



Coronary Artery Disease

*Your Heart and
How Coronary Artery
Disease Affects You*

This Coronary Artery Disease booklet could not have been produced without the help of all members of the Cardiology Team and the Education Services Department who contributed materials and supplied invaluable information and direction.

Our Cardiology Team includes the Heart Health Education Committee and a team of nurses, dietitians, social workers, cardiologists, physiotherapists and exercise specialists.

We would also like to recognize the input of our patients in the reviewing of this booklet.

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This information is of a general nature and may vary according to your special circumstances. If you have specific questions, please contact your physician or appropriate health care professional

What's Inside

Introduction 1

How Your Heart Works	2
What Is Angina?	4
Stable Angina	4
Unstable Angina	5
Angina Treatment Instructions	6
Heart Attack	7
Recognizing The Symptoms	7
How The Heart Heals	8

You can assist in your recovery if you have a good understanding about your heart and how coronary artery disease affects you.

Treatment of Coronary Artery Disease 9

Your Care In Hospital	9
Diagnostic Tests	10
Forms Of Treatment	11
Activity In Hospital	12
Self Care	12
Your Emotions	13

Ongoing Management 15

Medications	16
Heart Healthy Eating	18
Cardiac Rehabilitation	21
Returning To Work	21
Driving	22



*By following
your treatment
plan and making
a commitment to
lifestyle changes,
you can have a
healthier life.*

Risk Factors For Coronary Artery Disease 23

Non-modifiable Risk Factors 23

Modifiable Risk Factors 24

 Smoking 24

 High Blood Pressure (Hypertension) 24

 High Blood Cholesterol Levels 26

 Physical Inactivity 27

 Obesity 28

 Body Mass Index Table (BMI) 29

 Stress 30

 Diabetes 30

Risk Factor Quiz 31

Making Lifestyle Changes 33

Tips 33

Action Plan 35

What’s New In CAD? 37

Vitamins and Minerals 38

“Good” Fats? 38

Women And Heart Disease 39

Glossary 41

Resources 43

Websites 44

Coronary Artery Disease

By learning about your heart and taking active steps to keep your heart healthy, you will be on the road to a full and healthy life.

Now that you have been diagnosed with coronary artery disease (CAD, for short) you may wonder what this means to you. Coronary artery disease is the number one medical diagnosis for both men and women in Canada. While CAD has no definite cure, there are many things you can do to help yourself and live a full and active life. Part of your recovery is learning more about your condition and taking an active part in your treatment.

This booklet will give you a better understanding of your heart, how it works, and how coronary artery disease affects your body. You will learn about the symptoms of CAD, the diagnostic tests and treatments, and the risk factors that contribute to the development of CAD. You will also learn how to make heart healthy lifestyle choices a part of your daily life.

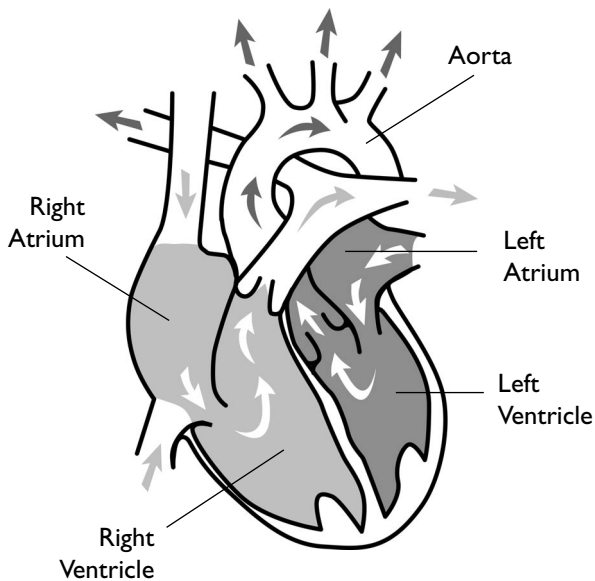
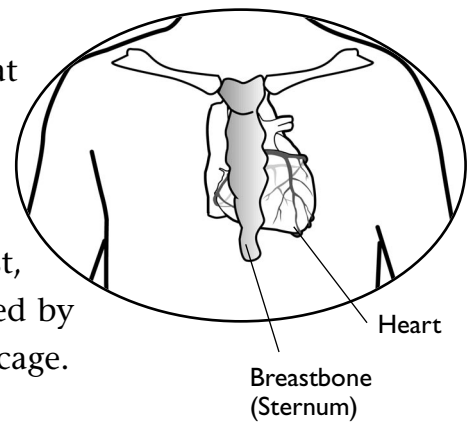
While your road to recovery begins in hospital, having a healthy heart lasts a lifetime! By learning about your heart and taking active steps to keep your heart healthy, you will be on the road to a full and healthy life.



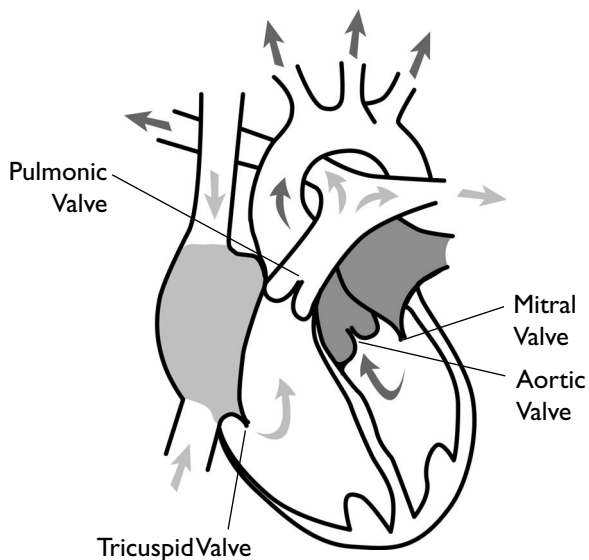
How Your Heart Works

Your heart works like
a two-sided pump.

The heart is a muscular organ that collects and pumps blood to all parts of the body. The normal heart is about the size of your fist. It lies in the middle of the chest, slightly to the left, and is protected by the breastbone (sternum) and rib cage.



Your heart works like a two-sided pump. The right side of the heart pumps blood to the lungs, where it gets rid of waste gas and picks up a fresh supply of oxygen. The left side of the heart receives blood from the lungs and then pumps it out to the entire body. The pumping action is your heartbeat.



Heart Valves

There are four chambers in the heart. The upper chambers of the heart are called *atria*; the bottom chambers are called *ventricles*. These chambers are separated by *valves*. These valves open and close when your heart beats. This opening and closing action keeps the blood flowing forward.

Coronary Arteries

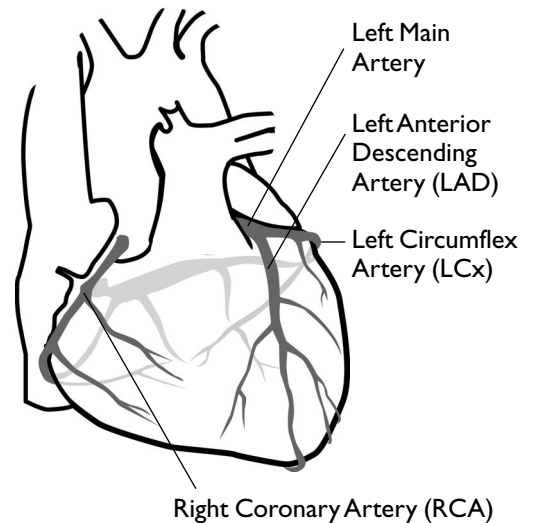
In order for the heart to work well, it needs a constant supply of oxygen. The heart receives its blood and oxygen supply from the coronary arteries.

