Understanding Stroke Risk: A Guide to Prevention

Lesson Summary

Introduction

A stroke happens when blood flow to part of the brain is interrupted. Without enough oxygen, brain cells can begin to die within minutes.

There are two main types of stroke:

- **Ischemic stroke:** A blood clot blocks a blood vessel supplying the brain. This is the most common type.
- **Hemorrhagic stroke:** A blood vessel in the brain bursts and bleeds.

Both types can cause lasting damage, disability, or death. The good news is that most strokes can be prevented. Research suggests that up to 80% of strokes may be preventable through managing risk factors and making healthy lifestyle changes.

Understanding risk factors

Some stroke risk factors, such as age and family history, cannot be changed. Others can be changed or managed to reduce your risk. These are called modifiable risk factors.

Modifiable risk factors include high blood pressure, high cholesterol, diabetes, physical inactivity, an unhealthy diet, excess weight, smoking, alcohol use, atrial fibrillation, and stress.

Many of these factors affect blood vessel health. Managing them can reduce the risk of stroke and heart disease and help protect against dementia.

Blood pressure

High blood pressure, also called hypertension, is the leading cause of stroke worldwide. Nearly half of all strokes could be prevented if everyone maintained healthy blood pressure. High blood pressure damages arteries and increases the risk of blood clots and bleeding.

Have your blood pressure checked regularly, even if you feel well. Several readings provide a better picture than a single measurement. If you monitor at home, use a validated device and ask your healthcare provider how and when to take readings.

For many adults with high blood pressure, the recommended treatment goal is a systolic blood pressure (the top number) below 130 mm Hg, if treatment is well tolerated. Your healthcare provider can help determine the right target for you.

©McMaster University and others

Physical activity, healthy eating with less sodium, maintaining a healthy weight, limiting alcohol, and not smoking can help lower blood pressure. Medication may also be needed, sometimes more than one.

Cholesterol

High levels of LDL cholesterol, often called “bad” cholesterol, can contribute to plaque buildup in arteries and reduce blood flow to the brain. High LDL cholesterol is also recognized as a risk factor for dementia.

A blood test called a lipid profile measures cholesterol and other fats in your blood. Your healthcare provider considers these results alongside other risk factors to assess your cardiovascular risk.

Additional blood tests may provide more information:

- **Lipoprotein(a), or Lp(a):** A cholesterol-carrying particle that is largely determined by genetics. About one in five people have elevated levels, which can increase cardiovascular risk.
- **Apolipoprotein B (apoB):** A protein found on cholesterol-carrying particles that contribute to plaque buildup. Measuring apoB helps estimate the number of these particles.

Regular physical activity and a heart-healthy diet, such as the Mediterranean diet, support cardiovascular health. Depending on your cholesterol levels and overall risk, your healthcare provider may also recommend cholesterol-lowering medication, most commonly a statin.

Diabetes

Diabetes and high blood sugar can damage blood vessels and nerves, increasing stroke risk. A hemoglobin A1C test measures average blood sugar over the previous two to three months.

Ask your healthcare provider whether you should be tested for diabetes. If you have diabetes, healthy eating, regular physical activity, and medication when needed can help manage blood sugar and reduce cardiovascular risk.

Diet

An unhealthy diet is linked to nearly one in four strokes worldwide. Healthy food choices can help manage blood pressure, cholesterol, blood sugar, and weight.

The Mediterranean diet is rich in vegetables, fruit, whole grains, fish, nuts, and olive oil. Research has shown that following a Mediterranean-style diet can substantially reduce stroke risk.

The DASH diet is particularly helpful for lowering blood pressure. The MIND diet combines elements of the Mediterranean and DASH diets, with an emphasis on foods that support brain health.

All three diets emphasize vegetables, fruit or berries, whole grains, beans and other legumes, and nuts. They differ in some details: the Mediterranean and MIND diets emphasize fish, the DASH diet includes low-fat dairy, and the MIND diet also includes poultry.

You do not need to follow one specific diet to benefit from these shared features. Start with manageable changes, such as adding vegetables to meals, choosing whole grains, or replacing processed snacks with healthier options.

Physical activity and daily movement

Physical inactivity is one of the most important modifiable risk factors for stroke, second only to high blood pressure. In a global study of over 27,000 people from 32 countries, those who did not get regular physical activity were much more likely to have a stroke. Physical inactivity is also a risk factor for dementia.

Regular physical activity supports heart, blood vessel, and brain health. How you spend the rest of your day, including time spent sitting and sleeping, also matters.

The Canadian 24-Hour Movement Guidelines recommend the following for adults:

- **Physical activity:** At least 150 minutes of moderate-to-vigorous aerobic activity each week.
- **Muscle strengthening:** Activities that strengthen major muscle groups at least twice a week.
- **Light activity:** Include several hours of light physical activity throughout the day, and replace sitting with standing or movement whenever possible.
- **Sedentary time:** Limit sedentary time to eight hours or less per day, including no more than three hours of recreational screen time. Break up long periods of sitting.
- **Sleep:** Seven to nine hours of good-quality sleep for adults aged 18–64, and seven to eight hours for adults aged 65 and older, with consistent bed and wake-up times.

