Continuing Medical Implementation Inc.

Bridging the Care Gap

A Guide for

CARDIAC REHABILITATION & PREVENTION

By Dr. Joel Niznick, M.D., FRCPC

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Mission

- To optimize cardiovascular risk in all cardiovascular patients.
- To reduce the gap between best evidence and implementation.
- To shorten the time lag between best evidence and implementation.
- To provide community based leadership in medical evidence dissemination and implementation.
- To provide physicians with patient education materials and cardiovascular disease management tools.
- To provide patients and their families with the knowledge they need to better manage and prevent cardiovascular disease.
- To provide nurses and allied health staff with a comprehensive patient education reference manual on cardiovascular disease prevention and management.
- To provide housestaff with a consistent reference standard for patient education in primary and secondary prevention of cardiovascular disease.
- To provide an integrated approach to the management of all aspects of cardiovascular disease prevention.

A GUIDE FOR CARDIAC REHABILITATION

I. INTRODUCTION

Cardiovascular diseases (CVD) including heart attack, stroke and peripheral vascular disease are the leading cause of death in Canada. The burden of cardiovascular disease is increasing in the population. Disturbingly the increase is affecting younger populations, ethnic minorities such as aboriginal Canadians and South Asians as well as women and persons with AIDS. The rising burden of cardiovascular disease is due in large part to the epidemic of obesity, diabetes and high blood pressure brought on by poor diet, inactivity and smoking. Death rates from CVD rise steeply in the elderly, highlighting the need for aggressive management in this age group.

The purpose of this booklet is to provide you with information about prevention of heart disease and about the recovery process after suffering a heart attack. Prevention is critical, particularly in those with CVD risk factors or a family history of CVD. Prevention in terms of changes in diet, lifestyle and inactivity should be a family effort. If you have risk factors but have not developed heart disease yet, this book may help you better understand what you can do to preserve your vascular health. If you have developed CVD at a young age, your children are at risk and the changes you make in your life could be instructive and lifesaving for them. If you have developed CVD at an advanced age, proper risk factor intervention could help to prevent the recurrence of cardiovascular events that lead to frailty and loss of functional capacity and independence.

The development of heart disease is naturally accompanied by many fears. “Will I die?” “What about my job?” “My family still needs me. What will they do?” “Can I still be active?” “Can I return to normal activities?” “How long will I live?” The advances in the treatment of heart disease and CVD are remarkable. Most people with heart disease do return to a full and normal life. Learning about heart disease is the first step in this recovery. Prevention and rehabilitation are a lifelong process and we hope this booklet will be helpful in that regard. It is never too late to start! Or to early!

II. THE HEART: WHAT IT DOES AND HOW IT WORKS

The heart is a hollow, muscular organ located between the lungs and underneath the breastbone. A muscular wall divides the heart into two sides – the right side and the left side. Each side has two chambers. The two upper chambers of the heart are called the atria.

The atria are the filling chambers. They receive blood returning from the body (right atrium) and the lungs (left atrium). The two lower chambers are called the ventricles. These are the pumping chambers of the heart. The right ventricle pumps blood to the lungs. The left ventricle pumps blood to the rest of the body. The atria and the ventricles are separated by valves, which allow the blood to flow through the heart in one direction and prevent back flow of blood. The wall of the heart is made up of three layers. The outer layer is called the epicardium. The middle layer is the actual heart muscle and is called the myocardium. The inner layer of the heart is called the endocardium. The heart is contained within a sac called the pericardium.

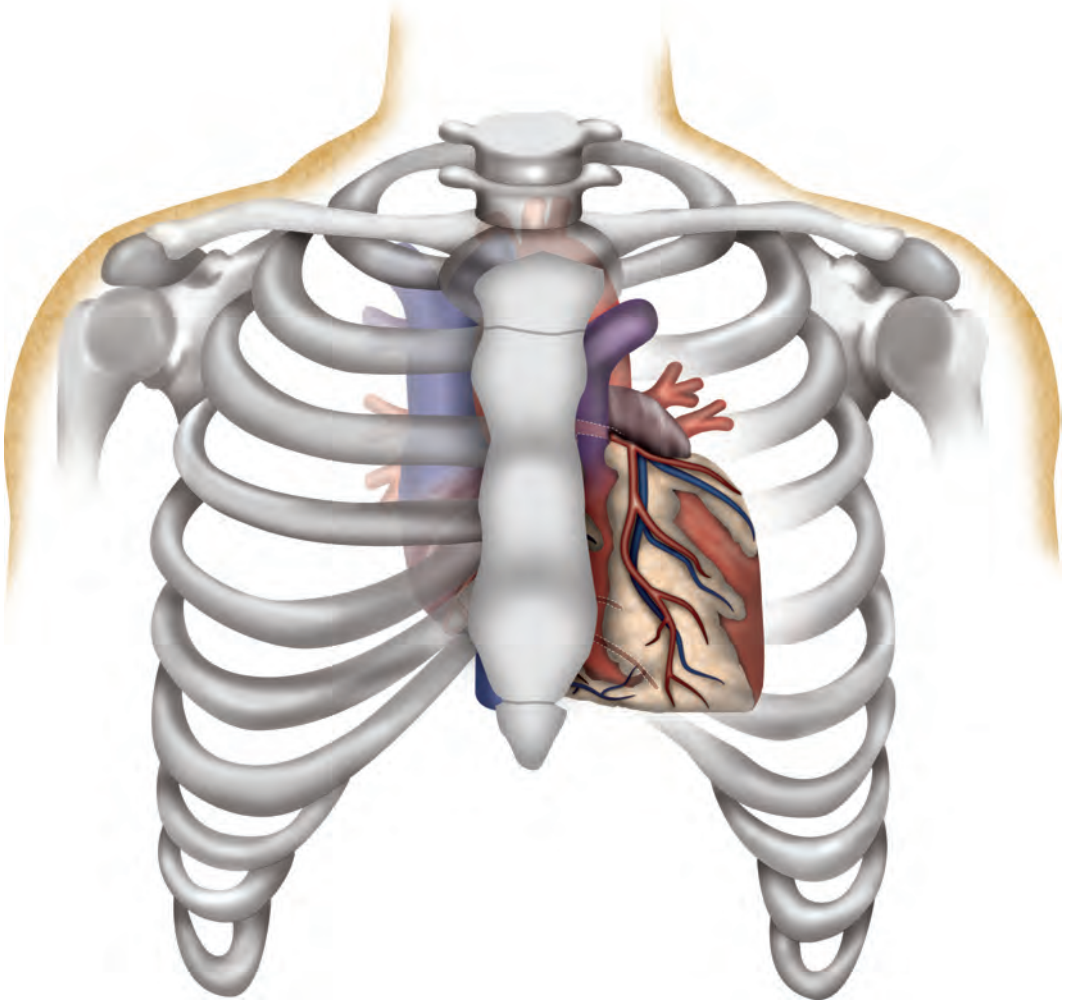


Figure 1: The heart within the chest cavity

The sole purpose of the heart is to pump blood to and from the rest of the body. The right side of the heart pumps blood without oxygen to the lungs where oxygen is picked up by the red blood cells. The blood then returns to the left side of the heart from where it is pumped to the organs and muscles of the body, including the heart itself. (Figure 2).

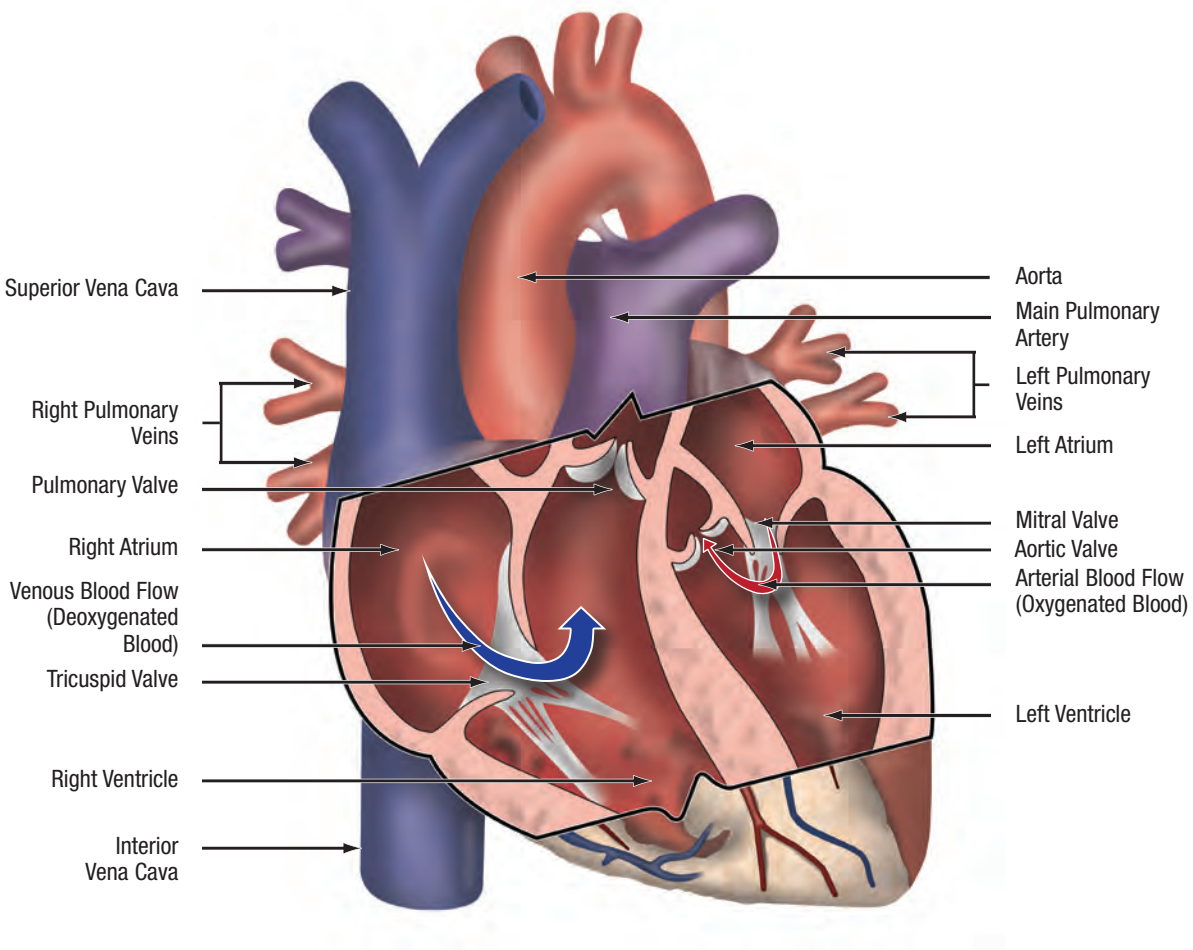


Figure 2: The Heart – Interior

Blood returns to the heart from the body via the superior and inferior vena cava(e). Blood travels through the right side of the heart to the lungs via the pulmonary arteries. There the red cells in the blood pick up oxygen. Blood returns to the left side of the heart from the lungs via the pulmonary veins. Once in the left side of the heart, the blood now rich in oxygen is pumped through the aortic valve to the aorta, the big blood vessel leading out of the heart and thence to the rest of the body.

In order to propel the blood, the heart must contract and relax some 60 to 100 times every minute. Exercise requires the heart to work harder. It does so by an increase in the heart rate (beats per minute) and increasing the amount of blood pumped from the heart with every heartbeat.

In order for the heart muscle to continuously pump, it must be well supplied with oxygen-rich blood. The heart supplies itself with this blood first, before sending blood to the rest of the body. The heart muscle is supplied with blood by the coronary arteries, the hearts own blood vessels. (See Figure 3 for a picture of the right and left coronary arteries and how they supply the heart with blood). The coronary arteries are located on the surface of the heart. The left main coronary artery divides into the left anterior descending coronary and the circumflex coronary. The left anterior descending coronary supplies blood to the front wall of the heart. The circumflex coronary artery supplies blood to the side wall of

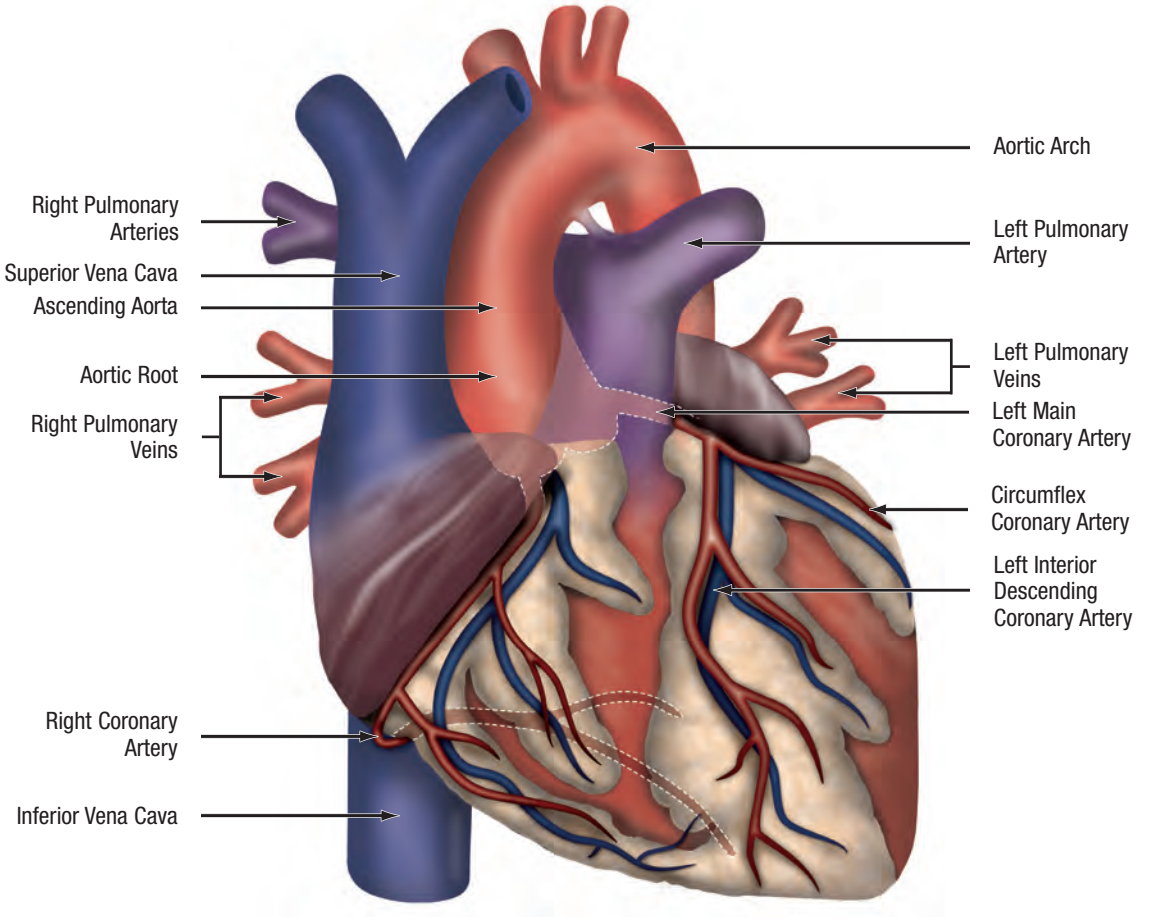


Figure 3: The Heart – Exterior

the heart. A third artery, the right coronary artery, supplies blood to the bottom wall of the heart. All the coronary artery branches send many tiny blood vessels deep into the heart muscle to supply oxygen rich blood to all layers of the heart. Without this blood supply the heart muscle could not function and blockages of the coronary arteries can lead to a heart attack.

Exactly what triggers cholesterol plaque to rupture leading to blockage is unknown. Contributing factors include excess physical exertion, mental stress, anger, cigarette smoking, coffee and alcohol consumption, sexual activity and the adrenaline surge that occurs in the early morning on awakening. The development of symptoms depends partly on how well other coronary arteries supply the heart muscle beyond the blocked blood vessel. Internal bypasses via small (collateral) vessels may protect the heart muscle from damage due to narrowed or blocked coronary arteries.

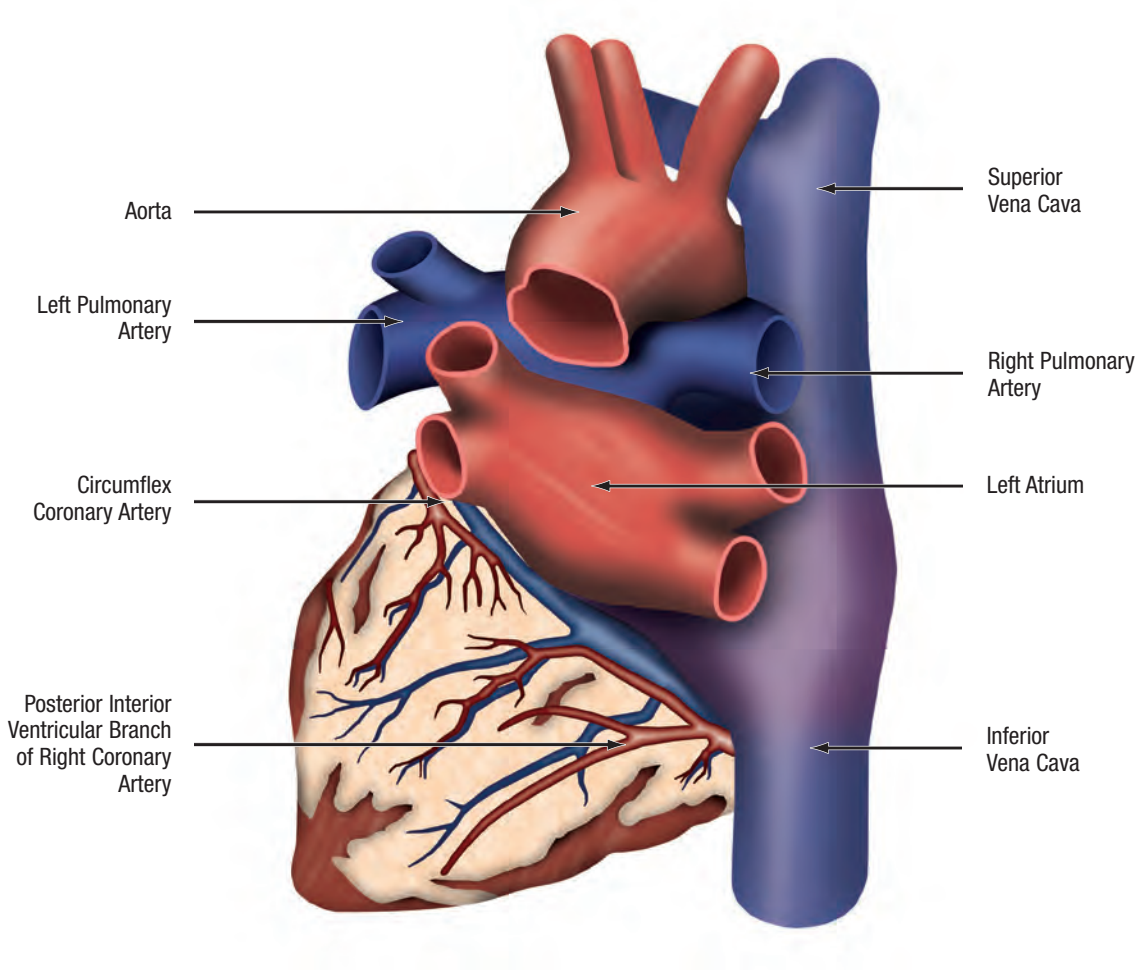


Figure 4: Posterior of heart

III. CORONARY ARTERY DISEASE

A heart attack is the end result of a slow process called Coronary Artery Disease (CAD) or Atherosclerosis. Another common name for Atherosclerosis is hardening of the arteries. A slow build-up of fatty materials (cholesterol plaque) along the inner walls of the coronary arteries causes the arteries to gradually narrow (see figure 5). This reduces the flow of blood to the heart muscle (b). These cholesterol plaques sometimes rupture or break open or rupture (c). This results in sudden further narrowing of the artery. Blood clots may also form at this site, completely closing off the blood supply to the heart muscle for an extended period of time (d). This is what causes a heart attack.

