Understanding Transient Ischemic Attack (TIA)
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What is a TIA?

TIA is short for transient ischemic attack. Transient means short-term and ischemic means a lack of blood supply. A transient ischemic attack is a short-term lack of blood supply to the brain and is often called a “mini-stroke.” A TIA is a serious warning sign of an increased risk of stroke. Once you have had a TIA, you are also at greater risk of future TIAs.

A TIA is a temporary problem that happens when part of the brain does not get the blood supply it needs. When the brain does not get enough blood, it also does not get the fuel – oxygen and nutrients – that it needs to work properly. This causes sudden, short-term neurological (nervous system) problems, such as:

- weakness
- trouble speaking
- vision problems
- headache
- dizziness

Most TIAs last only a short time - from 30 seconds to 10 minutes – but can last as long as 24 hours. A TIA that lasts only a few seconds or minutes does not usually leave any noticeable lasting effects, even though some brain cells may be damaged. Minor damage to the brain is often unnoticeable because plenty of healthy cells are left to carry out the normal functions of the brain.

Some of the medical words in this workbook may be unfamiliar to you. Words that are written in bold are explained in the Word List at the back of the workbook on page 8-1.
What is a stroke?

A stroke is a sudden loss of brain function. It is caused by the interruption of the flow of blood to the brain (an ischemic stroke) or the rupture of blood vessels in the brain (a hemorrhagic stroke). The interruption of the blood flow or the rupture of blood vessels causes brain cells (neurons) in the affected area to die. The effects of a stroke depend upon where the brain was injured, as well as how much damage occurred.

As the brain controls everything we say, do and think, a stroke can have a wide variety of effects. A stroke can affect your:

- ability to move and coordinate movement
- ability to feel: touch, temperature, pain and movement
- ability to see or to interpret what you see
- ability to think, to remember, understand, plan, reason or problem-solve
- ability to communicate (speaking and understanding speech, as well as reading, writing and the ability to do mathematics)
- personality
- emotions
- behaviour

What is a TIA?
How does my brain work?

Your brain is made up of billions of nerve cells. It controls everything you think, feel, and do. The brain is divided into regions that control different body functions, like:

- movement
- speech
- balance

The left side of your brain controls the movement and senses on the right side of your body. It also controls your ability to:

- read
- talk
- think
- do arithmetic

The right side of your brain controls the movement and senses on the left side of your body. It also controls your:

- creativity
- ability to enjoy music and art
- ability to recognize people and objects
How does my brain get the oxygen and nutrients it needs?

Your brain needs a constant supply of fuel in the form of oxygen and nutrients to work properly. The heart pumps blood, which contains oxygen and nutrients, to the brain through blood vessels called arteries.

Four main arteries carry blood through your neck to your brain. The two carotid arteries are located at the sides of your neck, one on each side. The two vertebral arteries are located at the back of your neck on each side of your spine (backbone).
The main arteries branch out in a network of smaller and smaller arteries. The tiniest blood vessels, called capillaries, take blood directly to and from the cells. The network of blood vessels allows oxygen and nutrients to be delivered to all cells of the brain continuously.

Each artery supplies blood to specific areas of the brain. Some areas of the brain are supplied by more than one artery.

- The brain controls everything we think, see, and do.
- The brain requires a constant supply of blood containing oxygen and nutrients.
- Blood is delivered to the brain through arteries.
What causes TIAs?
What causes a TIA?

A TIA is a temporary lack of blood supply to the brain. This can happen when one of the arteries supplying oxygen and nutrients to the brain becomes blocked. The part of the brain supplied by that artery does not receive the blood it needs. If the brain cells don’t get enough oxygen and nutrients, they start to die. Brain cells die very quickly, in about 4 to 6 minutes.

Several conditions can cause TIAs. The main cause is atherosclerosis, or hardening of the arteries. TIAs can also be caused by:

- spasms in the arteries of the brain
- abnormalities in the shape of the blood vessels
- certain blood disorders that can cause inflammation of the arteries in the brain
- abnormal blood pressure changes
- uncontrolled bleeding (hemorrhage) in the brain caused by structural problems with the blood vessels in the brain. These structural problems include aneurysms and arteriovenous malformations (AVM)

These could all cause problems with blood supply to the brain.

In some cases, doctors are unable to determine the cause of a TIA.

What is atherosclerosis?

Atherosclerosis is a condition in which fatty material called plaque (atheroma) builds up on the inside walls of the arteries. Plaque is a sticky yellow substance made up of fatty substances like cholesterol and debris from blood cells.

Plaque builds up in and damages the thin inner layers of artery walls, causing the artery walls to become thicker and less elastic.
What causes TIAs?

The inside of the artery becomes narrower. As a result, less and less blood is able to flow through it. A blood clot (thrombus) could then develop further narrowing or completely blocking blood flow through the artery, a process known as atherothrombosis (see diagram below). A piece of plaque or a blood clot could break off and travel to other parts of the body also blocking blood flow through the artery.

When a blood vessel supplying the heart is narrowed or blocked, it can cause conditions such as angina (chest pain) and/or heart attack. A narrowed or blocked blood vessel that feeds the brain can cause a TIA or stroke. When blood supply to the legs is reduced it can cause pain and discomfort in the calves when walking and in more advanced stages even when resting. Treating any one of these atherosclerosis-related diseases can impact all of them.

Atherosclerosis is a slow, progressive condition that can begin as early as childhood. It can involve all parts of the arterial system including the heart, brain and legs. The older you are, the more advanced the atherosclerosis in your arteries is likely to be. How quickly it develops depends on factors such as your family medical history and your lifestyle. These are risk factors for atherosclerosis and TIA and are discussed on pages 6-1 to 6-9.
How does atherosclerosis and clot formation cause a transient ischemic attack?

Atherosclerosis can make the arteries in the neck much narrower. These narrowed arteries will allow little or no blood to flow through. A blood clot or piece of plaque can block the artery and stop the blood flow completely (middle diagram), or the clot can break off and travel to another location and block the blood supply there (bottom diagram).

Blood clots can form when cells in the blood called platelets clump together. Most often blood clots are caused by atherosclerosis, but they can also be caused by certain heart conditions. Blood clots can form anywhere in the body, including inside the arteries and on the valves in the heart.
A TIA is a temporary disruption of blood supply to a part of the brain.

TIAs are usually caused by atherosclerosis and clot formation.

TIAs may not cause obvious lasting effects but are a major warning sign of risk of stroke or further TIAs.
Recognizing TIAs and Stroke
Should I be concerned if I have had a TIA?

A TIA is a very serious warning sign that something is wrong with the blood flow to your brain. If you have had a TIA, you are at an increased risk of having a stroke. The greatest risk is in the immediate period following the TIA and up to the first year.

The good news is that because a TIA warns you that you are at risk for a stroke, you can take steps to prevent it. You can do many things to reduce your risk. Some preventative steps are discussed later in this workbook.

Something to think about...

* Each year, about 15,000 people in Canada have a TIA, and there are likely many more TIAs that go unreported.

* People who have had a TIA are five times more likely to have a stroke over the next two years than the general population.