The main arteries are:

- the **left main coronary artery** which divides into:
 - the **left anterior descending artery (LAD)** and
 - the **left circumflex artery (LCx)**.

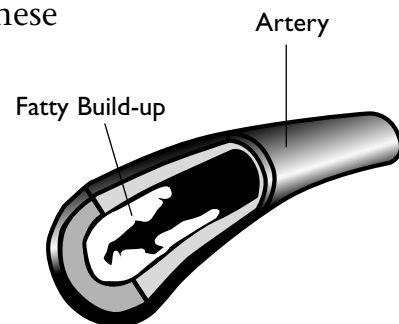
The LAD artery travels down the front of the heart; the LCx goes to the back of the heart.

- the **right coronary artery (RCA)** runs along the right side and to the bottom and back of the heart.



These arteries divide into smaller vessels to supply the entire heart with blood and oxygen. The pumping action of the heart depends on a good supply of blood and oxygen from these coronary arteries.

When everything is working well, the blood flows freely through these arteries. Problems arise, however, when these arteries become blocked or narrowed by a process called **atherosclerosis**. Atherosclerosis is a general term for thickening or a fatty build-up in arteries. This is similar to hard water deposits building up in water pipes. It is a slow process and develops over many years. When these deposits build up in the arteries it can decrease or block the flow of blood to the heart. This is referred to as **coronary artery disease (CAD)**. Having CAD can lead to angina (chest pain) or a heart attack (myocardial infarction). However, some people have no symptoms until there is complete blockage of the arteries.



What Is Angina?

Angina is the heart's way of telling you that there is not enough blood and oxygen supply to the heart

Angina is temporary chest discomfort or pain caused by coronary artery disease. It is caused by a partial blockage in the coronary artery(s). Angina is the heart's way of telling you that there is not enough blood and oxygen supply to the heart. The usual symptom of angina is **discomfort/pain** (ache, pressure, heaviness, tightness, burning feeling, numbness) in the chest OR the neck, jaw, arms, or back.

Angina may sometimes be triggered by:

- activity
- eating a very large meal
- emotional stress
- exposure to extreme hot or cold weather.

Stable Angina

There are two kinds of angina – stable angina and unstable angina.

Stable angina is usually predictable. In other words certain activities or stressful events cause it. Stopping the activity that brought on the attack, or taking Nitroglycerin, should relieve this type of angina.

- **Nitroglycerin** opens the heart's blood vessels wider to increase the supply of blood and oxygen to the heart. Nitroglycerin can be taken by a tablet you dissolve under your tongue or as a liquid you spray on or under your tongue. Sometimes a Nitroglycerin patch or long-acting tablet is used to control stable angina.

If you experience this type of angina, keep a record or diary of the time of day and what you were doing when you experienced angina. This may help you predict what situations bring on your angina.

If you find that certain activities cause your angina, you may take a Nitroglycerin spray or tablet before doing these activities. You should rest for a few minutes after taking Nitroglycerin to avoid dizziness and then carry on with your activity.

Unstable Angina

Unstable angina is often not predictable. It can occur at rest or even wake you from your sleep. Unstable angina usually means the blockage in the coronary arteries may be severe and must be treated.

The signs of unstable angina are:

- angina when you are at rest
- more frequent episodes of angina which last longer and are more intense
- changes in what brings on angina
- angina that is not relieved the same way as before , i.e., takes longer to get relief, need to take more nitroglycerin than usual.

If you experience any of these symptoms, you should see your doctor as soon as possible to assess your condition. If your doctor suspects that you have unstable angina you may require further testing, or even hospitalization, to decide on further treatment.

You should rest for a few minutes after taking Nitroglycerin to avoid dizziness and then carry on with your activity.

Unstable angina usually means the blockage in the coronary arteries may be severe and must be treated.

If you experience angina at home, follow these instructions for using Nitroglycerin:

1. Sit down and rest

2. If the chest pain/discomfort does not improve immediately, do the following:

- Place a Nitroglycerin tablet or spray under your tongue
- Wait 5 minutes
- If pain/discomfort is not relieved, take another Nitroglycerin tablet or spray
- Wait 5 minutes
- If discomfort is not relieved, take another Nitroglycerin tablet or spray
- **If pain/discomfort continues after 3 tablets or 3 sprays, immediately call 911 or your town's emergency number.**
- **NEVER** drive yourself to hospital when you are having chest pain/discomfort.

If your angina is relieved with less than 3 Nitroglycerin you do not need to go the hospital emergency.

3. If the chest pain/discomfort is relieved with rest or Nitroglycerin, rest for awhile and resume your activity at a slightly slower pace.

4. If your angina is relieved with less than 3 Nitroglycerin you do not need to go the hospital emergency.

Heart Attack

A heart attack occurs when the blood supply to your heart is seriously reduced or stopped due to blockage of the heart's arteries. The blockage is generally due to the build up of atherosclerosis, a blood clot, or a spasm in the coronary artery. When this happens the affected part of the heart muscle will be damaged and may die. The medical term for heart attack is *myocardial infarction* (MI).

If blood flow is not restored shortly after heart attack symptoms begin, some of the heart's muscle may be permanently damaged and die. Early treatment helps to restore blood flow and save heart muscle. Therefore you **must** get medical treatment as soon as you feel the symptoms of a heart attack.

Symptoms of a heart attack can range from being very mild, such as the discomfort of a toothache or indigestion, to severe or crushing pain. **The most common symptoms include:**

- **Chest discomfort or pain** (ache, heaviness, tightness, burning, pressure, tingling and/or numbness). You may also have pain or discomfort to one or both arms, your jaw, neck, shoulder or back.
- **Sudden sweating with cold, clammy skin.**
- **Nausea and/or vomiting.**
- **Shortness of breath.**
- **Weakness, dizziness or fainting.**
- **Extreme tiredness.**
- **OR a combination of any of the above**

If you have any of these symptoms you must seek medical help immediately!

Early treatment helps to restore blood flow and save heart muscle.

Therefore you must get medical treatment as soon

as you feel the symptoms of a heart attack.

If you think you are having a heart attack:

- Stop what you are doing and lie down.
- Take a Nitroglycerin tablet or spray and call an ambulance immediately.
- NEVER drive yourself to the hospital

With early treatment nowadays, most people do not have problems after a heart attack.

If you do develop any problems they can be treated right away.

How the Heart Heals after a Heart Attack

The healing starts the moment the damage has been done to the heart muscle. A number of chemical changes will occur in your body to help heal the injured area. With time the area of the heart muscle that has experienced the damage will form scar tissue. The heart will be somewhat weakened until the scar becomes tough and thick. Sometimes new vessels grow into the damaged area and allow blood to reach the injured area around the blocked vessel.

During the first few days you may have a slight fever and feel tired because of the healing activity in your heart. The rest of the heart, which feels the impact of the heart attack, also needs time to heal. Most often this healing process takes about 4 to 8 weeks. Some people heal more quickly than others so the recovery time will vary from person to person.

