Brain damage from a stroke can cause you to have mild-to-severe disabilities with your body. That’s why you and those around you should know the signs and symptoms of a stroke and act FAST when getting medical attention.

Since a stroke happens in your brain, it could be hard for you to know that you are having one. You may appear confused, have a headache, have problems seeing, or even have trouble moving.

Stroke Symptoms – any of them can happen suddenly:

- Numbness, weakness, or paralysis: This could happen in the face (facial droop), arm, or leg—especially on one side of the body
- Confusion, trouble speaking, slurred speech, problems understanding speech, or not being able to speak at all
- Trouble seeing in one or both eyes, double vision, blurred vision
- Headache or severe headache with no known cause
- Trouble walking, dizziness, loss of balance or coordination

Don’t wait – call 911! Time is Brain!
Wasting time can mean that more brain cells are damaged or die, and the person is at greater risk of disabilities.

When Calling 911:
- Check the time – the emergency person you talk to will want to know when symptoms started.
- Use the word “stroke” when you are asked why you called.

If you think that you or someone near you is having a stroke, calling 9-1-1 quickly is very important, even if symptoms have gone away. Don’t wait – calling for help can reduce brain damage and prevent or limit disabilities. To be the most effective, medications that can help treat a stroke must be given as soon as possible after symptoms start.

If you go to the hospital in an ambulance, have someone go with you – especially the person who was near you when the stroke started. This person can give important information to the Emergency Department.

If someone can’t go with you, give the Emergency Department a phone number where the person can be reached.
Could It Be a Stroke? Call 911, FAST!

A stroke is like a heart attack that happens in your brain. The attack happens when blood flow to the brain is interrupted, either by a blocked or burst blood vessel. The part of the brain with the stroke does not get the blood flow that it needs and it starts to die. Any of your body functions can be affected depending on which part of the brain has the stroke (e.g., sight, hearing, speech, movement).

**What Is a Stroke?**

- The 3rd leading cause of death in the United States
- The leading cause of adult disability
- Something that can impact your quality of life and make it challenging
- Something to be taken seriously—call 911 immediately if symptoms appear

**FAST**

**F**

Ask the person to smile. Does the smile look the same on each side or does one side of the face droop?

**A**

Ask the person to raise both arms. Can they raise both or does one arm drift down?

**S**

Ask the person to repeat a simple sentence. Can they do it or does their speech sound strange or like it’s slurred (like the person is mumbling)?

**T**

If you see or feel any of these signs, call 9-1-1 quickly!

Stroke Is…

- The 3rd leading cause of death in the United States
- The leading cause of adult disability
- Something that can impact your quality of life and make it challenging
- Something to be taken seriously—call 911 immediately if symptoms appear

![Diagram of the brain showing various functions and areas affected by a stroke.](image-url)
Types of Stroke

A stroke happens when blood flow to your brain is interrupted and brain cells start to die. Blood flow is reduced either by a blocked or burst blood vessel. There are three main types of stroke, but all are serious and symptoms can appear suddenly:

Ischemic Stroke:
This is the most common type of stroke, happening 85% of the time. An ischemic stroke is when a blood vessel is blocked by a blood clot or other object and the brain cannot receive the blood and oxygen it needs. The clot/object can either travel to the vessel from another area in the body (embolic), or can develop over a period of time (thrombotic).

Embolic Stroke: Caused by a clot or particle from another area of the body. The clot/particle gets stuck in a blood vessel and stops blood flow. Blood clots are most commonly seen in patients who have atrial fibrillation or diseased carotid or vertebral arteries (located in the neck).

Thrombotic Stroke: The most common cause is atherosclerosis, which is a build-up of cholesterol or plaque in the artery. The plaque or a blood clot blocks blood flow to the brain.

Hemorrhagic Stroke:
This type of stroke is less common, but is still very serious. A hemorrhagic stroke happens when a blood vessel bursts or leaks into the brain. People with this type of stroke often have a very bad headache, nausea (feel sick), and vomiting.