* Many people who have a stroke had one or more TIAs before their stroke.
Stroke

If an artery supplying blood to the brain bursts or becomes blocked and the part of the brain supplied by that artery becomes permanently damaged, this is called a stroke.

The more stroke risk factors you have, the likelier it is that you will suffer a stroke. Stroke survivors live with an increased risk of having another stroke.

Something to think about...

* Seven per cent of all deaths in Canada are due to stroke.
* Stroke is the fourth most common cause of death in Canada.
* Stroke is the leading cause of adult neurological disability in Canada.
* About 50,000 strokes occur in Canada every year.
* Sixty per cent of stroke survivors will be left with a disability.
* Between 200,000 and 300,000 Canadians are stroke survivors.
How will I know if I am having a TIA or stroke, and what should I do about it?

YOU MAY BE HAVING A TIA OR STROKE IF YOU EXPERIENCE:

- **Weakness:** sudden weakness, numbness, and tingling in the face, arm, or leg

- **Trouble speaking:** sudden temporary loss of speech or trouble understanding speech

- **Vision problems:** sudden loss of vision, particularly in one eye, or double vision

- **Headache:** sudden, severe, and unusual headache

- **Dizziness:** sudden unsteadiness or sudden falls, especially if you have any other warning signs

If you experience any of these symptoms, it is a medical emergency. Call 911 or your local emergency number immediately.
Why do I need to get medical attention quickly if I think I’m having a TIA or stroke?

Getting to the hospital quickly is crucial to getting the best treatment. Over the past few years, major advances have been made in the treatment of stroke. These new treatments need to be started within a few hours of the onset of your symptoms in order to be effective.

The doctors must investigate carefully to determine the cause of your symptoms so that you get the right treatment. Don’t try to figure out on your own what is causing your symptoms, and don’t wait for the symptoms to go away. Get to a hospital as quickly as possible. Even if your symptoms go away on the way to the hospital, being seen by a doctor is crucial in identifying the underlying reason for the symptoms.

**Recognizing the warning signs of TIA and stroke as soon as they appear and seeking immediate medical treatment gives you the best chance of a good outcome.**
Recognizing TIAs and Stroke

- **A TIA is a serious warning sign of increased stroke risk.**
- **Symptoms of a TIA are the same as those of a stroke.**
- **Stroke is a major cause of death and disability in Canada.**
- **Recognizing that you have had a TIA provides a warning and an opportunity to reduce the risk of going on to have a stroke.**
- **If you experience any of the symptoms of a TIA or stroke, call 911 or your medical emergency number immediately.**
Diagnosis
What tests are used to investigate TIAs?

Your doctor will decide what tests are appropriate for you. The following is a list of the most common tests.

<table>
<thead>
<tr>
<th>Type of test</th>
<th>What is the purpose of the test?</th>
<th>How is the test performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurological examination</td>
<td>A complete neurological examination involves testing your language and memory skills; your behaviour, alertness, vision, and eye movements; your muscle control; your ability to walk (gait); and your sense of touch.</td>
<td>The doctor makes skilled observations of your ability to answer questions and perform simple tasks.</td>
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<tr>
<td>Blood tests</td>
<td>Blood tests are done to learn whether there is anything in your blood that would tell your doctor what caused your TIA. Your blood may be tested for cholesterol and triglyceride levels, blood sugar level, and abnormalities in blood clotting.</td>
<td>Small samples of blood are taken from your arm and studied in a lab.</td>
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<td>Carotid doppler</td>
<td>A Doppler test can help determine if plaque buildup is narrowing your arteries and affecting blood flow in your neck or brain.</td>
<td>A Doppler test uses ultrasound (non-harmful, high frequency sound waves) used to listen to the sound of your blood flowing through your arteries.</td>
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<td>Carotid artery angiography (arteriography)</td>
<td>These studies are done to locate blocked or abnormal arteries in the brain or neck. They are also used to look for plaque and other possible sources of emboli (travelling blood clots).</td>
<td>A dye that shows up on X-rays is injected into an artery. X-rays are taken as the dye travels through your arteries.</td>
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<tr>
<td>ECG</td>
<td>An ECG (electrocardiogram) is a test that records the electrical activity of the heart. An ECG can find abnormal heart rhythms that may have caused blood clots to form.</td>
<td>Sticky pads are placed on specific parts of your body (your chest, arms, and legs). Sensors in the pads detect the electrical activity of your heart and send the information to the ECG machine, where it can be printed out and read by the doctor.</td>
</tr>
<tr>
<td>HOLTER monitor</td>
<td>The HOLTER monitor is used to look for abnormal heart rhythms that may have caused your TIA.</td>
<td>A HOLTER monitor is a portable ECG recording device. It allows your doctor to monitor your heart rhythm over a longer period than an ECG – usually several hours or days. HOLTER monitors are worn on the body. The test may be done in the hospital or at home.</td>
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<tr>
<td>Echocardiogram</td>
<td>An echocardiogram may be done to determine whether your TIA was caused by a heart condition.</td>
<td>An echocardiogram uses non-harmful sound waves to create a picture of your heart.</td>
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<td></td>
<td>Echocardiograms help determine if blood clots are forming in your heart.</td>
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<tr>
<td>CT scan (CAT scan, or computerized tomography)</td>
<td>A CT scan of the brain is done to identify conditions such as bleeding in the brain (intracranial bleeding), tumors, stroke, or evidence of previous brain damage.</td>
<td>A CT scanner takes a series of pictures of your brain using X-rays.</td>
</tr>
<tr>
<td>CTA (CT Angiography)</td>
<td>CT angiography (CTA) is an examination that uses x-rays to visualize blood flow in arterial vessels throughout the body, from arteries serving the brain to those bringing blood to the lungs, kidneys, and the arms and legs.</td>
<td>Beams of x-rays are passed from a rotating device through the area of interest from several different angles so as to create cross-sectional images, which then are assembled by computer into a three-dimensional picture of the area being studied.</td>
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<td><strong>MRA</strong> <em>(Magnetic Resonance Angiography)</em></td>
<td>This is a newer imaging technique and is used to detect any blocking or hardening of the arteries in the neck or brain.</td>
<td>Like an MRI, an MRA uses a strong magnetic field and radio waves to take a picture of the blood vessels. It gives images of veins and arteries.</td>
</tr>
<tr>
<td><strong>MRI</strong> <em>(Magnetic Resonance Imaging)</em></td>
<td>MRI is another type of scan. It is also used to detect bleeding in the brain, tumors, stroke, or evidence of previous brain damage.</td>
<td>MRI uses a non-harmful magnetic field and radio waves to produce a three-dimensional image of a part of your body, such as your brain. MRI is also sometimes called nuclear magnetic resonance, or NMR.</td>
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<tr>
<td><strong>Trans-esophageal Echocardiogram (TEE)</strong></td>
<td>This is done when your doctor may suspect your heart may be producing blood clots and wants a more detailed picture of the heart.</td>
<td>TEE uses high frequency sound waves to look at the structures of the heart. This test is similar to the echocardiogram above but examines the heart in a different way. It is done by inserting a tube in the esophagus (food pipe). You are sedated during the procedure.</td>
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</table>
How are TIAs diagnosed?