As with other medical conditions, there can be possible problems or complications after a heart attack. These include:

- Problems with the heart's pumping action ("**heart failure**")
- Interference with the heart's electrical system ("**arrhythmias**")
- Inflammation of the tissue around the heart ("**pericarditis**")

Treatment of Coronary Artery Disease

Your Care in Hospital

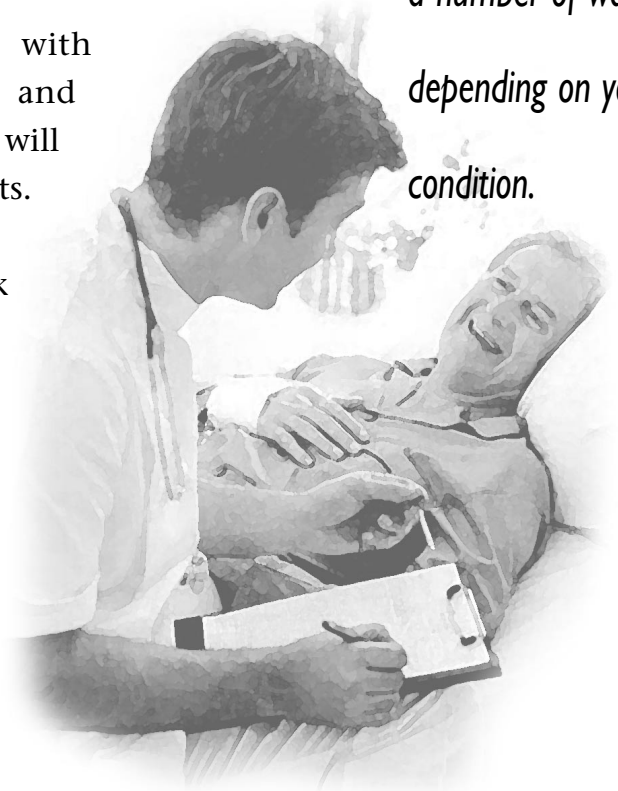
Coronary artery disease is treated in a number of ways, depending on your condition.

While in hospital you will be treated with medications to relieve your symptoms and restore the blood supply to the heart. You will also be monitored and have a variety of tests.

Your lifestyle plays a critical role in your risk for a heart attack, as well as your ability to recover from one. Your risk factors for heart disease will be discussed with you while you are in hospital (refer to page 23).

If you have any questions please talk to your nurse.

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Diagnostic Tests

If you have any of these tests, or other tests, you will receive more information and instructions at that time.

These tests may also be done as an outpatient after you go home from hospital.

Many tests will be used to help your doctor diagnose your heart problem and decide on a treatment plan for you. Some of these tests include:

- **Blood tests** – to test for certain enzymes and chemicals that are released in the blood during a heart attack. This helps to confirm the diagnosis of a heart attack. Blood work may also be done to test cholesterol levels.
- **Chest x-ray** – to check the size of the heart and the condition of your lungs.
- **Electrocardiogram (ECG)** – records the electrical activity of your heart. An *ECG* helps the doctor diagnose your heart condition, including a heart attack, and to follow the heart's healing process.
- **Telemetry monitoring** – this is a constant (24 hour) recording of your heart. The rate and rhythm of your heart is monitored on a screen by the nurse.
- **Echocardiogram** – this is an ultrasound image of the heart. “Sound waves” not x-rays are used to produce the image. This test shows the size and motion of your heart muscle and valves.
- **Thallium Scan** – a special x-ray which takes pictures of the chambers and muscle of the heart to show the blood supply to the heart muscle.
- **MUGA Scan** – a special x-ray to show how well your heart is pumping.
- **Cardiac Angiogram** – this is an x-ray study of the heart. A small catheter is placed into an artery or vein in the groin and passed through blood vessels until it reaches your heart. A special x-ray dye is injected into the catheter and into the heart's coronary arteries. This dye allows the doctor to see the chambers, valves or coronary arteries in your heart. This test is done in the Cardiac Cath Lab using special equipment and x-ray machines.

Forms of Treatment

The type of treatment you receive will depend on many factors, including your underlying heart disease. Your cardiologist will recommend which treatment is best for you. Please feel free to ask any questions about your care or treatment plan.

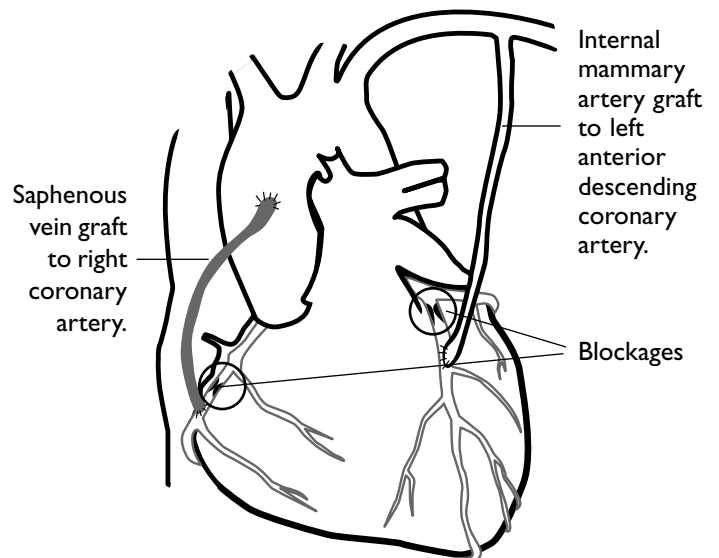
The most common forms of treatment include:

- **Medications** – may include medications for pain relief (e.g., nitroglycerin), blood thinners, or other medications to help the heart heal and work better.



- **Coronary Angioplasty**, most often called **Angioplasty** – this is a similar procedure to cardiac angiogram. This procedure is done to dilate (open up) a narrowing in your coronary artery. The artery is dilated by inflating a special catheter with a balloon on the tip. A **stent** may be used to help the artery stay open. The stent is permanent and stays in the artery after the catheter is removed. You can get more information on this procedure by reading the teaching booklet “Cardiac Catheterization/Coronary Angioplasty” and “Coronary Stent” (available on all patient care units).

- **Coronary Bypass Surgery** – is a form of heart surgery. A new artery (or vein) is attached to the coronary artery to reroute (bypass) the blood around the blocked/narrowed artery. If this procedure is selected for you, your nurse and doctor will give you more information. You will also be given the teaching booklet “Cardiac Surgery” to read.



These forms of treatment do NOT cure CAD. They are used to increase the blood supply to the heart and to help make the heart work better.



Activity in Hospital

*While you are
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While you are in hospital your level of activity will be determined by the healing rate of your heart. Usually your activity level is guided by how well you tolerate it (e.g., angina, shortness of breath, dizziness, light-headedness, tiredness) and will be gradually increased.

You will start by sitting up in a chair for short periods at a time and progress to walking in your room and in the halls. Your nurse will teach you about your activity while you are in hospital. You will also be given some guidelines on resuming your daily activities when you get home from the hospital. These guidelines are in the teaching booklet “Activity and Exercise Guidelines After A Heart Attack”.

Self-Care

There are several things you can do to help yourself and the health care team while you are in hospital.

- **Report all symptoms.** If you experience any angina or shortness of breath, let your nurse know right away. You should also let your nurse know when you have taken nitroglycerin to relieve your angina.
- **Ask questions!** Be sure you understand what is happening to you and what the treatment plan is for you.
- **Be informed.** Attend the cardiac classes on the nursing unit if you are able. (You are also welcome to attend these classes after you are discharged.) Ask for reading material about your condition, any of the tests you are having, or information about your treatment.

Your Emotions

It is not uncommon to feel your emotions go up and down like a roller coaster while in hospital.

The diagnosis of heart disease can be a very frightening experience for you and your family. You may feel angry, anxious, frustrated and depressed about what has happened to you. These feelings are normal and take time to resolve. It is important to talk about these feelings with your health care provider. You may also ask to speak to a social worker to help you deal with these emotions.

Educating yourself and being informed can help to relieve some of the anxiety and fear you and your family may feel. If you have any concerns or have questions about your condition or treatment plan, do not hesitate to ask your health care team. You may also wish to attend the education classes that are offered while you are in hospital and after you go home.

