

# Warning Signs of a Stroke

Learn the many warning signs of a stroke. Act FAST and CALL 9-1-1 IMMEDIATELY at any sign of a stroke. Use B.E. F.A.S.T.T. to remember the warning signs.

## B.E. F.A.S.T.T.

<b>BALANCE</b>	Sudden dizziness Loss of balance
<b>EYES</b>	Double vision Blurred vision
<b>FACE</b>	Uneven smile Facial droop
<b>ARM</b>	Arm weakness Arm numbness
<b>SPEECH</b>	Slurred speech Difficulty speaking or understanding
<b>TERRIBLE HEADACHE</b>	Sudden severe headache
<b>TIME LAST SEEN NORMAL</b>	Call 911 immediately.

Note the time when any symptoms first appear. There is a FDA-approved clot-buster medication that may reduce long-term disability for the most common type of stroke if it is administered within three hours of the first symptoms.

# Stroke EDUCATION GUIDE

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## What is a Stroke?

Think of a stroke as a “brain attack.” Just like any other organ in the body, the brain needs a constant supply of blood to work properly. During a stroke, blood stops flowing to a certain area of the brain resulting from a blocked or ruptured blood vessel.

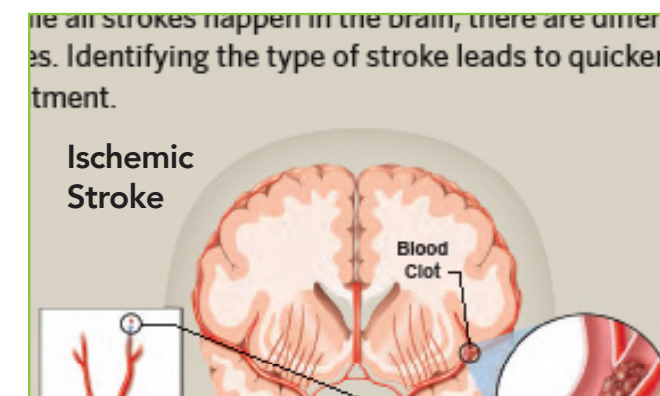
The signs of a stroke are typically very sudden.

### ARE ALL STROKES THE SAME?

No. There are two types of strokes – an ischemic stroke and a hemorrhagic stroke.

### ISCHEMIC STROKE

An ischemic stroke happens when an artery is blocked by a blood clot. The arterial blockage results from a build-up of plaque and other fatty deposits and prevents blood from reaching certain parts of the brain. This is the most common form of a stroke.

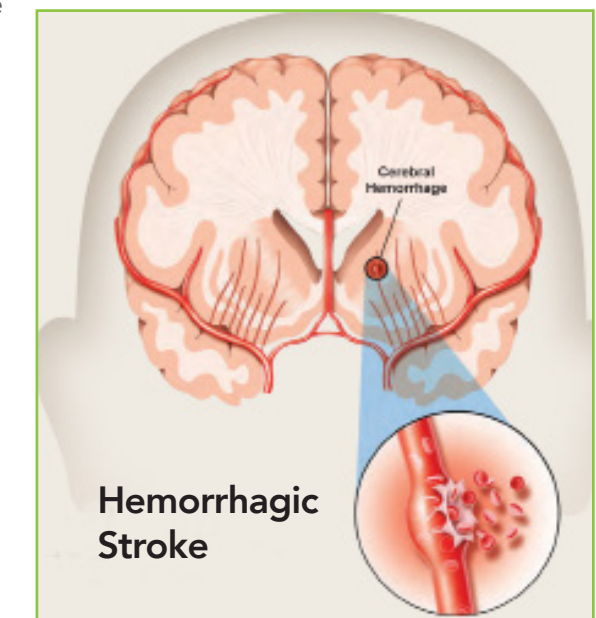


There are two types of ischemic stroke:

- o In an embolic stroke, a blood clot or plaque fragment forms elsewhere in the body (usually in the heart or in the large arteries leading to the brain) and moves through the blood stream up to the brain. Once in the brain, the clot blocks a blood vessel and leads to a stroke.
- o In a thrombotic stroke, the clot does not travel, but instead forms inside an artery that supplies blood to the brain. The clot may eventually interrupt blood flow and cause a stroke.