It is sometimes difficult for doctors to diagnose TIAs because the symptoms have usually gone away by the time the person gets medical help. The key to treating a TIA is prompt recognition that a TIA has occurred. Tests are then done to determine why the TIA occurred. With this information, the doctor can work with you to plan the best treatment to prevent future TIAs or a stroke.

Remember that the most important thing is to tell your doctor if you have had symptoms of a TIA or stroke.

Some conditions have symptoms similar to a TIA. Tests are usually done to rule out these conditions before making a diagnosis of TIA. Examples of some conditions with symptoms similar to TIAs include:

- **Hypoglycemia**, or low blood sugar – A condition in which the brain cells, nerves, and/or muscles do not receive enough sugar, causing temporary disruptions of nerve and muscle function, such as weakness and trouble speaking.

- **Complicated migraine** – A migraine headache in which spasm of an artery supplying blood to the brain is so severe that it causes symptoms similar to a TIA.

- **Bell’s palsy** – An inflammation of one of the nerves in the face, causing that side of the face to droop, sometimes interfering with the ability to speak.
Treatment
What type of treatment will I receive?

The type of treatment you receive depends on the cause of your TIA, the part of your brain that is affected, and whether you have other medical conditions.

The goal of treatment is to prevent a stroke from occurring and to make sure your brain gets the oxygen and nutrients it needs through a good blood supply. This is done either through surgery or by using medication to thin the blood and prevent blood clots from forming.

Making healthy lifestyle choices to change your risk factors is an important part of your treatment.

Your doctor will study the results of any tests you have had to decide what types of treatment are most suitable for your condition. Your doctor will then discuss the risks and benefits of the treatment options. Working together, you and your doctor will decide the best treatment plan to prevent a stroke.

Medication

Two main types of medications are used to treat TIAs – antiplatelet and anticoagulant medications. They are often referred to as “blood thinners.” They are used to prevent or destroy blood clots and can reduce the risk of stroke in survivors who have had TIAs or strokes.

Antiplatelet medications prevent platelets from sticking together and forming blood clots. Anticoagulant medications work on other clotting factors that make blood clot.
The following are some of the medications used in treating TIAs:

- **Acetylsalicylic acid or ASA.** This drug is also called Aspirin® (ASA) or Entrophen® (coated ASA) and is the most commonly used antiplatelet. It has been shown to reduce the risk of stroke. Your doctor can tell you if you should take ASA and how much you need to take to reduce your risk of stroke. Some people should not take ASA because of bleeding problems, allergies, and other medical conditions. The amount taken is usually less than the standard dose. You should always check with your doctor before you take ASA regularly for the prevention of stroke.

- **Plavix® (clopidogrel)** is an antiplatelet medication. Often used in conjunction with ASA and other therapies, it is used to reduce the risk of stroke or heart attack. It works by preventing excessive blood clotting.

- **Ticlid® (ticlopidine)** is an antiplatelet medication. Used to reduce the risk of stroke in patients with certain indications.

- **Aggrenox®** contains both ASA and another antiplatelet medication, dipyridamole.

- **Coumadin® (warfarin)** is an anticoagulant that is often prescribed for atrial fibrillation. Warfarin is sometimes prescribed when antiplatelet drugs fail to prevent a stroke or subsequent TIA, or there is a medical reason why antiplatelet drugs can’t be given. Warfarin is usually given in tablet form and can be taken over a long period of time. People have to take it for several days before it takes effect. The doctor will perform a number of tests before prescribing an anticoagulant. As a rule, people who have high blood pressure, a recent brain injury or are prone to falls or alcohol abuse will not be prescribed an anticoagulant.
Medications for high blood pressure. There are many different medications used to treat high blood pressure. They generally fall into the following categories:

- **Angiotensin II Receptor Blockers (ARBs)**
  ARBs are a family of drugs that relax blood vessels by blocking a chemical (angiotensin II) that causes blood vessels to narrow, constrict or tighten. This action allows blood to flow more easily through the body and thus, helps to lower blood pressure.

- **Angiotensin Converting Enzyme (ACE) Inhibitors**
  ACE inhibitors are a family of drugs that relax blood vessels by reducing the production of an enzyme required to produce a chemical (angiotensin II) that causes blood vessels to narrow, constrict or tighten. This action allows blood to flow more easily through the body and thus, helps to lower blood pressure.

- **Beta Blockers**
  Beta Blockers are a family of drugs that slow down the rate of the heart, the pumping force of the heart and the amount of blood pumped by the heart per minute. These actions help to lower blood pressure.

- **Diuretics**
  Diuretics are a family of drugs commonly referred to as “water pills” that increase the kidneys’ excretion of sodium or salt, which in turn reduces the volume of blood and helps to lower blood pressure.

- **Calcium Channel Blockers or Antagonists**
  Calcium Channel Blockers are a family of drugs that block the passage of calcium into muscles that control the size of blood vessels. This action dilates or opens up the blood vessels and thus, helps to lower blood pressure.
There are other classes of drugs less commonly used. Ask your doctor or pharmacist if you have any questions, or visit the Heart and Stroke Foundation Web site at [www.heartandstroke.ca](http://www.heartandstroke.ca).

**Medications for high cholesterol.** Drug therapy is an option for people who are unable to lower their cholesterol with lifestyle changes alone.

- **Statins** are the class of medication which is usually the first choice of drug used for lowering high cholesterol but there are other options. Statins may be used if a person is considered to be a high risk for a heart attack or stroke, regardless of their cholesterol level.

Whatever medications you are given, it is important to know what drug and what dose you are taking, as well as any potential side effects to watch for.

It is very important that you take your medications.

Talk to your doctor about alternatives if you feel any unpleasant side effects, or talk to your pharmacist for more information about your medications.

**Surgery**

Sometimes a surgical procedure, or operation, is recommended as the best way to prevent a stroke. Your doctor will tell you if this is the right treatment for you.

- The most common surgery is a **carotid endarterectomy**. This is a procedure to remove plaque from the carotid artery (one of the arteries in the neck). An incision is made to open the artery, the blockages are removed, and the artery is then closed up. Because this procedure carries considerable risk, it is done
only in selective cases. Only certain people are eligible for this type of treatment.

- **Carotid angioplasty** and **stenting** is a newer type of surgery. The procedure is similar to angioplasty and stenting that is commonly done in the coronary arteries of the heart. This procedure involves using a balloon like device to open a clogged artery followed by the placement of a small metal **stent** to help keep the artery open.

- **Coiling aneurysms**: Aneurysms are weak spots in the walls of blood vessels which can rupture and cause bleeding (**hemorrhage**) in the brain. If an intracranial aneurysm ruptures (causing a subarachnoid hemorrhage), immediate surgery may be required. In some cases, an unruptured aneurysm can be treated by filling the blood vessel with tiny flexible coils made of platinum. This procedure can only be performed if the aneurysm has not yet ruptured and the patient has an appropriate neck size. The coils are put into place by means of a catheter, a long flexible tube that can be threaded through the blood vessels.

