With a stroke, minutes matter, and so does the hospital

Welcome to Penn State Hershey Stroke Center, located on the grounds of Penn State Milton S. Hershey Medical Center. We are proud to be recognized as the only Joint Commission Certified Stroke Center in the region. We have a brain attack team staffed 24-hours-a-day/7-days-a-week and offer a dedicated Neuroscience Intensive Care Unit to provide the best care to our stroke patients. With highly skilled nurses, specially trained stroke neurologists, and internationally recognized neurosurgeons—our team can help you strike back at stroke and start living your life.

Penn State Hershey Stroke Center would like to thank our friends at the American Stroke Association for contributing information and sponsoring this stroke resource guide. We greatly appreciate the generous support provided by our Get With The Guidelines program partner, United Way of the Capital Region. Together, we are committed to educating our communities about the prevention and treatment of stroke. Both the United Way and the American Stroke Association should be applauded for their ongoing efforts to work with the medical community to raise awareness of an important disease that affects so many lives. Thank you.
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Read the Warning Signs

• Sudden numbness or weakness of the face, arm, or leg, especially on one side of the body.
• Confusion, trouble speaking, or understanding.
• Blurred vision in one or both eyes.
• Trouble walking, dizziness, loss of balance, or coordination.
• Sudden, severe headache with no known cause.

Brain attacks are emergencies! If you or someone you love experience these warning signs, call 911 immediately.
Treatments are available. Minutes matter. For non-emergent evaluations by a Penn State Hershey Stroke Center expert, please call the CareLine at 1-800-243-1455.
What is a Stroke?

A stroke occurs when a blood vessel bringing blood and oxygen to the brain gets blocked (called an ischemic stroke) or ruptures (called hemorrhagic stroke), preventing brain cells from getting a sufficient flow of blood. Deprived of oxygen, nerve cells cannot function, and die within minutes. When nerve cells do not function, the part of the body they control cannot function either. The effects of stroke are often permanent because dead brain cells cannot be replaced. However, neighboring cells may take over function and a person’s condition can improve over time.

Strokes, also known as brain attacks, affect more than 700,000 adults every year. They are the third leading cause of death and the number one cause of adult disability in America.

Ischemic Strokes

One way a stroke occurs is that blood vessels to the brain become narrowed or clogged, cutting off blood flow to brain cells. A stroke caused by lack of blood reaching part of the brain is called an ischemic stroke. Ischemic strokes are the most common type of stroke and account for about 87 percent of all strokes. Symptoms develop over a few minutes or worsen over hours and are typically preceded by warning signs that may include loss of strength or sensation on one side of the body, problems with speech and language, or changes in vision or balance.

There are three types of ischemic stroke:

- **Thrombotic strokes** are caused by a blood clot (thrombus) in an artery going to the brain. The clot blocks blood flow to part of the brain. Blood clots usually form over time in arteries damaged by arteriosclerosis.
- **Embolic strokes** are caused by a wandering clot (embolus) that is formed elsewhere (usually in the heart or neck arteries). Clots are carried in the bloodstream and clog a blood vessel in or leading to the brain.
- **Systemic hypoperfusion** (low blood flow) occurs because of circulatory failure caused by the heart itself. The heart’s pumping action fails and too little blood reaches the brain. This is one way that a heart attack may cause a stroke.

Hemorrhagic Strokes

Not all strokes are caused by blood clots that block an artery. About 10 percent occur when a blood vessel ruptures in or near the brain, causing a hemorrhagic stroke. Hemorrhagic strokes have a higher fatality rate and poorer overall prognosis. People who have hemorrhagic strokes are often younger than people who have ischemic strokes.

Hemorrhagic strokes are often accompanied by a severe headache, nausea, and vomiting. Symptoms appear suddenly and may not have any warning signs.

There are two kinds of hemorrhagic stroke:

- **Subarachnoid hemorrhage** (SAH) occurs when a blood vessel on the surface of the brain ruptures and bleeds into the space between the brain and the skull. A ruptured aneurysm is the most common cause. An aneurysm is a blood-filled pouch that balloons out from an artery wall. Smoking and high blood pressure are both risk factors for the development of brain aneurysms.
- **Intracerebral hemorrhage** (ICH) occurs when a blood vessel bleeds into the substance of the brain itself. The blood clot that develops can cause problems with brain function. Chronically high blood pressure or aging blood vessels are the main causes of this type of stroke.

**TRANSIENT ISCHEMIC ATTACKS**

A transient ischemic attack (TIA) is a mini-stroke that occurs when a blood clot blocks an artery for a short time. The symptoms of a TIA are like the warning signs of a stroke, but they usually last less than an hour. About 10 percent of strokes are preceded by TIAs. TIAs are strong predictors of a future stroke.

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**FYI:**

**ISCHEMIC STROKES:** caused by a clot

**HEMORRHAGIC STROKES:** caused by a bleed

**TRANSIENT ISCHEMIC ATTACKS (TIA):** are strong predictors for a future stroke
Acute Treatment Options

ISCHEMIC STROKES

• **Intravenous (IV tPA) or intra-arterial (IA tPA) tissue plasminogen activator**—this treatment uses a medication to break up and dissolve blood clots in the first few hours following a stroke.

• **Merci retrieval**—using a catheter that is inserted into the groin and threaded up to the brain, clots are grabbed and removed from the patient’s circulatory system.

• **Angioplasty and stents**—a minimally invasive procedure that opens the clogged or narrowed arteries by inserting a balloon and/or tube that opens the blockage.

• **Carotid endarterectomy (CEA)**—the surgical removal of plaque buildup from inside the carotid artery. This improves the flow of blood to the brain.

HEMORRHAGIC STROKES

Subarachnoid Hemorrhage/Aneurysm

• Surgical intervention (craniotomy and clipping)—this procedure treats the aneurysm by opening the skull and placing a clip at the base of the aneurysm, preventing blood from filling it.

• Endovascular procedures (coil embolization)—using a catheter, platinum coils are inserted into the aneurysm. The coils act like a plug to block blood flow into the aneurysm.