### HEMORRHAGIC STROKE

The second type of stroke is a hemorrhagic stroke. It occurs when a blood vessel in the brain ruptures, or breaks, causing bleeding. Hemorrhagic strokes can damage or kill nearby brain cells, increase pressure on the brain and damage brain tissue cut off from the blood supply. Hemorrhagic strokes account for about 13% of all strokes.



### TRANSIENT ISCHEMIC ATTACK (TIA)

If an artery leading to the brain, or inside the brain, becomes blocked for a short period of time, the blood flow to an area of the brain slows or stops. This lack of blood and oxygen can cause a mini-stroke, or TIA.

Symptoms of a TIA include numbness, loss of balance, trouble speaking and loss of coordination. These symptoms will often last a short period

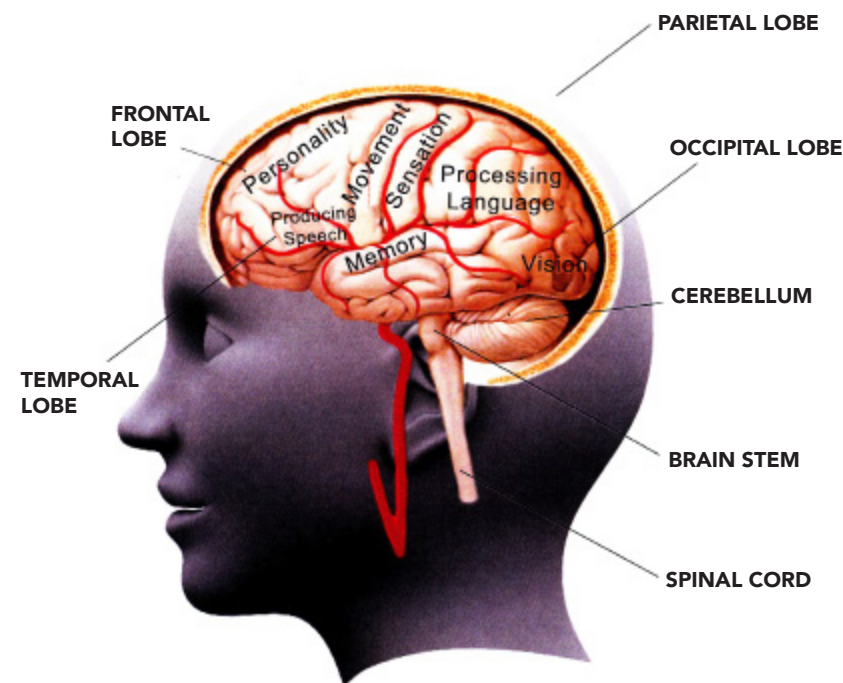
of time and then disappear as the blood flow is restored to the brain. While TIAs cause no permanent damage, they are a serious warning sign of stroke and should not be ignored.

Up to 40 percent of people who experience a TIA will go on to have a stroke. In fact, risk for stroke is especially high in the first few days after a TIA and most studies show that nearly half of all strokes occur within the first two days after a TIA.

### DIAGNOSING A STROKE

If a stroke is suspected, we will order certain diagnostic tests. The results from these tests will allow us to best understand:

- The type of stroke you experienced,
- The specific location of the blockage or rupture, and the extent of the stroke.
- CT Scan which uses an x-ray to develop a detailed image of the brain.
- Blood flow tests to assess the health of the heart and the arteries in your neck. There are a variety of blood flow tests such as:
  - Ultrasound - uses high frequency sound waves to create an image of the inside of the body.
  - Doppler Ultrasound - A special form of ultrasound commonly used to evaluate blood flow.
  - Echocardiogram (ECHO)- A test that produces images of the heart by using sound waves.
- MRI - uses a magnetic field, radio waves, and a computer to create detailed images of slices of the body, such as the brain. These soft-tissues images allow the radiologist to evaluate different types of body tissue.



## How Does a Stroke Affect the Brain & Body?

The brain acts as your body's control center. Each part of the brain has a specific role related to a function in the body. When the blood supply is cut, brain cells begin to die affecting the functions controlled by those cells.

The physical and mental effects of a stroke depend on two things:

- The area of the brain affected.
- The extent of the brain tissue damaged.

Understanding physical and mental changes following a stroke is an important step in recovery. The following information links the area of the brain with the part of the body it controls, and that may be affected after a stroke.