- **A variety of tests can be done to find out what caused your TIA.**

- **The results of the tests can be used to decide the best type of treatment.**
Risk Factors for TIA and Stroke
What are the risk factors for stroke?

A risk factor is something in a person's physical condition or health habits that increases the chance of developing a medical condition such as stroke.

A TIA is a serious warning sign that you are at risk of having a stroke. Once you have had a TIA, it is important to do everything you can to reduce your risk factors for stroke.

Some risk factors are present at birth, some are the result of normal changes such as aging, and some are the result of lifestyle.

The risk factors that you can’t change are:

Age: The risk of stroke and TIA increases with age. Although strokes can occur at any age, most strokes occur in people over the age of 65.

Gender: Although women are at lower risk than men until they reach menopause, more women than men die of stroke. There are particular risks for women around the time of pregnancy and with the combination of smoking and oral contraceptives.

Ethnic background: Canadians of First Nations, African or South Asian descent tend to have higher rates of blood pressure and diabetes and are at higher risk for stroke compared to the general population.

Family history of stroke or TIA: If someone in your family has had a TIA or stroke before the age of 65, you are at increased risk of having a stroke. The closer the family member (e.g. parent) the greater the risk.
You can’t do anything about these risk factors. However, if you have one or more of these risk factors, you should take extra steps to make healthy lifestyle choices to prevent stroke.

**The risk factors that you can change are:**

**High Blood Pressure:** High blood pressure is also called **hypertension**. Reducing high blood pressure is very important in reducing the risk of stroke.

Blood pressure is the force of blood pushing against the walls of an artery as the blood is squeezed from the heart. Changes in activity, posture, and emotions can cause changes in blood pressure. These are temporary and normal. Blood pressure that is consistently over 140/90 is considered high. (See **diastolic** and **systolic** in the word list for an explanation of blood pressure readings.)

High blood pressure can sometimes be controlled through a combination of proper diet, exercise, and stress reduction. Managing diabetes, being smoke-free and limiting alcohol use are also important. If these methods are ineffective, medications may be prescribed. For the medication to be effective, it must be taken regularly. You should never stop taking blood pressure medication without first consulting your doctor. If you have any questions or experience unpleasant side effects, talk with your doctor. There are often alternatives.

High blood pressure has been referred to as the “silent killer” because there are often no symptoms. The only way to know if you have high blood pressure is to have your blood pressure taken by a healthcare professional at least once every two years.
**Blood pressure action plan:** For more information on high blood pressure, visit the Heart and Stroke Foundation’s “Your Blood Pressure Action Plan” at www.heartandstroke.ca/bloodpressure. Or call the Foundation at 1-888-HSF-INFO (1-888-473-4636).

**Become smoke-free:** Smoking is the most preventable cause of disease and death in Canada. Contrary to what most people believe, smoking causes more deaths from stroke or heart attack than from cancer.

Smoking affects the circulatory system in a number of ways. Smoking adds to the buildup of plaque in your arteries. Nicotine raises your blood pressure. The carbon monoxide in cigarette smoke reduces the amount of oxygen your blood carries to your brain. Cigarette smoke makes your blood thicker and more likely to clot.

People who become smoke-free can rapidly reduce their risk for stroke to that of non-smokers. Non-smokers can reduce their risk by avoiding environmental tobacco smoke.

Becoming smoke-free is a very difficult process. If you smoke, your doctor can recommend programs and medications that can help you. You can also get information from:

- your Heart and Stroke Foundation office
- a pharmacist
- the Canadian Cancer Society
- the Lung Association
Health Canada Tobacco Control Program – 1 866 318 1116

Toll free quit lines
- Newfoundland residents 1 800 363-5864
- New Brunswick and Nova Scotia residents 1 877 513-5333
- Prince Edward Island residents 1 888 818-6300
- Quebec residents
  - (Quebec Lung Association) 1 888 768-6669
  - (Canadian Cancer Society) 1 888 853-6666
- Ontario residents 1 866 332-2322
- Alberta residents 1 888 939-3333
- BC residents 1 877 455-2233

Download your personal “Contract to Quit Smoking” from the Heart and Stroke Foundation Web site
(www.heartandstroke.ca/bloodpressure, click on “Your Tools”)

Sign up for Health Canada’s free e-Quit e-mail service at
www.hc-sc.gc.ca/hecs-sesc/tobacco/quit/e-quit

Remember, it is never too late to become smoke-free.

Physical inactivity: People who don’t have enough physical activity in their lives are at much higher risk for stroke than are active people. More than half of Canadians don’t get enough physical activity to prevent heart disease and stroke.

Regular physical activity raises the level of “good cholesterol” (HDL) in your body. It also makes your muscles more efficient and helps your blood circulation. Physical activity can also help you reduce stress, control your blood pressure, prevent or control diabetes, and maintain a healthy body weight.
To reduce your risk of stroke, you should be physically active 30 minutes a day most days of the week. How much exercise you need to do depends on how hard you are exercising – for example, a short run can give you the same benefits of a longer walk. You can get the same benefit from breaking your physical activity into shorter sessions, such as three 10-minute sessions in a day. You can get more information about physical activity by contacting the Heart and Stroke Foundation or Health Canada for a copy of Canada’s Physical Activity Guide to Healthy Active Living. Visit Health Canada’s Web site at www.hc-sc.gc.ca/hppb/paguide/main.html.

You should speak to your doctor before starting any fitness plan.

**Heart disease: Coronary artery disease**, heart valve defects, an enlarged heart, or an irregular heartbeat can cause blood clots to form in the heart that may break loose and block the arteries that supply blood to the brain. Your doctor may prescribe medication to help prevent the formation of clots.

Because it creates clots that can dislodge and travel to the brain, **Atrial fibrillation**, a type of irregular heart rhythm, is strongly linked to an increased risk of stroke. If you have atrial fibrillation, be sure to ask your doctor about anticoagulant medication.

**Diabetes:** Diabetes mellitus is a condition in which the body doesn’t produce or properly use insulin. Diabetes often leads to high blood pressure and high levels of **cholesterol** in the blood.

People with diabetes are at much higher risk for stroke than is the general population, and women with diabetes are particularly at risk. The risk of stroke also begins at a much younger age for people with diabetes.

If you have diabetes, you should eat a healthy diet, perform regular physical activity, maintain a healthy body weight, and take
the medications ordered by your doctor to regulate blood sugar levels and reduce your risk of stroke.

Good control of your diabetes is the best way to minimize your risk.

**High cholesterol:** Cholesterol and triglycerides are fat-like substances that are an important backup source of energy for your body. However, high levels of the wrong types of these fats can contribute to the development of atherosclerosis, leading to TIAs, stroke, and heart disease.

Blood cholesterol is made up of HDL ("good cholesterol") and LDL ("bad cholesterol"). HDL carries the cholesterol formed by the body to the liver so it can be eliminated. LDL can be deposited inside the walls of the arteries and help form plaque. Low levels of HDL and high levels of LDL lead to atherosclerosis and increase the risk of stroke and heart disease.