There are two types of hemorrhagic stroke: subarachnoid and intracerebral. In a subarachnoid stroke, bleeding happens in the space between the brain and the skull. In an intracerebral stroke, the bleeding happens in tissue deep within the brain. High blood pressure is the most common cause of intracerebral hemorrhages. Aneurysms can also cause a blood vessel wall to weaken and leak blood into the brain.

TIA (Transient Ischemic Attack)
This is sometimes called a mini-stroke because blood flow to the brain is blocked for a short period of time. A TIA is a serious warning sign of a possible future stroke. Symptoms can be similar to a stroke and usually last for a short time and go away. A TIA is still very serious and 9-1-1 should be called right away! Important: A person who has a TIA is 10 times more likely to have a stroke within three (3) months.

Once you’ve arrived at the hospital, the doctor will want to know more about you and your type of stroke. This will help the doctor make decisions about the best care for you.

Different types of tests will give the doctor the information needed to make important decisions about your care and treatment.

Physical/neurological Exam
The doctor will ask you questions about your symptoms and your health history and will look to see how well you can do specific tasks. The doctor will want to know when your symptoms started and the last time you were known to be well or without symptoms.

Blood Tests
Certain blood tests will be ordered and will give the doctor more information.

Imaging Tests
A head CT (computed tomography) and/or a MRI (magnetic resonance imaging) will take a picture of your brain and allow the doctor to see the type and location of the stroke, as well as any brain injury. A head CT scan is the most commonly used test for a stroke.

A Doppler sonography (ultrasound) allows the doctor to look at blood flow to the brain.

Blood flow tests:
A CT angiography or CTA is when a special dye is injected into a vein and travels into the arteries of the brain. The doctor uses an x-ray picture to follow the flow of dye, and can help to locate a blockage or abnormal blood vessels.
Medications Used to Treat a Stroke

There are certain medications that are used to treat stroke patients, both while they are in the hospital and once they leave the hospital. Treatment depends on the type of stroke that happened.

**tPA – Tissue Plasminogen Activator (tPA):**
This is used to treat ischemic stroke. It works by breaking up the blood clot causing the blockage in the brain. It is very important to get to the hospital as soon as possible to see whether tPA can be used. It’s just one of the many reasons to call 9-1-1 if you think you or someone near you has stroke symptoms.

**Antiplatelet Medications**
Platelets are the part of your blood that form clots when needed (e.g., when you cut yourself). For some people, platelets can be a problem when they stick together and form clots that block an artery and cause a stroke or other health issues.

These drugs keep the platelets from sticking together and forming clots, which helps keep your blood flowing and reduces your risk of stroke and heart attack. The most common medication used is aspirin.

**Anticoagulants (“blood thinners”)**
For most people, blood clots only when it’s necessary (e.g., when you cut yourself). For others, blood clots too easily or too often and this can cause a stroke.

Anticoagulants make it harder for blood to clot or keep already-formed clots from getting bigger. Treatment with these medications should be closely supervised.

**Blood pressure medications**
Having a normal blood pressure is very important to living healthy, especially after a stroke. High blood pressure puts stress on the sides of your arteries and can damage small blood vessels in the brain. This damage can cause a number of health problems, including stroke.

There are many types of medications used to lower high blood pressure. Two of them are called ACE (angiotensin-converting enzyme) inhibitors and ARBs (angiotensin II receptor blockers). Other medications are diuretics ("water pills"), calcium channel blockers, and beta blockers. These medications are also used to treat an irregular heartbeat (example: atrial fibrillation).

**Cholesterol-reducing medications ("statins")**
Normal cholesterol is another important part of living a healthy life. Having extra cholesterol in the blood can mean that you are at higher risk of stroke and other health issues like heart attack.

These drugs help keep cholesterol levels in normal range. Other types of cholesterol-lowering medications could be prescribed by your doctor.

**Risk Factors for Stroke**
There are many risk factors for stroke. Some of these can’t be changed no matter what you do, but you can change many of them either by yourself or with the help of your doctor, family, and friends.

**Risk Factors that Can’t be Changed**

- **Age**
The risk of having a stroke goes up for each decade (10 years) after you turn age 55. Although stroke is common in elderly people, many people under age 65 have strokes.