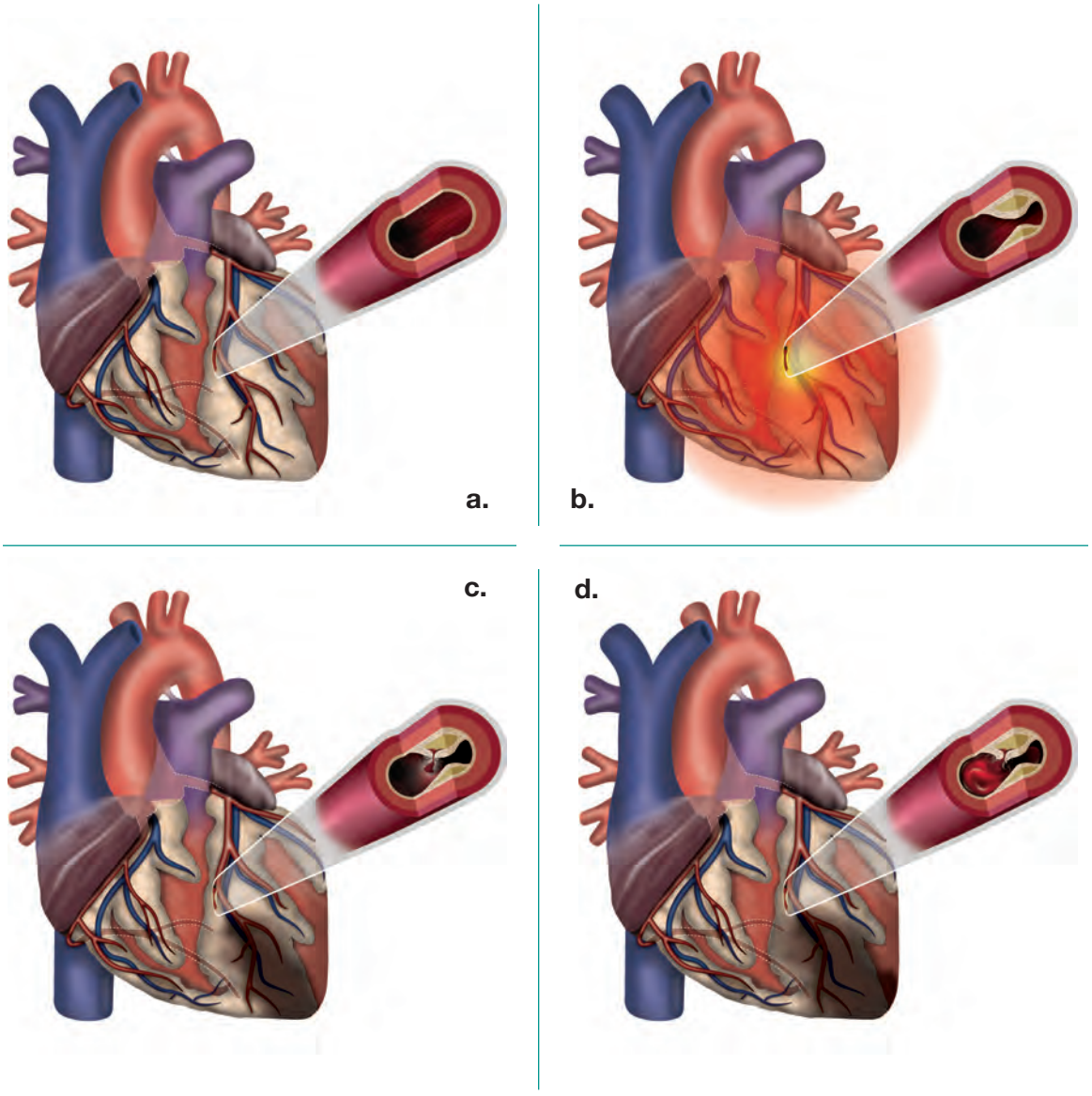


Figure 5: Narrowing in these arteries deprive the heart of its necessary blood flow resulting in the symptoms of Coronary Artery Disease (see text above).

IV. SYMPTOMS OF HEART DISEASE

There are four symptoms of heart disease, which will be described below.

Angina

Angina pectoris is a symptom that occurs when blood supply to an area of the heart muscle doesn't match its needs. Angina may be felt as heaviness below the breast bone which may spread to either arm, to the neck or the back. On occasion, angina may be felt as an indigestion-like discomfort in the upper stomach or a burning or heartburn-like feeling below the breastbone. In some cases angina is experienced as shortness of breath, weakness, fatigue or dizziness. Angina may occur during physical activity, at rest or may awaken you when you are asleep. Angina that becomes more frequent or severe, or that occurs at rest and lasts for longer periods of time, is of great concern. This change in pattern of angina is known as UNSTABLE ANGINA and may be an early warning sign of a heart attack. When angina lasts longer than 20 minutes, there is a risk that heart damage has occurred. This is called an ACUTE CORONARY SYNDROME or ACS. If this occurs, you should call your doctor or have someone take you to the nearest hospital Emergency Department.

Myocardial Infarction (Heart Attack)

Myocardial infarction is the medical term for a heart attack. It has also been known as coronary thrombosis or simply as a "coronary". The pain of myocardial infarction lasts longer than that of angina pectoris. Generally there is a prolonged, sudden-crushing chest pain accompanied by shortness of breath, sweating, nausea, vomiting and perhaps lightheadedness. This pain may spread to the arms, neck, jaw, shoulders and back.

For some people symptoms of angina and heart attack may be felt only as shortness of breath. For others, heart attacks may occur silently without any symptoms of chest pain or they may be passed off as mild indigestion. As with men, women's most common heart attack symptom is chest pain or discomfort. But women are somewhat more likely than men to experience some of the other common symptoms, particularly shortness of breath, nausea/vomiting, and back or jaw pain.

The diagnosis of myocardial infarction (MI) is made when the patient suffers a prolonged attack of angina accompanied by ECG (electrocardiographic) changes and a rise in the blood level of cardiac enzymes or markers (enzymes which leak out of heart muscle cells due to cell damage). There are several enzymes that can be released from damaged heart muscle and measured to confirm the diagnosis of MI. These include CK, CK-MB and the biomarkers Troponin T or I. The troponin test is very sensitive and can be positive or abnormal when only a microscopic amount of heart muscle is damaged. Elevated CK indicates larger amounts of heart muscle damage but may be released from other muscles in the body aside from the heart leading to a false positive diagnosis of heart attack. CK-MB is a cardiac specific enzyme which has largely been replaced by the measurement of troponin. CK-MB may still be useful to identify the presence of heart attack and measure the heart attack size in cases where the troponin level can be chronically elevated, such as patients with kidney failure.

A heart attack that involves the full thickness of the heart muscle has typical ECG features of ST elevation and is called a ST elevation MI or STEMI. This type of heart attack is usually due to sudden and total blockage of a major coronary artery.

A partial thickness heart attack generally involves less muscle damage, has different ECG features and is called a non ST elevation MI or non-STEMI. This type of heart attack is usually due to partial blockage of a major coronary artery or a smaller branch vessel Treatment of these two types of heart attacks is different.

Congestive Heart Failure

Congestive heart failure is a term used to describe the accumulation of fluid in the lungs or circulation due to weakness of the heart muscle pump. It may occur as a complication of a heart attack or it may occur due to other forms of heart disease. Common symptoms include shortness of breath, which may occur with activity or might awaken you at night. Some people find that in order to breathe properly at night they have to sleep on several pillows. As symptoms become worse, they may be unable to breathe at night unless sleeping upright. Symptoms are worse at night because fluid that is in the general circulation returns to the central circulation and the heart when you lie down.
See "Diet for Congestive Heart Failure" in Appendix H.

If congestive heart failure becomes severe, the lungs may fill up with fluid. This condition is called PULMONARY EDEMA. This is a medical emergency that can usually be avoided by heeding the warning signs of congestive heart failure and contacting your physician early. The congestion may also affect the right side of the heart resulting in swelling of the ankles and legs also known as EDEMA.

Arrhythmia

The heart normally beats anywhere from 60 to 100 times a minute. Pacemaker tissues in the right atrium or filling chamber regulate the heartbeat. The main pacemaker of the heart is known as the sinus node and when it is working properly the heart rate is said to be in normal sinus rhythm. Any disturbance of this normal sinus rhythm is known as an arrhythmia. The heart may beat slowly or rapidly but still be under the control of the sinus node. Such conditions may be normal such as during sleep or exercise.

Extra or early beats may occur and are normal. These may be experienced as skips or extra beats. When several of these occur together, they may be experienced as flip-flopping of the heart or short palpitation. These arrhythmias are harmless. When an arrhythmia becomes continuous, it may be experienced as a racing sensation of the heart and may be accompanied by light-headedness, dizziness or fainting. Arrhythmias may arise from the upper (filling) chambers of the heart or lower (pumping) chambers of the heart.

Not all arrhythmias are dangerous; most are not, but some may be potentially life threatening. If you experience these sensations, you should tell your doctor.

V. WHAT IS A HEART ATTACK?

The Heart Attack Process

All tissues in the body requires a constant blood supply bringing oxygen and nutrients. The heart is no exception. The coronary arteries are the blood vessels that bring blood to the heart. When one of these arteries becomes severely narrowed or blocked, the blood supply to a part of the heart's muscle is reduced. When this lack of blood supply lasts longer than 20 to 30 minutes, heart muscle damage may occur. This process is known as a heart attack. Other names used to refer to a heart attack are Myocardial Infarction, or simply a MI. We have previously discussed the full thickness heart attack or STEMI and the partial thickness (sometimes microscopic) heart attack or non-STEMI.

Myocardial infarction is not a sudden event; it is a process, which evolves over time. This process begins with the initial damage and ends with a healed, well-formed scar that replaces the area of damage. In the first hours of a heart attack the patient may experience chest pain and all the other symptoms of Angina or other symptoms described earlier. There may also be dangerous arrhythmias and Sudden Death. This is why it is necessary to go the hospital as quickly as possible.

Treatment

The pain of a heart attack may last from six to 12 hours and sometimes longer. Patients with STEMI who arrive early enough may receive blood clot dissolving medications to try and reopen the blocked artery. These blood clot dissolving medications include Streptokinase, t-PA (which stands for tissue plasminogen activator) and r-PA. These agents are intended to be given as soon as possible after the start of a MI and act to dissolve blood clot at the site of cholesterol plaque rupture. By opening the coronary arteries, these agents limit the size of the heart attack and save heart muscle. As time is important in reducing the size of a heart attack, these "clot busting" agents are sometimes given by paramedics in the field under appropriate medical supervision.

Depending on availability, some patients may be taken immediately to the cardiac catheterization laboratory for a **direct PCI** (coronary angioplasty and stenting). This is done if the blocked artery can be reopening within 90 minutes of presentation. Most hospitals in Canada do not have the resources for direct PCI and in some cases, transfer to a facility with such resources is appropriate. Promptly restoring blood supply to the heart greatly reduces the size of a heart attack and improves the outcome of a person suffering a heart attack.

That is why it is important to **present to hospital promptly when possible heart attack symptoms occur.** The sooner the blocked artery can be reopened the better. When it comes to a heart attack, remember that **time is muscle**. Patients with non-STEMI are treated with medications to control their angina. These patients may then undergo less urgent testing which could include either angiography or non-invasive testing such such as exercise stress testing or exercise nuclear heart scanning to measure blood flow to the heart.

Other medications such as aspirin, clopidogrel (Plavix), prasugrel (Effient), ticagrelor (Brilinta) and heparin to thin the blood. Beta blockers and angiotensin converting enzymes (ACE) inhibitors may be given to reduce the size of the heart attack and preserve pump function. For the few days you will be monitored in the Coronary Care Unit. This is primarily to detect complications such as arrhythmia. After this you will be transferred to a regular ward for further monitoring and your level of physical activity will be gradually increased to normal over the next week. In hospitals where patients receive immediate angioplasty to treat their heart attack, the hospital stay may be much shorter and the patient may be discharged home within days.. This makes it increasingly difficult for the patient to understand what has happened to him/her and limits educational opportunities by the patient's health care team.

Returning Home

A person with a small, uncomplicated heart attack may expect to go home after four to seven days. Patients undergoing early direct angioplasty may be discharged even earlier. People with larger heart attacks or with complications may stay in hospital longer. In general, a stress test is done prior to discharge or shortly thereafter, to assess your risk for another heart attack. If you develop a recurrence of your presenting symptom, usually chest pain, then an angiogram may be indicated (see the section on cardiac testing). At home you will gradually increase your activity level to normal over the next two to four weeks. Someone with a sedentary or office job may return to work after approximately two months. Someone doing physical labor is often advised to remain off work for three months. Some heart attacks, those that are identified only by a troponin rise, are microscopic and recovery times are much shorter.

Remember that recovering from a heart attack takes time. The healing process begins immediately and may take six to eight weeks to complete. The area of heart muscle damage is permanent but unless that area is large, the remainder of the muscle is usually adequate to permit you to lead a normal life. A firm scar replaces the heart muscle that is damaged and the remaining heart muscle takes over the work of the damaged area.

Usually after a heart attack you will be given a variety of medications intended to reduce your risk of another heart attack and to help the heart heal. It may seem that you are being given a lot of pills, but most of these prescriptions are based on strong medical evidence. Other medications are given to control symptoms such as congestion or angina. See the section on cardiac medications for a more detailed description of the pills you have been prescribed. These may include:

1. Aspirin
2. Plavix, Effient or Brilinta
3. Beta (ß)-blockers
4. ACE inhibitors
5. Cholesterol lowering agents-usually a “statin”
6. Nitroglycerin and long acting nitrates
7. Calcium channel blockers
8. Diuretics
9. Digoxin

Complications of Myocardial Infarction

One of the most important reasons to be in hospital during a heart attack is to watch for complications. The key complication to watch for is recurrence of chest pain or angina. Angina recurring after a heart attack is considered **UNSTABLE ANGINA**. This may indicate that there is some heart muscle that is still at risk of damage from narrowed or blocked coronary arteries and may require further investigations such as an angiogram or cardiac catheterization (see section on cardiac investigations and procedures). Sometimes after a heart attack the outer lining of the heart or pericardium becomes inflamed, a condition known as **PERICARDITIS**. This may produce sharp chest pains that may also be felt in the shoulders, neck and arms. Such pains may worry you but they are part of the healing process and are not dangerous. Other complications such as arrhythmias and congestive heart failure have already been described.Complications are far less frequent these days when patients receive early therapy such as clot busting medications or balloon angioplasty and stenting to re-open their blocked arteries.

VI. CARDIAC RISK FACTORS

YOU CAN PREVENT ANOTHER HEART ATTACK

Throughout the heart attack and recovery you may have asked, “Why did I have a heart attack?” and “what are my chances of having another heart attack?” To answer these questions, let’s begin by looking at the risk factors – things about you and how you live that can increase the possibility of a heart attack. Some risk factors cannot be changed (not modifiable) and some can be eliminated or greatly reduced by changing your habits and the way you live (modifiable).

Not Modifiable	Modifiable	Emerging Risk Factors
• Family History • Gender • Age • Ethnicity	• Hypertension • Diabetes • High Cholesterol • Smoking • Obesity • Inactivity • Stress	• Metabolic Syndrome • Lipoprotein (a) • Apolipoprotein B • Homocysteine • CRP • Microalbuminuria • Hypercoagulable states • Inflammatory conditions • Increased clotting factor VII

1. Hypertension

Blood pressure is required to force the blood to circulate throughout the body. As the heart contracts, the pressure within the blood vessels rises to a maximum or top blood pressure, which is called the systolic blood pressure. When the heart relaxes the blood pressure falls to a minimum or bottom blood pressure called the diastolic blood pressure. The average normal systolic blood pressure is about 120 mm Hg (millimeters of mercury) and the average normal diastolic blood pressure is about 80 mm Hg. This is reported as 120/80 or 120 over 80 mm Hg. Elevation of blood pressure is present when the systolic blood pressure is above 140 mm Hg or the diastolic blood pressure is above 90 mm Hg. The condition of having elevated blood pressure is called hypertension.

In the majority of patients with hypertension the cause cannot be found. Genetics and heredity may play a role. In 5 to 10 % of patients a reversible cause for hypertension may be identified.

Environmental factors such, as excess salt intake will raise someone’s blood pressure. Other modifiable causes of hypertension include excessive calorie intake, inactivity, excessive alcohol consumption, low potassium intake and smoking. In fact eliminating fast food from the diet will lower your blood pressure significantly.

Hypertension is common and present in about 10% of the adult population or about 2 million people in Canada. For the most part patients with hypertension are under-diagnosed and under treated. The Canadian Heart Health Survey has shown that only 42% of patients are aware that they have hypertension, 19% are not treated and not controlled, 23% are treated and not controlled and only 16% of hypertensive patients are treated and controlled. Awareness and control have improved in the last ten years.

Excessive elevation of blood pressure can have long term effects. High blood pressure will thicken the heart muscle. This condition is called hypertrophy. Elevated blood pressure can lead to stroke, vascular damage, and kidney failure. For the most part high blood pressure has no associated symptoms unless complications develop. If blood pressure is quite high patients may experience headaches, fatigue, shortness of breath or dizziness.

High blood pressure is particularly dangerous in those patients with other cardiac conditions such as coronary artery disease or leaking heart valves. In conditions such as diabetes or chronic kidney disease, it is especially important to normalize blood pressure to prevent progressive kidney and organ damage. High blood pressure in the elderly population is one of the major risk factors for stroke.

There are many medications that can be used to control blood pressure. Often small doses of a diuretic or a beta blocker medication are sufficient. In some patients combination therapy is required and in other patients certain agents are used for special or specific reasons such as angiotensin converting enzyme (ACE) inhibitors in diabetic patients with protein in their urine (evidence of kidney damage), and calcium channel blocking agents in the elderly. Medical evidence shows that aggressive treatment of blood pressure will reduce the risk of stroke and cardiovascular events considerably but often it will take 2 or 3 blood pressure medications to control the hypertension. For more details regarding specific medications that control blood pressure, see our medication information sheets. If you have further questions please discuss them with your physician.

See "Eating Plan for Hypertension" in Appendix G
See "Potassium Modified Eating Plan" (for patients with low potassium due to diuretics) in Appendix I.

2. Diabetes

Diabetes is a disease in which your body cannot properly use and store sugar, a principle fuel for the body. Diabetes is caused by a lack of insulin production in the pancreas (TYPE I) or a resistance to the actions of insulin in the body (TYPE II). In patients with diabetes the sugar that is not used by the body builds up in the bloodstream and is washed out of the body through the kidneys. As a result you may feel thirsty and may urinate a lot. You may feel fatigue, thirst and visual blurring. These are all symptoms of Diabetes.

Approximately 3% to 5% of the adult population have unrecognized type 2 diabetes. This number is much higher in people with coronary artery disease. All patients with coronary artery disease should be checked for diabetes and should know their blood sugar levels.