If you wish to read more about your emotions ask for a copy of the “Stress Management” booklet and/or “The Emotional Implications of Cardiac Surgery”.

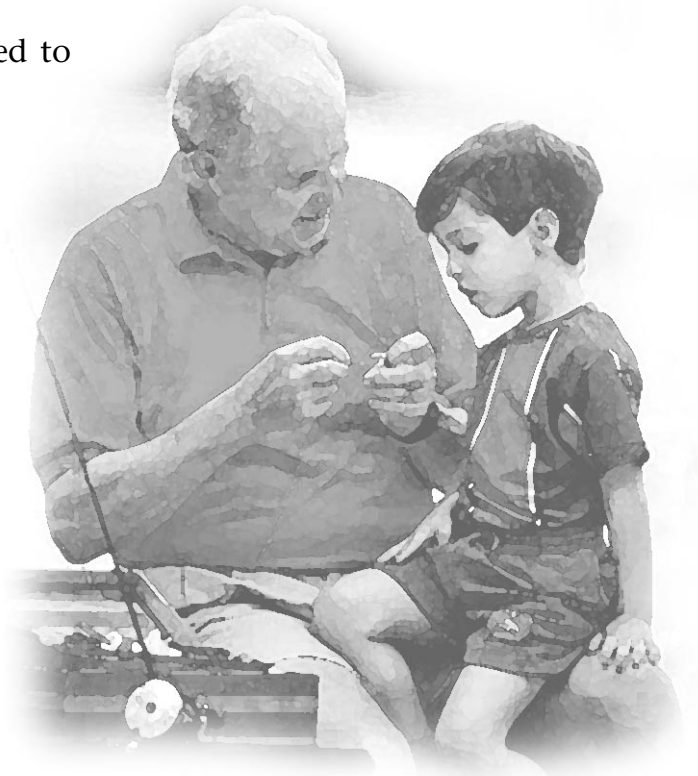
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Ongoing Management of Coronary Artery Disease

Once you have developed CAD, you will need to manage it the rest of your life.

You may have to take some medication(s) and make some changes in your lifestyle. You may also take part in a cardiac rehabilitation program.

By following your treatment plan and making a commitment to make some changes in your daily habits, you can have a healthier life.



Taking Medications

Heart medications do not cure heart disease.



Heart medications do NOT cure heart disease. They are used to control your heart condition and the symptoms you may have. You may need to take these medications for a long time, maybe even the rest of your life. It is important to take your medications as prescribed in order to manage your heart condition.

They are used to control your heart condition and the symptoms you may have.

Medications are used to promote healing (of the heart muscle), prevent complications and to prevent another coronary (heart) event. They may do one or many of the following things:

- Prevent and control angina
- Slow down the heart rate
- Help to prevent further heart attacks by making the blood thinner to prevent blood clots; lowering blood cholesterol levels; lowering blood pressure. You may be on a “high blood pressure” pill even if your blood pressure is normal. Your heart doesn’t have to work as hard if your blood pressure is low.
- Prevent further muscle damage following a heart attack
- Help heart muscle to heal after it has been damaged
- Treat abnormal heart rhythms
- Help the heart beat stronger and work better
- Help to get rid of extra fluid (edema) in the body

Note: You should receive an information sheet about each medication you are taking before you go home. This information sheet will tell you how the medication works, how to take it, and how to prevent possible side-effects. Please ask your doctor, nurse, or pharmacist if you have any questions about your medication.

General Instructions for Taking Medications

- It is important that you know the name and the dose of the medication you are taking, and how often you should take it. Make a list of all your medications, doses, and times taken each day on a card, and carry it with you at all times.
- Be sure to take the medication as instructed. Ask your pharmacist or a member of the health care team (e.g., nurse, doctor) if you are not clear about how and when to take your medication (e.g., with meals, at bedtime). **Do NOT stop** taking any of your prescribed medication before consulting your doctor.
- You must take your medications regularly and on schedule to get the most benefit. Your pharmacist can give you some tips on how to do this. You can also buy special pill containers (e.g., a dosette) to organize your pills for each day.
- Check with your pharmacist or doctor before you take any over-the-counter medication. Some of them can interfere with the heart medication you are taking.
- Do not skip any doses or let your medication run out. Get your prescription refilled early.
- Watch for any possible side-effects from the medication. Side-effects can vary, depending on the type of medication you are taking. Most side-effects do not last very long. However, any symptom that seems abnormal or different for you should be discussed with your doctor. Unwanted side-effects can usually be managed by making a change in the dose or the medication. Make sure that you receive information sheets about every medication you will be taking. These information sheets will tell you about the drug and how to prevent possible side-effects.
- Some heart medications are expensive. If you have no health coverage for the cost of medications, mention this to your doctor or nurse. Sometimes less expensive medications can be used or extra funding can be arranged.

Some of the herbal remedies on the market can interfere with the heart medications you are taking. Be sure to tell your doctor or pharmacist if you are taking any herbal medicines so they can provide appropriate advice.

Heart Healthy Eating

There is a strong link between how people eat and the risk of developing heart disease. By following Canada's Food Guide for Healthy Eating and by lowering the fat in your diet, you can help to lower your risk of developing further heart problems.

There is a strong link between how people eat and the risk of developing heart disease.

Use these guidelines to help you make heart healthy food choices:

✓ **Eat at least 3 times a day.**

✓ **Choose vegetables and fruit more often.**

- Eat at least 5 servings of vegetables and fruit every day
- Eat some dark green and orange vegetable/fruit every day. These types of foods are high in antioxidants. Antioxidants are vitamins and minerals that have been shown to help fight diseases, including heart disease.

1 serving is: 1/2 cup of vegetable or fruit, 1 cup salad or 1/2 cup juice

✓ **Choose whole grains more often.**

- Eat at least 5 servings of whole grain breads and cereals every day.
- Whole grain products help increase the fiber in your diet, which is good for your heart.

1 serving is: 1 slice bread or 1/2 cup pasta, rice or cereal

✓ **Choose low fat dairy products**

- Eat 2 to 4 servings of low fat dairy products every day.
- Choose skim or 1% milk, low fat yogurt and low fat cheese (less than 20% MF). Dairy products are a major source of calcium but are also high in saturated fats. So it is important to choose low fat products.

1 serving is: 1 cup milk, 3/4 cup yogurt or 1-1/2 ounce cheese

✓ **Choose lean meats and poultry, and fish**

- Eat up to 6 ounces of lean meats, poultry or fish a day
- Trim fat on meat and remove skin on chicken/turkey
- Include fish 2 to 3 times a week
- Try vegetarian meals using legumes such as kidney beans, baked beans, lentils or split peas.
- Eat up to 4 eggs a week

✓ **Choose more unsaturated fats** (monounsaturated, polyunsaturated and omega 3-fats). These are a good choice when choosing fats.

- Unsaturated fats are usually liquid at room temperature.
- These include fats such as:
 - canola oil and olive oil
 - flax oil
 - non-hydrogenated, soft tub margarine
 - natural or old-fashioned peanut butter
 - nuts and seeds (2 Tbsp)
 - fish (such as salmon which is high in omega-fats)

✓ **Reduce your intake of saturated fats.** These fats are linked with an increased risk of CAD.

- Saturated fats are solid at room temperature.
- These include fats such as:
 - animal fats, such as butter, lard and beef fat
 - hydrogenated vegetable oil, shortening or block margarine
 - tropical oils such as coconut oil
 - fried and deep fried foods

✓ **Be sensible about added fats**

- 1 teaspoon provides 4 grams of fat! Limit added fats or oils to 3 to 6 teaspoons a day.