Intracerebral Hemorrhage (ICH)

• AVM—a tangle of blood vessels in the brain or on its surface that bypasses normal brain tissue and directly diverts blood from the arteries to the veins.

• Surgical intervention (craniotomy and removal of hemorrhage and arteriovenous malformation)—this operation requires opening the skull to locate and microsurgically remove an AVM.

• Endovascular intervention (glue embolization)—catheters are inserted into the blood vessels going to the AVM. A glue-like material is injected into the vessels, closing off the AVM from inside.

• Radiosurgery (Gamma Knife)—this non-invasive technique is not really surgery at all. The treatment uses high-powered radiation beams to treat and eliminate AVMs. Radiosurgery can also be used to treat certain types of tumors.

Diagnostic Tests

BRAIN TESTS/IMAGING

• CT/CAT scan (computed axial tomography)—this scan uses radiation to take internal images of the body. It is similar to an X-ray, and can take anywhere from ten minutes to ninety minutes, depending on the number of images your doctor needs. A dye, or contrast agent, may be given intravenously before the test. You will need to lie still while the CT machine moves around your body taking images.

• CTA (computed tomographic angiography)—using an advanced X-ray machine, the flow of blood through the arteries is examined using a contrast agent. The results form a 3D image of blood vessels and help detect aneurysms or other blood flow abnormalities.

• MRI (magnetic resonance imaging)—this scan does not use radiation. It creates detailed images of the brain and other internal organs by using a magnetic field. A contrast agent may also be used. Prior to the exam, you will be asked about any metal in your body (pacemakers, shrapnel, metal work exposure) since this uses a very powerful magnet. During the scan, you will lie on a flat surface with your head inside the MRI machine. It will be loud, but the technician will remain in contact with you.

• MRA (magnetic resonance angiography)—uses an MRI machine to show the flow of blood throughout the body. It is a valuable tool for looking at blood vessel problems or blood flow abnormalities.

• Cerebral angiogram—a catheter is inserted into an artery in the groin area and navigated up into the arteries that feed the brain. X-rays are taken while contrast dye is injected through the catheter. This produces detailed images of the brain’s blood vessels. The test may last between two to three hours. You will be asked to sign a consent for this procedure, and may receive mild sedation to ensure that you remain still and comfortable.

• EEG (electroencephalogram)—this painless test uses small electrodes on the scalp to record brain waves. It is used to evaluate for possible seizure activity.

• TCD (transcranial doppler)—similar to ultrasound, this noninvasive test uses sound waves to create images of brain blood vessels. The pictures can show problems with blood flow or the narrowing of brain arteries. TCD is performed by touching a small device, called a transducer, to your temple as you lie on a bed or exam table.
CARDIAC TESTS

- ECG (electrocardiogram)—using several stickers placed on the upper body that lead to the EKG machine, this test records the electrical activity of the heart.
- TTE (trans-thoracic echocardiogram or echo)—similar to an ultrasound, a TTE is a noninvasive test that records moving images of the heart. It is performed by touching a handheld device, called a transducer, over your chest as you lie on a bed or exam table.
- TEE (trans-esophageal echo)—this echocardiogram uses a thin tube that goes down your throat and into your esophagus to take pictures from behind the heart. Images of the heart muscle and function are much clearer with this technique since the ribs and chest muscles are not in the way. You will be asked to sign a consent for this procedure, and may receive mild sedation to ensure that you remain still and comfortable.
- Holter monitor—typically worn for twenty-four hours, a Holter test records heart rhythm to look for any irregularities. Several small electrodes will be placed on your chest with thin cords connecting them to a small recorder that can be carried in a pocket.

OTHER TESTS

- Lumbar puncture—also known as a spinal tap, this test helps to identify neurological conditions that may have caused a stroke. Doctors perform a lumbar puncture to remove fluid from the area surrounding the spinal cord. A needle is inserted in the lower back under local anesthesia.
- Carotid ultrasound—this test evaluates blood flow through the carotid arteries, which carry blood to the brain. A device is used to take images of your two carotid arteries, one on each side of your neck.
- Swallow study—to check for problems with eating and swallowing after a stroke, you are observed swallowing certain food while X-rays are taken.

ACUTE TREATMENT AREAS

Intensive Care Unit

The Intensive Care Unit (ICU) is home to patients who are monitored closely by a multidisciplinary team of doctors, nurses, respiratory and physical therapists, and dieticians. Your vital signs will be constantly recorded and you will likely be receiving fluid and medication through an intravenous (IV) line.

Intermediate Care Unit

Also known as the step-down unit, the Intermediate Care Unit (IMC) is for patients who still need close monitoring but do not require constant care. You will be in a private room, and will have your vital signs taken every few hours.

Neuroscience Floor

These private and semi-private rooms are for patients who need less monitoring and care. Patients are often discharged from this floor after they have sufficiently recovered.

Neuroangiography Suite

This suite hosts many of the neurological procedures you may undergo. Patients in need of tests or medical interventions will be treated by members of the stroke team using highly sophisticated equipment for imaging and treating brain blood vessel problems.

Many patients are discharged directly home while others may go to an acute rehabilitation unit or a long term acute care center. A few patients may need the services of assisted living or a skilled nursing facility.

FYI:

Most stroke patients will have several diagnostic tests.
Stroke Risk Factors

Some factors that contribute to stroke are uncontrollable, including:

**Age**—Most strokes occur in people over age 55.

**Heredity**—Your chances of a stroke increase if one of your parents, grandparents, or a sibling has had a stroke.

**Race**—African Americans, Latinos, and Asians are more likely to have a stroke.

**Gender**—Men have a slightly elevated stroke risk.

**Health History**—Previously having a stroke, heart attack, or TIA increases your likelihood of another event.

**MODIFICATION OF RISK FACTORS**

There are several things that you can do to decrease your chances of having another stroke. Your doctor or nurse will highlight some of these risk factors that are specifically relevant to you.