A diet high in fat can result in high blood levels of LDL cholesterol. Most people need to reduce the overall amount of fats in their diet. In fact, fat intake should be below 30% of total calories. In particular, to reduce LDL cholesterol, you should reduce **saturated fats**. Saturated fats are generally the fats from animal sources that stay in a solid form at room temperature, such as butter, cheese, or the fat around a steak. Harmful saturated fats are also found in palm and coconut oils. Trans fats are another type of harmful fat. Trans fatty acids are formed by a process called hydrogenation where a liquid fat is made into a solid fat. Trans fatty acids are found in many baked goods and certain margarines. (Look for non-hydrogenated on the label to help you make a good choice.)

**Polyunsaturated** and **monounsaturated** fats are better choices. Remember, it is important to reduce all fats but the ones you do choose to eat should be largely one of these types. Polyunsaturated
fat is found mainly in vegetable oils such as sunflower, corn oil, and margarine made from these oils and seeds. Monounsaturated fats are found in canola, olive and peanut oils as well as in nuts and seeds, although some nuts are high in saturated fats, such as cashews and brazil nuts.

These fats tend to lower cholesterol and may also help the body maintain proper levels of HDL cholesterol (the “good cholesterol”).

High cholesterol levels can be the result of your family history and/or the types of food you eat. Medication, physical activity and diet changes can help lower high blood cholesterol levels. Ask your doctor what you can do to lower your cholesterol level. Recent research has shown that regardless of cholesterol level, lowering the cholesterol level in the blood reduces the risk of stroke.

**Excessive alcohol intake:** More than 1-2 drinks per day up to a weekly total of 9 for women and 14 for men increases the risk of stroke.

Heavy drinking and binge drinking have been clearly identified as risk factors for stroke and are also associated with high blood pressure.

One drink is equal to:
- 350 mL/12 oz. (1 bottle) of beer (5% alcohol)
- 150 mL/5oz. wine (12% alcohol)
- 50 mL/1-1/2 oz. liquor (40% alcohol)

**Being overweight:** Compared to people who maintain a healthy body weight, people whose body weight is more than 20% above a healthy weight have a greater risk of high blood pressure and diabetes. This means they also have a greater risk of stroke.

People who are overweight also tend to have other risk factors, such as physical inactivity, diabetes, high blood pressure, and high blood cholesterol levels.
To maintain a healthy body weight, enjoy regular physical activity and eat a healthy diet. For Canadians over two years of age, Health Canada’s *Canada’s Food Guide to Healthy Eating* (Web: www.hc-sc.gc.ca/hppb/nutrition/pube/foodguid/index.html) recommends the following guidelines:

- enjoy a variety of foods
- emphasize cereals, breads, other grain products, vegetables, and fruits
- choose lower fat dairy products, leaner meats, and foods prepared with little or no fat
- limit salt, alcohol and caffeine

For more suggestions for healthy eating or the latest version of *Canada’s Food Guide to Healthy Eating*, contact your local Heart and Stroke Foundation.

**Hormonal changes:** Modern oral contraceptives (birth control pills) are much safer than the forms used decades ago. In women under the age of 35 who are smoke-free, their use does not increase the risk of stroke.

However, in a small proportion of women, oral contraceptives increase the risk of high blood pressure and of blood clots. The risk is greater if you:

- smoke
- already have high blood pressure
- already have a blood clotting problem
- are over age 40
Recent evidence has found that hormone replacement therapy does not reduce the risk of recurrent stroke; more studies are ongoing.

Talk to your doctor about the best choice for you.

**Stress:** Most people have some stress in their lives. However, too much stress may contribute to the risk of stroke, although research on stress is still being done.

Stress can cause the heart rate to increase, the heart to pump harder, blood sugar levels to increase, and fats in the blood stream to increase. Continual or frequent stress places more demand on the heart and enhances the development of plaque. Stress often leads to unhealthy lifestyle choices such as:

- smoking
- high alcohol consumption
- lack of physical activity
- poor food choices

The first step in reducing and controlling stress in your life is to recognize what is causing the stress and take steps to avoid it. Once you notice how you react to stress, you can start trying to change your reaction. Try different methods to remove or reduce your stress, and learn to manage stress in a healthy way. Some suggestions include participating in regular physical and other enjoyable activities, performing relaxation techniques, sharing feelings, managing your time better, eating a healthy diet, and confronting the person or situation that is causing continued stress. Information on controlling stress is also available from your local Heart and Stroke Foundation office.
Homocysteine: Homocysteine is produced naturally in the body as the body breaks down protein for fuel. A high homocysteine level is associated with a higher risk of stroke. However, it is not yet known if reducing homocysteine levels also reduces the risk of stroke. The effect of reducing homocysteine levels is an area of ongoing research, so talk to your doctor about how this may affect you.

- **TIA is a major risk factor for stroke.**
- **Factors in your life may put you at risk for stroke.**
- **You can reduce your risk for stroke by making healthy lifestyle choices.**
Reducing the Risks
What can I do to reduce my risk of stroke and TIAs?

A TIA is a warning. Fortunately, you can take a number of steps to reduce your risk of stroke and TIAs.

Read through the statements on the following pages, and circle “TRUE” if the statement applies to you or “FALSE” if it doesn’t apply. For each statement to which you answer “true,” go through the checklist and check off the things you can do to reduce your risk. Talk to your doctor about your options to be sure your choices are safe for you.

1. **I have high blood pressure.**

 □ I am on medication and I will take my medication regularly.

 □ I will not stop taking my medication without talking to my doctor.

 □ I will control the amount of sodium in my diet by making good food choices.

 □ I will reduce or eliminate salt added to food at the table and when cooking.

 □ I will make healthy food choices and try to reduce my weight (if I need to). Losing even 10 lbs. (4.5 kg) can help improve my high blood pressure.

 □ I will be physically active regularly, for at least 30 minutes on most days of the week (after checking with my doctor).
I will limit my alcohol consumption to no more than 1 drink per day (for women) or 2 drinks per day (for men) to a weekly total of 9 (for women) and 14 (for men).

I will have my blood pressure monitored regularly (at least once every two years) by a healthcare professional.

2. I am ready or already trying to become smoke-free.  TRUE  FALSE

Quitting smoking or avoiding second-hand tobacco smoke isn’t easy, but it is one of the best things you can do for your health.

I am not even considering it, but I will at least think about the benefits of being smoke-free

- Improved health
- Money savings
- Public acceptance

I have been thinking about becoming smoke-free and when I am ready, I will...

- Research smoking cessation aids and programs
- Think about my past attempts to become smoke-free
- Pick a quit date that will work best for me
- Keep a smoking diary
- Figure out what situations “trigger” me to smoke and how to avoid those situations or deal with them when they come up
- List all the benefits of not smoking
- Find a support person
- Make plans for my first day without smoking
- Speak to my doctor about any medications that might help

I have just become smoke-free, and I am going to...