Dark green and orange vegetables and fruit are high in antioxidants. Antioxidants are vitamins and minerals that have been shown to help fight diseases, including heart disease.

*By following
Canada's Food
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- ✓ **Choose herbs and spices to add flavour to your foods.**
Reduce the added salt or spices containing salt (e.g., garlic salt)
- ✓ **Reduce the use of salty foods** such as processed meats, canned soups, salty snacks, and condiments such as soy sauce and BBQ sauce.
- ✓ **Drink alcohol in moderation.** You should discuss the use of alcohol with your doctor before you drink.
 - Too much alcohol can:
 - lead to high blood pressure or make it more difficult to control in those people who are being treated for high blood pressure.
 - increase triglycerides in the blood
 - increase calorie intake and lead to weight gain.
 - The general guideline for drinking in moderation is no more than 2 drinks a day. One drink is equal to 12 ounces of beer, 4 to 5 ounces of wine, 1-1/2 ounces of hard liquor.
- ✓ **Limit caffeine beverages** (e.g., coffee, tea, cola) to 4 cups a day. Replace caffeinated drinks with more nutritious beverages such as water, juice, low fat milk, or try herbal tea or decaffeinated coffee.



For more information, ask for a copy of “Healthy Eating: Take it to Heart”.

Cardiac Rehabilitation

Rehabilitation plays an important role in the ongoing management of CAD. The goal of cardiac rehabilitation is to help you achieve the best level of heart health possible. The programs usually include an assessment of your heart function, personal counseling and education on risk factors. These programs can help you recognize and change unhealthy habits.

You may wish to attend the Cardiac Wellness Program in Calgary or a similar program in your community. Or you may choose to attend a rehabilitation program recommended by your cardiologist or family doctor. Ask a member of the health care team for more information.

The goal of cardiac rehabilitation is to help you achieve the best level of heart health possible.

Returning to Work

Being able to return to work and take part in daily activities is an important part of well-being for many people with CAD. Fortunately, this is possible in most situations.

Deciding **if** and **when** you are ready to return to work will depend on many things:

- Your heart condition and your general health
- The type of work you do (e.g., does it involve manual labour, shift work, long hours)
- The mental demands of the job (e.g., does it involve time pressures, is it stressful)

Your cardiologist or family doctor is best able to consider all these factors and advise you about returning to work. Remember, too, that working from home is still work.

Being able to return to work and take part in daily activities is an important part of well-being for many people with CAD.



Talk to your employer honestly about your needs and ability to return to work. You may need to return on a part-time basis or require a change of duties to help you gradually return to work. This also applies to any volunteer work you may do..

Finally, it is important to remember that house and yard work are also work. Making meals, shopping, doing the laundry, making beds, vacuuming, mowing the lawn and cleaning the house or garage are all work! Follow your doctor's advice about these activities just as carefully as you do for returning to work outside the home.



Driving

There are some restrictions on driving for people who have CAD. These regulations and guidelines vary between provinces. Check with your doctor to see if any of these restrictions apply to you. It is also recommended that you check with your Car Insurance company to find out if there are any other restrictions on your driving.

Risk Factors for Coronary Artery Disease

There is no single cause of heart disease. Instead, research shows that there are several factors that contribute to the development of heart disease in people. These are called risk factors. Risk factors are divided into two groups — those you cannot change (non-modifiable) and those you can change or control (modifiable).

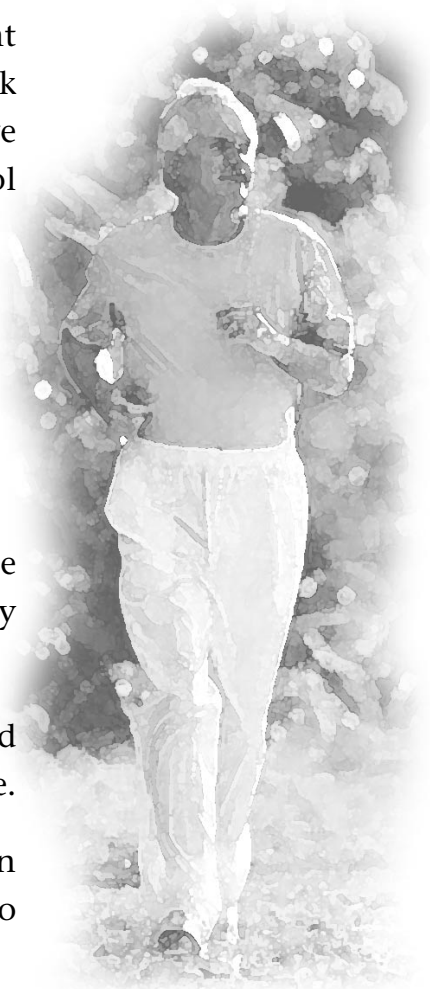
Non-modifiable Risk Factors

The risk factors that you cannot change are:

Heredity: If you have a family history of heart disease you are more likely to develop CAD than someone who has no family history.

Age: As we get older our risk for CAD increases. Men over 40, and women over 50, are at a higher risk for CAD than younger people.

Gender: Men tend to develop CAD at an earlier age than women. However, after menopause, women are just as likely to develop CAD as men.



Modifiable Risk Factors

The risk factors you **can** change or control are:

*Studies have shown
that the risk for
heart disease drops
by 50 percent within
the first year of
not smoking.*

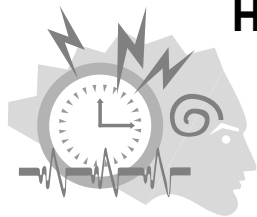


Smoking: Quitting smoking is the best thing you can do for your heart. People who smoke have twice the risk of a heart attack than people who do not smoke.

Smoking damages the heart and the blood vessels in several ways:

- causes blood vessels to narrow and speeds up the process of atherosclerosis
- increases blood pressure and makes your heart work harder
- decreases the amount of oxygen in your blood (which can make angina worse)
- thickens the blood so that it forms clots more easily.

Studies have shown that the risk for heart disease drops by 50 percent within the first year of not smoking. So if you are a smoker, deciding to quit is a positive step towards having a healthy heart. Quitting smoking can be a challenge. Talk to your health care team about ways to quit and what resources are available to help you.



High Blood Pressure (hypertension): Although the exact cause of most high blood pressure is not known, it can be controlled. Over time, high blood pressure damages the arteries and makes it easier for fatty deposits to build up inside the artery walls. In turn, this leads to atherosclerosis and the development of CAD. High blood pressure also makes the heart work harder, causing it to enlarge and weaken over time. So, if you have high blood pressure it is important to control it.

Blood pressure is measured in two numbers — e.g., 130/80 mmHg. The top number is called *systolic*. This is the pressure in the arteries when the heart beats and pushes blood through the body. The bottom number is called *diastolic*. This is the pressure maintained in the arteries when the heart is resting. Both numbers are important in the treatment of high blood pressure.

The Canadian Guidelines for the Management of Hypertension (1999) recommend a goal blood pressure of less than 140/90 mmHg for someone being treated for high blood pressure. A “goal” blood pressure for people with CAD, or other chronic diseases, may be lower than this. For example, the Canadian guidelines (1999) recommend a blood pressure of less than 130/80 mmHg for people with diabetes. Check with your doctor to find out what a healthy blood pressure should be for you.

You can help control high blood pressure or even prevent it by making some lifestyle changes. These include:

- weight loss and/or staying at a healthy weight
- using alcohol in moderation
- regular exercise
- for people who are “salt-sensitive”, cutting down on the amount of added salt and salty food
- eating a healthy diet (fruits, vegetables, low-fat products)

Sometimes medication may be needed to lower blood pressure. If medication has been prescribed to control your high blood pressure, DO NOT STOP taking it. If you have questions about the medications you are taking for your high blood pressure talk to your doctor or pharmacist.