**High Blood Pressure**

High blood pressure above 140/90, known as hypertension, makes you four times more likely to have a stroke. Hypertension increases pressure on your blood vessels, causing damage to the lining of these vessels. Lowering your salt intake, taking your blood pressure medication, and exercising on a regular basis can help reduce your blood pressure. You usually cannot feel when your blood pressure is high so it is important to have it checked on a regular basis. Your physician may ask you to monitor your blood pressure at home.

**Heart Disease and Atrial Fibrillation**

Individuals with heart disease are more likely to have a stroke. Those with atrial fibrillation are at an increased risk because the heart’s two small upper chambers (the atria) quiver instead of beating effectively. Blood is not pumped completely out of the chambers, so it may pool and clot. If a blood clot in the atria leaves the heart and becomes lodged in an artery in the brain, a stroke results. About 15 percent of strokes occur in people with atrial fibrillation. Changing your diet and exercise habits along with medication can help get heart disease under control.

**Smoking**

Do not smoke. It harms your blood vessels, creates plaque, and contributes to heart disease and high blood pressure. As a result, it doubles your chances of having a stroke and increases your risk of a heart attack. The PA Department of Health and the American Cancer Society have a free quit line, which can provide counseling, follow-up, and written materials: 1-877-724-1090 or TTY 1-866-228-4327.

**Cholesterol**

High cholesterol (blood levels over 200) increases your risk of stroke and heart disease. An LDL (bad cholesterol) of greater than 100 also increases your risk. You can lower your cholesterol by changing your diet, increasing your activity levels, and taking medications that lower cholesterol.

**Diabetes**

Because diabetes can contribute to high blood pressure, high cholesterol, and obesity, your chances of a stroke are also increased. Uncontrolled diabetes damages the lining of blood vessels. Keeping your diabetes under control and watching your blood glucose levels carefully can reduce your risk of a stroke.
Weight
Being overweight makes your heart work harder and makes you more likely to have high blood pressure, diabetes, and heart disease. Getting at least thirty minutes of exercise a day and reducing your caloric intake can help you lose weight. Talk with your physician about calculating your body mass index (BMI). This assesses your body weight relative to height, and is a useful, indirect measure of body composition. It correlates highly with body fat in most people. (Translation: The leaner you are, the lower your health risks.)

Alcohol
Although small amounts of alcohol may help prevent a stroke, more than two drinks a day for men, and one drink a day for women increases your risk. Be sure to also check your medications for any alcohol interactions.

FYI:
Losing weight, not smoking, taking medications as prescribed, and getting regular exercise are some of the most important things you can do to avoid a stroke.

Effects of a Stroke
A stroke can have lasting effects that vary from person to person. Your outcome will depend on how long the brain was without oxygen, how quickly you received treatment, and which parts of the brain were affected.

Keep in mind that many of these issues can improve over time and by participating in different forms of therapy.

PHYSICAL EFFECTS OF A STROKE
Weakness
Loss of strength (hemiparesis) on one side of the body is common and can affect a limb, part of the face, or the whole side of the body. Hemiplegia occurs when one side of the body is paralyzed.

Vision
Changes to your eyesight, such as double-vision, blind spots, and poor focus, are common.

Sensation
Affected areas of the body may feel numb or experience pain.

Muscle tone
The muscles in your weakened arm or leg can become loose, limp, or rigid (spastic) following a stroke.

Balance
You may have difficulty keeping your balance when you stand and walk. Special care should be given to preventing falls.

Communication
Stroke survivors who develop aphasia often have trouble understanding what other people are saying and/or may have difficulty communicating their own thoughts through speech and writing. Patients with dysarthria are unable to speak clearly because the muscles in the face and mouth are not working properly.

Swallowing Disorder
Muscle weakness in the face and throat can cause dysphagia, a disorder that makes it difficult for you to swallow food and liquids.

Loss of Environmental Control
Bladder and bowel control is sometimes affected by a stroke.

BEHAVIORAL CHANGES
Neglect
When someone loses the ability to use part of their body, such as an arm or leg, they may seem to ignore it or avoid using it. This is generally unintentional; they are simply unaware of that limb.

Memory
Some patients experience varying forms of memory loss, either short- or long-term, or may easily lose their train of thought and seem forgetful.

Skin care
Being immobile can cause bedsores and skin irritation. Getting out of bed, if allowed, changing positions, and monitoring your skin can help avoid these.
Pain
Nerve damage and immobilization may cause pain following a stroke; however this is rare.

EMOTIONAL/SPIRITUAL EFFECTS

Depression
It is common to experience sadness and depression after a stroke. This can be caused by biological changes in the brain or as a psychological response to the problems caused by the stroke. The physician and care team will monitor for this and provide therapy. Be sure to speak to your doctor about these feelings.

Lability
After a stroke, it is common to experience quickly changing emotions, such as laughter or crying. These do not always reflect your true mood.

Feeling Tired
The physical changes in your body, new medications, and difficulty sleeping may all contribute to a lack of energy following a stroke. The brain is healing, a process that requires many calories, which adds to fatigue.

Sexuality
Many of the after effects of stroke, such as fatigue, depression and concerns about appearance, can hinder feelings about sex. However, many couples can return to an active sex life after a stroke.

Medications

Depending on the type of stroke you had and how it affects you, you will likely be given several different medications from your doctor. All of your medications will be listed on your discharge instruction sheet and reviewed with you at discharge. Go over any questions about your medications with your care provider or pharmacist. It is important that you do not stop taking any medications without talking with your physician.

BLOOD PRESSURE MEDICATION
In addition to diet and exercise, your blood pressure can also be improved by certain medications like diuretics (water pills), which lower the sodium content in your body, and beta-blockers, which improve heart rate.

ANTIPLATELETS/ANTICOAGULANTS
These medications, which include aspirin, help prevent a stroke and heart attack by making it less likely for blood clots to develop.

ANTI-SMOKING MEDICATION
There are many medical therapies available to people who want to quit smoking, including pills and patches.