- Do one of the “four Ds” when cravings hit – do something else, delay, do deep breathing, or drink water
• Take my smoking cessation medication (patch, pill, or gum)
• Be positive with myself
• Reward myself

☐ I plan to stay smoke-free, and I am going to:

• Take it one day at a time
• Practice relaxation every day
• Congratulate myself on doing something so beneficial for my health
• Write a list of all the good things about becoming smoke-free, and read it regularly
• Plan some strategies for dealing with tough situations
• Limit my consumption of alcohol and caffeine
• Be physically active and eat a healthy diet
• Reward myself with all the money I have saved at my anniversary dates of being a non-smoker, for example, 1 month, 6 months, and 1 year

☐ I am frequently exposed to second-hand smoke, and I am going to:

• Avoid situations in which I will likely be exposed to second-hand smoke

• Talk to the family member(s), friend(s), and/or coworker(s) about the risks of exposure and encourage him or her to either become smoke-free or smoke in locations that do not expose others to smoke.

3. I don’t do enough physical activity. TRUE FALSE

☐ I plan to become more physically active, and I am going to:

• Talk to my doctor about starting a physical activity program
• Think about how I can become more active
• Weigh the “pros” and “cons” of being inactive
• Decide how to fit more activity into my daily life
• Think about whether I want to be more active on my own or with others
• Choose activities that I enjoy
• Set realistic goals
• Plan rewards for myself
• Choose a starting date
• Schedule an activity just like I do for appointments

☐ I have just started becoming more physically active, and I am going to:
  • Always remember to warm up before and cool down after exercising
  • Adjust my goals if necessary
  • Reward myself
  • Tell myself I can do it
  • Apply what I’ve learned from past successes

☐ I plan to stay active, and I am going to
  • Remember my reasons for becoming active
  • Be ready with solutions for those times when I feel like stopping
  • Be active 30 minutes or more every day

4. I have heart disease. TRUE FALSE
  ☐ I will work on reducing my risk factors
  ☐ I will talk to my doctor about how this affects my risk of stroke
  ☐ If I have atrial fibrillation, I will talk to my doctor about anticoagulant medication
  ☐ I will limit my alcohol intake to no more than 1-2 drinks per day to a weekly total of 9 (for women) and 14 (for men)
☐ I will maintain a healthy body weight

☐ I will learn to manage the stress in my life

5. **I have diabetes.** TRUE FALSE

☐ I plan to take an active part in my own treatment

☐ I plan to eat right and maintain a healthy body weight by
  - Eating a variety of foods and choosing food from each of the four food groups
  - Having some starchy food, such as bread, pasta, potato, or rice at each meal
  - Cutting down on fat, especially fat that comes from animal foods, such as meat, butter, and cheese
  - Using moderation with sweets
  - Allowing 4 to 6 hours between meals
  - Eating small, healthy snacks
  - Limiting my alcohol intake to no more than 1-2 drinks per day to a weekly total of 9 (for women) or 14 (for men)

☐ I plan to be active 30 minutes or more every day

☐ I plan to take my medication as prescribed

☐ I plan to check my blood glucose regularly

☐ I will be smoke-free

☐ I will work with my doctor and pharmacist to control my blood pressure and blood cholesterol

6. **I have high blood cholesterol.** TRUE FALSE

☐ I plan to eat less fat and cholesterol by:
  - Choosing leaner meats, poultry, and fish
• Having some meals with no meats, or using meat as a side dish rather than the main course
• Reducing meat portions to the size of a deck of cards
• Choosing nonfat or low-fat dairy products, such as skim milk, 1% M.F. cottage cheese, yogurt with less than 1% M.F., and hard cheeses with less than 15% M.F.
• Cooking with little or no fat
• Using vegetable oils, such as olive, canola, corn or sunflower oil in small quantities
• Avoiding store-bought baked goods, such as croissants, muffins, and donuts

☐ I plan to eat more vegetables and fruits (five to ten a day); whole grains, such as oats and barley; and legumes such as dried peas, dried beans, and lentils

☐ I plan to maintain a healthy body weight

☐ I plan to be active 30 minutes or more every day

☐ I will be smoke-free

☐ I will take my medication as prescribed

7. **I drink too much alcohol.**  TRUE  FALSE

☐ I plan to talk to my doctor about the risks of drinking too much alcohol

☐ Because I have high blood pressure, I will drink little or no alcohol

☐ I will limit my alcohol intake to no more than 1-2 drinks per day to a weekly total of 9 (for women) and 14 (for men)

☐ I will not “save up” drinks to have a week’s worth of alcohol in one day
I will cut down on my alcohol consumption by drinking low- or non-alcohol beer, or by mixing wine or spirits with low sodium mineral water or a soft drink.

8. **I have trouble controlling my weight.** TRUE FALSE

I plan to be active 30 minutes or more every day.

I plan to change how I eat by:

- Eating 3 healthy meals a day
- Planning my meals around high fibre foods, including fruits and vegetables; legumes, such as dried peas, dried beans, and lentils; and whole grain products, such as brown rice, whole grain bread, and whole grain cereals

I plan to change my eating habits by taking time to eat, eating slowly, and taking smaller bites.

I plan to cut down on fat by:

- Reducing the amount of fat I add to my food
- Cooking with little or no fat
- Choosing low-fat meat such as chicken and fish
- Choosing non-fat or low-fat dairy products
- Avoiding high-fat desserts and snack foods
- Eating smaller portions of foods that contain fat
- Choosing low-fat foods when I eat out

I plan to cut down on calories.

I plan to keep a Food and Activity Record.

I plan to work with my dietitian or doctor to develop a healthy eating plan.
9. **I have a lot of stress in my life.**

   - True
   - False

   - I will take notice of the situations that cause me stress and how I react to such situations
   - I will plan ways to eliminate or avoid stressful situations
   - I will learn new ways to deal with stressful situations when they occur
   - I will learn to manage my time so that I can take pressure off myself
   - I will set aside time to relax every day, and I will learn some relaxation techniques
   - I will get the support of family and friends in handling my stress
   - I plan to get 30 minutes or more of physical exercise every day
   - I plan to get plenty of sleep and eat a healthy diet
   - I will practice stress management techniques
How can I get more information?

You can get more information by:

- Visiting the Heart and Stroke Foundation Web site
  www.heartandstroke.ca

- Calling the Heart and Stroke Foundation toll-free Information Line 1-888-HSF-INFO (1-888-473-4636)

- Subscribing to the Strokeline e-newsletter at
  www.heartandstroke.ca/stroke

- Checking Internet Web sites for information:
  www.strokeassociation.org – The American Stroke Association’s Web site – part of the American Heart Association

  www.mayohealth.org – The Mayo Clinic’s health information Web site

  www.stroke.org – The U.S. National Stroke Association’s Web site

- Getting information from your local library
TIA and Stroke
Word List
TIA and Stroke Word List

This list contains words that you may come across when reading about TIAs and stroke. They are also words that your doctor, nurse, or therapist may use when discussing your stroke and recovery.

The words in this list are not all used in this workbook. They are included here so that you can refer to them at any time. Words indicated with a star (*) are those that are used in the workbook.

More information about highlighted words in the following definitions can be found by looking up that word in the list.