### Frontal Lobe:

- Arm/leg movement on the opposite side
- Incontinence of bowel and bladder
- Aggression
- Apathy/depression
- Personality changes
- Decreased motivation

### Occipital Lobe:

- Visual field cut
- Visual hallucinations
- Visual deficits

### Parietal Lobe:

- Sensation to touch
  - Left brain:
    - Reading
    - Writing
    - Math
  - Right brain:
    - Spatial orientation
    - Neglect of the left side of the body
    - Right side of the body becomes the left

### Temporal Lobe:

- Auditory sensation
  - Left brain: language
  - Right brain: sounds, rhythm, music
- Memory
  - Left brain: verbal/names
  - Right brain: visual/faces

### Cerebellum:

- Dizziness
- Impaired coordination
- Weakness/fatigue
- Tremors
- Slurred speech

### Brain Stem:

- Level of consciousness
- Nausea
- Vomiting
- Unstable vital signs
- Cannot initiate movement
- Difficulty swallowing

## RIGHT-SIDED VS LEFT-SIDED STROKE?

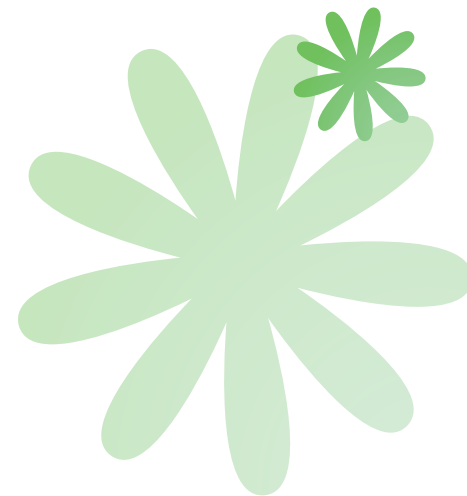
During your treatment and recovery, you may hear your healthcare provider talk about right-sided or left-sided stroke. The following lists highlight common effects of each.

### • Right Stroke

- o Left-sided weakness
- o Neglect of the left side of the body
- o Decreased attention span
- o Problem solving difficulties
- o Emotional lability (crying)
- o Poor judgment, impulsive behavior
- o Denial of disability
- o Visual-perceptual deficits
  - Hand-eye coordination
  - Spatial relationships (such as the inability to feel the relationship between a person's body and their feet, which increases the risk for a fall.)

### • Left Stroke

- o Right-sided weakness
- o Decreased reading and writing
- o Communication problems (aphasia)
- o Memory problems
- o Depression
- o Easily frustrated
- o Left/right confusion
- o Compulsive behavior
- o Difficulty starting tasks
- o Delayed processing of tasks



## EMOTIONAL CHANGES AFTER A STROKE

After a stroke, a survivor's emotions may vary. Some may experience depression, frustration, apathy and anxiety about their life after stroke. Treatment for post-stroke depression may be needed. If not properly treated, it can become an obstacle to a survivor's recovery.

Others may experience a change in their personality as a result of the actual injury and chemical changes to the brain caused by the stroke. Common emotional changes after a stroke include:

- Laughing or crying at inappropriate times or that lasts longer than seems appropriate
- Rapid mood changes
- Crying or laughing that does not match the person's mood.

*A health care provider can assist you with medications or counseling to best cope with these changes.*

## COMMON SIDE EFFECTS

### Aphasia:

#### Difficulties with Communication

Aphasia is a neurological disorder caused by damage to the parts of the brain that control language. Aphasia is common following a stroke.

#### Common signs of Aphasia may include:

- Difficulty expressing self when speaking.
- Trouble understanding speech.
- Problems with reading and writing.
- Speech:
  - o May use short or incomplete sentences
  - o Sentences may not make sense
  - o May use unrecognizable words
- Interpreting figurative language literally.
- Writing sentences that do not make sense.

#### How is Aphasia treated?

You will meet with a Speech/Language Pathologist as soon as possible to develop a treatment plan. You may work on reading, writing, following directions, and other needs as identified during your consultation.

### Dysphagia:

#### Problems with Swallowing

Dysphagia, or difficulty swallowing, occurs when food or liquids stick in the throat on the way to the stomach. Some people have trouble swallowing after a stroke, increasing the possibility of choking.