Most adults should have their blood pressure checked at least once a year. People with CAD may have to have their blood pressure checked more often. Check with your doctor to see how often you should have this done.

Check with your doctor to find out what a healthy blood pressure should be for you.

You can help control high blood pressure or even prevent it by making some lifestyle changes.

High Blood Cholesterol Levels: Cholesterol is a fatty substance that occurs naturally in the body. The liver makes most of the cholesterol circulating in the blood. The rest comes from the foods we eat.

The main types of cholesterol are:

- **High Density Lipoproteins (HDL)** — HDL is considered the “good” cholesterol because it helps keep the cholesterol from building up in your arteries. The higher your HDL cholesterol is, the better.
- **Low Density Lipoproteins (LDL)** — LDL is considered the “bad” cholesterol as it leaves a build up of cholesterol inside the artery walls. A “high” LDL cholesterol level increases your risk for CAD. Therefore, the lower your LDL cholesterol is, the better.
- **Triglycerides** — Triglycerides are another form of fat carried in the blood. Most of the body’s fat is stored in form of triglycerides. High levels of triglycerides can increase a person’s risk of CAD.

*Lowering one’s
bad cholesterol level
can reduce the
risk of coronary
artery disease.*



High levels of blood cholesterol, especially LDL cholesterol, have been found to increase the risk of CAD. The good news is that lowering one’s cholesterol level can reduce the risk. Eating a healthy diet and making healthy lifestyle choices (i.e., weight loss, regular exercise, stop smoking) can help lower cholesterol. Some people may also need to take medication to reduce their cholesterol levels.

People with CAD should know what their cholesterol level is, including the HDL and LDL.

The Canadian Cardiovascular Society (2000) recommends the following cholesterol levels for people with CAD:

TOTAL Cholesterol	less than 4.2
HDL level	greater than 1.0
LDL level	less than 2.5
Triglycerides	less than 2.0
Total Cholesterol/HDL (ratio)	less than 4.0

Check with your doctor to see what your goal cholesterol levels should be. Your health care team can work with you to help keep your cholesterol in a healthy range.

Physical Inactivity: Lack of physical activity, or regular exercise, is now recognized as a major risk factor for heart disease. Research has shown that people who are inactive are at twice the risk for developing heart disease as those who exercise. Regular exercise can help to lower blood pressure, improve cholesterol levels, control blood sugar levels (which is important in managing diabetes) and lose weight. Exercise is also a great way to reduce or relieve stress. While exercise will not change what has already happened to your heart, it will improve the overall efficiency of your body so that your heart does not have to work so hard.

Lack of physical activity, or regular exercise, is now recognized as a major risk factor for heart disease.

It is never too late to start exercising! Doing some form of aerobic exercise for 20 to 30 minutes, 3 to 5 times a week will give you the benefits mentioned above. Aerobic exercise includes those activities that get the large muscles of your arms and legs moving, such as walking, bicycling, skating, swimming, jogging, and cross-country skiing. Remember to always warm up at the beginning of exercise and to take time to cool down at the end.



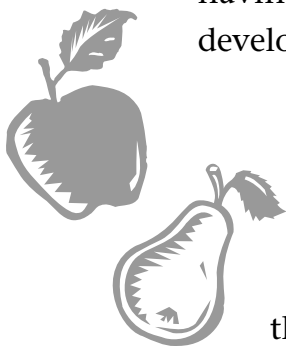
It is never too late to start exercising!

Your exercise program should not cause angina.

Your exercise should feel moderately intense. It should never feel “hard”. You should be able to talk and breathe comfortably during your exercise. Your exercise program should not cause angina. If it does, decrease your distance and your speed. If you are still having problems with angina, talk to your doctor.

Talk to a member of the health care team for specific guidelines before starting or resuming an exercise program. There are health professionals who specialize in setting up exercise programs for people who have heart problems or CAD. You may also read the booklet “Activity and Exercise Guidelines After a Heart Attack” for more information.

Obesity: People who are more than 30 percent over their “healthy” body weight are more likely to develop CAD. Being overweight puts strain on the heart and can increase the risk of having high blood pressure, high blood cholesterol and developing diabetes.



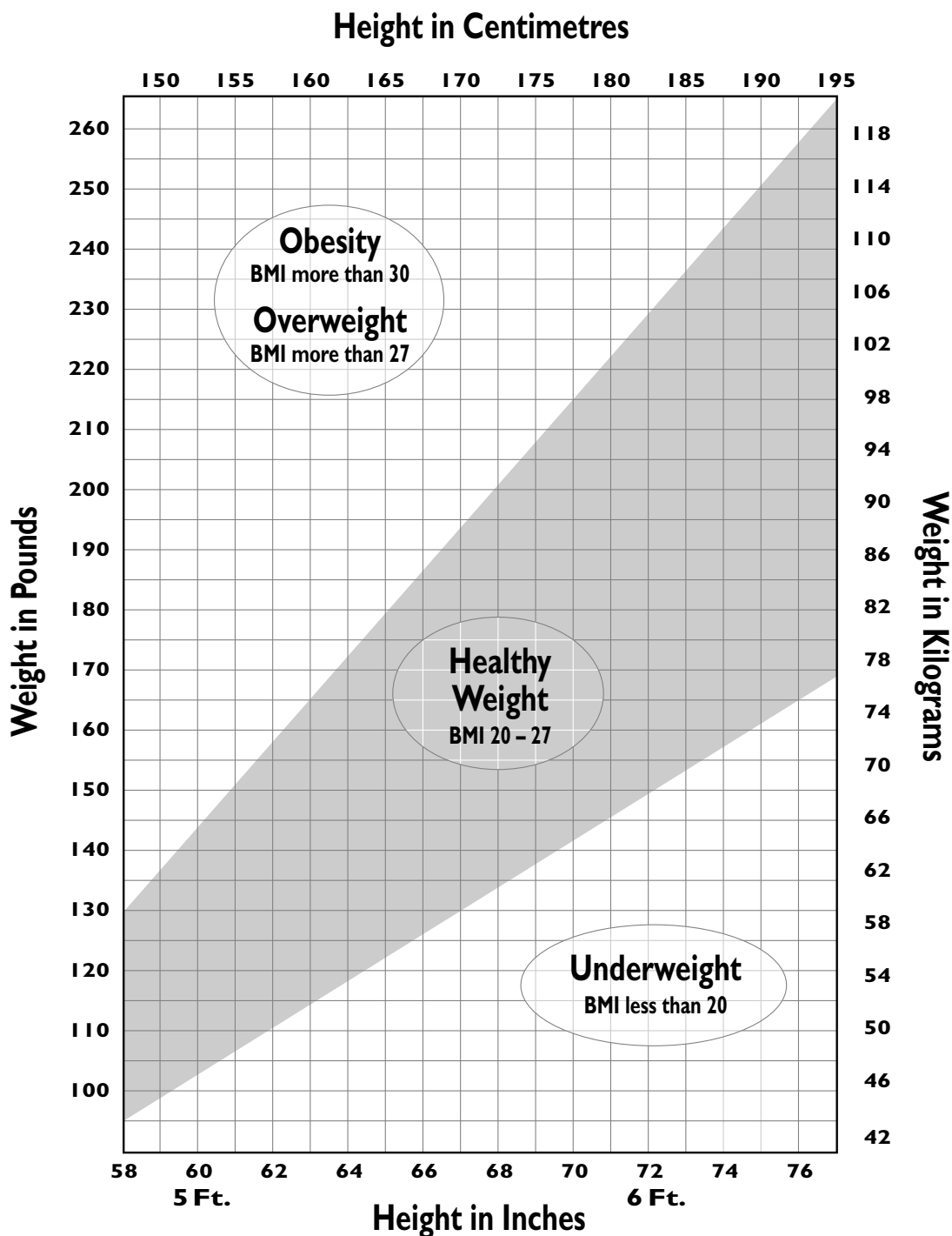
Where you store your extra weight may be even more important than the weight itself. People who carry their extra weight around their waist (“apple” shape) have a higher risk of heart disease than those who carry it around their hips (“pear” shape). The notches in your belt, not just the scale, are a better way to measure successful weight loss.