Adults aged 65 and older should also include activities that challenge balance.

During moderate activity, such as brisk walking, you can talk but not sing. During vigorous activity, you can say only a few words before pausing for breath. Light activities, such as casual walking and household tasks, also help you spend more of the day moving.

Choose activities you enjoy and that suit your health and abilities. If you have a health condition or concerns about starting an activity, ask your healthcare provider or physiotherapist about appropriate options.

Even if you do not meet every target, increasing activity and reducing sitting can benefit your health. Build up gradually without sacrificing sleep.

Weight and waist size

Excess body fat, particularly around the abdomen, increases stroke risk. Abdominal fat contributes to inflammation and can raise blood pressure, blood sugar, and cholesterol.

Body mass index, or BMI, compares weight with height but does not show where body fat is carried. Your healthcare provider may also measure waist size or waist-to-hip ratio to assess risk.

In a large global study, people with a higher waist-to-hip ratio had about a 26% higher risk of stroke, with even greater risk seen in women and younger adults.

If weight management is appropriate for you, losing even 5–10% of your weight can improve blood pressure, blood sugar, and cholesterol levels; all important factors in reducing stroke risk.

Smoking

Smoking is a major preventable cause of stroke. In a large international study, smoking was linked to about one in eight strokes worldwide.

Smoking makes arteries stiff and narrow, raises blood pressure, and makes blood more likely to clot.

The benefits of quitting begin quickly. Circulation improves within weeks, and stroke risk decreases substantially over time. After several years, the risk may approach that of someone who has never smoked.

If you smoke, ask a healthcare provider or pharmacist about support. Medications, support programs, and smoking cessation apps can double or triple your chances of quitting successfully.

Vaping and inhaled cannabis have also been associated with increased stroke risk. Research on their long-term effects is still developing. Discuss their use with your healthcare provider.

Alcohol

Canada's Guidance on Alcohol and Health emphasizes that drinking less is better for your health. One to two standard drinks per week is considered low risk, but not risk-free. If you drink alcohol, avoid consuming more than two standard drinks on any occasion.

Heavy drinking—more than 10 standard drinks per week—raises blood pressure and increases stroke risk. Both heavy drinking and binge drinking, or consuming several drinks on one occasion, are associated with a higher risk of all stroke types. High alcohol intake is also linked to cognitive decline and dementia.

A standard drink is approximately:

- 341 mL (12 oz) of beer, cider, or cooler at 5% alcohol.
- 142 mL (5 oz) of wine at 12% alcohol.
- 43 mL (1.5 oz) of spirits at 40% alcohol.

Larger servings or drinks with a higher alcohol content contain more than one standard drink. Reducing alcohol use can benefit your brain, heart, and overall health.

Atrial fibrillation

Atrial fibrillation, or AFib, is an irregular heart rhythm that becomes more common with age. People with AFib are up to five times more likely to have a stroke.

AFib can allow blood to pool and form clots in the upper chambers of the heart. If a clot travels to the brain, it can cause a stroke.

AFib may cause a fluttering heartbeat or fatigue, but many people have no symptoms. Checking your pulse may reveal an irregular rhythm. An electrocardiogram (ECG) or other heart rhythm monitoring is needed to confirm the diagnosis.

If you are aged 65 or older, or have other risk factors such as heart disease, ask your healthcare provider about being checked for AFib.

Treatment may include anticoagulant medication, often called a blood thinner, to reduce stroke risk. Other medications or procedures may help control heart rate or rhythm.

Stress

Frequent or ongoing stress is associated with a higher risk of stroke. A large international study found that people with frequent stress at home or work were almost twice as likely to have a stroke.

Stress can raise blood pressure, increase inflammation, and affect sleep, eating, and alcohol use. Major life events, such as bereavement or financial hardship, can also increase risk, particularly when several occur close together.

A sense of control and strong social support may help lessen the effects of stress. Physical activity, adequate rest, mindfulness, and connection with others can help you manage stress.

If stress feels persistent or overwhelming, speak with your healthcare provider about support.

Taking action

Reducing stroke risk involves both daily habits and appropriate medical care:

- Know your blood pressure and discuss your cholesterol and blood sugar results.
- Take medications as prescribed and discuss any concerns with your healthcare provider.
- Move regularly, break up sitting time, and get enough sleep.
- Choose healthy foods and seek support with weight management when appropriate.
- Quit smoking and reduce alcohol use.
- Ask about being checked for AFib.
- Find practical ways to manage stress and stay connected with others.

Addressing several risk factors can provide greater protection, but you do not need to change everything at once. Choose one manageable step and build from there.

DISCLAIMER: This resource has been provided for informational purposes only. It is not a substitute for advice from your own health care professional. This resource may be reproduced for not-for-profit educational purposes only. Any other uses must be approved by the McMaster Optimal Aging Portal (info@mcmasteroptimalaging.org).