- **Gender:**
More men than women have strokes, however, more women than men die from strokes. Birth control pills and pregnancy are special risks for women.

- **Prior Stroke, TIA, or Heart Attack:**
The risk of stroke goes up a lot for anyone who has had one or more of these health issues.

**Risk Factors that You Can Change, Treat, or Control**

- **High blood pressure**
This is the number one cause of stroke. Treatment with medications, diet, and exercise can help lower blood pressure.

- **Cigarette smoking**
Tobacco of any kind is bad for your health, and that’s especially true for cigarettes. Quitting smoking and all tobacco products can reduce your chance of having a stroke.

- **Diabetes mellitus**
Diabetes happens when the level of sugar in the blood is too high. Many people with diabetes also have high blood pressure, high cholesterol, and are overweight. Just having the disease puts you at risk, but keeping blood sugar at normal levels is very important.

- **Race:**
African Americans have a much higher risk of stroke-related death. This is because African Americans as a group have higher rates of high blood pressure and diabetes.

- **Diabetes:**
Just having the disease puts you at risk, but keeping blood sugar at normal levels is very important.

- **Blood sugar:**
Just having the disease puts you at risk, but keeping blood sugar at normal levels is very important.

- **Diabetes History:**
If a parent, grandparent, sister, or brother has had a stroke, your risk of having one will be greater. African Americans have a much higher risk of stroke-related death. This is because African Americans as a group have higher rates of high blood pressure and diabetes.

- **Family History:**
If a parent, grandparent, sister, or brother has had a stroke, your risk of having one will be greater. African Americans have a much higher risk of stroke-related death. This is because African Americans as a group have higher rates of high blood pressure and diabetes.

- **Gender:**
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Carotid or other artery disease
Build-ups of fatty plaque in the carotid artery (supplies blood to your brain) or other arteries (e.g., leg, arm) can cause arteries to become narrow and more easily blocked by a clot. It’s very important to control high blood pressure, diabetes, and high cholesterol, as well as eat well and quit smoking.

Atrial fibrillation
This happens when heart rhythm isn’t normal and quivers instead of beating regularly. This can let the blood pool and form a clot instead of flowing freely. Treatment for atrial fibrillation is important.

Other heart disease
People who have other health issues like coronary artery disease, heart failure, cardiomyopathy, heart valve disease, and some congenital (you are born with them) defects have a higher risk of stroke. It’s important to identify other heart disease quickly and get it treated.

Sickle cell disease (sickle cell anemia)
This is a genetic disorder that mostly affects African American and Hispanic children. The red blood cells aren’t shaped normally and tend to stick to blood vessel walls. This can block blood flow and cause a stroke. Proper treatment for sickle cell disease is very important.

High blood cholesterol
Having extra cholesterol in the blood can mean that you are at higher risk of stroke and other health issues like heart attack. You can help reduce high cholesterol by eating healthy foods, exercising on a regular basis, and (if necessary) taking medication.

Poor diet
A poor diet can raise blood cholesterol levels, increase blood pressure, and make diabetes worse. A diet high in calories can also make you overweight. A good diet has at least five (5) servings of fruits and vegetables per day and avoids fried, and fatty foods.

Obesity and low physical activity levels
Being overweight and not exercising regularly can increase many of the risk factors of stroke, including high blood pressure, high cholesterol, diabetes, and stroke. Be sure to stay active with regular exercise, even taking the stairs instead of the elevator.

Alcohol use
Drinking excessive amounts of alcohol can raise blood pressure. Binge drinking can lead to stroke. It is important to limit or avoid alcohol to reduce stroke risk.

Illegal drug use
Intravenous drug use and cocaine use are related to a high risk of stroke. Using illegal drugs is never a good idea.

Things that you can do:
Try and maintain a healthy lifestyle.

Know your blood pressure and the names of the medications you take. If your blood pressure is elevated, have it checked regularly and work with your doctor to keep it in control.

Take your medications regularly, know the side effects and call the doctor immediately if you develop any problems with the medications.

Know your cholesterol level and work with your doctor to control it.

Attend regularly scheduled appointments and check-ups.