Diabetes is diagnosed based on blood glucose (sugar) levels. The diagnostic criteria are:

GLUCOSE LEVELS FOR DIAGNOSIS OF DIABETES		
Category	**FPG (fasting plasma glucose) mmol/L**	**PG 2 hours after 75 GM. Glucose load;mmol/L**
Impaired fasting glucose (IFG)	6.1-6.9	N/A
Impaired glucose tolerance (IGT)	< 6.1	7.8-11.0
Diabetes Mellitus (DM)	≥ 7.0	≥ 11.1
IFG and IGT	6.1-6.9 and	7.8-11.0

Diabetes may also be diagnosed by having symptoms of diabetes plus a casual plasma glucose above 11.1 mmol/L or by having two separate tests showing fasting glucose above 7.0 mmol/L. High level of sugar in the blood due to lack of or resistance to insulin contributes to the development of atherosclerosis (hardening of the arteries), kidney failure and other complications of diabetes such as eye damage (retinopathy) and nerve damage (neuropathy). Diabetic patients with no previous heart attack have the same risk for heart attack or stroke as a patient who has already had a heart attack particularly if they have multiple other risk factors.. Recent studies have shown that tight aggressive blood sugar control lessens the complications of diabetes. Furthermore we must be even more careful to control other cardiac risk factors, such as high cholesterol and high blood pressure in the patients with diabetes in order to lessen their complication rate. The cholesterol targets for a diabetic are the same as a patient with established CAD.

3. Dyslipidemia *(High Cholesterol)

Hyperlipidemia is the medical term for high levels of fat or cholesterol in the blood. There are many different types of hyperlipidemia. The most important type is an elevation of the total blood cholesterol. This may be a problem that runs in your family or it may be due to the kind of foods you eat. 80% of the cholesterol in your body is produced internally. Only 20% is related to diet.

There are different types of cholesterol. Some of these contribute to the development of coronary artery disease and some of these protect against it. LDL-cholesterol is considered the “bad cholesterol” because it contributes to the development of coronary artery disease. HDL-cholesterol is considered the “good cholesterol”. It protects against coronary artery disease.

If your total cholesterol level is less than 5.0 mmol/L, that is reassuring. Unless you have other risk factors, such as a family history of heart disease, low HDL cholesterol, high blood pressure, cigarette smoking or diabetes mellitus, your risk of heart attack is relatively low. Even with a low risk cholesterol level, it is still a good ideal to follow a heart-healthy diet, since keeping your cholesterol level well **below 5 mmol/L** reduces your heart disease risk even further.

If you total cholesterol is in the 5 to 6 mmol/L range, you have twice the risk of heart attack as compared to your risk if your level was well below 5 mmol/L. But don’t feel alone: 45% of Canadian adults are in this group. Cholesterol readings in this range mean you should watch out for other risk factors, have your cholesterol re-checked, and modify your diet and activity to attempt to reduce your level to **below 5 mmol/L**.

LDL-Cholesterol

Your LDL-cholesterol level greatly affects your risk of heart attack. In fact, LDL-cholesterol is a better predictor of heart attack risk than total blood cholesterol. When your LDL-cholesterol is over 5.0 mmol/L you are at high risk; when it’s between 3.5 and 5.0 mmol/L, you are at borderline-high risk. Ideally your LDL-cholesterol should be below 3.5 mmol/L. However, as with total cholesterol, the lower the level, the less the risk. If you have a history of heart disease, stroke, vascular disease, aneurysm or type 2 diabetes, the ideal LDL–cholesterol is between **1.5 and 2.5 mmol/L**, and probably between **1.5 and 2.0 mmol/L**. Medications will likely be required to achieve and maintain these levels. Diabetes is treated by diet, weight reduction and regular exercise. In some patients, oral medications or self-administered insulin injections are required. Diabetes may be monitored by finger prick (capillary) blood glucose measurements. Target FPG is 4-7 mmol/L; 1-2 hour post meal BS [blood sugar] 5-10 mmol/L (5.0-8.0 if A1c targets are not being met). Glycated Hemoglobin (A1c assay) gives a measure of long term blood glucose control the target for A1c is < 7%. For further information on diabetes contact the Canadian Diabetes Association or visit their website *http://www.diabetes.ca*.

HDL-Cholesterol

In the average man, HDL-cholesterol levels are usually in the range of 1.1-1.4 mmol/L; in women from 1.3-1.6 mmol/L. HDL-cholesterol levels less than 1.0 mmol/L are considered abnormally low. Increasing HDL-cholesterol levels can significantly reduce the risk of heart disease. Weight loss, quitting smoking and most importantly, increasing aerobic exercise, are the best ways to raise the level of HDL-cholesterol. Having high triglycerides also reduces HDL-cholesterol and thus, increased the risk of heart attack. Female sex hormones (estrogens) and moderate alcohol intake are two other factors which can increase HDL levels.

To obtain an accurate measurement of your triglyceride level, it is necessary to have a blood sample taken after an overnight fast. Triglyceride levels above 2.0 mmol/L are considered elevated. Excess body fat, poorly controlled diabetes and excessive alcohol intake are common causes of elevated blood triglycerides. The clustering or risk factors including high triglycerides, low HDL, obesity, hypertension and impaired fasting blood sugar are called the **Metabolic Syndrome**. Weight loss, reduction in alcohol intake, increased activity and better control of diabetes often normalize triglyceride levels.

Lipoprotein (a) is an emerging risk factor for heart disease. Lp (a) is a type of LDL which is particularly atherogenic (causes cholesterol deposits in arteries) and also appears to increase the risk of blood clot formation in already narrowed arteries leading to heart attacks or strokes. Lp (a) is dependent on genetic factors and hence levels are often found to be elevated in families with a history of early heart disease. A normal Lp (a) level is about 15 mg/dl. Heart disease risk increases with levels above 30 mg/dl. The only effective medication for Lp (a) is Niacin, but the risk associated with Lp (a) decreases if LDL cholesterol is lowered by diet or other medications. Lp (a) is measured in specialized laboratories.

It is advisable for people with coronary artery disease to be tested for levels of cholesterol and for the subgroups of LDL and HDL cholesterol. You can speak to your physician about the need for this. These values are best measured shortly after admission to hospital or after a period of recovery from myocardial infarction. If cholesterol levels are high, then it may be necessary to change your diet or take medications to lower the cholesterol. You and your doctor can discuss the need for this.

See "Eating Plan for High Cholesterol" in Appendix J.

**Adapted from COPING WITH CHOLESTEROL Booklet-University of Ottawa Heart Institute/Ottawa Civic Hospital*

Homocysteine is an amino acid in the blood. Amino acids are the building blocks of proteins. Build-up of homocysteine in the blood may be due to vitamin deficiencies or hereditary deficiencies of enzymes that normally break down homocysteine. An excess of homocysteine in the blood has been linked to premature vascular disease (hardening of the arteries) and early development of stroke, heart attack or peripheral vascular disease. There is as yet, no proof that treating homocysteine excess with vitamins know to work with certain enzymes to increase the breakdown of homocysteine, has any effect on clinical outcome. Nevertheless, in patients with premature atherosclerosis or in patients with no obvious risk factors who develop CAD, it is reasonable to test for homocysteine and however treatment with appropriate doses of Vitamins B6, B12 and folic acid has not been shown to change clinical outcome. *(see Cardiovascular Risk Reduction Rx Checklist)*.

CRP (C-reactive protein)

Atherosclerosis is an inflammatory disease. Inflammatory cells are active within the cholesterol plaque ingesting cholesterol to aide in its removal. CRP or C-reactive protein,is a marker of vascular inflammation. CRP has been shown to be a strong predictor of future cardiovascular events. an increased CRP at admission has been shown to be a marker for worse short and long term prognosis in patients with unstable angina. In one recent trial CRP was superior to an elevated LDL as a predictor of primary cardiovascular events. CRP and LDL are independent, thus the use of both markers has been shown to be superior to the use of either marker alone. almost 50% of cardiovascular events occur in patients with normal LDL levels. The measurement of CRP in these patients helps to identify those patients at greater risk. Low risk is defined as hs-CRP (high sensitivity- CRP) <1 mg/ml; average risk 1.0 - 2.0 mg/L and high risk as 2.0-10 mg/L. If hs-CRP is 10 mg/L, the test should be repeated and patient examined for sources of infection or inflammation. risk estimates based on CRP levels are not affected by the use of HRT (hormone replacement therapy).

High sensitivity CRP (hs-CRP) is a useful test to predict cardiovascular risk, particularly in those patients with low LDL levels and the absence of other traditional cardiac risk factors.

AS A CARDIAC PATIENT, YOU SHOULD KNOW YOUR CHOLESTEROL AND LDL LEVELS. TARGET VALUES ARE:

Test	Current	Previous	Ideal: no risk factors	Ideal: with risk factors	Ideal: with CAD* or DM+
	Date	Date			(potential)
Total Cholesterol *mmol/L*			5.2	5.0	< 4.5
LDL Cholesterol *mmol/L*			< 5.0	< 3.5	< 2.0 (1.8)
HDL-Cholesterol *mmol/L*			> 1.0	> 1.1	> 1.2
TC/HDL Ratio			6/1	5/1	4/1 (3/1)
Triglycerides *mmol/L*			< 2.0	< 1.7	< 1.5
Lp(a) *mg/dl*			< 30	< 30	< 30
Apolipoprotein B *g/L*			< 1.2	< 1.05	< 0.9
hs-CRP (high sensitivity-CRP) *mg/ml*			< 3	1-3	< 1
Homocysteine *µmol/L*			< 10	< 10	< 10

*(*CAD - coronary artery disease; + DM - type II diabetes*

For treatment guidelines, see appendix B: Lipid Optimization Tool

4. Smoking

Smoking is one of the key risk factors for coronary artery disease that you can control.

Smoking is the largest preventable cause of ischaemic heart disease (IHD) and coronary artery disease. Each year more than sixteen thousand cardiovascular deaths, many of which are premature, occur in Canada as a result of smoking. People who stop smoking for one year reduce the risk of heart attack down to the level of those who never smoked. If a heart attack does occur, a smoker has a greater risk of dying than a non-smoker. Smokers with coronary artery disease must make every effort to stop smoking. There are community resources available to help you quit. Ask you doctor or nurse about them.

Adverse health effects of smoking:

- Smoking raises your blood pressure contributing to hypertension.
- Smoking changes the balance of cholesterol in your body to increase the risk of hardening of the arteries. The good cholesterol (HDL) levels fall in association with smoking.
- Smoking results in carbon monoxide build up in the blood and reduced oxygen delivery to the tissues.
- Smoking increases the thickness of the blood and the tendency of the blood to clot thus increasing the risk of heart attack.
- Smoking significantly increases your risk of sudden death.
- Smoking may be associated with 50 to 55% of all strokes occurring in the United States. The stroke risk of a smoker is 1.5 to 3 times that of a non-smoker. This risk is particularly high in women smokers using oral contraceptives.
- Smoking is associated with peripheral vascular disease and impaired circulation to the extremities. As well smoking may contribute to the development of abdominal aortic aneurysms.

Non-Cardiac Adverse Effects of Smoking:

- Smoking contributes to the development of chronic lung disease, emphysema and chronic bronchitis.
- The association of smoking and lung cancer is well documented.

Now that you are aware of the adverse effects of smoking, you can realize the importance of doing everything in your power to quit. I realize this is a difficult process. There are a variety of approaches to be taken.

Smoking Cessation Therapy

Treatment options to help you quit smoking:

1. Behavioral treatment program.
2. Nicotine replacement therapy (Gum and Patch)
3. Other medications:
   - certain anti-hypertensives such as Clonidine
   - anti-depressants such as bupropion (Zyban) and fluoxetine.

Drug	Dosage	Comments
Nicorette gum 2-4 mg	10-12 pieces/day, maximum 20 pieces/day for 12 weeks then taper 1 piece/day every week	Chew and park between gums and cheek to ↓ side effects
Nicotine Patch		
• Habitrol/Nicoderm	21 mg/24 hours X 4 weeks then 14 mg/24 hours X 2 weeks then 7 mg/24 hours X 2 weeks	• Higher doses may be needed in heavy smokers • Avoid smoking while on patch-may trigger MI
• Nicotrol	15 mg/16 hours X 4 weeks then 10 mg/16 hours X 2 weeks then 5 mg/16 hours X 2 weeks	
Zyban	150 mg/day X 3 days then 300 mg day • Set target quit date with-in 1st two weeks of Rx • Continue Rx 7-12 weeks	• Avoid if on other anti-depressants • Avoid if history of seizures
Champix® (varenecline)	Day 1-3 0.5 mg daily Day 4-7 0.5 mg twice daily Week 2-12 1.0 mg daily	Initiate 1 week before quit date Avoid if history of depression
Adapted from the Health Canada Healthy Heart Kit http://www.hc-sc.gc.ca/hppb/ahi/healthyheartkit/healthyheartkit.htm		

If you are seriously considering smoking cessation you should discuss methods with either your cardiologist or family physician who is in the best position to refer you to the proper resources. Pharmacotherapy combined with behavioral support provides the best success rates.

5. Inactivity-Exercise and Heart Disease

The American Heart Association has now added " lack of exercise" to the list of major risk factors for heart disease. Exercise not only helps fight heart disease, but for sedentary people, just adding a little exercise to your daily routine reduces the risk of high blood pressure, osteoporosis, breast and colon cancer, depression, anxiety and stress. Ideally, you should exercise for a total of 200 minutes per week within your target heart rate. However, your health can benefit simply by accumulating 30 minutes of moderate activity per day, such as stair climbing, walking to work or gardening.

Also, it is not just aerobic exercise such as walking, cycling, jogging and swimming that is recommended. Resistance training, or weight lifting, is an important component of a good fitness program because it increases your strength, leads to decreased body fat and helps improve blood cholesterol levels.

Benefits of Regular Exercise

- Improves heart and lungs
- Decreases resting blood pressure
- Decreases body fat
- Decreases total and LDL cholesterol ("bad cholesterol")
- Raises HDL cholesterol ("good cholesterol")
- Increases energy level
- Increases tolerance to stress and depression
- Controls or prevents the development of diabetes
- Decreases risk of orthopedic injury

Guidelines for Safe Exercise

- Frequency - 3-7 times a week
- Duration - 20-60 minutes
- Accumulate 200 minutes of exercise per week (240 minutes for weight loss)
- Intensity (how hard) - within your target heart rate
- Feel like you are working somewhat hard but not outside your comfort zone

You will need your physician's direction to begin a gradual exercise program. Initiate exercise at 60% of maximum predicted HR and progress to 70-80 % of maximum HR. For patients with ischaemia and/or exercise induced arrhythmia, set exercise HR in a 10-15 beat range, 10 beats below the onset of ischaemia and/or arrhythmia. For Heart Failure patients, initiate at 50% MPHR and progress to 60-70 % MPHR.

Calculating Your Target Heart Rate

1) 220 - age = _____ MHR (maximum heart rate)
2) MHR x 0.8 = _____ (this is the upper end of your target HR)
3) MHR x 0.7 = _____ (this is the mid range of your target HR)
4) MHR x 0.6 = _____ (this is the low end of your target HR)
5) MHR x 0.5 = _____ (low end target HR for Heart Failure patients)

Obesity

Being overweight increases your chance of having other cardiac risk factors. Losing weight can lower your blood cholesterol, blood pressure and blood sugar. It is for these reasons and for a sense of general well being that weight reduction is advised.

Recalculating a Hefty Sum

The U.S. government's new standard, based on "body mass index," increases the number of North American adults defined as overweight.

How to figure body mass index: $\textbf{BMI} = \frac{703 \times \text{Weight in pounds}}{(\text{Height in inches})2}$

HEIGHT (metres)

WEIGHT (pounds)	1.47	1.50	1.52	1.55	1.57	1.60	1.63	1.65	1.68	1.70	1.73	1.75	1.78	1.80	1.83	1.85	1.88	1.91	1.93	1.96	WEIGHT (kilograms)
295	62	60	58	56	54	52	51	49	48	46	45	44	42	41	40	39	38	37	36	35	134
290	61	59	57	55	53	51	50	48	47	46	44	43	42	41	39	38	37	36	35	34	132
285	60	58	56	54	52	51	49	48	46	45	43	42	41	40	39	38	37	36	35	34	130
280	59	57	55	53	51	50	48	47	45	44	43	41	40	39	38	37	36	35	34	33	127
275	58	56	54	52	50	49	47	46	44	43	42	41	40	38	37	36	35	34	34	33	125
270	57	55	53	51	49	48	46	45	44	42	41	40	39	38	37	36	35	34	33	32	123
265	56	54	52	50	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	120
260	54	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	33	32	31	118
255	53	52	50	48	47	45	44	43	41	40	39	38	37	36	35	34	33	32	31	30	116
250	52	51	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	30	114
245	51	50	48	46	45	43	42	41	40	38	37	36	35	34	33	32	32	31	30	29	111
240	50	49	47	45	44	43	41	40	39	38	37	36	35	34	33	32	31	30	29	29	109
235	49	48	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	29	29	28	107
230	48	47	45	44	42	41	40	38	37	36	35	34	33	32	31	30	30	29	28	27	105
225	47	46	44	43	41	40	39	38	36	35	34	33	32	31	31	30	29	28	27	27	102
220	46	45	43	42	40	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26	100
215	45	44	42	41	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26	26	98
210	44	43	41	40	38	37	36	35	34	33	32	31	30	29	29	28	27	26	26	25	95
205	43	41	40	39	38	36	35	34	33	32	31	30	29	29	28	27	26	26	25	24	93
200	42	40	39	38	37	36	34	33	32	31	30	30	29	28	27	26	26	25	24	24	91
195	41	39	38	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	89
190	40	38	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	86
185	39	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	22	84
180	38	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	22	21	82
175	37	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	22	21	21	80
170	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	77
165	35	33	32	31	30	29	28	28	27	26	25	24	24	23	22	22	21	21	20	20	75
160	34	32	31	30	29	28	28	27	26	25	24	24	23	22	22	21	21	20	20	19	73
155	32	31	30	29	28	28	27	26	25	24	24	23	22	22	21	20	20	19	19	18	70
150	31	30	29	28	27	27	26	25	24	24	23	22	22	21	20	20	19	19	18	18	68
145	30	29	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18	17	66
140	29	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18	17	17	64
135	28	27	26	26	25	24	23	23	22	21	21	20	19	19	18	18	17	17	16	16	61
130	27	26	25	25	24	23	22	22	21	20	20	19	19	18	18	17	17	16	16	15	59
125	26	25	24	24	23	22	22	21	20	20	19	18	18	17	17	17	16	16	15	15	57
120	25	24	23	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14	55
115	24	23	23	22	21	20	20	19	19	18	18	17	17	16	16	15	15	14	14	14	52
110	23	22	22	21	20	20	19	18	18	17	17	16	16	15	15	15	14	14	13	13	50
105	22	21	21	20	19	19	18	18	17	16	16	16	15	15	14	14	14	13	13	12	48
100	21	20	20	19	18	18	17	17	16	16	15	15	14	14	14	13	13	13	12	12	45
	4'10"	11"	5'0"	5'1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	6'0"	6'1"	2"	3"	4"	5"	

HEIGHT (feet and inches)

Anything < 25 is good; 25-27 is okay; above 27 is too high. Above 30 is considered obese.

How to calculate your Body Mass Index
Body Mass Index (BMI) is a ratio of height and weight. On this chart, the numbers across the top are your height in meters and the numbers across the bottom are your height in feet and inches. You can call the Ottawa-Carleton Regional Health Department's nutrition line at 722-2242 ext. 3403 to obtain a Health Canada BMI chart, or you can calculate your BMI by visiting an internet site at **http:/www.nhibi.nih.gov**. Go to "clinical guidelines on overweight and obesity" and then click on Body Mass Index Calculator."

How to calculate your waist-to-hip ratio
1. Measure your waist at your navel (In inches or centimeters)
2. Measure your hips at the widest point (over your buttocks)
3. Divide your waist measurement by your hip measurement

For example: if you have a 27 inch waist and 38-inch hips, divide 27 by 38 to get a waist hip ratio of 0.71. For most women, the waist-to-hip ratio should fall below 0.80. For most men, the waist to hip ratio should be no greater than 1.0.

6. Stress

Whether being under stress or working in a stress environment will directly cause a heart attack is uncertain. Nevertheless, some studies show that people with the so-called "type A" personality characterized by the need to excel, impatience, bossiness, time pressures, eating quickly and job uncertainty coupled with a "workaholic" nature is associated with almost a doubling of risk of coronary artery disease. If you fit this description, discuss various means of stress management with your physician.