**Acute**
Coming on abruptly, but lasting only a short time. It is the opposite of **chronic**.

**Aneurysm***
Ballooning out of the wall of a blood vessel. It usually involves the wall of an **artery**. It happens when the wall is weakened by disease, injury, or a problem present at birth.

**Angina**
Angina (or angina pectoris) is a chest pain due to **coronary artery disease**. Pain occurs when the heart muscle doesn’t receive enough blood because the arteries that supply blood to the heart muscle itself are clogged (narrowed).

**Angiography***
A test in which dye is injected into blood vessels. The blood vessels are then examined using X-rays. The test can give a good idea of the condition of **veins** and **arteries**. It can also warn doctors if there are **blood clots**. It is also known as arteriography.

**Anticoagulant***
A drug that prevents blood from clotting. Often referred to as a blood thinner.

**Antiplatelet***
See **platelet antiaggregant**.
Arrhythmia* See dysrhythmia.
Arteriography* See angiography.
Artery* Any one of the blood vessels that carry blood from the heart to other parts of the body.
ASA* ASA, which is short for acetylsalicylic acid, is commonly known as Aspirin®. It affects the body in a number of ways, but one is to prevent blood platelets from sticking together and forming blood clots.
Atherothrombosis* Occurs when a blood clot forms on fatty deposits in the wall of a blood vessel. The blood clot is called a thrombus and the fatty deposit in the blood vessel is referred to as plaque (atheroma).
Atheroma See plaque.
Atherosclerosis* A form of artery disease also known as hardening of the arteries. The inner layers of artery walls become thick and rough because of deposits of cholesterol and other substances. The arteries become narrower and less blood can flow through them. This build-up of deposits is sometimes called atheroma or plaque.
Atria The upper chambers of the heart.
Atrial fibrillation* Very fast, irregular pumping of the heart muscle in the atria. As a result, the heart can’t pump blood around the body effectively.
Autonomic nervous system* The organs of our body, such as the heart, stomach and intestines, are regulated by a part of the nervous system called the autonomic
nervous system. The autonomic nervous system is part of the peripheral nervous system and it controls many organs and muscles within the body. In most situations, we are unaware of the workings of the autonomic nervous system because it functions in an involuntary, reflexive manner. For example, we do not notice when blood vessels change size or when our heart beats faster.

**AVM**

*(Arteriovenous malformations)*

Arteriovenous malformations are blood vessels abnormally linked, and often occur (50% of cases) within the brain, brainstem and spinal cord. AVMs develop when arteries are directly linked to veins rather than passing through the interface of capillaries and interstitial fluid of cells. The blood is exchanged at a relatively higher pressure with more rapid flow directly into the veins. This unusual connection generates a mass of abnormal blood vessels called a nidus (Latin for nest). The anatomy of the vein is not designed to take the higher pressures and flow; thus, it expands and pushes against the normal brain tissue. This may damage the normal brain causing weakness, numbness, loss of vision, or seizures. Often there is a rupture in the supplying arteries, the AVM itself, or the enlarged veins which results in an intracranial hemorrhage, which is a type of stroke. The incidence for AVM is roughly 30 people in 1 million. Over their lifetime, AVM-carrying individuals have a 40-80% risk a nidus
might rupture (annual risk 1-4% until you turn 55 years of age, when the risk almost disappears).

**Blood clot***
A jelly-like mass of blood cells formed by substances in the blood. **Blood clots** can form inside an **artery** if it is damaged by plaque deposits. This can cause a stroke.

**Blood sugar/ Blood glucose***
The level of sugar in the blood. The body needs some sugar in the blood for energy. Too much sugar, in conditions such as **diabetes**, can injure the walls of the **arteries** and increase the risk of **stroke**.

**Brain hemorrhage**
Bleeding in or on the brain.

**Capillary***
Tiny blood vessels between **arteries** and **veins**. They allow exchange of oxygen and other nutrients between the blood and body tissues.

**Cardiac**
Having to do with the heart.

**Cardiovascular disease**
Disease of the heart and blood vessels, including coronary artery disease, stroke, **rheumatic heart disease**, and **high blood pressure**.

**Carotid artery***
A major **artery** in the neck that carries blood to the brain.

**Carotid doppler***
A noninvasive test which uses high frequency sounds waves to determine extent of blood flow through the carotid arteries in the neck.

**Carotid endarterectomy***
Surgery to remove **plaque** deposits or **blood clots** in the **carotid arteries**.

**Cerebral***
Having to do with the brain.
**Cerebral embolism**  A blood clot that is formed in one part of the body and is carried by the bloodstream to the brain. It lodges in an artery, cutting off blood flow to a part of the brain.

**Cerebral hemorrhage**  Bleeding in the brain resulting from a burst aneurysm or a head injury.

**Cerebral thrombosis**  A blood clot that forms in an artery which supplies part of the brain.

**Cerebrovascular occlusion**  The blockage or closing of a blood vessel in the brain.

**Cholesterol**  A fat-like substance found in food from animal sources, such as dairy products, meat, fish, poultry, animal fats, and egg yolks.

**Chronic**  Lasting a long time. It is the opposite of acute.

**Circulatory system**  The heart, blood vessels, and blood circulation.

**Clot**  See blood clot.

**Clot-buster**  A drug that breaks up clots in the blood vessels. An example of a clot busting drug is tissue plasminogen activator (t-PA).

**Cognitive**  Having to do with thinking and understanding.

**CT scan or CAT scan**  Short for computerized tomography. A test for evaluating the brain and other body organs. A CT scan can usually identify whether a stroke was due to bleeding or a blockage.

**Congenital**  Refers to a condition already present in the body at birth.
**Coronary Artery Disease***

Coronary artery disease (CAD) results from the development of atherosclerosis in the arteries that supply the heart. Atherosclerosis develops gradually and is the underlying problem leading to heart attack. Coronary artery disease is also known as coronary heart disease.

**Diabetes***

A disease in which the body doesn’t produce or properly use insulin. Insulin is a hormone produced that changes sugar and starch into the energy needed for daily life. Diabetes increases the risk of developing cardiovascular disease.

**Diastolic blood pressure***

The lowest blood pressure that can be measured as blood flows through the arteries. It occurs when the heart muscle relaxes between beats.

**Diuretic***

A drug that increases the rate at which urine forms. This helps the body get rid of excess salts and water.

**Doppler test***

A test that uses sound waves to listen to the blood moving through the blood vessels. Doppler tests can be used to identify blood vessels that are narrowed or blocked.

**Dysrhythmia***

An abnormal heart rhythm, sometimes called an arrhythmia.

**Echocardiography***

A test that uses ultrasound (non-harmful sound waves) to make images of the heart chambers, valves, and surrounding structures.