CHOLESTEROL-LOWERING MEDICATION
Statins, and nicotinic acid can lower your cholesterol by preventing the production of bad cholesterol, the LDL. Fibrates prevent your body from absorbing cholesterol in food.

FYI:
Many effects of a stroke can improve over time. If you have any of these physical effects as a result of your stroke, please bring them to the attention of your physician for evaluation and treatment.
DIABETIC MEDICATION
Your blood sugar should be closely monitored, and doses of insulin and oral medications should be adjusted to keep blood glucose in an ideal range.

HOMOCYSTEINE-LOWERING MEDICATION
The amino acid homocysteine is a risk factor for coronary artery disease. If you have high levels of it, your doctor may try to lower it with medication.

SEIZURE MEDICATION
If you have had seizures in the past or had one during your stroke, medication can help prevent another one. This medication may only be a temporary step while you are recovering from the stroke.

VASOSPASM MEDICATION
This medication can prevent arterial spasm which will help to keep your blood vessels open, creating a better path for blood flow to your brain.

SALT SUPPLEMENT MEDICATIONS
Many patients with subarachnoid hemorrhage who have an electrolyte imbalance will be discharged on salt pills that can restore normal sodium levels. If salt supplements are required, specific instructions will be given prior to discharge.

Rehabilitation, Recovery, and Prognosis
In many cases, your stroke recovery will progress over several weeks or months. Rehabilitation (rehab) is a critical part of this process that will identify areas that can be improved, such as being able to move or walk. You may need to relearn certain tasks or find new ways to accomplish things based on your range of ability. Depending on which areas of your body were affected by your stroke, a rehab program will be developed to help you reach your goals.

Your stroke rehab will begin in the hospital and will vary based on how much time is devoted to the treatments. Acute rehab occurs for at least three hours a day while subacute lasts for one to two hours. After you are discharged from the hospital, you may continue your rehab at an outpatient facility that you will visit on a regular basis, at least once a week.

Long-term care may be provided at a skilled nursing facility or an assisted living facility. Skilled nursing care may also be provided to you in your home to support your rehab efforts.

With new advances in treatment of stroke, the prognosis for stroke survivors is better than ever; however, most people do not recover 100 percent from their stroke. Getting early treatment, preventing another stroke, and following your care team’s instructions about lifestyle changes, medication recommendations, and rehabilitation are crucial in making post-stroke improvements.

FYI:
COMPLIANCE means doing your part to protect your health and improve your recovery. Taking your medications as prescribed is a powerful way to support your health.

FYI:
REHABILITATION: all rehab programs are individualized to the patient. You may have your rehab in an acute rehab facility, at home, in an outpatient facility, or an assisted living center.
Nutrition

Although there are some stroke risk factors that cannot be modified, you can take charge of your diet. Making healthy modifications can help reduce your chances of heart disease and lower your blood pressure and cholesterol level, which decreases your chances of having another stroke.

HEART HEALTHY DIET

Following a heart healthy diet may be as easy as making some simple changes in your current eating habits. Add more fruits, vegetables, and whole grains to your meal while choosing leaner cuts of meat, such as skinless chicken and turkey. You should avoid foods with high amounts of saturated fats, such as butter, doughnuts, whole milk, and potato chips.

We also recommend spreading out your food choices throughout the day, so instead of eating 4 ounces of meat at dinner, you eat 2 ounces at lunch and 2 at dinner.

Here are some heart and brain healthy guidelines:

- 8-10 percent of the day’s total calories from saturated fat
- 30 percent or less of the day’s total calories from fat
- Less than 300 milligrams of dietary cholesterol a day
- Limit sodium intake to 2400 milligrams a day
- Just enough calories to achieve or maintain a healthy weight and reduce your blood cholesterol level. (Ask your doctor or registered dietitian what is a reasonable calorie level for you.)

LOW SODIUM (SALT) DIET

Foods and beverages high in sodium cause your body to retain fluid. This can create a rise in blood pressure as well as body weight.

- Buy fresh, plain frozen, or canned “no salt added” vegetables.
- Use fresh poultry, fish, and lean meat, rather than canned or processed types.
- Use herbs, spices, and salt-free seasoning blends in cooking and at the table.
- Cook rice, pasta, and hot cereals without salt. Cut back on instant or flavored rice, pasta, and cereal mixes, which usually have added salt.
- Choose “convenience” foods that are lower in sodium. Cut back on frozen dinners, pizza, packaged mixes, canned soups or broths, and salad dressings, as these often have a high sodium content.
- Rinse canned foods, such as tuna, to remove some sodium.
**DIABETIC/LOW CARBOHYDRATE DIET**

If you have diabetes or need to follow a low carbohydrate diet after your stroke, you may be able to eat many of the same foods you previously enjoyed but with smaller portion sizes. Since you will have a certain amount of carbs that you can consume each day, you should plan your meals in advance to ensure that you have enough food options available without going over your carbohydrate limit.

Healthy diabetic eating includes:

- Limiting sweets
- Eating often, but in smaller portions
- Being careful about when and how many carbohydrates you eat
- Eating a lot of whole-grain foods, fruits, and vegetables
- Eating less fat
- Limiting your use of alcohol

**COUMADIN/VITAMIN K DIET**

Too much vitamin K can decrease the effectiveness of Coumadin, an anticoagulant that you may be prescribed after your stroke. You will need to keep track of how much vitamin K you get each day. Vitamin K is found in green leafy vegetables, like spinach, broccoli, and collard greens. It is also found in nuts, eggs, and fish. You are welcome to include these foods in your diet as long as you eat a consistent amount and in moderation. Ask your physician about how much you can have.

**DYSPHAGIA/SPEECH THERAPY RECOMMENDATIONS**

If you are affected by a swallowing disorder or weakened face and mouth muscles after your stroke, you may need to have your food prepared differently or use a feeding tube for your daily nutrients. If you are able to eat by mouth, soft foods like ice cream and yogurt or food that can be blended will be high on your list of approved foods. Since thick liquids will be safer to swallow, your nutritionist may recommend using a thickening agent in your food. Smaller meals spaced throughout the day will also be easier to handle than larger ones.