Get regular exercise and walk everyday if possible. Think about including your caregiver, family, or friends in your routine.

Eat a healthy diet and limit your intake of fatty foods, and salt. Enjoy more fruits vegetables, whole grains, lean meats including fish and poultry while avoiding fried and processed food. Choose low fat dairy products.

Maintain an ideal body weight.

Avoid excessive alcoholic beverages.

Manage other health problems if you have them.

Keep a daily log of your progress/concerns/ problems and share them with your primary care provider.
Rehabilitation

There are different services offered to help your recovery from the effects of a stroke. The services will depend on how severe your stroke was and may begin while you are still in the hospital. Rehabilitation after a stroke helps you get back to your life and regain as much of your pre-stroke function as possible so you have the skills needed for everyday living. It’s true that you may have to change the way you do some of the things that you did before you had a stroke or relearn how to do others. However, you will have a team of people who can help you. Staying active is very important and daily exercise such as stretching, bending, and walking will help to strengthen muscles, increase your flexibility and increase energy. Fatigue is a common and expected result of a stroke and can vary on a daily basis. Your rehabilitation team could include the following people:

Physiatrist
A medical doctor who specializes in rehabilitation medicine

Physical Therapist
Improves problems with mobility (walking), balance and coordination

Occupational Therapist
Helps with problems related to everyday living, such as eating, bathing, dressing, and toileting

Dietician
Someone who gives you information about healthy food choices

Rehabilitation Nurse
A nurse who will work with you, your family/friends and the rehabilitation team to help you with your recovery

Speech Therapist
Someone who helps with speech-related issues, communication, and swallowing issues

Recreational Therapist
Someone who modifies activities enjoyable before the stroke

Psychiatrist or Psychologist
Someone who helps deal with emotional challenges after a stroke

Vocational Rehabilitation Counselor
Someone who helps a stroke survivor with work-related issues

After You Leave the Hospital

Your doctor or rehabilitation team may feel that you need rehabilitation after the hospital. If you go to a facility for inpatient rehabilitation, you may eventually finish your rehabilitation in that setting. There are a range of options available to stroke survivors, and what’s recommended by your doctor will depend on the severity of your stroke and how well you’ve been able to recover. Below are some of the settings that will be considered when you are done rehabilitation:

Your home or the home of a caregiver
Nursing facility
Assisted living

Effects of a Stroke

A stroke is a major life event and it changes your life after it happens. Whether you are trying to prevent another stroke, relearn how to do certain things, or change the way you eat or exercise, your life has changed. Your brain controls everything about your body. The effects of the stroke and recovery can differ among individuals. Ongoing issues and/or disabilities depend on where the stroke has taken place inside your brain. Some of the challenges you may face include:

- Trouble with your emotions including depression
- Fatigue
- Memory issues or other problems thinking
- Changes in your personality
- Weakness or paralysis on one side of the body
- Difficulty speaking, thinking of what you want to say, or understanding what others are saying
- Difficulty swallowing
- Vision problems
Taking Care

Life After a Stroke

Your Follow-Up Appointments

Soon after you are released from the hospital, you will either be transferred to another facility for care (including rehabilitation) or you may be able to go home. You may go home with a plan for outpatient rehabilitation services.

If you are home and receiving outpatient services, it is very important to make and keep appointments with doctors, therapists, counselors, and other professionals. If you are having trouble making the appointments or remembering them, have a relative or friend help you make phone calls and write the information down (space has been provided at the end of this booklet for notes). Keep this information in a place that is easily accessible. Include emergency numbers and put them in locations throughout your home if necessary.

It’s also important to make the most of your time with the doctor or therapist. You probably have a lot on your mind, but try to think of questions before your appointments and write them down (or have someone help you). That way, when your doctor or therapist asks you if you have questions, you can look at what’s been written.

Your Discharge Summary

When you are discharged from Lowell General Hospital, you will receive a printed copy of your discharge summary. It contains information about your reason for admission and your final diagnosis, as well as your allergies, medications, and vital signs.