1. STOP SMOKING.
2. ATTAIN and MAINTAIN a HEALTHY WEIGHT.
3. HEALTHY DIET: Reduce fats and cholesterol in your diet.
4. BE MORE ACTIVE: With your physician plan a regular program of physical activity.
5. KNOW and CONTROL YOUR BLOOD PRESSURE.
6. CONTROL DIABETES: If you are diabetic, strive to maintain a normal blood sugar.
7. REDUCE STRESS: Learn stress management or relaxation techniques.

VII. HEART DISEASE IN WOMEN

Cardiovascular disease (CVD) is the #1 killer of women both in Canada and the US. Average lifetime risk of cardiovascular disease in women is approximately 40%, and increases as the number of risk factors increases. Coronary artery disease is the main form of heart disease that affects both women and men. One in 5 women has been told by their physician that they have heart problems. More women than men die from heart failure and stroke.

The risk factors that lead to the development of heart disease are increasing and we can expect to see more heart disease develop in women over time. Most of these risk factors are the same as for the general population and include obesity, inactivity, poor dietary habits, metabolic syndrome and elevated cholesterol, diabetes, hypertension and smoking. However, additional factors are more prevalent among women than men, are often unrecognized, and have been associated with significantly increased risk of subsequent CVD. These include hypertension in pregnancy, gestational diabetes, preeclampsia and autoimmune diseases. Aggressive management of risk factors can delay the development of heart disease, stroke and congestive heart failure.

Prior to menopause women are relatively protected from the development of heart disease. Hormonal protection delays heart disease by about ten years on average, although the presence of diabetes overrides this protection. Thus, women tend to be older and have more comorbidities than men when they develop heart disease. When women do develop heart disease, particularly at a young age, it tends to be more severe and have a worse prognosis. Women often have delays in diagnosis of heart disease and tend to have more diffuse or widespread disease. Their coronary arteries are smaller and women tend to do poorer with procedures such as angioplasty or bypass surgery.

Heart disease in women can be difficult to diagnose because the usual presenting symptoms are less often present or symptoms are atypical. A recent study of women presenting with heart attack showed that the most frequent preceding symptoms were unusual fatigue (70.7%), sleep disturbance (47.8%), and shortness of breath (42.1%). Only 29.7% reported chest discomfort, a hallmark symptom in men. The most frequent acute symptoms were shortness of breath (57.9%), weakness (54.8%), and fatigue (42.9%). Acute chest pain was absent in 43%.

Using common tests to diagnose heart disease in women pose further challenges. Treadmill stress testing, the usual test to diagnose coronary artery disease, can often be falsely abnormal in women. More accurate tests such as stress nuclear heart scanning or stress echocardiograms are necessary to exclude or diagnose heart disease in women. These tests tend to be less readily available and more costly and sometimes are inappropriately avoided, thus delaying the diagnosis of what are often atypical or unusual presentations of coronary artery disease.

Once coronary artery disease is diagnosed there continue to be problems with inadequate therapy to control symptoms as well as risk. These problems apply to all patients with heart disease and cardiac risk factors.

VIII. RECOVERY FROM YOUR HEART ATTACK

You've had a heart attack. Now what?

You should know that your heart begins to heal right after the muscle is damaged. In many cases the damage is small and the heart functions normally. You can help your heart in this healing process by getting rest. While in the hospital your doctor, nurses and physiotherapists can help you determine how active you can be without stressing your heart. Your doctor will explain what activities you can and cannot do once you are at home.

Remember your heart will heal if you give it rest and time. In the first phase of your recovery (while in hospital) emphasis is on protecting your heart from too much work. Your activity is restricted to meet that need. Once your doctor says you are medically stable, a program of controlled, gradually increasing activity begins.

The purpose of a gradually increasing activity program is to allow you to return to the same or greater work and recreational ability as before your heart attack. The program balances your need for rest with the need to increase activity. You will increase your activity gradually until you are able to carry out self-care activities and walk in the halls comfortably. You will be expected to increase these levels until you are able to take walks at least two to four times daily. Your doctor, nurse or physiotherapist will explain the actual activity levels to you. You need to know that these levels will be adjusted for you to meet your needs. In cases where the heart damage is minimal such as in patients who have had a non-ST elevation MI, received thrombolytic therapy or have had direct angioplasty, the hospital stay will be shortened and progression through the levels will be accelerated.

Pay attention to how you feel!

Activity Levels

1. Activity in Hospital

Activity in hospital has been divided into six levels. You may expect to progress through the levels gradually. If you experience any symptoms such as chest pain, shortness of breath or dizziness, you should inform your nurse, doctor or physiotherapist and you should stop the activity and rest.

2. Activity at Home

After leaving hospital you are advised to maintain the same level of activity which you have been carrying out in the hospital. For the first week you should remain at home doing normal indoor activities. After that you should begin walking either outside in good weather or indoors if it is cold or stormy.

The amount of walking should be gradually increased. A GENERAL GUIDELINE is to walk five minutes twice a day the first day, 10 minutes twice a day the second day, 15 minutes twice a day the third day, and to gradually increase the walking so that by

the end of the second week at home you are walking for one-half hour twice a day. You should maintain this activity level until assessed by your physician at four to six weeks after your heart attack. If you experience chest pain or shortness of breath with activity, reduce your activity level and advise your physician. You should try to see your family physician within one to two weeks to advise him/her of your situation. You should have a follow-up with your cardiologist or internist within four to six weeks to review therapy and guide further assessment.

3. Returning to Work

In general, patients return to sedentary or non-stressful office work at about 2 months after a heart attack. For more vigorous jobs or manual labour 3 months is advisable. Nothing is written in stone however. If your heart attack was small and you have no ongoing symptoms you may be able to return to work earlier. If you suffered only an unstable coronary syndrome without significant heart damage or underwent a successful coronary angioplasty (PTCA) you should be able to return to work earlier. If you suffered a larger heart attack, have ongoing symptoms or had complications such as heart failure, it may be advisable to recuperate further before returning to work.

Your cardiologist, internist of family physician should advise you regarding the timing of return to work and other activities. Often a risk stratifying evaluation such as a stress test or stress nuclear heart scan is carried out at about 4-6 weeks or earlier post heart attack to determine if further investigations such as cardiac catheterization are required in your case or to form a baseline for future comparison and guide your return to full activities and work. An echocardiogram may be obtained to assess the pump function of the heart. Each patient's recovery must be individualized. Some patients may benefit from referral to a cardiac rehabilitation program where available.

Activity Level	Time	Activity Permitted
0	0-24 hrs	• Complete bed rest • Feed self and brush teeth
1	Day 2-3	• Up in chair twice a day for 30 min. each time • Increase as tolerated • Sit at bedside for meals • Wash/shave as tolerated
2	After ICU	• Walk in room and to bathroom • Bath or shower with assistance
3	Day 4-5	• Walk half length of hall once or twice daily • Bath or shower with assistance
4	Day 5-7	• Walk full length of hall as tolerated • May bath or shower
5	Pre-Discharge	• Level 5 plus walk 2 flights of stairs with assistance

4. Driving
Current guidelines indicate that you should not return to private driving for 1 month or to commercial driving for 3 months after a heart attack. For unstable angina, ACS or non-STEMI treated with angioplasty, the waiting period is 48 hours after the procedure for private driving and 7 days for commercial driving. Commercial drivers should be reassessed after 6 months with a stress test.

5. Sexual Activity
A heart attack does not prevent you from returning to normal sexual functioning. If you have fears about sexual activities, discuss them with your doctor. A rule of thumb is that when you are able to walk up two flights of stairs it is safe to resume sexual activities. Or once you are comfortable with day to day activities and are able to walk for half an hour easily then sexual relations may be resumed.

6. Diet
After a heart attack you may have many questions regarding diet to prevent another heart attack. For most patients, strict diets are not necessary. Eating a well balanced diet based on Canada's Food Guide to Healthy Eating is important.

Practical Guidelines

Too much salt should be avoided. Small amounts of salt may be used in cooking but should not be used at the table. Extra salt may lead to fluid build-up and may make high blood pressure and heart failure worse. If this happens even stricter salt restriction may be required.

There is no one ideal body weight for everyone of the same height because people have different body shapes and frames. Instead there is a range of weights that is healthy for your height. You may have an idea of what your healthy body weight range should be. Health experts use a scientific measure called Body Mass Index to figure out whether your weight is within a health range. SEE PAGE 20

The Body Mass Index is designed for adult's aged 20 to 65 years. If you are outside this age range please ask to speak to a dietician about your healthy weight range. Extra pounds place extra strain on the heart.

Your doctor may plan to measure your blood cholesterol and triglyceride levels. Often this is done six to eight weeks after your heart attack. Having a heart attack actually lowers your cholesterol. It is best to wait until visiting your doctor to have your cholesterol checked. If your total cholesterol is above normal (5.2 mmol/L) dietary changes may be needed.

The dietary changes you need to make are:
- Lower your intake of fat, especially saturated fats (from animal sources)
- Eat more fibre by making healthy food choices from whole grain products, vegetables, fruits, dried peas, beans and lentils.

General Recommendations for Healthy Food Choices

Follow Canada's Guidelines for Healthy Eating

- Enjoy a variety of foods means eating many different kinds of foods, prepared in different ways.
- Choose cereals, breads, and other grain products, vegetables and fruits. You shouldchoose whole grain, enriched grain products, dark green and orange vegetables and orange fruit more often.
- Choose low-fat dairy products, lean meats, fish and poultry as well as dried peas, beans and lentils. Prepared foods with little or no fat. Trim off all visible fat before cooking. Drain fat from cooked ground meat. Remove skins from fish and poultry. Roast, barbecue or broil meat allowing the fat to drip off.
- Use skim, 1% or 2% milk and milk products instead of homogenized mild or other high fat milk products such as cream cheese, sour cream or regular cheese.
- The amount of fats and oils should be limited to 3 to 5 tsp./day. Use smaller amounts of the recommended margarine containing corn, canola, safflower, soya and sunflower oils. Lower your intake of fats such as butter, lard, coconut oil, palm oils and cocoa butter.
- Intake of egg yolks should be limited to 2 per week – egg whites or commercial egg substituted may be used as desired. Other foods containing high cholesterol such as liver, kidney, brain and sweetbreads should be avoided.
- Most convenience, processed or fast foods generally have high salt and high fat content. They should be used in moderation, if at all.
- Limit your intake of salt, alcohol and caffeine.

Achieve and maintain a healthy body weight by enjoying allowed physical activity and healthy eating. Remember that your weight for height may be placed into a "weight range" rather than one "ideal" weight.

Following the above guidelines will result in healthy eating to guard your heart. You as a consumer will be better able to make healthier food choices. Please review the New Canada's Food Guide to Healthy Eating. If you need more dietary counseling, please ask to speak with a dietician.

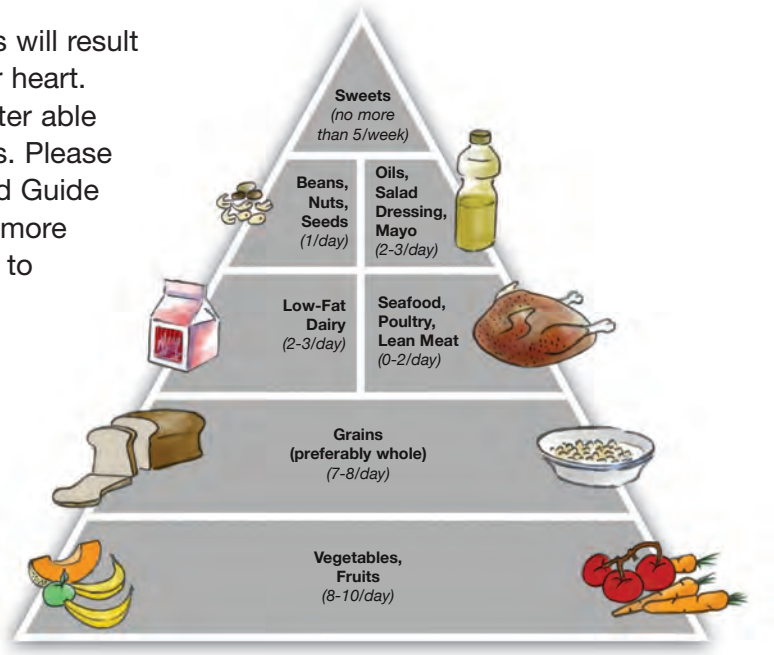


Figure 6: Food Pyramid. Download the Canada Food Guide at: http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php

Non-Invasive Cardiac Investigations and Procedures

Stress Testing

Stress testing is also known as treadmill testing or graded exercise testing. During the test you will be asked to walk on a treadmill which gradually increases the speed and grade. Your electrocardiogram, blood pressure and symptoms will be continuously monitored. The test will be stopped when your symptoms warrant it or if a strongly positive result or arrhythmia occurs. Treadmill testing is useful to assess the presence and severity of coronary artery disease, and if present to determine the prognosis and to guide therapy or intervention.

A treadmill test may be carried out shortly after a heart attack to determine your risk for a future heart attack or for angina. The most common way to do this is to increase speed and grade every 3 minutes. In this case, the treadmill test is usually limited either by a time or a heart rate maximum. Later a full exercise test may be carried out.

Treadmill testing may show changes in the electrocardiogram (ECG) which may mean the blood supply to your heart is reduced. Chest pain or shortness of breath may accompany these changes. Unfortunately treadmill testing is not perfect. About 30% of the time false positive results may be obtained. This may make further testing necessary to rule out coronary disease or assess its severity.

Holter Monitoring

A Holter monitor is a tape recorder, which is attached to your skin by ECG electrodes. It is able to record the heart rhythm over a 24-hour period. You will record any symptoms that occur during that time. The recording is then analyzed. It may detect changes in heart rhythm, or changes in the ECG that might mean lack of blood supply to the heart.

Cardiac Loop Recorder

A cardiac loop recorder is a device which records a continuous loop of cardiac rhythm. If a patient experiences symptoms, the patient pushes an indicator button to save recent ECG tracings. The tracings can then be transmitted by telephone for analysis. Loop recorders are generally worn for 1 or 2 weeks and are used to diagnose symptoms such as dizziness, palpitation or fainting.

Ambulatory Blood Pressure (ABP)

BP recorded in the physician's office is often falsely elevated. This is called "white coat hypertension". In order to accurately assess true BP ABP (ambulatory blood pressure) device records BP frequently over a 24-hour period. Like a Holter monitor, you wear the device home. A BP cuff is attached to a control and recording device. The 24-hour BP recording is then printed out and analyzed by your physician to confirm the presence or absence of hypertension. Another way to monitor the BP is home BP self-monitoring using an automated or semi-automated device and recording the BP yourself, at rest, several times a day. A normal home or ABP is 135/85.

Echo/Doppler

Echocardiography is an ultrasound test that gives excellent pictures of the structures of the heart. It evaluates the size, shape and motion of these structures. Important information may be obtained on the function of the pumping chambers of the heart and of the valves. This test is entirely painless and safe. It takes about 15 to 30 minutes; Cardiac Doppler is also an ultrasound test. It too is painless and safe. It may be used to find leaky cardiac valves and/or the presence of tightened or stenotic valves. The test takes about 10 to 20 minutes. In both tests a transducer (a small instrument looking something like a stethoscope) coated with conductive jelly will be placed on the chest and moved along the chest wall over the areas to be examined.

Stress Echocardiography

Stress echocardiography combines stress testing with an echocardiogram (cardiac ultrasound) obtained immediately after exercise. Exercise is usually carried out on a treadmill. Alternatively a bicycle (either upright or lying down) may be used to provide the exercise stress. This measures the pump function of the heart under stress and can be used to prove or disprove the presence of coronary artery disease and evaluate the functional significance and severity of angiographically identified coronary narrowing. Sometimes a medication, dobutamine, is used to accelerate the heart rate in patients who are unable to exercise. Echocardiography is used to measure the pump function of the heart before and during this pharmacologic (medication induced) stress test and identify lack of blood supply to the heart muscle. Side effects of dobutamine include angina and cardiac arrhythmias.

Trans-esophageal Echocardiography (TEE)

In some patients in whom external or trans-thoracic echocardiography does not provide diagnostic information, an ultrasound transducer can be placed into the esophagus to provide close and excellent pictures of the cardiac structures. Such a procedure is much like a gastroscopy and is usually carried out under sedation.

Stress Nuclear Testing

Stress nuclear testing is a form of stress test that may provide added useful information about your prognosis. A nuclear material is injected into your blood stream while you exercise on the treadmill. The material is safe and medically approved. Similar nuclear materials are used to obtain bone scans, brain scans, thyroid scans etc. The nuclear material is taken up by your heart and is distributed through the heart muscle according to blood flow. Areas of the heart that are supplied by narrowed arteries will have reduced blood flow that will show up on scanning as reduced areas of radioactivity. These techniques are more accurate than routine treadmill testing in finding coronary disease and determining its severity. Scanning agents include the isotpes thallium and Technetium 99m. Technetium 99m is bound to carrier molecules bound to carrier molecules (MIBI or Myoview®; tetrafosmin or Cardiolyte®). Technetium 99m-based scanning has the added advantage of providing information on the pump function of the heart. Both stress and persantine nuclear stress tests are useful in excluding falsely abnormal treadmill stress tests and carry 90-95% accuracy.

MPI is a widely used and safe non invasive test that has been well validated over more than 30 years. As with many non invasive tests, it results in a small radiation exposure. By appropriate selection of patients, the very small risk associated with the radiation exposure is far outweighed by the benefits of the test. In relative quantitative terms the exposure from a MPI test (8-10 Msv) is roughly 3 times naturally occurring annual background radiation (approximately 3 Msv).

Persantine Nuclear Stress Testing

In patients who cannot exercise due to vascular or musculo-skeletal problems (e.g. back pain, arthritis, etc.) an injection of intravenous persantine may be used to "stress" the heart. Nuclear isotopes may then be administered and the heart scanned with a special camera to identify areas of reduced coronary artery blood flow. Persantine may not be given to patients with asthma or who are on asthma medications or to patients with unstable symptoms. Side effects of persantine include headaches, flushing, chest pain and shortness of breath. These effects are readily reversed with the antidote, aminophylline.

Invasive Cardiac Investigations and Procedures

Cardiac Catheterization (coronary angiogram or simply "angiogram"):

Cardiac catheterization is a procedure where a small plastic catheter is placed within a large artery in your leg and advanced to your heart. This technique is used to take pictures of the arteries of the heart and the pump function of the left ventricle. The procedure provides the most detailed and accurate information on the anatomy of

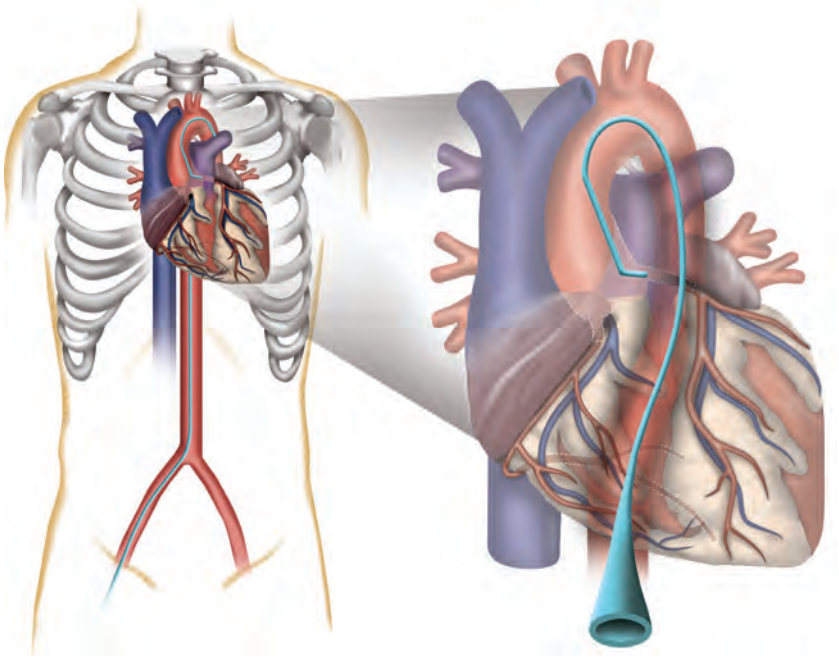


Figure 7: Cardiac catheterization

the coronary arteries. Cardiac catheterization is necessary before a decision can be made about bypass surgery or coronary angioplasty. On occasion, for instance, when the arteries to the legs are blocked, the procedure is carried out through an artery in the elbow crease or wrist.