#### How Dysphagia treated?

A Speech/Language Pathologist will work with you to improve swallowing. You may be taught exercises to strengthen the mouth and improve tongue movement and lip closure to reduce side effects.

Your Speech/Language Pathologist may also suggest changes to your diet, changes to head or body positioning while eating and the use of liquid thickeners to make swallowing easier. If there is a period of time you cannot safely eat or drink, a feeding tube may be needed.



# What To Expect Following a Stroke

It may be unclear for days, or even weeks, how your body was affected by the stroke. This can be a very frustrating time for you and your family.

During the first days and weeks following your stroke, our team is dedicated to stabilizing your condition and developing a plan for your rehabilitation.

As you begin the rehabilitation phase of your recovery, our goal is to help you:

- Regain movement
  - o Improve positioning and body posture,
  - o Work your muscles,
  - o Enhance your ability to stand or stand for longer lengths of time, and
  - o Regain your ability to walk.
- Improve language and speech skills
- Improve swallowing
- Regain your ability to care for yourself



## MEDICINES MY DOCTOR MIGHT ORDER FOLLOWING MY STROKE.

Your doctor may talk with you about adding medicines to your treatment plan. Types of medicines, reasons given, common medicines, and common side effects are listed below:

**Antiplatelet Agents** - These medicines help keep the platelets in your blood from sticking together and forming clots. Antiplatelet agents help keep blood flowing. They also help reduce the risk of stroke or heart attack.

**Anticoagulants** - These medicines reduce the ability of blood to clot. These are often ordered for patients with atrial fibrillation, which may form clots in the heart. The clots can travel to the brain and cause a stroke.

**Cholesterol-lowering medicines** – Statins are medicines that help manage cholesterol levels.

Talk with your doctor about the need for new medicine treatments.

### What do I need to know about taking my medicines?

While everyone is different, you will likely be prescribed medications that you must take daily to treat your risk factors for stroke.

Be sure to take your medicines exactly as prescribed. If you have any questions about changing your dosage or are unsure what each medication is for, please do not hesitate to speak with your physician.

- Skipping doses or not refilling a prescription could cause serious problems. Do not stop taking your medicine without talking to your doctor.

- Medicines sometimes cause side effects. If you have side effects or questions or believe the medicine is not helping you, call your physician.

## SELECTING THE RIGHT REHABILITATION PROGRAM.

There are a variety of rehabilitation settings available. Your physician and team of health care professionals will work with you to make a decision on which one is best suited for your medical needs.

- **Hospital-based rehabilitation:** The inpatient unit at Kaiser provides assistance during the first phase of recovery and on-going care for patients who are not ready to return home after discharge from an acute care hospital.
- **Outpatient rehabilitation programs:** The outpatient rehabilitation program at Kaiser provides ongoing therapy appointments on a scheduled basis to address the needs of each patient.
- **Skilled nursing facilities:** Located within nursing homes, these facilities provide patient care with minor rehab.
- **Home health services:** A health provider visits the patient at home to assist with needed personal and medical care, as well as some rehab services.

## CARE AT HOME FOLLOWING A STROKE.

After discharge from the hospital or rehab facility, it is important to follow your doctor's advice exactly to help you feel better, stay out of the hospital, and improve your quality of life. When you return home, call to schedule your follow-up appointment with your primary care physician or specialists as instructed.

### What activities can I do when I return home?

Your physician will provide instructions on exercise or activity, but the following list provides general recommendations following a stroke:

- Plan rest periods during the day. Rest as long as you need to feel refreshed.
- Keep your feet and legs elevated while sitting. Do not dangle them.
- Learn to relax. You may become tense, anxious, and frustrated. Being relaxed lets you use your energy more wisely.

### When might I need emergency care?

Call your doctor any time you notice a change in your body or your symptoms. Call 911 to take you to the Emergency Department of the closest hospital if any of these signs or symptoms occur:

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

# Reducing Your Risk for Another Stroke

Once you have had a stroke, you are more likely to experience another stroke. To stay healthy, it is important to know your risks, have regular medical checkups and talk to your health care provider about what you can do reduce your risk.

