentrated), and drink mixes with sugar added
- milkshakes, chocolate milk, hot cocoa mix
- sugar-coated cereals, granola, breakfast/snack bars
- canned fruits with heavy syrup, dried fruit, fruit roll-ups, candied fruit
- iced sweet breads, coffee cakes, breakfast rolls, and donuts

Eat 3 well-balanced meals a day and a small snack at night. Each meal or snack should contain protein. When planning meals, select a variety of foods from each food group, and watch your portion sizes (see food guide on page 2).

Increase your fiber intake. Choose whole-grain breads and cereals. Eat plenty of vegetables, and choose whole fruits instead of fruit juices. When you look at food labels, look for products that contain at least 3 grams of fiber per serving.

Do not skip meals. Try to eat around the same time each day. Meals are best spaced 4 to 5 hours apart.

Reduce fat intake by baking, broiling, and grilling your foods, and using some low-fat foods. Be careful when selecting low-fat foods; many are high in sugar.

Stay active. Your blood glucose level will improve if you keep active. Check with your doctor before beginning an exercise or walking program.

Lose weight if you are overweight. Losing weight gradually, even a small amount of weight (5 to 10 lbs.) can help improve your blood glucose level.

Check with your doctor or dietitian about alcohol intake, if you are taking medicine for your diabetes.

Read “Nutrition Facts” labels. Sugar free products may contain the same amount of calories as regular products and still contain carbohydrates.

---

### Recommended Foods

<table>
<thead>
<tr>
<th>Food Categories</th>
<th>Recommended Foods</th>
<th>Recommended Number of Servings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CARBOHYDRATES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>whole-grain breads, rolls, muffins, or bagels</td>
<td>3 - 4 servings per meal (no more than 8 - 12 per day)</td>
</tr>
<tr>
<td>1 serving =</td>
<td>pasta, rice, noodles</td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>oatmeal and bran cereals</td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>starchy vegetables (peas, corn, lima beans, and potatoes)</td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>dried beans (kidney beans, lentils)</td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>soup (broth and cream style)</td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>popcorn, pretzels, graham crackers, and vanilla wafers</td>
<td></td>
</tr>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>fresh fruit</td>
<td>3 - 4 servings per day</td>
</tr>
<tr>
<td>1 serving =</td>
<td>unsweetened fruit juice</td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>canned fruit in natural juice or water</td>
<td></td>
</tr>
<tr>
<td>Milk/Dairy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>fat-free, 1 percent or 2 percent milk</td>
<td>2 - 3 servings per day</td>
</tr>
<tr>
<td>1 serving =</td>
<td>low-fat buttermilk</td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>lactose-reduced or lactose-free milk</td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>soy milk</td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>“lite” yogurt</td>
<td></td>
</tr>
<tr>
<td>Vegetables (non-starchy)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 serving =</td>
<td>any cooked or raw vegetables, except starchy vegetables (see starch list)</td>
<td>2 - 3 servings per day</td>
</tr>
<tr>
<td>1 serving =</td>
<td>1 cup raw vegetables</td>
<td></td>
</tr>
</tbody>
</table>
**BASIC DIABETES MEAL PLAN**

<table>
<thead>
<tr>
<th>Food Categories</th>
<th>Recommended Foods</th>
<th>Recommended Number of Servings</th>
</tr>
</thead>
</table>
| Sweets/Desserts/Other Carbs (1 serving = 15 grams carbohydrates) | • 1/2 cup sugar-free pudding, custard, ice cream, or sherbet  
• 2 small cookies  
• 1 frozen juice bar  
• 3 gingersnaps or small sugar-free cookies  
• 1/4 cup fat-free salad dressing | Limit, and substitute for 1 serving starch, fruit, or dairy |
| PROTEIN                                       | Meats/Meat Substitutes (1 serving = 35 to 100 calories per ounce, 7 grams protein, and 0 carbohydrates)  
1 serving = 1 oz. meat, 1 egg,  
1/4 cup tuna fish or cottage cheese,  
1 slice of cheese, 1 tablespoon of peanut butter | • meat, poultry, fish, eggs, egg substitutes  
• low-fat cheese and cottage cheese  
• peanut butter, tofu, dried beans | Typically, 0-1 serving (1 oz.) at breakfast is recommended  
Typically, 3 servings (3 oz.) at lunch and dinner  
3 oz. of meat is roughly equal to the size of a deck of cards |
| FATS                                          | Fats (1 serving = 45 calories, 5 grams of fat, and 0 carbohydrates)  
1 serving = 1 teaspoon regular or  
1 tablespoon reduced-fat dressing  
6-10 nuts | • margarine, oil, salad dressing, mayonnaise  
• cream cheese, sour cream  
• peanuts, almonds, walnuts, pecans  
• gravy | 1 - 2 servings per meal |
| FREE FOODS                                     | Unlimited diet soda, diet club soda, sugar-free Popsicles, artificial sweeteners, sugar-free drink mixes, sugar-free Jell-O, regular or decaf coffee and tea | 3 servings per day |
|                                              | Limited (1 piece, 1 tablespoon) sugar-free hard candy, low-sugar jelly, light syrup, sugar-free gum, whipped topping, fat-free cream cheese (1 cup) raw vegetables | |

To individualize your meal plan, contact a registered dietitian.

**Sample Meal Plan**

**Breakfast**
- 1/2 grapefruit (1 carbohydrate)  
- 1/2 cup oatmeal (1 carbohydrate)  
- 1 slice wheat toast (1 carbohydrate)  
- 1 scrambled egg or egg substitute (1 meat)  
- 1 teaspoon margarine (1 fat) and sugar-free jelly  
- 1 cup milk (skim, 1 percent, or 2 percent) (1 carbohydrate)  
- coffee or tea  
- artificial sweetener

**Lunch**
- turkey sandwich  
  [2 slices whole wheat bread (2 carbohydrates),  
  3 oz. turkey (3 meats), lettuce, and tomato]  
- 2 teaspoons light mayonnaise (1 fat)  
- 1/2 cup sugar-free pudding (1 carbohydrate)  
- small banana (1 carbohydrate)  
- iced tea with lemon  
- artificial sweetener

**Dinner**
- 3 oz. sliced roast beef (3 meats)  
- 1 cup whipped potatoes (2 carbohydrates)  
- 1 teaspoon margarine (1 fat)  
- 1/2 cup corn (1 carbohydrate)  
- 1/2 cup broccoli (1 vegetable)  
- tossed salad with low calorie dressing (1 vegetable, 1 fat)  
- 1/2 cup peaches (1 carbohydrate)  
- coffee or tea  
- artificial sweetener

**Snack**
- 3 graham cracker squares (1 carbohydrate)

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Caregivers 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.

Here are some helpful tips to follow:

1. **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.

2. **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 assist with respite care, 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.

3. **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.

4. **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.

5. **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
   - Inability to sleep or too much sleeping
   - Feelings of hopelessness or worthlessness

Don’t delay in getting professional help. Referral to a psychologist for counseling or antidepressant medications may be helpful.

6. **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. 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 guilty, 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 that have the same feelings about their situations.

**Words from the Heart**

- You will find the 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.
Stroke Resources

UPMC Stroke Institute
412-647-8080
www.upmc.com/services/strokeinstitute

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

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

Health Hope Network
Stroke Survivor Connection
412-904-3836
www.healthhopenetwork.org

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

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

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