This procedure is called an “invasive cardiac procedure” because tubes are actually placed within the body. The procedure is, however, relatively painless. Local anaesthetic is given before insertion of the catheters. You may feel pressure as the catheter is inserted. You may feel a warm sensation throughout your body when the x-ray dye is injected to obtain the pictures. The procedure generally lasts for one-half hour. After the procedure you will be asked to lie still for four hours to allow the puncture site in the groin to heal.

There are certain risks involved in cardiac catheterization. These include an approximate 2/1000 risk of serious complications such as heart attack or stroke. As well there is a 2/100 risk of minor complication such as allergy, bleeding, fainting or vascular injury. Ninety-eight times out of a hundred there are no problems.

Cardiac catheterization is not indicated in all patients with coronary artery disease. In general, it is reserved for patients whose angina is unstable, in patients who are having angina following a heart attack, or in whom other cardiac testing has shown a high risk for myocardial infarction.

Coronary Angioplasty (PTCA) and Coronary Stenting:

Coronary angioplasty is a technique used to open up narrowed or blocked coronary arteries. It is carried out in a manner similar to cardiac catheterization. Plastic tubes are inserted through a large artery in your leg or a small artery in the wrist and advanced to the opening of the coronary arteries. Small balloons are then placed through these small plastic tubes (catheters) and slid down the coronary arteries to

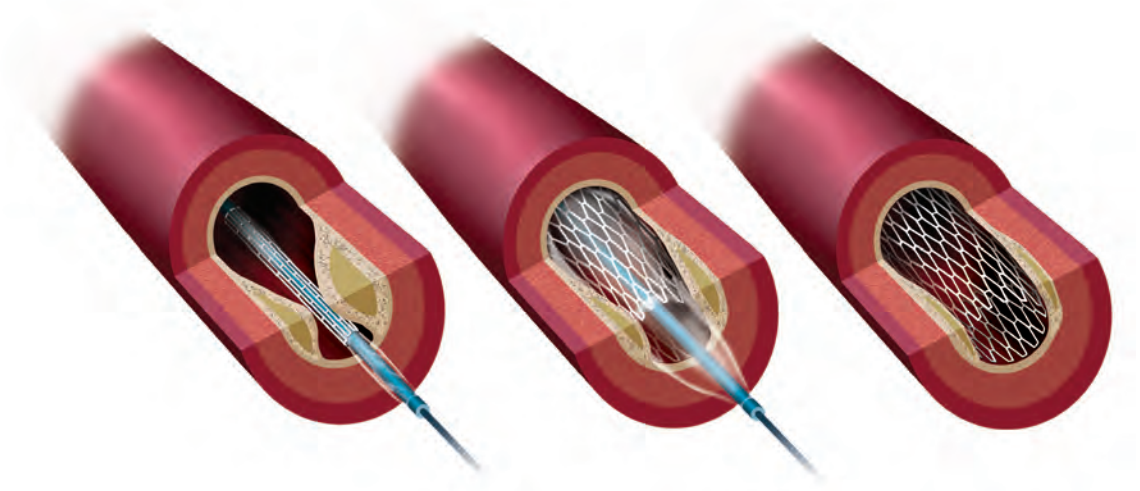


Figure 8: Coronary angioplasty and stenting

the level of narrowing. These balloons are inflated at the site of coronary narrowing, resulting in dilatation or flattening outwards of the cholesterol plaque and blood clotting substances that make up the blockage.

Angioplasty has a high success rate of around 95%. Unfortunately, however, the narrowing may recur 5-10% of the time (this is called re-stenosis). It is possible to do second and third coronary angioplasties if necessary. Coronary angioplasty carries the same risks as cardiac catheterization. In addition, there is a slightly higher risk of myocardial infarction (heart attack) as the angioplasty may sometimes cause blockage of coronary arteries that are being opened. This risk is still low. In most cases a stent or expandable metal tube is used to further reduce the risk of recurrent narrowing of the coronary artery (re-stenosis). This stent may be a bare metal stent (BMS) or a drug eluting stent (DES). This improves the long term success of the angioplasty and stenting procedure. Coronary angioplasty has been shown to reduce mortality when used in the setting of a heart attack (STEMI or non-STEMI). In other situations, angioplasty and stenting may be used to treat angina but has not been shown to reduce mortality or heart attack risk compared with bypass surgery or optimal medical therapy.

Patients undergoing angioplasty and stenting will receive blood thinning medications including aspirin and another anti-platelet agent(either Plavix, Effient or Brilinta) for 6 weeks. If a DES is placed both the ASA and other blood thinner(either Plavix, Effient or Brilinta) should be maintained for a minimum of 1 year to prevent sudden blockage or clotting of these stents. Please check with your cardiologist or internist to determine how long you should stay on this medication.

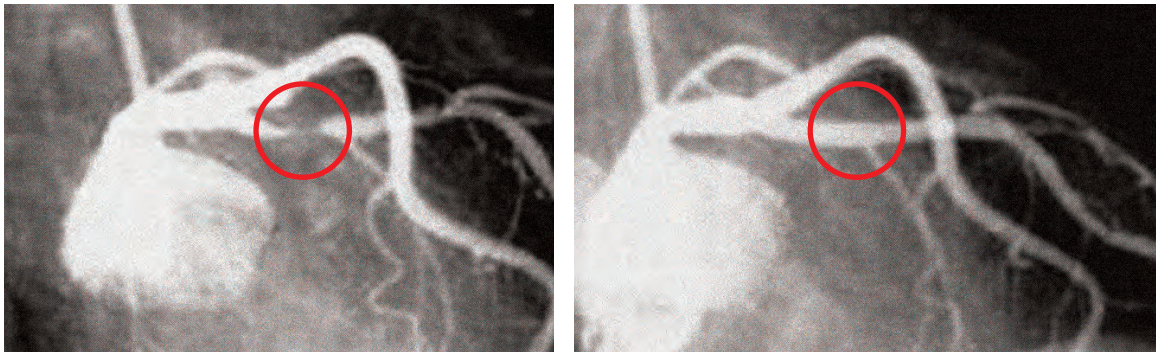


Figure 9: LAD Stenosis pre (left) and post (right) angioplasty

DO NOT STOP PLAVIX®, EFFIENT OR BRILINTA ON YOUR OWN – ESPECIALLY IF YOU HAVE RECEIVED A DRUG ELUTING STENT (DES).

Coronary Artery Bypass Grafting (CABG)

Coronary artery bypass grafting (CABG) is a surgical technique whereby veins are taken from the legs and an artery is taken from the chest wall. They are used to bridge or bypass narrowed areas in coronary arteries to restore blood flow to the heart.

Newer procedures include total arterial revascularization: where arteries from the right and left chest wall and from the forearm are used to create all the bypass grafts, and the MID-CAB procedure where bypass of single vessel LAD disease is carried out on the beating heart through a small incision in the anterior chest wall. In some cases, coronary bypass may even be carried out off pump (OP-CABG) to avoid stopping the heart, so called beating heart bypass surgery. These newer procedures have specific indications, which can be discussed with your cardiac surgeon.

CABG is very good therapy for angina particularly when medications or angioplasty cannot control angina. The surgery may also be indicated where cardiac testing shows a high risk for extensive heart damage to occur if the patient were to suffer a heart attack.

The operation usually takes about 4 hours and the patient is usually in hospital about 5-7 days. The patient usually resumes normal activities by around 2 months after the surgery and may return to work in 3-4 months. The risk of bypass surgery includes an approximate 1% risk of death and 5% risk of heart attack, stroke or wound infection.

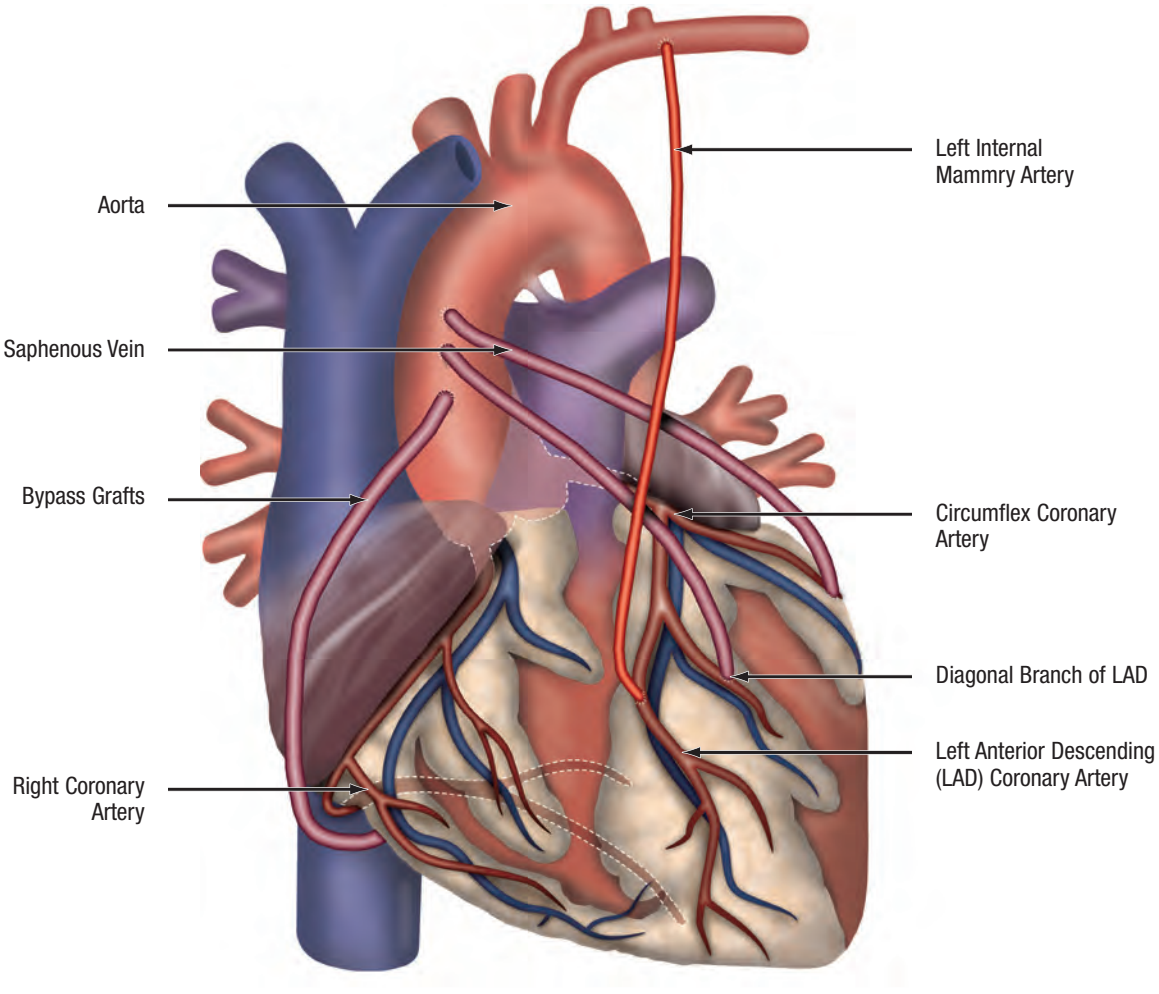


Figure 10: Coronary artery bypass grafting

X. CARDIAC MEDICATIONS: WHAT DO YOU NEED TO KNOW?

Your doctor may prescribe medicine for you to take at home to help your heart continue to heal and function efficiently. The medication is carefully chosen to meet your needs. There are points you need to remember about taking medication. Know the name of your medicine and how you are to take it (i.e.: on an empty stomach, with food, times, frequency, how long will you be taking, etc).

Know what to do if you forget a dose of the drug. Know why you are taking the medicine, what it is supposed to do for you. Know possible problems that can be caused by the drug (side effects).

Know what to do if they occur.

Some drugs available in drug stores have warning attached against use by cardiac patients. When looking for cold or cough preparations or other medications not prescribed by your doctor, read labels carefully for warnings and avoid taking them.

1. Never use medications prescribed for someone else or allow others to use your medications.
2. It is dangerous to mix drugs or to try to prescribe medication for yourself.
3. Consult your doctor before making any changes in your medication plan. Do not stop taking your medication without instructions from your doctor.
4. Talk to your doctor or nurse if you have any questions about your medications.

Most cardiac medications have two names, which causes some confusion. There are brand names, which may be given to the same medication by several different companies. In addition, there is the generic name, which is the same name for the same medication manufactured by different companies. Pharmacies are permitted and expected to substitute less expensive generic medications for brand name medications unless otherwise specified by the physician. The active ingredients in these medications are generally the same, although other constituents may vary. In the following discussion, brand names will be listed in brackets.

IT IS THE PATIENTS RESPONSIBILITY TO KNOW THE NAMES AND DOSES OF HIS/HER MEDICATIONS OR TO CARRY A LIST OF MEDICATIONS WITH HIM/HER.

1. Nitroglycerin

Nitroglycerin is one of the oldest medications available for the treatment of angina and heart disease. Nitroglycerin dilates blood vessels reducing the workload of the heart and improves blood flow to the heart. Nitroglycerin is used under the tongue to treat attacks of angina. Follow these directions for the use of Nitroglycerin.

If you have chest pain:
Stop what you are doing. If the discomfort does not subside within several minutes, take a Nitroglycerin tablet or spray under your tongue. Avoid swallowing while the tablet disolves or the spray is absorbed. When doing so you should ensure that you are sitting or lying. Nitroglycerin can lower the blood pressure and cause dizziness. Avoid standing after taking the medications for approximately 20 minutes.

There are two different sizes of Nitroglycerin tablets, 0.3 mg and 0.6 mg. Nitroglycerin is also available in spray form (0.4 mg). You may take one 0.3 mg tablet or one 0.4 mg spray every fives minutes up to a total of four doses or one 0.6 mg every 10 minutes up to a total of two to three doses. You should never use Nitroglycerin while driving.

If your angina has not subsided after 20 to 30 minutes, then there is a chance you |may be having a heart attack and you should either contact your physician immediately or have someone take you to the nearest hospital.

Nitroglycerin must be fresh to be effective. Cap the bottle quickly and tightly after each use. Nitroglycerin spray is good for several years. Nitroglycerin tablets are good for about 3 months. Replace unopened bottle after three months even if there are tablets left. Protect tablets from light.

2. Anti-platelet medications

Antiplatelet agents are medications, which interfere with the action of small elements in the blood called platelets. Platelets adhere to bleeding sites and initiate the clotting process. Aspirin is the best known and most widely used antiplatelet agent. These agents are used to treat unstable angina and to prevent stroke and heart attack. Other anti-platelet agents include Dipyridamole (Persantine), Asasantine (aspirin and persantine) and Sulfinpyrazone (Anturan, ticlopidine [Ticlid] and clopidogrel [Plavix]). Plavix has largely replaced Ticlid and is used routinely in unstable angina, post heart attack and post angioplasty and coronary artery stenting. Side effects include gastro-intestinal upset and bleeding. To relieve mild GI distress take enteric coated aspirin or take these medications with food or milk. Don't take aspirin with alcohol to avoid intestinal bleeding.

Plavix is administered along with aspirin to patients who have developed an ACS or undergone angioplasty and coronary stenting. In general dual anti-platelet therapy should be continued for up to a year after an episode of unstable angina, an ACS, a non-STEMI or following coronary angioplasty and stenting. In some patients with drug eluting stents (DES) it may be necessary to continue the clopidogrel (Plavix) for longer than a year. Please check with your cardiologist or internist to determine how long you should stay on this medication. Newer anti-platelet agents which may replace Plavix in some cases include prasugrel (Effient) and ticagrelor (Brilinta). **Stopping Plavix, Effient or Brilinta could lead to sudden stent occlusion (blockage). Consult your prescribing physician before discontinuing Plavix, Effient or Brilinta.**

3. Long-Acting Nitrates

Long-acting nitrates are preparations of Nitroglycerin that have been formulated for prolonged action. They may be taken in pill form (Isordil, Nitrong SR, Nitrodur) or applied to the skin (Nitropaste, Transderm Nitro, Nitrodur, Minitran, Trinipatch) or applied under the gums (Nitrogard). All of these medications provide continuous levels of Nitroglycerin in the bloodstream and are intended to prevent attacks of angina. Side-effects include headache and lightheadedness. These side-effects generally wear off. If they do not, notify your physician. When taking Nitrates, avoid overly hot showers and baths as this may make you dizzy and fainting is possible. To prevent dizziness, get up slowly from a sitting or lying position.

4. Beta-Blockers

Beta-blockers are medications that can lower your blood pressure, reduce the frequency of angina attacks, control rapid heart rate and reduce the risk of complications after a heart attack by making the heart's workload easier.

Beta-blockers may have side effects, which include fatigue, difficulty concentrating, insomnia, nightmares, impotence and alterations of peripheral circulation. Beta-blockers may also worsen asthma and you should not be taking these drugs if you have this condition. Despite this list of side effects, most patients tolerate Beta-blockers without significant problems. Higher doses of beta-blockers, particularily in older patients, may lead to increased risk of heart failure.

Several studies have shown that, after a heart attack, Beta-blockers reduce the risk of another heart attack or sudden death. This is likely the reason that you would be prescribed a Beta-blocker while in hospital after your heart attack.

Some Names of Beta-blockers include:
Propranolol (Inderal)
Metoprolol (Lopresor, Betaloc)
Atenolol (Tenormin)
Tomolol (Blocadren)
Acebutolol (Sectral, Monitan)
Nadolol (Corgard)
Sotalol (Sotacor)
Carvedilol (Coreg)
Bisoprolol (Monocor)

If you are to take one dose of this type of drug each day, and you miss a dose, take the missed dose within eight hours. If you take two or more doses each day, take the missed dose as soon as possible. Never take a double dose to make up for a missed dose.

Suddenly stopping these drugs can cause serious problems. They must be tapered off gradually. Some patients may have difficulty in getting to sleep when starting on these drugs. Taking the drug no later than two hours before bedtime can help with this.

5. Calcium Blockers

Calcium channel blockers are an entirely different group of medications from beta-blockers. These agents reduce the flow of calcium into cells, which produces relaxation of blood vessel walls. These agents increase blood flow to the heart, and as well, reduce the work of the heart. They may also relax the walls of other arteries and lower blood pressure.

Calcium blockers are used for the treatment of angina and hypertension. One of the calcium blockers is also used for the treatment of arrhythmias. There has been news media attention in past years questioning the safety of calcium channel blockers in patients with coronary artery disease and hypertension. These concerns pertain to short acting agents. There have been many studies with all classes of calcium channel blockers. In general, when used in patients who do not have congestive heart failure, the heart rate limiting calcium channel blockers (verapamil and diltiazem) are safe to use in Coronary Artery Disease (CAD) patients. Non heart rate limiting calcium channel blockers (nifedipine, amlodipine and felodepine) are safe to use in hypertension but are best avoided in CAD patients unless they are given with a Beta-blocker or unless the patients heart rate is naturally slow. Side effects include headache, flushing, dizziness, lightheadedness, swelling of ankles and constipation.