## What risk factors for stroke can I not change?

- Age - your risk increases beginning at age 55
- Gender - males are at greater risk
- Race - African American, Pacific Islander, and Hispanic individuals are at greater risk
- Heredity - a family history of stroke
- Transient Ischemic Attack (TIA) or previous stroke

## What risk factors can I change or treat?

- |                        |   |                            |
|------------------------|---|----------------------------|
| • High blood pressure  | • Tobacco use                               | • Diabetes                 |
| • Circulation problems | • High cholesterol                          | • Physical inactivity      |
| • Obesity              | • Sleep Apnea                               | • Excessive alcohol intake |
| • Atherosclerosis      | • Atrial fibrillation & other heart disease |                            |

## The Most Common Risk Factors for Stroke

### HIGH BLOOD PRESSURE

High blood pressure is the leading cause of stroke. Blood pressure is a measurement of the force of blood pushing against the walls of the arteries as the heart pumps out blood. If this pressure rises and stays high over time, it can damage the body.

A diagnosis of high blood pressure is called hypertension

- Systolic is the top number and is measured when the heart pumps blood into the body.
- Diastolic is the bottom number of the reading and is measured when the heart is at rest between beats.

Pulse is the number of times the heart beats in one minute. Normal pulse range for adults is between 60 and 100. Medicines can affect your pulse and lower it below 60. It is helpful to be familiar with your normal pulse rate at rest. Count by feeling the pulsation close to the bend of your wrist, along the thumb line. Never use your thumb, always use your fingertips.

Your blood pressure and pulse can fluctuate minute to minute due to your activity or excitement level.

There may be no warning signs that your blood pressure is too high. Therefore, it is important to have your blood pressure checked annually. If your blood pressure is elevated, make an appointment with your doctor to evaluate your need for treatment. If you have been diagnosed with high blood pressure (hypertension), treatment goals may vary based on other conditions you have such as diabetes, kidney disease, or heart failure.

The goal for blood pressure readings at rest should be at or below 130/80

### DIABETES

Diabetes is a diagnosis of high blood sugar (blood glucose). Much of the food we eat is broken down into glucose and it acts as the main source of fuel for the body. Insulin is needed for the body to process and use glucose.

**TYPE 1 DIABETES** and is usually diagnosed in childhood.

Symptoms of Type 1 Diabetes may include the following:

- Increased thirst and urination
- Weight loss
- Constant hunger
- Blurred vision
- Extreme fatigue

If not diagnosed and treated with insulin, a person with Type 1 diabetes can lapse into a life-threatening diabetic coma.

**TYPE 2 DIABETES** occurs when the body is not able to produce adequate amounts of insulin.

Symptoms of Type 2 Diabetes may include the following:

- Sexual dysfunction
- Frequent urination
- Weight loss
- Slow healing of wounds or sores
- Fatigue
- Increased thirst and hunger
- Blurred vision
- Some people have no symptoms

If not diagnosed and treated, a person with Type 2 diabetes faces increased risk for stroke, as well as coronary artery disease, kidney disease, loss of vision, and/or other related disorders.

### Goals for blood sugar readings

Keep levels as close to normal as possible. People with diabetes should monitor blood glucose levels every 3 to 6 months with a laboratory test called the A1C. Results of the A1C test reflect average blood glucose over a 2 to 3 month period.



## HIGH BLOOD CHOLESTEROL

Cholesterol is a fat-like substance manufactured naturally within our bodies. A diet that includes large amounts of saturated fats and cholesterol may increase the amount of cholesterol in your body.

High blood levels of cholesterol can cause a buildup of fat in the walls of your arteries called "plaque." This process is also called "hardening of the arteries" and over time, blood flow is slowed down or blocked. If the narrowed or blocked artery is carrying blood supply to your brain it may cause a stroke.

Lowering your blood cholesterol lessens the risk for developing heart disease and having a future stroke or heart attack.

Cholesterol levels are reported as a total number and then broken down to measure:

- **LDL**
  - LDL (low density lipoprotein) is the "bad" type of cholesterol that can increase the buildup of plaque in arteries.
- **HDL**
  - HDL (high density lipoprotein) is the "good" form of cholesterol. HDL can help decrease excess cholesterol by carrying it to the liver where it is then passed from the body.
- **Triglycerides** are another form of fat measured in the bloodstream. There is a negative effect on blood vessels that can influence plaque formation if the level is too high. Many of the same measures to reduce cholesterol may also reduce triglycerides.

## PHYSICAL ACTIVITY

Your body is made to move! Finding a way to increase the amount of activity you do each day is key to developing a healthy lifestyle. Being active every day will help you reach and maintain a level of fitness that allows you to perform daily tasks and enjoy life.