Body Mass Index (BMI) is the recommended measurement of body weight for healthy adults ages 20 to 65 years. The BMI includes weight from all sources, including fat. The BMI scale is divided into zones that are used to identify weight as a possible risk factor for CAD for both men and women. A healthy body weight is a BMI between 20 to 27. The higher the BMI, the greater the risk for health problems. Take the test — find out what your BMI zone is by using this scale.

Body Mass Index Table (BMI)

The BMI is based on a formula that divides weight by height. To use this table, find your present weight then move across to your height to find your zone.

$$BMI = \frac{WEIGHT (kg.)}{[HEIGHT (m)]^2}$$



If your BMI is in an “unhealthy” zone, talk to a dietitian to help you reach a healthy weight.

You can also get more information on healthy eating in “Healthy Eating: Take It To Heart”.

There are many healthy ways to help you manage the stress in your life.

Stress: Recent studies have found that stress can be a risk factor for developing CAD. While the exact role of stress in heart disease is not clearly understood, constant or unrelieved stress can make the heart work harder and increase blood pressure, cholesterol and fat levels. All of these factors are related to an increased risk for CAD. People under stress may eat too much, drink too much alcohol, or use cigarettes to cope with stress. These unhealthy habits also increase the risk for heart disease.

If stress, or your ability to cope with stress, is a problem for you, talk to your doctor or a health professional about it. There are many healthy ways to help you manage the stress in your life. You may also ask to read the teaching booklet “Stress Management” which is available on all units.

Good control of diabetes in hospital and at home can help to reduce the risk of further heart disease by 30 percent or more.

Diabetes: Diabetes is a disease in which the body does not make enough insulin or cannot properly use the insulin. When this happens the glucose (sugar) stays in the blood and blood sugar levels rise. Diabetes, or elevated glucose levels, can damage the arteries. People who have diabetes are two to four times more likely to develop CAD. People with diabetes are also more likely to have high blood pressure, high LDL, low HDL and high triglycerides – all major risk factors for CAD. Good control of diabetes in hospital and at home can help to reduce the risk of further heart disease by 30 percent or more.

So it's important to control your diabetes as well as manage the other risk factors you may have. Eat right! Talk to a dietitian to help you plan healthy and enjoyable meals that will manage both your diabetes and heart disease. You may also need to lose some extra weight and add regular exercise to your lifestyle. While you are in hospital, ask your nurse or dietitian about any support or information you may need to help you manage your diabetes when you get home.

Risk Factor Quiz

Knowing what risk factors you have for CAD is the first step in helping you to reduce your risk. Take this simple test to find which risk factors may be contributing to your heart problem. The results can help put you on track for healthy lifestyle choices.

Family History/Gender	Yes	No
Has anyone in your immediate family ever had a heart attack? Stroke? Cardiac bypass surgery? Angina?	<input type="checkbox"/>	<input type="checkbox"/>
Did anyone in your immediate family develop coronary artery disease before the age of 50?	<input type="checkbox"/>	<input type="checkbox"/>
Are you a male over 45 years of age?	<input type="checkbox"/>	<input type="checkbox"/>
If you are woman, have you gone through menopause or have you had your ovaries removed?	<input type="checkbox"/>	<input type="checkbox"/>
Personal History		
Do you smoke cigarettes?	<input type="checkbox"/>	<input type="checkbox"/>
Do you have high blood pressure or have you ever been told you have high “blood pressure”?	<input type="checkbox"/>	<input type="checkbox"/>
Have you been told that your cholesterol level is “too high”?	<input type="checkbox"/>	<input type="checkbox"/>
Do you have diabetes?	<input type="checkbox"/>	<input type="checkbox"/>
Is your weight above a healthy BMI range? <i>(To find out what your BMI is, use the chart on page 29)</i>	<input type="checkbox"/>	<input type="checkbox"/>
Do you exercise or get some form of physical activity less than 3 times a week?	<input type="checkbox"/>	<input type="checkbox"/>
Do you find it difficult to deal with stress?	<input type="checkbox"/>	<input type="checkbox"/>

Your Score:

Count up the number of YES boxes you checked off. The more YES answers you have, the higher your risk for coronary artery disease.

Talk to your health care professional about your answers and develop an action plan to lower your risk.

If you don't know your cholesterol level or blood pressure, ask your health care provider.

Making Lifestyle Changes

Work on changing one lifestyle habit at a time.

Making lifestyle changes can be hard work and requires a lifetime of commitment. The challenge is to break old habits and to make new healthy habits a part of your daily life.

Making lifestyle changes is a process that occurs over time. Some people are more ready to make a change than others.

Once you're successful in one area, then start working on changing another one.

Here are some tips to help you make positive lifestyle changes:

- If you're thinking about making a change but haven't quite committed yourself to it, try thinking about all the good reasons to change.
- Work on changing one lifestyle habit at a time. Once you're successful in one area, then start working on changing another one.



*You can make a
difference!*



*By making healthy
lifestyle choices you
can help to manage
your heart disease
and enjoy a full and
healthy life.*

- Don't take an all or nothing approach. For example, if you need to cut down on your fat intake and you've always enjoyed french fries, don't tell yourself you can never have them again. Instead, try cutting down on the number of times you have french fries. Once you feel okay about that level, cut down again.
- Once you've decided to make a change, make a plan that is realistic and workable. For example, once you've decided to do some form of regular exercise, choose an activity that you enjoy and do it at a convenient time.
- Get the help of friends and family to support and encourage you when you're ready to start work on making the change.
- Reward yourself when you are successful. But make sure they are healthy rewards. For example, plan to go to a movie once you've lost 5 pounds. Don't plan to treat yourself to a double fudge sundae for losing weight.
- Make some changes in your household which remind you to support your new lifestyle. For example, remove the cookie jar from the cupboard, remove ashtrays from the house, keep your running shoes at the door.
- Plan ahead for the times that you know will be difficult. For example, if you are trying to develop healthier ways of dealing with stress and a particular work situation always causes you stress, then think of ways you can remove yourself from this situation BEFORE it happens.
- Remember that you will likely have slip ups. Decide ahead of time that slipping up on your plan for change is not a reason to give up. If you persist, then the change will eventually become a new habit that you don't even think about.

Action Plan

Making healthy lifestyle choices is good for your health and your heart. Even when you know what you should or should not do, it's not always easy to make lifestyle changes. Use this ACTION PLAN to help you set some goals and a plan to achieve them!

“What do I want to change or do better?”

(e.g., quit smoking ; lose weight; eat healthier; get more exercise)

“What is my goal”

(e.g., lose 1/2 pound a week until I reach a healthy weight; lower my cholesterol level by ____ ; walk 30 minutes, 3 times a week)

“How will I do that?”

(e.g., cut down on high fat/high sugar foods; eat more vegetables and fresh fruit; eat a good breakfast)

“Who can help me stick to my plan?”