**UNDERSTANDING FOOD LABELS**

Improving your diet begins at the grocery store when you purchase the items you will eat at home. Look for foods marked with “low cholesterol” and “fat free” to help identify items that fit into your prescribed diet.

Keep in mind that nutritional labels list information according to serving size. A can of soup, for example, may have 3.5 grams of fat per serving, but that serving size is only a cup. Since many people eat a bowl of soup, they are unknowingly consuming more fat than they expect.

A new tool from the American Heart Association makes it easier to identify food with low levels of fat that meet general health guidelines. Labels bearing the American Heart Association Check Heart have 1 gram or less of saturated fat and 20 milligrams or less of cholesterol. Check Heart items with the Whole-Grains certification also have fiber and whole grains.

**EATING OUT**

When eating in restaurants or having take-out food, you typically lose the ability to review your food’s nutritional value or make healthy modifications as you could at home. Paying attention to portion size, which is generally larger in restaurants than in home-cooked meals, can save you a lot of additional fat and calories. When you order, ask your server for a to-go box so you can put half of the meal away as soon as it comes to you. Having less food on your plate is an easy way to prevent over-eating.

If you order a salad or food with dressings and sauces, have the sauce placed in a separate serving dish so you can add it yourself. Also, stay away from food that is fried or comes with cheese toppings. Steamed or baked entrees are your best choices.

**FYI:**

Healthy eating gives you the power to make positive changes in your life.
Life After a Stroke

Wanting to get back to your usual routine is a goal of many stroke survivors. While you will probably be able to do many of the same things you did before, special modifications may need to be made and you will likely need to learn different ways of doing things. Your rehabilitation team will be a good resource for helping you find adaptive devices and relearning certain skills.

WOUND CARE AFTER A COILING OR EMBOLIZATION

Avoid showering for twenty-four hours after your procedure. When you do shower, let soap and water run over your incision and pat dry. Do not scrub the incision. You may want to have a caregiver nearby in case you need assistance.

You may remove the dressing from your groin puncture site before or during your shower. Do not take tub baths or soak your groin incision for the next six weeks.

If a closure device “plug” was used during your procedure, you may notice a small pea or marble-sized lump develop in a day or two. This is normal and will eventually diminish.

HOME SAFETY TIPS

Changes in your mobility and a loss of muscle strength may make it necessary to alter some areas of your home to better accommodate you. Depending on your ability to walk, you may need to have handrails or support bars installed in hallways and staircases. Non-slip mats can be placed in bathrooms and kitchens to provide better traction on slippery floors and grab bars should be installed in bathtubs. Area rugs or throw rugs should be secured or removed. Areas of the home that you frequently used may be rearranged according to your abilities and needs.

PERSONAL CARE AND DRESSING

Being able to care for yourself is an important part of stroke recovery. There are many devices available, such as mirrors and long-handled shoehorns, that can assist you in meeting that goal. Simple clothing that can be closed in the front is often the best choice for people with limited range of motion.

Support bars and raised toilet seats can help you achieve independence in the bathroom, as well.

MOBILITY

Depending on the areas of your body affected by the stroke, you may have reduced mobility and need the assistance of a wheelchair, cane, or other support. Working with your rehabilitation team can improve your ability to move on your own.

EXERCISE

Exercising after a stroke can help you regain strength and coordination, and has been shown to help people with emotional changes like depression. It is important, however, that you discuss any exercise program with a member of your care team before beginning the program. You will also be able to develop an exercise routine in conjunction with your rehabilitation program. Many of the exercises you do in rehab can be continued even after your treatment ends.

1. Wear comfortable clothes and sneakers or flat shoes with laces or Velcro closures.

2. Start slowly. Gradually build up to at least thirty minutes of activity on most or all days of the week (or whatever your doctor recommends). If you do not have a thirty minute block of time, try two fifteen minute sessions to meet your goal.

3. Exercise at the same time of day so it becomes a regular part of your lifestyle. For example, you might walk every Monday, Wednesday, Friday, and Saturday from noon to 12:30 p.m.
4. Drink a cup of water before, during, and after exercising (but check with your doctor, because some people need to limit their fluid intake).

5. Ask family and friends to join you—you will be more likely to stick with it if you have company. Join an exercise group, health club, or the YMCA. Many churches and senior centers offer exercise programs, too.

6. Note your activities on a calendar or in a logbook. Write down the distance or length of time of your activity and how you feel after each session. If you miss a day, plan a make-up day or add ten to fifteen minutes to your next session.

7. Use variety to keep your interest up. Walk one day, swim the next, then go for a bike ride on the weekend.

8. Look for chances to be more active during the day. Walk the mall before shopping and choose a flight of stairs over an escalator.

9. Do not get discouraged if you stop for a while. Get started again gradually, and work up to your old pace.

10. Do not exercise right after meals, or when it is very hot or humid.

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**FYI:**

Many stroke survivors will be able to do the same things they did before their stroke, but with modifications.

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**JOB RETRAINING/VOLUNTEERING**

Following your stroke, it may not be possible to return to your previous occupation. In many cases, new job training and accommodations can be made to allow you to continue working. Although returning to your job or volunteer responsibilities may be important to you, keep in mind that may not always be practical depending on how your body recovers from the stroke. It is important to keep your health and well-being as your number one priority and not push yourself too hard.

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**DRIVING**

For most adults, driving seems like an easy task because we have been doing it for so long. In actuality, driving is the most complex activity we do on a daily basis. Driving safely requires excellent memory, thinking, perception, vision, attention, anticipation, and reaction time. It also requires the ability to do many things at once. It is a dangerous activity that, if done before all skills return, could result in serious injury or death to you or someone else.