### How do I get started with a more active lifestyle?

Talk with your doctor about how an exercise program could be helpful for you. Consider enrolling in a fitness program.

During exercise or other activity, pay close attention to how hard you feel you are working. This feeling should be your total amount of exertion and fatigue, combining all sensations and feelings of physical stress, effort, and fatigue. Don't underestimate or overestimate, just be as accurate as you can.

## WEIGHT

Being overweight increases your risk for stroke, among many other diseases.

Reaching and maintaining an ideal weight should be the goal. Any drop in your weight, even just 10 pounds, can reduce your risk for heart disease and help manage cholesterol, triglycerides, diabetes, and blood pressure.

One way to determine if you are overweight is to identify your Body Mass Index (BMI).

- A BMI of 25 or below is normal.

To find your number, locate your height and weight on the BMI chart on the next page. If your BMI is over 25, you should take steps to lose weight.

Another way to determine if weight increases your risk for stroke, heart disease, and diabetes is to measure your waist. A healthy waist measurement for:

- Men: 40" or less
- Women: 35" or less

Place a tape measure around your waist just above the level of the belly button. If your measurement is above a healthy level, take steps to lose weight.

## TOBACCO USE

Smoking or the use of any tobacco products doubles your risk for stroke. Smokers' risk for stroke is higher than that of non-smokers. It is never too late to quit. The good news is that you can decrease your risk if you stop smoking.

Quitting can be difficult. Many make several attempts before being successful - don't give up! The best advice to break the addiction to tobacco is the first talk with your doctor. There are aids to help you, such as nicotine replacement products (gum, lozenges, and patches), medicines, and behavior modification techniques.



**STRESS**

Everyone has a certain amount of stress in everyday life - small to moderate amounts may be helpful. But, if stress becomes severe or lasts a long time, it can increase your risk for heart disease and stroke.

**What can I do about stress?**

- First, recognize the things that cause unusual stress in your life. Signs of stress may include constant worrying, feelings of anger, and/or negative thinking.
- Learn ways to manage the negative effects of stress on your health. Finding ways to remain calm, maintaining a positive attitude, and perhaps seeing the humor in a situation can help. Set aside a time each day for relaxation. Exercising regularly and eating a healthy diet also help to limit negative effects of daily stress.
- Depression can be another source of stress and may increase your risk of stroke and heart disease. You may need help from your doctor or other medical professionals to identify if you suffer from depression or other emotional distress. Treatment will help decrease the negative effects of stress and reduce your risk.

**OTHER RISK FACTORS**

**Atrial Fibrillation**

Atrial fibrillation (AFib) is an irregular heartbeat that may be very fast and can cause a blood clot to form in the heart. If the clot breaks off and travels to the brain, you could have a stroke.

If you have been diagnosed with AFib, follow your treatment plan ordered by your doctor to decrease your risk of stroke. Always follow-up with your doctor as planned.

**Call your doctor or 911 if you have any of the following:**

- Chest pain
- Shortness of breath
- Falling
- Palpitations
- Bleeding

**Atherosclerosis**

When the arteries become stiff or coated with plaque, the flow of blood can be too low to carry enough oxygen and nutrients to the brain. If an artery carrying blood to the brain becomes blocked, it can cause a stroke.

If you have atherosclerosis, follow your treatment plan and keep your follow-up appointments with your doctor.

**Call 911 if you have any symptoms listed below:**

- Shortness of breath – difficulty breathing,
- Hands or feet are bluish or cold,
- Cannot move one side or area of your body,
- Cannot get words out or your speech is garbled, or
- Feel too weak or dizzy to walk by yourself.

General Health Tips

The following general health tips will improve your total health and wellness while reducing your risk of having a stroke:

- Eat a healthy diet that includes fruits and vegetables, whole grains, and is low in salt (sodium). A healthy diet can reduce your blood pressure.
- Reducing weight, even by 5 to 7 percent, will have a positive effect on your health.
- Regular physical activity of at least 30 to 60 minutes per day can help achieve or maintain a healthy weight and keep blood pressure readings within a normal range.
- Your doctor may prescribe medicine. To achieve the best results with any medicine you take, discuss the correct dose, frequency, and timing with your doctor and pharmacist.

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