(e.g., my spouse, someone in my family; my friend(s), my co-workers)

“How will I reward myself for reaching my goal?”

(e.g., go to a movie, listen to my music; read a book, go to your favourite restaurant)

Good luck in making your lifestyle change!

If you think you need some help along the way talk to a member of the Heart Health team. They can give you suggestions on ways to meet your goals.

What's New in Coronary Artery Disease

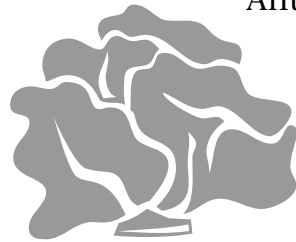
These days there is always some new cure or treatment for heart disease on the television or in the newspaper. You may even find miracle cures or breakthroughs while surfing the Internet. While there is new and exciting research in heart disease, many of these trends are still under investigation or are not based on scientific facts.

To help you make informed decisions about your health, the Heart Health team has selected some of the more popular trends or questions related to heart disease. If you have any questions or would like more information on a topic, talk to a member of the health care team.



Vitamins and Minerals

The Use of Antioxidants



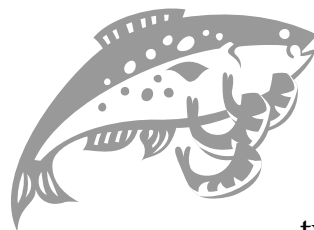
Antioxidants are vitamins, minerals and other substances found in foods that help fight disease, including heart disease and some cancers. It has been found that antioxidants help prevent LDL cholesterol from building up in the arteries. The dark green and orange vegetables and fruit are high in antioxidants. So eat your spinach and broccoli! It's good for you and your heart.

Vitamins

Vitamin E and Vitamin C have not been scientifically proven to prevent CAD. However, these vitamins are still safe to take as recommended by your doctor.

A healthy diet includes at least one fish meal a week, with the goal of eating fish up to 3 times week.

Are There Any “Good” Fats?



Yes! Monounsaturated fats and omega-3 fats do not increase our cholesterol level and may actually help protect the blood vessels. The oils in fatty fish such as salmon, trout and shellfish are high in this type of fat. A healthy diet includes at least one fish meal a week, with the goal of eating fish up to 3 times week. So even if you're from the prairies, eat more fish! You can choose fresh, frozen or canned fish.

Women and Heart Disease

Did you know that CAD is the leading cause of death for women in Canada? More women die from CAD than all forms of cancer. So it's important that women know what they can do to prevent heart disease and what the latest facts are on treatment. Women tend to have less CAD than men until they reach menopause. Then their risk for CAD increases dramatically and even passes the men. We also know that women who have developed CAD do not recover as well as men, although the reason for this is not really known.

The situation may be improving. Women are being diagnosed with CAD sooner, and treatment started earlier. Many of the risk factors which have been linked to women and heart disease can be controlled. These include:

- cigarette smoking
- obesity
- a low level of HDL cholesterol
- high triglycerides
- diabetes



If any of these apply to you take some action! Make some positive lifestyle changes that will be good for your health and your heart.

Hormone Replacement Therapy?

The use of Hormone Replacement Therapy (HRT) to prevent and help treat CAD has received a great deal of attention in both the public and medical press. However, a recommendation regarding the usefulness of HRT in post-menopausal women cannot be made at this time. Women with CAD who are considering the use of HRT should discuss both the risks and benefits with their doctor before making a decision.

Many of the risk factors which have been linked to women and heart disease can be controlled.



Despite all we know about heart disease there are still many questions to be answered.

Reduce your risk of coronary artery disease by living a healthy lifestyle.

Several studies are trying to identify other risk factors that may be related to heart disease or looking at different ways of preventing or treating CAD.

It's too early to know if any of these theories will make a difference in the treatment and prevention of CAD. In the meantime, the best advice is to reduce your risk of CAD by living a healthy lifestyle.

Glossary

Angina: a temporary chest discomfort or pain caused by a partial blockage in the coronary artery(s).

Angiogram: a special x-ray which uses a dye and a catheter to show the coronary arteries and the chambers or valves of the heart.

Angioplasty: a procedure where a special catheter with a balloon is used to dilate (open up) the clogged vessels(s) in the heart. Angioplasty is a form of treatment for coronary artery disease but does not cure it.

Atherosclerosis: a thickening or build up of fatty deposits in the arteries. This is often called “hardening of the arteries”.

Arrhythmia: an irregular or abnormal rhythm or rate of the heartbeat.

Atrium: one of the two upper chambers of the heart.

Blood Pressure: the pressure of blood on the walls of the arteries or the force that keeps blood moving through the body. Blood pressure is measured at two levels — **systolic pressure** (the pressure inside the arteries when the heart beats) and **diastolic pressure** (the pressure inside the arteries when the heart is resting).

Cholesterol: a fatty substance made by the liver. The body needs cholesterol to work properly. However, too much cholesterol in the blood is a risk factor for heart disease. The main types of blood cholesterol are **high density lipoprotein (HDL)**; the “good” cholesterol, and **low density lipoprotein (LDL)**; the “bad” cholesterol.

Coronary Artery Bypass: a type of heart surgery which uses a vein or artery to go around (bypass) one or more blockages in the coronary arteries. Coronary artery bypass surgery is done to improve blood flow to the heart.

Coronary Artery Disease (CAD): a condition caused by thickening or narrowing in the walls of the arteries that supply blood to the heart. This causes less blood flow to the heart and can lead to angina or a heart attack.

ECG or Electrocardiogram: a tracing of the electrical activity of the heart.

Heart Failure: a condition where the heart cannot pump enough blood for the body's needs. Heart failure can be treated with medication, diet and other lifestyle changes.

Heart Rate: the number of times the heart beats in a minute.

Hypertension (High Blood Pressure): the medical term for blood pressure that remains higher than normal.

Myocardial Infarction (Heart Attack): the medical term for heart attack. This happens when there is a blockage in a coronary artery which prevents blood from getting to the heart.

Pericarditis: an inflammation of the tissues around the heart.

Triglycerides: is a form of fat that is carried in the blood. Most of the body's fat is stored as triglycerides. A high level of blood triglyceride is a risk factor for heart disease.

Ventricle: one of the two lower chambers of the heart that receive blood from the atria (upper chambers of the heart). The right ventricle pumps blood to the lungs and the left ventricle pumps blood to the rest of the body.

Resources

The following teaching materials have been developed by the Heart Health Education Committee and are available free-of-charge:

Activity and Exercise Guidelines After A Heart Attack

Air Travel With A Heart Condition

Coronary Angioplasty

Cardiac Catheterization / Coronary Angiogram

Cardiac Surgery

Cardiac Surgery: The Emotional Implications

Coronary Angioplasty

Coronary Stent

Energy Conservation & Work Simplification

Healthy Eating: Take It To Heart

Heart Healthy Eating

Heart Healthy Shopping Guide

Sexuality and Heart Disease

Stress Management



Websites

The internet offers a wealth of information on a variety of topics. The following websites are related to the topic of coronary artery disease.

**Calgary Regional Health Authority
Health Connection webpage
www.crha-health.ab.ca**

**CRHA Angioplasty Program
www.fhangioplasty.com**

**Becel Canada
www.becelcanada.com**

**Canadian Diabetes Association
www.diabetes.ca**

**Canadian Dietitians Association
www.dietitians.ca**

**Canadian Health Network
www.canadian-health-network.ca**

**Heart and Stroke Foundation of Canada
www.hsf.ca**

**Health Canada
www.hc-sc.gc.ca**

**Mayo Clinic Health O@sis
www.mayohealth.org**