Within the discharge summary are patient education materials about your specific diagnosis. It is important that you read the materials carefully because they are about you and your medical condition. If you cannot read them, ask for help. Below are some topics that may be included on the discharge summary:

- What to do when you return home (such as to take medications as directed)
- Follow-up appointments to schedule such as with your primary care physician and neurologist. It is important that you make and keep your follow-up appointments with your physician(s) to be sure you are in good health and recovering as expected when you are discharged from the hospital.
  - A list of your current medications
  - Tests/procedures that you had during your stay.
  - Educational materials

If You are the Patient

You’ve had a serious health event that has changed your life. It’s normal to have many different feelings while you recover. Depending on your stroke, you may have physical challenges, problems thinking or communicating, or issues with your emotions.

- You may need to make some changes in your home. Your daily activities and/or routine may also change. Getting enough rest is important.
- Work together with your family caregiver and medical caregivers (doctors, therapists) to get the most out of your recovery. Be willing to accept help from others–this is especially important if you were fully independent (on your own) before the stroke.
- Make arrangements for family/friends to check on you on a regular basis or visit you when they can.
- Accept help from others including errands, household chores, and meals.
- Let your care team know what you think you can do physically to recover, and any questions you have. Don’t be afraid to ask for what you think you will need.
- Realize that you will have a range of emotions during your recovery. These may vary on a daily basis. You may feel proud of yourself, sad, angry, frustrated, or overwhelmed. Talk with others, and think about the recovery you’ve been able to do since the stroke.
- Remember that your recovery may take some time. Be patient and take each day as it comes.

If You are the Caregiver

When a loved one or friend has a serious health event, like a stroke, it’s normal to feel worried, sad, and overwhelmed. These emotions may be happening at a time when you are trying to remain upbeat and hopeful.

It is important that you take care of yourself while helping your loved one recover from a stroke:

- Contact the health-care team for assistance and resources for your loved one. Learn about stroke and what to expect.
- It is important that the patient make and keep follow-up appointments with their primary care physician and neurologist. Offer to call or make this appointment for them if needed.
- Seek out any available resources through the hospital, community, and or friends and family.
If You are the Caregiver

- Talk with the hospital’s financial services coordinator about insurance and financial matters.
- Reach out to other family and friends for help with transportation to follow-up appointments, visiting the patient, or helping around the patient’s house. You may also need someone to talk with for support.
- Stay organized by getting a file or a box to keep paperwork that you may need in the future.
- Have a notebook, phone app (notebook apps are available), or other system in place so you can write down questions you have for doctors, other caregivers, or financial/insurance representatives, or for just keeping track of daily events.
- Know that you are not alone; there are programs and resources available to help you with the stroke survivor’s care.

- Realize that recovering from a stroke takes time and varies for each person. It can be stressful if it does not happen as quickly as you’d like.
- Try to eat a good diet, exercise, and get a good amount of sleep. It will be tricky to do this while taking care of someone, but if you don’t take care of yourself, you won’t be able to care for your loved one.
- Recognize that you may not be able to do everything for your loved one and it is important that you seek assistance instead of trying to do everything yourself.

Resources

Here are a few websites that can provide more information about stroke and recovery. To use some of them, you may need to type the word “stroke” into the search area.

- American Stroke Association
  www.strokeassociation.org/STROKEORG/
- Centers for Disease Control and Prevention
  www.cdc.gov/ (search “stroke”)
- Family Caregiver Alliance
  www.caregiver.org
- Lowell General Hospital’s Stroke Support Group
  Please call 1-877-LGH-WELL (1-877-544-9355) for more information or to register.
- MedlinePlus
  www.nlm.nih.gov/medlineplus/ (search “stroke”)
- National Institute of Neurological Disorders and Stroke
  www.ninds.nih.gov/
- National Stroke Association
  www.stroke.org/site/PageNavigator/HOME

References:
- National Stroke Association
- National Institute of Neurological Disorders and Stroke
- American Heart Association:
  Massachusetts Department of Public Health
  The StayWell Company (Krames)
Notes

Use this space to write down information about your condition, follow-up appointments, and questions you have for your doctor or therapist. If you are having trouble writing or thinking of things to write, don’t hesitate to ask a family member or friend for help.