A certified driver rehabilitation specialist (CDRS) is an expert in the field of driving for individuals who may be impaired due to medical conditions, such as stroke or functional decline from aging. The CDRS will evaluate your visual skills, thinking skills, reaction time, perception, and many other factors that go into making you a safe driver. The driver rehabilitation specialist is also an expert in adaptive equipment that may make it easier for you to physically control the vehicle, and in techniques that may make driving safer. These adaptations are individualized and should never be installed in a vehicle without the proper evaluation and training.

To find a certified driver rehabilitation specialist in your area, go to the Association of Driver Rehabilitation Specialists Web site or contact the Penn State Hershey Driver Evaluation and Training program at 717-531-7105. We will be happy to guide you every step of the way once your physician has told you your medical condition does not prohibit evaluation.

If you are not ready to return to driving and you need special transportation for a wheelchair, the driver rehabilitation specialist can also assist you in vehicle options.
Family Support

CAREGIVERS: TAKING CARE OF YOURSELF

The role of caregivers is important in the recovery of a stroke patient. As a caregiver, you may be expected to help tend to the needs of your loved one by assisting with personal needs, meal preparation, transportation to doctor’s visits and rehabilitation, and monitoring medication and health needs.

As the people closest to the stroke survivor, you may also be the first to notice signs of pain, depression, or decreased driving ability. You will also play a crucial role in watching for signs of another stroke.

There are many organizations like home health services and respite care programs that can help you provide care to your loved one. You may also find that talking to other caregivers can help. Your local American Stroke Association or the stroke survivor’s care team can provide you with more information on these groups.

YOU, YOUR FAMILY, AND DISABILITY

(Reprinted with permission from the Minnesota Department of Human Services)

Giving care to a disabled family member brings stress into the family. It changes the family system. It changes how each family member relates to all other family members.

SORTING OUT ROLES

When a family member begins requiring daily care, “tried and true” family roles are often used first as a way of coping with the new situation. In fact, sometimes caregivers who find themselves caring for a disabled family member automatically start to act like a parent. Other traditional family practices may also appear. You may, perhaps, be guided by a family role that names you as the person who is supposed to provide full-time care for any ill or disabled family members.

Other family members may not have these same “family assignments.” They may not feel as responsible as you do. They may feel they are not as close to the care receiver as you are. Brothers, sisters, children, and in-laws may be frightened by the illness, or feel uncomfortable around the care receiver. Some may not want to interfere with what you have already planned or decided. You may also unwittingly discourage help by presenting an image of “having everything under control.”
FAMILY CONFERENCE

Sometimes clear-cut family roles can help everyone know what they should do for the disabled family member. Roles can provide order and structure to what often seems to be chaos. But no one should accept any role unwillingly; everyone has a right to say no. If you accept the role of caregiver, you should feel free to request significant help from family members inside and outside the household.

Family conferences can be helpful in sorting out the expectations of each family member, including the care receiver. These can be good times for everyone to talk. Family conferences are also a good way to make long-term plans for the disabled family member, for sharing information and feelings, and for planning emergency or vacation backup for the primary caregiver.

Family meetings can be awkward, especially for people who have not talked easily or openly about family matters. Talking about feelings or the need for help is difficult for many people.

Unresolved conflicts or long-standing grudges among family members can resurface. You may end up arguing more about incidents of long ago rather than talking about your family member's needs. Problems between parents and adult children, siblings, spouses, or even extended family members can reignite. Feel free to seek outside help to resolve old issues. Clergy, social workers, or counselors are often able to help. The time spent healing wounds is worth it. The success of a caregiving plan increases when family members are able to express their feelings and help shape the caregiving plan.

ORGANIZING DETAILS

Usually a family meeting will be called either by the primary caregiver or another member close enough to see problems that need to be resolved. One family member should take responsibility for leading the meeting and make certain everyone knows what help the care receiver needs. Family members need to decide how to share responsibility for meeting these needs.

There are many ways to divide tasks. By specific need, by interval of time, or by ability to provide. You might label a chart: care receiver needs, caregiver needs, and resources. Then appropriately list the amounts of time, money, talent (i.e., cooking, nursing skills, companionship, transportation, etc.) and other items required under each title.

Assigning each person the responsibility for meeting one specific care need can be an effective way to divide responsibilities. For instance, a brother might arrange for transportation by getting a bus pass, arranging volunteer drivers, or driving himself. Another relative might take charge of handling bills and finances. Someone else might accept responsibility for researching alternative housing options should the care receiver's needs change. With luck, some of what is needed will be volunteered without prompting.

Young children need to know how they fit in, especially if the care receiver lives or moves into their household. Children might, for example, help grandparents eat, or read their mail and the newspaper to them.

Making all the major decisions involved in a care plan can be a big task. You might create several contingent care plans to choose from later if there are changes in your care receiver's condition or your family's situation. You might also decide to try one care plan, but plan regular meetings to review and revise it.

Who is in charge?

There is usually one primary caregiver. That person usually becomes the in-home case manager and switchboard for information. Unless otherwise arranged, that person coordinates the care plans decided on by the family.

CHANGING RELATIONSHIPS

When you become a caregiver, you will probably find that you will have less time for your children, parents, spouse, siblings, or friends. Your energy and interest for projects or activities you used to enjoy together may diminish. As caregiver, you may have to take on additional financial burdens and may be emotionally upset at the physical or emotional decline of the care receiver. All these stresses affect the immediate family.

The caregiver and immediate family should discuss the anticipated changes created by having the care receiver in your home. Have this talk early before tempers flare and resentment flourishes. Consider how household routines will change: fixing and eating dinner, house cleaning, grocery shopping. All of these and more may have to change because of new responsibilities.

Also consider how recreational activities and time together may change. You may have less time for walks after supper with your spouse, boating on Saturdays with the kids, or family camping trips.

The caregiver, family members, and the care receiver will all encounter new situations in their new roles. Working together as a family usually will be the best way to plan and work for change that will be most beneficial for all.
Feeling Frustrated

Excerpted from “Feeling Frustrated,” Stroke Connection Magazine
September/October 2004

FENDING OFF FRUSTRATION
When you find yourself frustrated, distinguish between what you can and can’t change. Trying to change an uncontrollable circumstance always produces frustration. And remember, no matter the circumstance, you do control one thing: how you respond.