Take a missed dose of this drug within four hours but do not take a double dose to make up for a missed dose. To minimize dizziness, rise slowly from a sitting or lying position. Alcohol intake can make dizziness worse. Foods and drinks containing calcium can still be included in your diet in reasonable amounts. Prevent constipation by increasing your fluid and fiber intake.

Currently available calcium blockers:
Nifedipine (Adalat XL)
Amlodipine (Norvasc)
Felodipine (Plendil, Renedil)
Verapamil (Isoptin SR, Chronovera)
Diltiazem (Cardizem CD, Tiazac ER)

6. Digoxin (Lanoxin)

Digoxin is a drug that acts to strengthen your heart contractions. It also regulates heart rhythm and is used to control heart rate in certain types of arrhythmias. If taken in excess, Digoxin may cause excessive slowing of heart rate.

Symptoms of Digoxin excess include:
- loss of appetite, nausea or vomiting
- palpitations
- visual disturbance (blurring, yellow or green tinge)
- increased shortness of breath, increased fatigue or swelling of ankles
- Sudden weight gain of more than three pounds

If these symptoms occur, contract your physician.

Take this medication at a regular time each day. Take a missed dose within 12 hours but do not take a double dose to make up for a missed one. Report a very high, low or irregular heart rate to your doctor.

7. Diuretics

Diuretics are medications, which help your kidneys to clear your body of excess fluid. They are used in conditions such as congestive heart failure and high blood pressure.

When taking a diuretic, you should avoid drinking unusually large amounts of liquids as this can counter the effect of the diuretic and lead to dilution of the body's natural salts.

Diuretics may also result in a loss of potassium*, which should be replaced by including potassium containing foods in your diet. Bananas and citrus fruits are rich in potassium, as are raisins, dates and green leafy vegetables. Your doctor may also prescribe a potassium supplement in form of liquid or tablet.

Examples of diuretic medications include hydrochlorothiazide and furosemide (Lasix). Take a missed dose of these drugs as soon as possible or within eight hours if on a single daily dose, within four hours if on twice daily. Otherwise, skip the missed dose. Take your second dose of the day in late afternoon to minimize having to get up during the night to pass urine.

Reactions to these medications may occur and those which should be reported to your physician include: excessive thirst, fever, irregular heart rate, lethargy, mouth dryness, muscle cramps, skin rash, urgent or burning on urination, weakness or weak pulse.

** See "Potassium Modified Eating Plan" in Appendix I*

8. Angiotensin Converting Enzyme Inhibitors (ACE-inhibitors)

Captopril (Capoten)
Enalapril (Vasotec)
Lisinopril (Prinivil, Zestril)
Ramipril (Altace)
Quinapril (Accupril)
Fosinopril (Monopril)
Cilazapril (Inhibace)
Perindopril (Coversyl)
Trandolapril (Mavik)

These agents are members of a special group of vasodilators known as ACE Inhibitors. These agents block the conversion of angiotensin I to angiotensin II which is an intrinsic

(natural) substance that causes constriction of blood vessels and can lead to fluid retention. In addition to their use in the treatment of hypertension and congestive heart failure, these agents have been shown to reduce hospitalization and improve prognosis in patients with coronary artery disease, vascular disease, prior stroke, chronic kidney disease or diabetes with other risk factors.

The major side effect of ACE inhibitors is a dry non-productive cough. Sometimes these agents can cause swelling of the throat and if this occurs, stop the medication and contact your physician. As these medications lower blood pressure (BP), dizziness can occur. If this happens, contact your physician.

9. Angiotensin II Receptor Blockers (ARB's)

Candesartan (Atacand)
Irbesartan (Avapro)
Losartan (Cozaar)
Valsartan (Diovan)
Telmisartan (Micardis)
Olmesartan (Olmetec)
Eposartan (Teveten)

These agents act further down the "angiotensin" pathway than the ACE inhibitors and block the effects of angiotensin II on the cells of the blood vessel wall. These agents are used in hypertension. Studies have shown ARB's produce equivalent benefit to ACE inhibitors in the prevention of heart attack, stroke and the progression of chronic kidney disease.

ARB's tend to have fewer side effects than ACE inhibitors in terms of cough. They are equally effective in terms of blood pressure control.

10. Vasodilators

Vasodilators are medications, which dilate or open up blood vessels. They are used to treat high blood pressure and congestive heart failure. Side-effects include dizziness, due to excessive lowering of blood pressure and occasionally flushing or palpitations.

Examples of vasodilators include:
Doxazosin (Cardura)
Hydrazine (Apresoline)
Prazosin (Minipress)
Terazosin (Hytrin)

11. Anti-arrhythmic medications

Anti-arrhythmic agents are medications which are used to regularize the heart beat and to treat rhythm disorders.

They are complicated medications with significant side-effects. They are best administered under close supervision by your physician as, on occasions, these medications can worsen an arrhythmia.

Examples of anti-arrhythmic agents include:
Quinidine (Biquin Durules)
Procainamide (Pronestyl)
Disopyramide (Rythmodan, Norpace)
Mexilitine (Mexitil)
Propafenone (Rhythmol)
Sotalol (Sotacor)
Amiodarone (Cordarone)
Dronedarone (Multaq)

Speak with your doctor or nurse about each of these drugs individually to learn of specific points to be aware of.

12. Anti-coagulants

Warfarin (Coumadin) is the most commonly administered anticoagulant. This medication interferes with normal blood clotting mechanisms by reducing certain circulating blood proteins, which normally act to form blood clots. Warfarin may be in used in patients with atrial fibrillation (a cardiac arrhythmia) to prevent stroke or embolism.

Warfarin may be given to patients with vein thrombosis (DVT, phlebitis) and in pulmonary embolism, which is a condition where blood clots travel from the veins in the legs to the lungs producing chest pain. Warfarin is also administered when blood clots form in the heart after a heart attack. On occasional Warfarin is also recommended in patients with severe blockages of coronary arteries.

While taking Warfarin the patient is at increased risk of bleeding. It is therefore necessary to monitor by a blood test called the prothrombin time, often referred to as PT. The PT is standardized between laboratories and reported as the **INR** (International Normalized Ratio). The INR is maintained between **2 and 3** to prevent clotting in atrial fibrillation, phlebitis and other conditions. With mechanical heart valves the INR is maintained between 2.5 and 3.5. The INR should be maintained within a narrow range in order to ensure that the blood is neither too thin nor too thick. Excessive thinning of the blood

can lead to bleeding. Based on INR determinations, your physician should advise you as to your dose of Warfarin you should be taking. Often the dose of warfarin is not stable and may have to be adjusted frequently to keep the INR in the therapeutic range.

Take a missed dose of Warfarin within eight hours but never take a double dose to make up for the missed dose. Be aware that you have a risk of bleeding. Being careful can reduce this risk. Never walk about barefoot, use an electric razor for shaving, use a soft toothbrush, and wear gloves to protect your hands when doing heavy work. Limit alcohol consumption (1-2 drinks/day).

There are many drugs, which interact with Warfarin and alter its effect. While taking Warfarin, do not take any new medications without the advice and knowledge of your physician. There are new anticoagulants available which act directly to block various clotting factors. These medications do not require monitoring of the INR. Currently only dabigatran (Pradax) is available. It is taken at a dose of 110 or 150 mg twice daily depending on age. Two other agents rivaroxaban and apixaban will soon be available.

13. Cholesterol and Lipid Lowering Drugs

These drugs are used to treat abnormally high levels of one or more types of fats such as cholesterol or triglycerides. These drugs are given to reduce the risk of atherosclerosis (hardening of the arteries) usually when dietary and other measures have not worked. In patients with coronary disease, cerebro-vascular disease (strokes or TIA's), peripheral vascular disease, abdominal aortic aneurysm and diabetes, aggressive lowering of total cholesterol and LDL cholesterol (the "bad") cholesterol have been shown to reduce the risk of heart attack and stroke by as much as 30-50%.

In general cholesterol lowering agents are started early in patients with CAD. Modern medications are very effective in lowering cholesterol with minimal side effects. When initiated in patients with CAD and other manifestations of atherosclerosis, they should be continued indefinitely.

Classes of Lipid Lowering Medications:
Statins
Fibric Acid Derivatives
Niacin
Cholesterol Binding Resins
Cholesterol Absorption Inhibitors

These drugs differ with respect to mechanism of action and degree and type of lipid lowering. In general, cholesterol can only be lowered about 10-15% by diet alone and it is difficult to adhere to a diet consistently. All patients should adhere to a low cholesterol diet. In many cases additional lipid lowering with medication will be

required. If required, these medications are best initiated early to attain maximum benefit as soon as possible. If diet alone is sufficient in the long term, the dose of lipid altering medication may be reduced or the medication discontinued entirely. Most often patients on lipid lowering medications for CAD will have to remain on these medications forever. This will ensure that the coronary disease will progress as little as possible and may even regress (get better).

The choice of agent depends on the lipid abnormality:

Lipid Profile	1st Line Therapy	2nd Line Therapy
LDL ↑	Statin	Cholesterol Absorption Inhibitor
LDL ↑↑ & TG ↑	Statin	Niacin or Fibrate
LDL ↑ & TG ↑↑	Fibrate or Niacin	Combination Therapy
TG ↑ & HDL ↓	Fibrate or Niacin	Combination Therapy

Statins

Statins are a group of medications, which block the internal production of cholesterol in the liver by blocking the enzyme HMG CoA reductase, an essential step in cholesterol production. They also increase the rate of LDL (bad cholesterol) receptor turnover in the liver. These medications may lower the LDL cholesterol by anywhere from 20% to as much as 60% depending on medication and dose. They also have a modest effect on raising HDL (good cholesterol) and lowering triglycerides.

There have been many large scale studies of the benefits of Statins in patients after a heart attack. These show significant reductions in the risk of death, cardiac events, strokes, and the need for angioplasty and bypass surgery in patients with CAD. The benefit is in the range of 25-40%. As well aggressive cholesterol lowering with statins in post-bypass patients has been shown to reduce the rate of coronary disease developing in the bypass grafts.

Currently available Statins include:
Lovastatin (Mevacor)
Pravastatin (Pravachol)
Simvastatin (Zocor)
Fluvastatin (Lescol)
Atorvastatin (Lipitor)
Rosuvastatin (Crestor)

These medications are generally well tolerated with infrequent side effects. Side effects to monitor include the development of muscle pains and liver abnormalities. While on these medications, liver function tests and the cardiac muscle enzyme CPK should be checked periodically (at 2-3 months after starting the medication and then every 6-12 months). If you develop muscle pains on these medications, report your symptoms to your physician. *See advisory I. Statin Advisory and J. Statin Risk Benefit.*

If your cholesterol improves on these medications, it means the medication is working. It does not mean you no longer need the medication. Unless you are experiencing side effects do not stop your medications without checking with your doctor.

Cholesterol Absorption Inhibitors

Cholesterol absorption inhibitors are a new class of cholesterol lowering drugs which block absorption of cholesterol at the brush border of the intestine without affecting absorption of triglycerides or fat soluble vitamins.These drugs have the advantage of not being systemically absorbed and can lower cholesterol by about 20% on their own. When used in addition to statins they may provide an additional 15%-20% cholesterol lowering. It is recommended to monitor liver function tests when using a cholesterol absorption inhibitor and a statin together. Side effects including fatigue, abdominal pain, diarrhea, muscle and joint pains and coughing are infrequent.

The only currently available cholesterol absorption inhibitors is Ezetimibe (Ezetrol).

Fibric Acid Derivatives

The fibric acid derivatives or Fibrates include:
Gemfibrozil (Lopid)
Fenofibrate (Lipidil Micro, Lipidil Supra, Lipidil EZ)
Bezafibrate (Bezalip)

These agents act via a variety of mechanisms to lower triglycerides (35-50%) levels and raise HDL levels (15-25%). They may also reduce Lp (a) and fibrinogen, which have been identified as newer, non-traditional risk factors. Fibrates are particularly useful in diabetic patients whose characteristic lipid abnormality is high triglycerides and low HDL. In some patients who have combined lipid abnormalities, Fibrates are combined with statins to lower both triglycerides and LDL and to raise HDL. When combined it is best to take the Fibrate in the morning and the Statin in the evening. This minimizes the overlap of medication and the side effects. The fibrate prevents the rise of triglycerides that occurs after eating and the statin prevents the overnight production of cholesterol by the liver.

When combined fibrates and statins may cause inflammation of skeletal muscles resulting in muscle pain and weakness. This side effect is uncommon, but serious and any generalized muscle pain symptoms should be reported to your physician immediately.

Bile Acid Sequestrants (Resins)

Bile acids are the breakdown products of cholesterol. They are excreted by the liver via the bile. They are 90% reabsorbed from the intestine and used to re-manufacture cholesterol in the liver. Bile Acid Sequestrants (Resins) interfere with this intestinal reabsorption, by binding the bile acids in the gut and thus promoting their excretion from the body. These agents are not absorbed and hence have no systemic effects. They may lower the LDL cholesterol by 10-30% depending on the dose. The use of these agents is often limited by GI side effects such as nausea, bloating, cramping and abnormal liver function.

Niacin

Niacin is a B-vitamin (no relationship to nicotine) and is one of the best medication available for patients with *elevated levels of both triglycerides and cholesterol and low levels of HDL cholesterol*. In well-controlled studies, niacin has been shown to reduce heart attacks and death from heart disease. It has also been shown to be effective in reducing the size of cholesterol deposits in the arteries of the heart.

Niacin is also available as a long acting preparation Niaspan®.Niaspan® is an extended release form of niacin intended for once daily dosisng.Niaspan® may have less side effects and be better tolerated than short acting niacin. The starting dose is 500 mg and the dosing is not directly interchangable with short acting niacin. Dose adjustments should be made at four weekly intervals. The maximum dose is 2000mg. Take Niaspan® only as directed. Do not chew the tablet. Take in the evening with a fatty snack.

Niacin is quite a safe medication. There is a risk of an increase in blood sugar levels in patients with diabetes but this can usually be controlled with diet. Uric acid levels in the blood tend to rise and, rarely, this may result in gout. In a few patients, small changes may occur in liver function tests. Patients with a history of duodenal ulcers may experience an increase in ulcer symptoms and should avoid this medication until the ulcer is well healed. You will be checked each time that you have a blood test for each of these possible complications and if you do experience any side-effects, they tend to resolve quickly once the niacin is stopped.

The most common side-effects with niacin are not serious ones but can make it difficult to adjust to the medication. When patients first start to take niacin, they will experience symptoms such as flushing, itching or tingling of the skin and slight lightheartedness. These side-effects are due to opening up of small blood vessels in the skin. Fortunately these symptoms tend to disappear as the body adjusts to the medication and are not usually a significant problem after the first month or two of treatment.

One to three coated aspirin per day will help to reduce flushing during the first few weeks of treatment. Take the coated aspirin approximately I hour before each meal or just before breakfast and take the niacin after your meal.

Short acting Niacin titration

Start therapy as follows: 500 mg tablets
1/4 tablet after each meal for 2 weeks-then
1/2 tablet after each meal for 2-4 weeks-then
1 tablet after each meal for 2-4 weeks-then, if directed
2 tablets after each meal thereafter

If you experience excessiveness of flushing, increase the dose more slowly. Avoid taking niacin with a hot beverage or on an empty stomach. It is important to follow a regular pattern and take the niacin 2 or 3 times per day after meals. Usually, in a few weeks, flushing and itching disappear. However, if you miss taking the medication for even a day or two, these symptoms tend to return.

XI. ACTIVITY LEVELS IN HOSPITAL

General Instructions

1. Do only activities taught to you by your nurse or physiotherapist.
2. Do not progress to the next level of activities until instructed.
3. You may repeat the activities two or three times during the day, if they do not cause you any distress or discomfort.
4. Monitoring your Activity Tolerance: Your PULSE RATE gives an indication of your Activity Tolerance. Learn to take your pulse and record it.

Before activity – record your pulse; do not start exercises if your pulse rate is higher than 100 per minute.

- Immediately after exercise – record your pulse; if it is higher than 120, please rest; report to your nurse. Do not repeat the exercise program until instructed to do so.
- Three minutes after exercise- record your pulse. It should have returned approximately to your "before exercise" recording. If not, rest; report to your nurse. Do not repeat the exercises until instructed to do so.

Activity Level	Time	Activity Permitted
0	0-24 hrs	• Complete bed rest • Feed self and brush teeth
1	Day 2-3	• Up in chair twice a day for 30 min. each time • Increase as tolerated • Sit at bedside for meals • Wash/shave as tolerated
2	After ICU	• Walk in room and to bathroom • Bath or shower with assistance
3	Day 4-5	• Walk half length of hall once or twice daily • Bath or shower with assistance
4	Day 5-7	• Walk full length of hall as tolerated • May bath or shower
5	Pre-Discharge	• Level 5 plus walk 2 flights of stairs with assistance

In patients who have had small heart attacks or direct angioplasty, these stages may be accelerated and patients may be discharged from hospital earlier.

Cardiac Rehabilitation Exercise Program
Hospital Activation Worksheet

Level 1: Bedrest-No exercise

Level 2: Activities - Up in Chair. Washing and showering.

1. Deep breathing - rib cage expands sideways.
2. Curling toes - straightening toes.
3. Bending feet up and down at ankles.
4. Bending alternate knees up and down.