**Edema***

Swelling because of too much fluid in the body.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td><strong>EKG or ECG</strong></td>
<td>Short for electrocardiogram. A graph of the electrical impulses produced by the heart.</td>
</tr>
<tr>
<td><strong>Embolic stroke</strong></td>
<td>Occurs when a brain artery is blocked by a blood clot that has formed somewhere else in the body. The clot usually forms in the heart or neck arteries. It is carried through the bloodstream to the brain.</td>
</tr>
<tr>
<td><strong>Embolus</strong></td>
<td>A blood clot that forms in a blood vessel in one part of the body and then is carried to another part of the body. The plural of embolus is emboli.</td>
</tr>
<tr>
<td><strong>Estrogen replacement therapy</strong></td>
<td>Medication given to women to replace their natural estrogen supply following menopause. Often referred to as HRT (hormone replacement therapy)</td>
</tr>
<tr>
<td><strong>Hardening of the arteries</strong></td>
<td>See atherosclerosis.</td>
</tr>
<tr>
<td><strong>Heart attack</strong></td>
<td>Death or damage of part of the heart muscle because of a lack of blood supply. Also known as myocardial infarction.</td>
</tr>
<tr>
<td><strong>Hematological</strong></td>
<td>Having to do with blood, such as hematological cause meaning the cause has something to do with the blood.</td>
</tr>
<tr>
<td><strong>Hemorrhage</strong></td>
<td>Bleeding from a burst blood vessel.</td>
</tr>
<tr>
<td><strong>Hemorrhagic stroke</strong></td>
<td>A stroke that happens when an artery wall bursts in or around the brain. They are usually more severe than ischemic strokes.</td>
</tr>
</tbody>
</table>
HDL* Short for High Density Lipoprotein. HDL is believed to carry cholesterol away from the tissues to the liver, where the body can get rid of it. It is sometimes called the “good cholesterol”, in comparison to LDL (Low Density Lipoprotein). It is made up of more protein and less cholesterol than LDL, along with other substances.

HOLTER monitor* A portable device that records the electrical activity of the heart. HOLTER monitors work in a similar way to ECGs, but allow the information to be recorded over longer periods of time, in the hospital or at home.

Hypertension* Also known as high blood pressure. A chronic increase in blood pressure above the normal range. Hypertension is a chronic increase in blood pressure above the normal range. High blood pressure increases the risk of heart disease and kidney disease. It is a major risk factor for stroke.

Infarction Death of tissue because of a lack of blood. It is usually caused by the blockage of an artery.

Intracerebral hemorrhage (ICH) Occurs when an artery in the brain bursts. The leaked blood presses on the brain tissue, destroying it.

Ischemia* Decreased blood flow to an organ. It is usually caused by narrowing or blockage of an artery.

Ischemic stroke* A stroke that happens when a blood clot forms on plaque that has built up on an artery wall. If the clot blocks an artery in the brain or an
artery that supplies blood to the brain, the result is an ischemic stroke.

**Lipid**
A fatty substance that does not dissolve in blood.

**LDL**
Short for Low Density Lipoprotein. LDL is the main carrier of harmful cholesterol in the blood. It is often called the “bad cholesterol”, in comparison to HDL (high density lipoprotein) because it is easily deposited in the blood vessel walls. It is made up of more cholesterol and less protein than HDL, along with other substances.

**Lumen**
The inner part of a tube, such as the inside opening of a blood vessel.

**MRI**
A test used to examine the brain and other parts of the body. MRI uses non-harmful magnetic field and radio waves to produce an image of a part of the body. MRI is short for magnetic resonance imaging. It is also sometimes called nuclear magnetic resonance, or NMR.

**Monounsaturated fat**
A type of fat found in foods, such as canola, olive oil, peanut oil, and avocados.

**Myocardial infarction (MI)**
See heart attack.

**Neurological**
Having to do with the nervous system, including the brain.

**Neurologist**
A doctor who specializes in diagnosing and treating diseases of the brain and other parts of the nervous system.
| **Occlusion** | A blockage. It occurs when something such as a **blood clot** blocks a blood vessel completely. |
| **Perceptual** | Having to do with the senses: sight, smell, taste, touch, and hearing. |
| **Plaque** | Also called **atheroma**. It is a build-up of fatty and other substances in the inner lining of the **artery** wall. It occurs in **atherosclerosis**. |
| **Platelet** | A type of cell found in the blood. It aids in the clotting of the blood. |
| **Platelet antiaggregant/platelet inhibitor** | Drugs that prevent **platelets** from sticking together and clotting the blood. They are also called antiplatelets. Two examples are ASA and Plavix®. |
| **Polyunsaturated fats** | Vegetable oils, such as corn, safflower, sunflower, and soybean oils. They are liquid at room temperature, and are better for your heart than saturated fats. |
| **Risk factor** | A risk factor is the increased chance that you will develop a particular condition, such as stroke. Some risk factors are present at birth, some are the result of normal changes such as aging, and some are the result of lifestyle. |
| **Saturated fats** | Fats found mainly in foods made from animals, e.g. butter, lard, and bacon drippings. They are usually solid at room temperature. |
| **Stenosis** | The narrowing of an opening such as a blood vessel. |
| **Stroke** | The sudden interruption of the blood supply |
to the brain. It can be caused either by a blockage or bursting of blood vessels. Older terms for stroke include apoplexy and cerebrovascular accident (CVA).

**Systolic blood pressure**  
The highest blood pressure that can be measured as blood flows through the arteries. It is the upper number of a blood pressure reading. It occurs when the heart muscle contracts.

**Thrombolysis**  
The breaking up of a **blood clot**.

**Thrombolytic agents**  
Drugs that work by dissolving blood clots in arteries. Also known as “clot-busters”.

**Thrombotic stroke**  
A stroke caused by a **blood clot** or **thrombus** that forms in an **artery** going to the brain. The clot blocks the blood supply to a part of the brain.

**Thrombus**  
A **blood clot** that forms inside a blood vessel or chamber of the heart.

**Tissue plasminogen activator (t-PA)**  
A natural protein that works by breaking up **blood clots** in arteries, restoring blood flow. tPA is a relatively new therapy for ischemic stroke patients, and has also been used for heart patients. It is also called a “**clot-buster**”.

**Transcranial Doppler (TCD)**  
A test that uses **ultrasound** to get information about brain blood vessels. TCD helps doctors locate **atherosclerosis** in the arteries of the brain. It also helps them determine the amount of damage to the brain.
Transient ischemic attack (TIA)*

Sometimes called a mini stroke. It is caused by temporary blockage of a blood vessel. It does not cause permanent brain damage. Symptoms of TIAs are the same as for a stroke but usually last 24 hours or less. TIAs are an important warning sign of a stroke and should never be ignored. Prompt medical attention could prevent a major stroke from occurring.

Triglyceride

The chemical form in which most fats exist in the blood. High triglyceride levels are often found along with high cholesterol levels. People with high triglyceride levels may be at higher risk of developing diabetes.

Ultrasound*

Sound vibrations that cannot be heard by the human ear. It is used in tests such as transcranial doppler.

Vascular

Having to do with the blood vessels.

Vasoconstriction

A narrowing of blood vessels. It reduces the area through which blood may pass.

Vein*

A blood vessel that carries blood from various parts of the body back to the heart.

Vertebral arteries*

Two arteries in the neck that supply the back of the brain with blood.

Warfarin*

(Coumadin®)

An anticoagulant that works by preventing blood clotting agents from forming in the liver.

For more information/definitions visit www.heartandstroke.ca and click on “health dictionary”.