TAKING A TIME OUT
Before frustration boils over, head it off with an activity to help you calm down. Count to ten slowly or take a few deep breaths. If possible, take a brief walk or go to another room to collect your thoughts. Try calling a friend, praying, meditating, singing, listening to music, or taking a bath.

COGNITIVE THERAPY FOR CAREGIVERS
An effective way to reduce stress and frustration is to reframe your thoughts. Cognitive therapy helps you identify unhelpful thought patterns and substitute more adaptive thoughts.

Examples of behaviors and suggestive responses:
1. Over-generalization: You take one negative situation or characteristic and multiply it. For example, you are preparing to go to a doctor’s appointment when you discover your car battery is dead. You conclude, “Something always goes wrong.”
   Adaptive Response: “This doesn’t happen all the time. Usually my car works just fine.”
2. Discounting the Positive: You overlook the good things about you and your circumstances. You say, “I could do more” or “Anyone could do what I do.”
   Adaptive Response: “Caregiving isn’t easy. It takes courage, strength, and compassion to do what I do. I’m not always perfect, but I do a lot and try to be helpful.”
3. Mindreading: You assume a friend who has not called is angry with you.
   Adaptive Response: “I don’t know what my friend is thinking. Maybe she did not get the message or is busy. If I want to know what she is thinking, I’ll have to ask her.”
4. Fortune-telling: You predict a negative outcome in the future. For example, you won’t try adult day care because you assume your family member/friend won’t enjoy it.
   Adaptive Response: “I can’t predict the future. He may not like it, but we won’t know for sure unless we try it.”

When You Need a Break

Caregiving can be a satisfying experience. It is helping someone you care for, helping him or her continue living independently in the community. But there is no denying this can sometimes be strenuous.

Finding an opportunity to break the routine and leave your caregiving responsibilities in other competent hands is essential. Taking a break is considered by many to be the most important thing a caregiver can do to sustain the ability and desire to care for an individual. It is called respite care, or taking time out.

You have a right, and many will say even a responsibility, to take time out to get away from your caregiving activities. You need time for yourself to spend with friends or alone, relax, take a vacation, or engage in a favorite hobby or sport.

NO EXCUSES
Sometimes you may feel you have good reasons for not taking a break. You may feel it is your duty to take total care of your family member, that it is your duty to respond to their every need because they cannot respond for themselves.

You may think no one else understands the person’s needs or behavior, that no one can provide the same quality of care. You may believe the impaired person will not allow anyone else to provide the care.

In some cases, these may all be true. Certainly the disabled person does require special attention and care. But a balanced evaluation will show that others can also do an adequate job, at least for a short period of time.

You will be better able to continue providing care when you are rested, refreshed, and invigorated after other activities and interacting with other people.

With proper planning, respite care almost always works. You may not be able to locate an appropriate respite care service immediately, and it may take a few tries to iron out all the bugs, but with repeated attempts, an orderly and satisfying respite arrangement is usually possible.

BENEFITS FOR BOTH
Isolation can be a danger to your well-being. If you allow no one to help in the caregiving, your friends may drift away and your social contacts shrink. Feelings of loneliness, sadness, and grief may be exposed. Anger at the impaired person or the world could follow. Eventually guilt about even being angry may develop. This approach is not a healthy process.

Also, care receivers often want more than just a single person involved in their care.
Be specific in your requests for help. Consider small things each individual might easily provide, like spending a few hours a week playing cards or watching TV with your family member, or just by staying in the house while you are gone. Also be realistic about how long you will need this help. You might try a “trial period” so all parties can see how an arrangement works.

Medical experts and groups representing the disabled also generally agree that handicapped or disabled people should be encouraged to do as much for themselves as possible. Involvement with others is an excellent way to spur interest in and work towards independent activity.

DEFINING YOUR NEED

Admittedly, finding appropriate substitute care for a stroke survivor may be difficult. If you would like to leave on vacation Saturday, do not expect to make arrangements Friday night. It takes time and preparation. Financial arrangements may need to be made. It may be upsetting to your care receiver. Balance these negatives with the benefit everyone receives from the temporary relief.

As in other caregiving responsibilities, you must be organized. You must know what type of help or relief you need or want most. Do you need occasional respite or a regular help you can rely on, or both? What activity and times are most beneficial to you? Is one evening out a week enough, or do you need household assistance daily to allow you to tend a garden or go for a walk?

Develop your list from the major categories of caregivers’ responsibilities:

- personal care
- housekeeping
- meal preparation
- transportation
- medical care/supervision
- recreation
- shopping
- daily supervision or companionship

Compare the list to your financial resources, the people you might call on for help and any private or public agency services available in your community.

OTHERS ALSO CARE

Family and friends can and should play major roles in caring for a disabled or impaired person. This is true even if most of the care has obviously been taken on by one person.

Try to involve these others with giving care early. Keep them involved! You need their assistance for an occasional break. Neighbors and friends may be glad to help when asked, despite hesitating to offer. Maybe they do not know what they could do to help, or how to offer help without interfering. You may even be unintentionally discouraging them by appearing to always have everything under control, when you are really overwhelmed.

Depriving yourself of rest and recreation can sap your strength and drain emotional energy. It can create or compound tension between you and your care receiver, or among other family members.

Other than you, your care receiver may only see a few people regularly. He or she can also benefit from seeing and being around others while you are taking your break. A break helps care receivers stay “fresh” just like you. To the degree possible, it also enables them to continue with their own activities, interests, and friends.
WHERE ELSE TO FIND HELP

Ask relatives, friends, clergy, or social workers for suggestions of other people who might help. Often word of mouth is a good way to locate dependable, suitable assistance.

Sometimes community organizations, such as United Way agencies, or information and referral services can also help. Local colleges, churches, and senior centers can also be sources of referrals or help.