Date:					
Pulse Rate - Before					
Immediately after					
3 minutes after					

Level 3: Activities - Walking in room, to bathroom, assisted bathing

Date:					
Pulse Rate - Before					
Immediately after					
3 minutes after					

Level 4: Activities - Walking _ hall 1 or 2 times a day/Continue levels 2 and 3

Date:					
Pulse Rate - Before					
Immediately after					
3 minutes after					

Level 5: Activities - Walking full length of hall, may shower/Continue levels 2, 3 & 4

Date:					
Pulse Rate - Before					
Immediately after					
3 minutes after					

Level 6: Activities - As Level 5 plus climb 2 flights of stairs- supervised/Continue levels 3,4 & 5

Date:					
Pulse Rate - Before					
Immediately after					
3 minutes after					

XII. CV RISK REDUCTION RX CHECKLIST

Rx ✓	Intervention	Recommendations
	Smoking: Goal -Complete cessation	Strongly encourage patient and family to stop smoking. Provide counselling, nicotine replacement, and formal cessation programs as appropriate.
	Lipid Management: **Primary goal *** LDL < 2.0 (1.8) mmol/L	Start hypolipidemic diet in all patients: ≤ 30% fat,< 7% saturated fat,< 200mg/day cholesterol. 10% LDL↓achievable with diet. Assess fasting lipid profile. Baseline lipid profile < 24 hrs. after acute event. In post-MI patients, lipid profile may take 4 to 6 weeks to stabilize. Add drug therapy according to the following guide:
	Secondary goal * Non-HDL Chol ≤ 2.6 mmol/L; Apo-B<0.8 g/L **Tertiary goal *** **Metabolic Syndrome** TC/HDL < 4.0mmol/l HDL > 1.0mmol/l (men)/ > 1.3mmol/l (women) ***2012 Update-CCS GUIDELINES for the Dx and Tx of Dyslipidemia for the Prevention of CVD***	**Lipid Profile** / **1st Line Therapy** / **2nd Line Therapy** LDL ↑ / Statin / Ezetimibe LDL ↑↑ & TG / Statin / Comb. Therapy Ezetimibe, Niaspan or Fibrate LDL ↑& TG ↑↑ / Fibrate or Niacin/Niaspan® / Combination Therapy TG↑& HDL ↓ / Fibrate or Niacin/Niaspan® / Combination Therapy * **Primary goal:** For patients CHD Risk equivalent: any of CAD, TIA, CVA, AAA, PVD/bruits, DM with one additional categorical risk factor or for patients with very high 10-year risk for total CV events (20%). • Target initial Rx medication dose required to achieve target LDL **<2.0 (1.8) mmol/L** or ≥ 50% LDL↓ • For 10 yr CV risk for hard endpoints 10-20%, LDL Rx threshold is **3.5 mmol/L** target ≥ 50% LDL↓ • For 10 yr CV risk for hard endpoints < 10%, LDL Rx threshold is **5.0 mmol/L** target ≥ 50% LDL↓ • Consider CRP measurement for males >50 & females >60. Initiate lipid lowering if CRP >2.0 mg/L **For specific medications and dosing strategy see *Lipid Optimization Tool***
	Hypertension Goal < 150 systolic(Age ≥ 80) < 140/90 (non-diabetic CKD) < 135/85 (Home BP) < 130/80 (DM+/-CKD) < 120/80 (LVD) AHA 2007 **2013 CHS CHEP** ***www.hypertension.ca*** **Measure BP at all appropriate visits. Assess overall cardiac risk. Home BPM an important monitoring tools. Treat to target. Lifestyle modifications to reduce BP and CV risk. Lifestyle and Rx to achieve BP targets. Combination Rx. Focus on adherence.**	• Assess BP at all visits. **Assess global CV risk.** Lifestyle modifications are cornerstone of anti-hypertensive and anti-atherosclerotic therapy. • Initiate Rx immediately if hypertensive urgency. Dx HTN on second visit if : target organ damage, DM, chronic kidney disease (CKD) or BP > 180/110.Dx HTN on 3rd visit if BP ≥140-179 or ≥90-109 • Validate hypertension with: 1) Office BP(<140/90), ambulatory BP(< 135/85 daytime average/ or 130/80-24 hr average) or Awake ABPM ≥ 135 or 85. 24-hour ≥ 130 or 80 DM, or 130</80 DM, and/or DM nephropathy. Target < 140/90 (non diabetic CK.), < 120/80 LVD. AHA. • Initial Rx for systolic/diastolic HTN in absence of compelling indication: Low dose thiazide; ß-blocker if age < 60 yr; ACE-I in non-black pts; long-acting CCB and ARB. **ISH:** LDD/ DHP-CCB/ARB. Combination therapies generally necessary to achieve target BP. • Consider Rx ASA (once BP controlled) and statin in HTN patients if ≥ 3 CV risks. • CHF&HTN-Rx ß-blocker; ACE-I (ARB if ACE-I intolerant) & aldosterone antagonist (Class III/IV HF or post MI). Thiazide or loop diuretics, DHP-CCB. • CKD or Type 2 DM with micro-albuminuria, proteinuria or nephropathy ACE-I/ARB are 1st line Rx. Combination of ACE-I and ARB not recommended in non-proteinuric CKD. • In DM if ACE combination therapy required: ACE-DHP CCB preferable to ACE-thiazide combinations (ACCOMPLISH)
	Diabetes **CDA 2013** **guidelines.diabetes.ca** ***Guidelines Released April 2013***	• **Dx DM:** FPG ≥ 7.0 mmol/L or 2 hr PC Glucose ≥ 11.1 mmol/L (Normal A1C < 5.5; FPG < 5.6 mmol/L; 2 hr PC FPG < 7.8 mmol/L). Dx Impaired Glucose Tolerance: FPG < 6.1 mmol/L and 2 hr PC PG 7.8-11.0 mmol/L. • **At diagnosis target euglycemia ASAP:** AIC ≤ 8.5 - Initiate diabetes education, diet to achieve weight loss (5-10%), exercise and lifestyle (+/- metformin). If not at target 2-3 mo - Start/Increase metformin. If A1C > 8.5 start metformin immediately. Consider initial combination therapy. If symptomatic hyperglycemia with metabolic decompensation, initiate insulin immediately. • **Aggressive BP Control** (Target<130/80). Rx: ACE-i, ARB, DHP-CCB, thiazide diuretic, then cardio-selective ß blocker or non-DHP-CCB. Alpha blockers not recommended as first line agent. • **Vascular Protection:** Macro/microvascular disease: Statin + ACEi or ARB + Antiplatelet (ASA or clopidogrel). DM > 15 years and age > 30 years: statin.

Rx ✓	Intervention	Recommendations
	Physical activity: Minumum goal 30 mins of moderate activity 5 times a week. Cumulative 150 mins/ week. See website exerciseismedicine.ca	• Assess risk, preferably with exercise test, to guide prescription. • Encourage minimum of 30 minutes of moderate intensity activity 5-7 times weekly (walking, jogging, cycling or other aerobic activity) supplemented by an increase in daily lifestyle activities (e.g., walking breaks at work, using stairs, gardening, household work) • Max benefits 5 to 6 hours per week. Medically supervised programs for moderate to high-risk patients. Resistance exercise 3 times/week does not adversely influence BP.
	Obesity/weight management:	Start intensive diet and appropriate physical activity intervention, as outlined above, in patients >120% of ideal weight for height. Particularly emphasise need for weight loss in patients with hypertension, elevated triglycerides or elevated glucose levels. Ideal body weight BMI < 25
	Antiplatelet agents/ anticoagulants:	Start aspirin 81-325 mg per day if not contraindicated. Consider clopidogrel 75mg OD post MI, post CABG, CVA, PVD in ASA intolerant or allergic patients *CAPRIE Trial*. Consider clopidogrel 75mg OD + ASA for ACS: unstable angina/non-ST elevation MI *CURE Trial*: duration of therapy 9-12 months . No chronic benefit of ASA+ clopidogrel *CHARISMA*. Consider alternate antiplatelet therapy for post MI patients unable to to take ASA or dual antiplatelet therapy for up to a year post ACS/PCI (Clopidogrel, Ticagrelor or Prasugrel post ACS with PCI).
	ACE inhibitors/ARBs **Post MI/LV Dysfunction:**	Start early post-MI in stable high risk patients (anterior MI, previous MI, Killip class II (S3 gallop, rales, radiographic CHF). Continue indefinitely for all with LV dysfunction (EF<40%) or symptoms of CHF. Use as needed to manage HPT or symptoms in all other patients. In ACEi intolerant patients consider Valsartan *VALIANT* or Candesartan *CHARM*.
	ACE inhibitors/ARBs **Vascular Disease/ Diabetes**	Rx ACE inhibitors in **all patients** >55 yrs with evidence of **vascular disease or DM** and one other risk factor: *HOPE Trial* - Ramipril 2.5 → 10 mg OD or **all CAD patients** >18 yrs *EUROPA Trial* -Perindopril 4 → 8 mg OD. If LVF preserved, patient non diabetic and other risk factors optimized may not need ACE inhibitor *PEACE*.
	Beta-blockers: **Post-MI**	Start acutely or within a few days of event in all post-MI patients (unless contra-indication). Continue indefinitely if residual ischemia, heart failure LV dysfunction, heart failure, severe LV dysfunction with EF < 40% or symptomatic arrhythmias. No mortality benefit of Beta blockers beyond 1 year post MI, in chronic CAD without MI or in patients with CAD risk factors. (JAMA , Vol 308, No. 13, pp. 1340-1349). Rx as needed to manage angina or HTN.
	Beta-blockers: **CHF**	Rx Add Beta-blocker to ACE-inhibitor/diuretic/+/- digoxin in stable Class II-IV CHF/LVEF ≤ 40% Bisoprolol 1.25 → 10 mg OD, carvedilol 3.125 mg BID → 25 mg BID (50 mg BID if weight > 85 kg) or nebivolol 1.25 -> 10 mg daily (Titrate q 2 weeks. Avoid mod-high dose in the elderly).
	Omega-3 fatty acids **HOMOCYST(E)INE**	**Rx: Omega-3 fatty acids 1-3 gm/day.** No identifiable benefit in lowering elevated homocysteine with vitamin supplements combining folic acid, B6 and B12 in patients with CVD, DM or post MI. *HOPE 2*/*NORVIT*.
	Estrogens	HRT not recommended for 1° or 2° prevention. Stop HRT in ACS, MI, PTCA, CABG, CHF, other surgery.

XIII. DISCHARGE SUMMARY

Patient: _____ was admitted to the Cardiology Service
at the _____ from Y /M /D
to Y / M / D under the care of Dr. _____ .

Discharge Diagnoses include:
❑ CAD-CCS Class: ❍ 0 ❍ 1 ❍ 2 ❍ 3 ❍ 4
❑ Unstable angina
❑ Non STEMI (non-ST elevation MI)
❑ STEMI (ST elevation MI)
❑ Atrial fibrillation
❑ SVT
❑ VT
❑ CHF-NYHA Class: ❍ I ❍ II ❍ III ❍ IV
❑ Other: _____

Risk Factors:
❑ HTN ❑ DM ❑ Dyslipidemia ❑ Smoking ❑ Family History CAD

Past Medical History:
❑ Angina ❑ MI ❑ PCI ❑ CABG ❑ Valve Replacement
❑ Other: _____

Complications:
❑ Recurrent ischaemia
❑ CHF-Killip Class ___ / IV
❑ Pericarditis
❑ DVT/ ❑ Pulmonary embolism
❑ Heart Block: ❍ 1° ❍ 2° WB ❍ Mobitz II ❍ 3°
❑ Temporary Pacer Insertion Y/N
❑ LV thrombus
❑ Mechanical complication
  ❍ MR
  ❍ Aneurysm
  ❍ Septal rupture
❑ Atrial fibrillation
❑ Ventricular tachycardia
❑ Other: _____

Pertinent Investigations:
Peak CK_____ CK MB _____Troponin I/T_____ Other:_____

Total cholesterol: (target value mmol/L)
LDL ___ (<4.5) TG ___ (<1.7) HDL ___ (>1.2) LDL ___ (<1.8/2.0)

Stress Test:
Ex duration ____ Peak HR____ (% PMHR____) Positive Y/N High Risk Y/N

Echocardiogram EF ___% LV Function: _____
Valves: _____

Nuclear Studies:

❑ Stress/ ❑ Persantine Myocardial Perfusion Study _____

_____

_____

❑ Wall motion EF___ % Regional wall motion _____

_____

❑ Cardiac PET _____

❑ CT Angiogram _____

Procedures:

❑ Thrombolysis: ❍ STK ❍ r-PA ❍ t-PA ❍ t-NK

❑ Primary PCI ❑ Rescue PCI

❑ Angiography: LV Class __/ IV

LM_____LAD (P/M/D)_____ Diagonal (1st/2nd)____CX (P/M/D)____OM (1st/2nd/3rd)_____RCA (P/M/D)_____ Other:_____

❑ PTCA/Stenting: Lesion 1: _____ _____% → ____ %. Bare metal stent Y/N. Drug eluting stent Y/N.
Lesion 2: _____ _____% → ____ %. Bare metal stent Y/N. Drug eluting stent Y/N.
Lesion 3: _____ _____% → ____ %. Bare metal stent Y/N. Drug eluting stent Y/N.
Lesion 4: _____ _____% → ____ %. Bare metal stent Y/N. Drug eluting stent Y/N.
Lesion 5: _____ _____% → ____ %. Bare metal stent Y/N. Drug eluting stent Y/N.

NB: Duration of Plavix therapy: ❍ 6 months ❍ 1 year ❍ 2 years ❍ Indefinitely

❑ CABG: ❍ LAD ❍ Diagonal ❍ IM ❍ OM1 ❍ OM2 ❍ PIV- circumflex ❍ RCA
❍ LITA ❍ RITA ❍ Other:

❑ Permanent Pacer Insertion Y/N: ❍ Single chamber ❍ Dual chamber ❍ Bi-ventricular
Pacing Mode: ❍ VVI ❍ VVIR ❍ DDD ❍ DDDR Automatic mode shift: Y/N

❑ AICD insertion ❑ EPS ❑ Ablation: site _____

Disposition:

Transfer to: ❑ Ottawa Heart Institute/ ❑ Ottawa Hospital—General Site ❑ Montfort
❑ Queensway Carleton ❑ Other Hospital: _____
❑ Discharge home

Follow-up:

Bloodwork: ❑ Lytes ❑ Cr ❑ Lipid Profile ❑ CBC ❑ INR ❑ 2 WEEKS ❑ 4 WEEKS
❑ 6 WEEKS ❑ 3 MO ❑ 6 MO
❑ Stress Test ❑ Stress/ ❑ Persantine Myocardial Perfusion Study
❑ Cardiac catheterization ❑ Other: _____
Cardiologist: Dr. _____ ❑ 2 WEEKS ❑ 4 WEEKS ❑ 6 WEEKS ❑ 3 MO ❑ 6 MO
Internist: Dr. _____ ❑ 2 WEEKS ❑ 4 WEEKS ❑ 6 WEEKS ❑ 3 MO ❑ 6 MO
Family MD: Dr. _____ ❑ 2 WEEKS ❑ 4 WEEKS ❑ 6 WEEKS ❑ 3 MO ❑ 6 MO

Diagnosis	Recommendation

XIV. MEDICATION PRESCRIPTIONS

✓	Class	Indication	Specific Rx	Dose (mg) & Frequency	Amount	Refills
	Nitroglycerin SL	Angina treatment				
	ß-blocker	❍ Angina ❍ LV function/prognosis				
	Nitrate	Angina prevention				
	Calcium blocker	❍ Angina ❍ HTN				
	Digoxin	❍ Atrial fib ❍ CHF				
	Diuretic 1	Fluid retention				
	Diuretic 2	Fluid retention				
	Diuretic 3	Fluid retention				
	ACE inhibitor	LV function/prognosis				
	A-II antagonist	LV function/prognosis				
	Statin	Cholesterol lowering				
	Fibrate	Cholesterol lowering				
	Niacin	Cholesterol lowering				
	Resin	Cholesterol lowering				
	ASA	Blood thinner				
	Plavix	Blood thinner				
	Anti-platelet	Blood thinner				
	Coumadin	Blood thinner				
	Anti-arrhythmic	❍ Atrial fib ❍ VT				
	Oral Hypoglycemic	Blood sugar control				
	Oral Hypoglycemic	Blood sugar control				
	Oral Hypoglycemic	Blood sugar control				
	Insulin AM	Blood sugar control				
	Insulin PM	Blood sugar control				
	Other:					

Signature (physician)	Name printed	CPSO #:	Phone #:

Supplementary Prescriptions/Discharge Rx:

✓	Rx	Indication	Specific Rx	Dose (mg) & Frequency	Amount	Refills

Signature (physician)	Name printed	CPSO #:	Phone #:

XV. POST HOSPITAL ACTIVITIES/EXERCISE Rx

Activities	The Times They May be Started				
	End of Week 1	End of Week 2	End of Week 3	End of Week 4	Other
1. STAYING HOME ALONE					
2. LIGHT HOUSEWORK (LUNCHES,DUSTING, DISHES)					
3. BEING TAKEN FOR DRIVES					
4. DRIVING THE CAR					
5. RESUMING SEXUAL ACTIVITY					
6. ATTENDING CHURCH, CONCERTS, MOVIES					
7. GOING GROCERY SHOPPING					
8. LIFTING LIGHT OBJECTS (UNDER ____LBS.)					
9. RESUMING CLUB ACTIVITIES, VOLUNTEER WORK					
10. DOING HEAVY HOUSEWORK					
11. TAKING A TRIP BY PLANE / CAR					
12. RETURNING TO WORK					
13. GARDENING					
14. MOWING, SHOVELLING, HOUSE REPAIRS					
15. FISHING					
16. HUNTING					
17. OTHER SPORTS, NAMELY					
18. DANCING					
19.					
20.					
21.					
22.					

Target HR Table:

HEART RATE	AGE											
	30	35	40	45	50	55	60	65	70	75	80	85
100%	190	185	180	175	170	165	160	155	150	145	140	135
85%	161	157	153	149	145	140	136	132	128	123	119	115
80%	152	148	144	140	136	132	128	124	120	116	112	108
70%	133	130	126	123	119	116	112	109	105	102	98	95
60%	114	111	108	105	102	99	96	93	90	87	84	81
50%	95	93	90	88	85	83	80	78	75	73	70	67

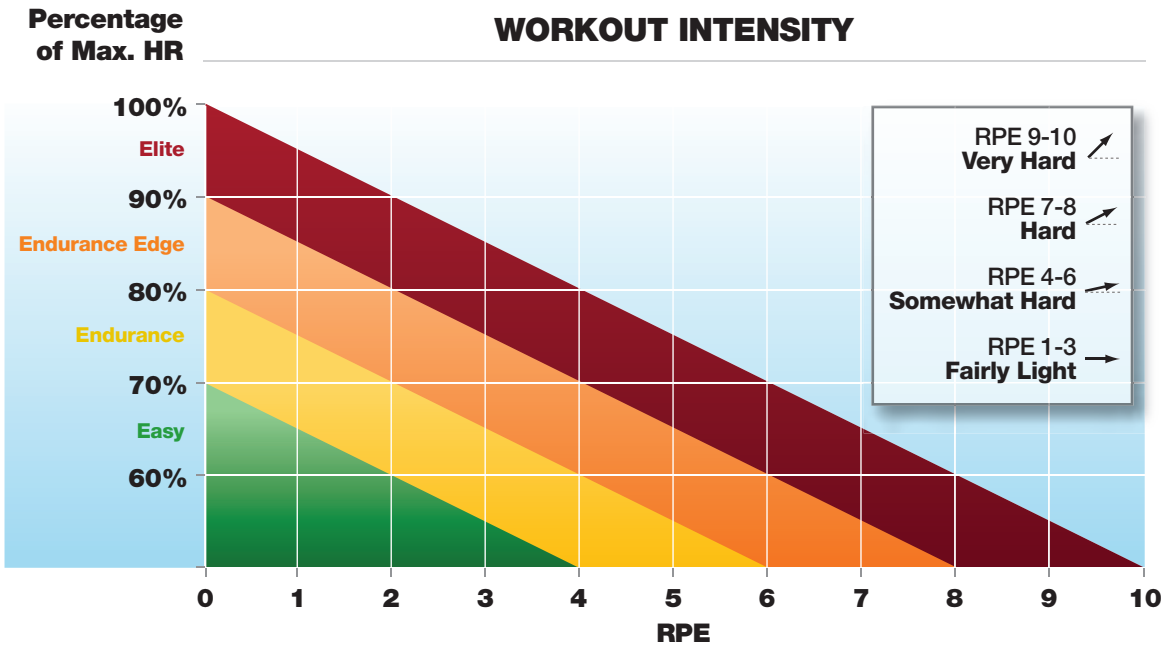
Calculating Your Target Heart Rate

1) 220 – age = _____ MHR (Maximum Heart Rate)
2) MHR x 0.8 = _____ (this is the upper end of your target HR)
3) MHR x 0.7 = _____ (this is the mid range of your target HR)
4) MHR x 0.6 = _____ (this is the low end of your target HR)
5) MHR x 0.5 = _____ (this is the low end of your target HR for Heart Failure Patients)

For patients with ischaemia and/or exercise induced arrhythmia, set exercise HR in a 10-15 beat range, 10 beats below the onset of ischaemia and/or arrhythmia.

Initiate exercise at 60% of the maximum predicted HR and progress to 70-80% of maximum HR. For Heart Failure patients, initiate at 50% MPHR and progress to 60-70% MPHR.

