

## Stroke Prevention

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Stroke is the third leading cause of death in the United States behind heart disease and cancer. Approximately 700,000 people have a stroke each year. Of these, more than 160,000 people died of the stroke or its related causes.

Stroke is the leading cause of disability in the United States. There are an estimated 5.5 million stroke survivors in the United States alone. The majority of stroke victims become stroke survivors. However, 15–30% of stroke survivors suffer permanent disability. In 2004, the cost of stroke in the United States was over \$53 billion. These costs include medical care, rehabilitation and lost productivity. The costs in terms of pain and suffering of its victims and their families cannot be measured.

A stroke occurs when there is a disruption in the blood supply to a part of the brain. As a result, brain cells in the affected area are deprived of oxygen. The longer brain cells are without oxygen, the greater the chance of permanent brain damage. As the brain controls body functions, permanent brain damage can cause varying degrees of disability depending on the location of the brain cells affected.

Strokes are classified according to how they occur. The 2 main types of stroke are ischemic and hemorrhagic. Ischemic stroke is the most common. It is caused by a blood clot that blocks a blood vessel in the brain. Ischemic strokes are further classified according to where the blood clot was formed. In embolic stroke, a blood clot forms outside of the brain and travels through the bloodstream until it becomes lodged in an artery in the brain. The most common places for a blood clot to form are the heart and carotid arteries, the major arteries in the neck carrying blood to the brain. A thrombotic stroke occurs when a blood clot forms around fatty deposits or atherosclerosis in blood vessels in the brain. A clot from either an embolus or a thrombus blocks blood flow to an area of the brain and causes a stroke.

A hemorrhagic stroke is caused by bleeding into the brain from a blood vessel that leaks or

bursts. The main causes of hemorrhagic stroke are high blood pressure and aneurysm. High blood pressure, or hypertension, weakens blood vessels, which increases their chance of leaking. An aneurysm is a weakened area in an artery. It is usually present from birth and does not cause problems unless it leaks or bursts. High blood pressure can further weaken an aneurysm, making it more likely to bleed.

Although the treatment of stroke has improved over the years, the best treatment is prevention. Primary prevention is prevention of the first stroke. Over 70% of all strokes occur in people who have never had a stroke before. Many factors have been identified as increasing a person's risk for stroke. These include nonmodifiable and modifiable risk factors.

### NONMODIFIABLE RISK FACTORS

**Age:** The risk of stroke doubles with each decade over the age of 55.

**Race:** African Americans and Hispanics have a higher risk for stroke. In one study, African Americans had a 38% higher risk of stroke than European Americans. The increased incidence of high blood pressure and diabetes in the African American population does not fully account for this increased risk.

**Sex:** In most age groups, stroke occurs more often in men. However, more women than men die of a stroke.

**Family History:** People with a family history of stroke are more likely to have a stroke. This may be due to both genetic and environmental factors that also contribute to high blood pressure, diabetes and elevated cholesterol levels. In addition, some blood clotting and blood vessel disorders are genetic.

### MODIFIABLE RISK FACTORS

**High blood pressure:** High blood pressure (or hypertension) is the most significant risk factor for both ischemic and hemorrhagic stroke. In fact, the higher the blood pressure, the higher the risk of stroke. The American Heart Association recommends a blood pressure below 140/90 for most individuals. For people with diabetes or kidney disease, the goal is even lower at 130/80.

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For additional information, contact The American Stroke Association, 1-888-4-STROKE (1-888-478-7653), [www.strokeassociation.org](http://www.strokeassociation.org).

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**Heart and vascular disease:** Individuals who have arteriosclerosis of the blood vessels supplying the heart (coronary artery disease) or the legs (peripheral artery disease) have an increased risk of stroke. That is because many of the risk factors for these diseases overlap. Therefore, prevention or treatment of these conditions through life style changes or medications may also reduce the risk of stroke.

**High cholesterol:** High cholesterol levels increase ones risk for stroke. High levels of LDL, a component of total cholesterol, increase the chance of developing fatty deposits within blood vessels, increasing the risk of stroke.

**Smoking:** Smoking doubles the risk of ischemic stroke and triples to quadruples the risk of hemorrhagic stroke. In fact, smoking contributes to 12–14% of all stroke deaths. Passive smoking also increases the risk for stroke. Both active and passive smoking can damage blood vessels and lead to arteriosclerosis. Smoking cessation rapidly reduces the risk of stroke. Women who smoke and take birth control pills containing estrogen increase their risk of stroke.

**Diabetes:** Diabetes increases a person's risk for stroke independent of other risk factors. Even when blood sugars are under good control, people with diabetes still have an increased risk of stroke. Therefore, it is important for people with diabetes to minimize other risk factors of stroke by keeping their blood pressure and cholesterol levels within targets set by their physician.

**Obesity and physical inactivity:** Obesity and physical inactivity increase the risk of high blood pressure, heart disease, high cholesterol, type 2 diabetes and stroke. Weight loss and exercise help to reduce these risk factors.

## WHAT YOU CAN DO TO PREVENT STROKE

1. Regular blood pressure checks help in the early detection of high blood pressure. The earlier the high blood pressure is treated, the less blood vessel damage it can cause.
2. If you do have high blood pressure, work closely with your physician to keep your blood pressure within the target range for you.
3. Talk to your doctor about strategies to lower your cholesterol.
4. If you do not smoke, don't start!
5. Stop smoking. There are numerous medications, nicotine replacement therapies and support services that can help people quit smoking.
6. Exercise regularly. Exercise helps with blood pressure and cholesterol control, aids in weight loss and may decrease the risk of type 2 diabetes. The US Surgeon General recommends 30 minutes of physical activity at least 5 days a week. Beginners should start slowly and gradually increase their exercise time and intensity. Check with your physician before beginning a new exercise program.
7. If you are overweight, talk to your doctor about a weight loss program. Foods high in fat, trans fat and cholesterol contribute to weight gain and atherosclerosis.
8. Ask you doctor if taking a daily antiplatelet medication such as a baby aspirin is right for you.

Primary prevention through life style changes including exercise, weight loss and a low fat diet is one of the most effective ways of reducing your risk for stroke. Your doctor or health care provider can help you identify your risk factors for stroke and suggest strategies to reduce or control these risk factors.