Hospitals and nursing homes often offer respite care for short periods of up to a week, temporarily moving the care receiver into their facilities.

Adult day care centers in many communities provide the therapeutic activities, supervision, and health monitoring for four to eight hours a day. Many adult day care centers will take clients on a regular basis, one to five days a week. Day care is sometimes also available in private homes licensed to care for two to five people.

Home health aides and household helpers are available for hire through private businesses, hospitals or health agencies. You may want to contact your county social services office and public health agency regarding similar help.

When calling any of these agencies, try to state clearly and briefly your needs for a break. Keep a record of the names of your agency contacts and all the information they provide. Remember to ask about financial and geographical eligibility, and ask if there are other agencies whose services might meet your needs.

PREPARATION

Especially if you have always been available, your care receiver will need to be prepared when you do leave for a break. Try to arrange for the helpers to come at a time when the stroke survivor is normally calm and is likely to feel at his or her best. Also, reassure your family member that you will return at a particular time. It is probably wise to be close by during the helper’s first few visits. The helpers will need to know the schedule and routine in the home, exactly what they’re expected to do, and how to reach you if a problem arises.

In many parts of the country, formal respite care services are not readily available, but health and social services professionals are working to develop respite care. You may help speed this process by informing your county planning board or commissioner of your family’s need for that service.

Been There, Done That

Tips from Caregivers

Excerpted from “Tips from Caregivers Who’ve Been There”, Stroke Connection Magazine November/December 2003

In a 2002 report in the Journal of Neuroscience Nursing, researchers interviewed family caregivers to identify their needs and concerns, strategies they used to deal with stroke, and advice they would offer other stroke caregivers. Here are their suggestions.

ORGANIZE HEALTH CARE NEEDS

• Keep a running list of questions to take with you to doctor’s appointments.
• Keep a list of daily medication for the stroke survivor (Include the drug name, purpose of drug, dosage, and possible side effects). Take this list with you to all doctor’s appointments.
• Use a calendar to keep appointments straight.

PROVIDE EMOTIONAL SUPPORT

• Encourage the stroke survivor to talk about his or her feelings. Listen, show love, and be patient.
• Read an article or book together about another stroke survivor. This helps stroke survivors know they are not alone.
• Join a support group for encouragement and ideas from people who’ve been there. Locate a support group in your area.

PROMOTE INDEPENDENCE

• Allow the survivor to take care of himself or herself as much as possible. Although it may be difficult to watch your survivor struggle to do things alone, this promotes greater independence in the long run.

PROVIDE SOCIALIZATION OPPORTUNITIES FOR YOURSELF AND YOUR SURVIVOR

• Go to the mall or grocery store with your survivor so you both can enjoy some physical activity.
• Consider adult day care for the survivor during the week to give yourself a break and a social opportunity for your survivor.
• Continue pre-stroke hobbies and activities as much as possible. Call friends regularly to play tennis or golf or to go walking, and schedule friends, family, or professional caregivers to take care of your survivor during that time.
**Resources**

Penn State Milton S. Hershey Medical Center has several resources available that can help stroke patients in their recovery. For general information or appointments, call the 24-hour CareLine at 1-800-243-1455 or 717-531-6955.

**STROKE SUPPORT GROUP**

This group meets the third Wednesday of each month at 3:30 p.m. at the Mohler Senior Center, 25 Hope Drive, Hershey. For more information, contact 717-531-0003 ext. 285032.

**OUTPATIENT MEDICAL APPOINTMENTS**

For outpatient appointments, contact neurology and neurosurgery at 717-531-4191 or 1-800-292-3332. When you schedule your first appointment, our staff may ask about the nature of your problem and your physician’s arrangements for your care. This helps us provide the most efficient plan for your care. It is also very important for our medical staff to know exactly what medications you take and if you have any known drug allergies. Please bring this information with you to your appointment.

**SMOKING CESSATION PROGRAM**

Six-week sessions are offered to guide patients through the quitting process. The group meets once a week for ninety minutes. For more information, call the Medical Center’s CareLine or the Pennsylvania QuitLine at 1-877-724-1090.

**FIT RX**

This fitness program helps patients modify their activity level to improve cardiovascular health. Classes are offered on Tuesdays and Thursdays but the exercise can be done at facilities that are more convenient to the participant. Contact the CareLine or ask your health care provider to call 717-531-1850 for more information.

**WEIGHT MANAGEMENT**

The twelve-week Weight Management Program in the Heart and Vascular Institute helps patients identify strategies to lose weight through behavior modification, nutrition, and exercise. The program is designed for people who need to lose less than fifty pounds. Call the CareLine at 1-800-243-1455 to register.

**LIPID WELLNESS**

Monitoring lipid levels can help maintain proper health and may prevent another stroke. If your doctor indicates that this could help you, contact the Lipid Clinic at 717-531-4554.

**CARDIAC REHABILITATION AND WELLNESS**

Since strokes can be related to cardiac health, your physician may want to monitor your cardiovascular system and make adjustments that can improve your health. For appointments, contact the CareLine at 1-800-243-1455.

**DIABETES SUPPORT GROUP**

Featuring discussion and speakers, this group meets the third Thursday of each month from 1:30-2:30 p.m. and 6:30-7:30 p.m. at the Mohler Senior Center, 25 Hope Drive, Hershey. Call 717-531-8395 for more information.

**DRIVING EVALUATION AND TRAINING**

Evaluation and training is provided by a certified specialist who can assist with adaptive driving techniques and equipment. The program can also help identify alternative transportation options if needed. Call 717-531-7105 for more information.

**National Contacts**

The following national organizations exist that are devoted to providing education and advocacy about stroke. These groups often have regional offices that may be able to help you find treatment options, connect with other survivors, and provide printed materials with more information about stroke.

**American Stroke Association**
1-888-478-7653
www.strokeassociation.org

**American Heart Association**
1-800-242-8721
www.americanheart.org

**National Stroke Association**
1-800-STROKES
www.stroke.org