Post Discharge Activity/Exercise Calendar:



Date Y/M/D	Weight (lbs/kg)	Target HR	Exercise Duration	RPE 1-10	Symptoms
Initial Rx					

*Grading of edema: **T**race = indent at ankle; **1+** = indent at shin; **2+** = indent at knee

3+ = indent above knee; **4+** = generalized (hips, abdomen, low back)

XVI. EDUCATIONAL RESOURCES

Web Site Links:

A Practical Guide to Diabetes	http://www.ianblumer.com/
AFAnswers	http://www.afanswers.com/
Alzheimer Society	http://www.alzheimer.ca/
American Diabetes Association	http://www.diabetes.org/
American Heart Association	http://www.americanheart.org/presenter.jhtml?identifier=1200000
Angioplasty (PTCA)	http://www.ptca.org/
Canada Food Guide	http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php
Canadian CHF Clinics Network	http://www.cchfcn.org/english/index.htm
Canadian Cardiovascular Society	http://www.ccs.ca/
Canadian Diabetes Association	http://www.diabetes.ca/
Canadian Health Network	http://www.canadian-health-network.ca/
CardioSmart	http://www.cardiosmart.org/
Canadian Hypertension Society	http://www.hypertension.ca/
Clinical Tobacco Intervention	http://www.ctica.org/home.html
emedicine.com	http://www.emedicine.com/
FamilyDoctor.org	http://familydoctor.org/
Healthcommunities.com	http://www.healthcommunities.com/health/
Health-Heart.org (Nutrition,Health & Heart Disease)	http://www.health-heart.org/acceuil.htm
Heart Health Education Centre	http://www.ottawaheart.ca/UOHI/HHEC.do
Heart Attack Signs (NHLBI)	http://www.nhlbi.nih.gov/actintime/index.htm
Heart Failure Online	http://www.heartfailure.org/
Heart Failure Society of America - About HF.org	http://www.abouthf.org/
Heart Valve Disease - Medtronic	http://www.medtronic.com/cardiac/heartvalves/
Heart Valve Disease - St. Jude Medical	http://www.sjm.com/conditions/condition.aspx?name=Heart+Valve+Disease
Health Information Translations	http://healthinfotranslations.com/
Heart and Stroke Foundation of Canada	http://www.heartandstroke.com/site/c.ikIQLcMWJtE/b.2796497/k.BF8B/Home.htm?src=redirect
HeartPoint Home Page	http://www.heartpoint.com/index.html
Heartsite	http://www.heartsite.com/index.html
Internet Stroke Center	http://www.strokecenter.org/
National Diabetes Information Clearinghouse	http://diabetes.niddk.nih.gov/
National Heart, Lung and Blood Institute	http://www.nhlbi.nih.gov/health/index.htm
National Stroke Association	http://www.stroke.org/site/PageServer?pagename=HOME
Pacemaker Club	http://www.pacemakerclub.com/
Pacemakers-Medtronic	http://www.medtronic.com/our-therapies/pacemakers/index.htm
Pacemakers St Jude Medical	http://www.sjm.com/resources/learnmoreabout.aspx?section=CardiacPacemakerSystem
Public Health Agency Canada	http://www.phac-aspc.gc.ca/index-eng.php
Public Health Agency Canada-Cardiovascular Disease	http://www.phac-aspc.gc.ca/cd-mc/cvd-mcv/index-eng.php

Public Health Agency Canada-Healthy Heart Kit	**http://www.phac-aspc.gc.ca/ccdpc-cpcmc/hhk-tcs/english/index-eng.php**
Smokers Helpline	**http://www.smokershelpline.ca/**
Up To Date-Patient Resource Center	**http://patients.uptodate.com/index.asp?usd=733934869&r=/index.asp&server=patients.uptodate.com&app=ptnt**
USDA Food Pyramid	**http://www.mypyramid.gov/**
WebMD.com	**http://WebMD.com/**
WomanHeart	**http://www.womenheart.org/**
Women's Health.gov cfm	**http://www.womenshealth.gov/topics.**
World Health Organization Cardiovascular Diseases	**http://www.who.int/topics/cardiovascular_diseases/en/**
You Can Quit Smoking Tearsheets	**http://www.surgeongeneral.gov/tobacco/tearsheeteng.pdf**

Patient Education Books

All of the following books may be available at yout local **Chapters** or **Indigo** book stores or by visitng the website: **www.chapters.indigo.ca**.

Exercises For Heart Health: The Complete Guide For Heart Attack, Heart Surgery, And Cardiovascular Disease Patients
Author: William Smith

Total Heart Health: How To Prevent And Treat Heart Disease With Maharishi Consciousness Based Health Care
Author: Robert H. Schneider

The South Beach Heart Health Revolution: Cardiac Prevention That Can Reverse Heart Disease and Stop Heart Attacks and
Author: Arthur Agatston

American Heart Association Complete Guide to Women's Heart Health
Author: American Heart Association

American Heart Association Healthy Family Meals
Author: American Heart Association

American Heart Association No-Fad Diet
Author: American Heart Association

American Heart Association Low-Calorie Cookbook
Author: American Heart Association

Exercises for Heart Health
Author: William Smith

The Cardiac Recovery Cookbook
Author: **M. Laurel Cutlip, LN, RD and Sari Budgazad, RD, CDN**

The G.I. Diet, Revised –
Rick Gallop Stroke-Free for Life: The Complete Guide to Stroke Prevention and Treatment
Author: David O Wiebers

Everything Stress Management Book
Author: Eve Adamson

Take A Load Off Your Heart: 114 Things You Can Do to Prevent or Reverse Heart Disease
Author: Joseph Piscatella

Leslie Beck's Nutrition Encyclopedia:
Managing Over 75 Health Concerns with Diet, Vitamins, Minerals and Herbs
Author: Leslie Beck

The Ultimate Healthy Eating Plan: That Still Leaves Room for Chocolate
Author: Liz Pearson

Anne Lindsay's New Light Cooking
Author: Anne Lindsay

The New Lighthearted Cookbook: Recipes for Healthy Heart Cooking
Author: Anne Lindsay

Women are Not Small Men: Life-Saving Strategies for Preventing and Healing Heart Disease in Women
Author: Nieca Goldberg

The New 8-Week Cholesterol Cure: The Ultimate Program for Preventing Heart Disease
Author: Robert E. Kowalski

Dr. Dean Ornish's Program For Reversing Heart Disease
Author: Dean Ornish

The Healing Power of Exercise: Your Guide to Preventing and Treating Diabetes, Depression, Heart Disease, High Blood Pressure, Arthritis, and More
Author: Linn Goldberg

The Heart Disease Breakthrough: What Even Your Doctor Doesn't Know About Preventing a Heart Attack
Author: Thomas Yannios

Her Healthy Heart: Womans Gd To Preventing & Reversing Heart Disease
Author: Linda Ojeda

Beyond Cholesterol: The Johns Hopkins Complete Guide for Avoiding Heart Disease
Author: Peter OJr. Kwiterovich

The Human Heart: A Basic Guide to Heart Disease
Author: Brendan Phibbs

Reversing Heart Disease: The Nonsurgical Approach
Author: Julian Whitaker

The Carbohydrate Addict's Healthy Heart Program: Break Your Carbo-Insulin Connection to Heart Disease
Author: Richard F. Heller

Cooking Ala Heart Cookbook: Delicious Heart Healthy Recipes to Reduce Risk of Heart Disease & Stroke, Second Edition
Author: Linda Hachfeld, Betsy Eykyn

Stress Diet And Your Heart
Author: Dean Ornish

The Mediterranean Diet: Reaping Nature's Bounty for Leaner, Heart-Healthy Living
Author: Marissa Cloutier

The Mediterranean Heart Diet
Author: Helen Fisher

The Living Heart Diet
Author: Michael E. DeBakey, Antonio Gotto

XVII. ACKNOWLEDGEMENTS

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First Edition April 1988

Second Edition June 1993

Third Edition May 2000

Fourth Edition September 2001

Fifth Edition January 2003

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Eighth Edition January 2005

Ninth Edition March 2005

Tenth Edition May 2005

Eleventh Edition May 2006

Twelfth Edition October 2006

Thirteenth Edition October 2007

Fourteenth Edition November 2009

Fifteenth Edition November 2011

XVIII. EVALUATION

Please help us assess the value of this booklet. Return to Dr. Niznick or mail to his office on completion:

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Place a check mark in the ranking box:

	Not at all	A little	Moderately	A lot	Yes!!!
The booklet was informative					
The booklet was easy to read					
The booklet made me nervous					
The booklet settled my anxieties					
The booklet was too complicated					
The booklet answered my questions					
The pictures & diagrams frightened me					
The pictures & diagrams made things clearer					
There should be more pictures & diagrams					

Other areas I'd like to see covered include:

Specific diet sheets on:	Yes	No
Hypertension-low salt		
Hypertension-potassium replacement		
Low cholesterol		
Heart failure-no salt		
Diabetes		

Other areas I'd like to see covered continued:

	Yes	No
More on non-traditional risk factors		
• Anti-oxidants		
• Vitamin E		
• Homocysteine		
• Others-list:		
Available cardiac wellness programs		
Available cardiac rehab programs		
Smoking cessation programs		
Psychological support information and programs		
Spousal support information and programs		
Other-list:		
My major source of information on heart disease will be:		
This booklet		
My cardiologist		
The nurses		
My family doctor		
Books		
TV		
Computer-the internet		
Education and rehab programs		
Other-list:		

General Comments:

THANK YOU!!!

XVIII. APPENDICIES

A. PATIENT EDUCATION TRACKING CHECKLIST

Topic	Taught by	Date	Understood	Additional Questions/Needs
How the heart works				
Symptoms				
• angina				
• heart failure				
• arrhythmia				
What a heart attack is				
Risk factors				
• hypertension				
• diabetes				
• cholesterol				
• smoking				
• inactivity				
• obesity				
• stress				
Recovering from MI				
• activity in hospital				
• activity at home				
• returning to work				
• driving				
• sexual activity				
Diet				
• low salt				
• low cholesterol				
• other				
Exercise Rx				
• HR target				
• frequency/duration				
• type				

Tests				
• stress test				
• stress nuclear test				
• persantine nuclear testing				
• echocardiography				
• cardiac catheterization				
• angioplasty				
• bypass surgery				
Medications Rx				
• aspirin				
• Plavix				
• anti-coagulants				
• nitroglycerin				
• long acting nitrate				
• beta blocker				
• calcium channel blocker				
• digoxin				
• diuretics				
• ACE inhibitor				
• ARB's				
• cholesterol lowering Rx				
• vasodilators				
• anti-arrhythmics				
Discharge plan				
• scheduled testing				
• cardiac rehab				
Scheduled follow-up				
• Cardiologist				
• Family doctor				
• other				

B. LIPID OPTIMIZATION TOOL

PATIENT: _____ **Pharmacy:** _____

Responsible for Lipid Management: ❍ Family Physician ❍ Cardiologist ❍ Endocrinologist

Lipid Flow Sheet[1] - Use the following Table to Guide Intervention:

NB: **UPPER STRATUM exceeds CWG on Hypercholesterolemia and other Dyslipidemias Recommendations 2009/ NCEP ATP III Guidelines Update 2004**

Risk Level	10 year CHD Risk	No. Of Risk Factors		Targets 1°	2°	2°	3°	Initiation of Lipid Lowering Therapy
Count risk factors or use **Framingham tables, Reynolds Risk Score or European SCORECARD** to calculate 10 year risk of hard CHD/CVD endpoints.				LDL <	Apo-B	Non-HDL Cholesterol	Ratio	
* CAD, PCI, CABG, TIA/CVA, PVD/bruits, DM[2], CKD[3]				1.8	≤ 0.8	≤ 2.6	3/1	Immediately
High	> 20%	3	Rx to <	2.0	≤ 0.8	≤ 2.6	4/1	Immediately
Moderate	10-20%	2	Rx if ≥	3.5	1.2	4.3	5/1	Diet/Lifestyle 3 months
Low	< 10%	≤1	Rx if ≥	5.0			6/1	Diet/Lifestyle 6 months

1. Count Risk Factors:

❍ Age M > 45 F > 55 ❍ Family Hx CAD ❍ Smoking ❍ HTN ❍ DM ❍ LVH ❍ HDL < 0.9 mmol/l

2. Identify Metabolic Syndrome (≥ 3 parameters):

❍ Abdominal obesity (Waist circumference: Male >94 cm (37 in.) / Female >80 cm (31.5 in.)

❍ TG ≥ 1.7 mmol/L ❍ HDL < 1 mmol/L (male)/< 1. 3 mmol/L (female) ❍ BP ≥ 130/85 ❍ FBG 6.2-7 mmol/L

3. Identify secondary causes: ❍ Diabetes ❍ Hypothyroidism ❍ Renal disease ❍ Liver disease ❍ Drugs & Alcohol

4. Record Indication: ❍ Risk Factors ❍ CAD: _ angina, _ post MI, _ post PTCA, _ post CABG ❍ CVD ❍ PVD

5. Risk Modifiers elevate risk one level: +FH, Ethnicity-South Asian/Aboriginal, Metabolic syndrome,↑CRP, ↑Lp(a), ↑A1C, ↑MAU, +GXT, ↑CIMT, ↓ABI, ↑CAC, Rheumatologic Disorders: RA/SLE/PSS/AnkSpond/Psoriatic Arthritis, IBD, AAA, CKD, COPD, HIV-HAART, Erectile Dysfunction

Date	TC	TG	HDL	LDL	TC/ HDL	ALT	CK	Medication Rx Adjustment Addition	Next Test	Req. Sent ✓	Patient Called (Initial)

1 Monitor lipid profile, ALT and CK at baseline, 2 months then every 6 to 12 months
2 Diabetes carries the same CV risk as manifest CAD. DM+CAD impart much higher risk for subsequent CV events.
3 Chronic Kidney Disease

Secondary Prevention: % LDL (mmol/L) change to reach LDL target by risk category.

ATP III Very High Risk		
Initial	Target	% Change
LDL	LDL <	LDL
5.00	1.8	-64%
4.80	1.8	-63%
4.60	1.8	-61%
4.40	1.8	-59%
4.20	1.8	-57%
4.00	1.8	-55%
3.80	1.8	-53%
3.60	1.8	-50%
3.40	1.8	-47%
3.20	1.8	-44%
3.00	1.8	-40%

CCS High Risk		
Initial	Target	% Change
LDL	LDL <	Min ↓50%
5.0	2.0	-60%
4.8	2.0	-58%
4.6	2.0	-57%
4.4	2.0	-55%
4.2	2.0	-52%
4.0	2.0	-50%
3.8	1.9	-50%
3.6	1.8	-50%
3.4	1.7	-50%
3.2	1.6	-50%
3.0	1.5	-50%

Moderate Risk		
Initial	Target	% Change
LDL	LDL <	Min ↓40%
5.00	3.0	-40%
4.80	2.9	-40%
4.60	2.8	-40%
4.40	2.6	-40%
4.20	2.5	-40%
4.00	2.4	-40%
3.80	2.3	-40%
3.60	2.2	-40%
3.40	2.0	-40%
3.20	1.9	-40%
3.00	1.8	-40%

Dose response to Medication (statins & fibrates) % LDL Reduction

Drug mg.	5	10	20	40	80	200	400	900
Lovastatin			24-28%	28-34%	39-42%			
Pravastatin		18-25%	21-28%	27-33%				
Simvastatin	23-30%	27-32%	30-40%	36-43%	45-47%			
Fluvastatin	13%	13%	19%	29%	36%			
Atorvastatin		38-41%	44-46%	50-51%	54-61%			
Rosuvastatin	42-46%	52%	55%	63%*				
Gemfibrozil	† Avoid in patients with renal impairment							12-16%
Fenofibrate	† Avoid in patients with renal impairment					21-32%		
Bezafibrate	† Avoid in patients with renal impairment						2-15%	
Ezetimibe		19%	(Co-administration with statin yields incremental 21% LDL reduction)					

Protocol: Initiate lipid lowering immediately in high-risk patients (concomitant with dietary/therapeutic lifestyle modification).

1. Target initial medication dose to ↓ LDL by 50% to minimum < 2.0 mmol/L for all risk levels. Consider target LDL < 1.8 mmol/L for ATP III Very High Risk patients. Initiate therapy with dose required to achieve target LDL.
   - NB: Initiate rosuvastatin at 10 mg (5 mg in Asians/CKD). *40 mg. contraindicated in Asian population.
   - NB: Caution with simvastatin 80 mg. **A to Z Trial**.
2. If initial LDL at target, raise HDL and lower triglycerides to target values with appropriate intervention: diet, exercise, weight loss, refined carbohydrate restriction, moderate alcohol intake or medication: niacin, fibrate or salmon oil (1gm TID).
3. If LDL and triglycerides high and HDL-C low, consider combination therapy (fibrate or Niaspan®).
4. If unable to raise HDL sufficiently, lower LDL to achieve Non-HDL Chol < 2.6 mmol/L or Apo B < 0.8 g/L, TC/HDL< 4 and/or LDL/HDL< 3.
5. If initial lipid profile normal look at other risk factors (LPa, homocysteine, apo-B and hs-CRP).
6. Follow Total cholesterol, LDL, non-HDL chol., HDL, triglycerides, CK and ALT in 2 months then every 6 months.
7. If LDL not at target increase statin dose to achieve target or switch to more potent statin. If LDL target not achievable on monotherapy add cholesterol absorption inhibitor (ezetimibe) or bile acid sequestrant (cholestyramine or colesevelam). Doubling statin dose adds ~ 6% LDL. Adding ezetimibe to statin therapy provides additional LDL lowering up to 20% reduction. See **Statin Cost Efficacy Grid**.
8. Feedback results to patent to improve compliance.

C. STATIN EFFICACY GRID

The **Statin Cost Efficacy Grid** details the cost and LDL lowering efficacy of all currently available statins. Statins and doses are highlighted based on evidence or cost efficacy. The green column highlights the minimum therapeutic bar for treatment of low and moderate risk patients. The orange column highlights the minimum therapeutic bar to halt atherosclerotic progression. The pink column highlights the minimum therapeutic bar for treatment of high risk patients or patients with atherosclerotic risk equivalents. The bright orange column highlights the minimum therapeutic bar to induce atherosclerotic regression. See the **Lipid Optimization Tool** for the therapeutic protocol.

STATIN	Dose	Cost/tab$	%LDL Red	%LDL Red Law	%LDL Red Stellar	%LDL Reduction						
						30%	35%	40%	45%	50%	55%	60%
Lovastatin	20mg	0.49	26	29								
(generic)	40mg	0.90	31	37		0.9						
Pravastatin	10mg	0.41	22	20	20							
(generic)	20mg	0.48	25	24	24							
	40mg	0.58	30	29	30	0.58						
Simvastatin	5mg	0.26	27	23								
(generic)	10mg	0.51	30	27	28	0.51						
	20mg	0.63	35	32	35		0.63					
	40mg	0.63	40	37	39			0.63				
	80mg	0.63	46	42	46				0.63			
Fluvastatin	20mg	0.85	19	21								
(generic)	40mg	1.19	29	27		1.19						
	XL 80mg	1.44	36	33			1.44					
Atorvastatin	10mg	0.42	40	37	37	0.42	0.42	0.42				
	20mg	0.52	45	43	43				0.52			
	40mg	0.56	51	49	48					0.56		
	80mg	0.56	58	55	51						0.56	
Rosuvastatin	5mg	0.32	42	38				0.32				
	10mg	0.34	52	43	46				0.34			
	20mg	0.43	55	48	52					0.43		
	40mg	0.45	63	53	55						0.45	

* Average % reduction: Use to estimate initial statin dose. Actual response varies by patient and subgroup (age and gender).

Cost based on Ontario ODB pricing-updated November 2012. For cost to patient, add 10% plus prescribing fee.

Select Statin based on efficacy, safety, evidence and cost.

Revised November 2012

EVIDENCE

COST

HPS/ASCOT/CARDS | **REVERSAL** | **PROVE-IT/TNT/IDEAL/AtoZ/SPARCL** | **ASTEROID**

The 2012 CCS/Canadian guidelines for the diagnosis and treatment of dyslipidemia and prevention of cardiovascuar disease in the adult (http://www.ccsguidelineprograms.ca) recommends targeting LDL reduction to ≥ 50% when treating any level of cardiovascular risk with pharmacotherapy. Initiation thresholds vary depending on level of risk and presence of risk modifiers.

D. STATIN ADVISORY

Statins are potent cholesterol lowering medications which lower the LDL or “bad cholesterol” to a predictable degree and raise the HDL or “good cholesterol” slightly. All medications have side effects and their use must weigh the potential benefits of the medication with those side effects. Common (2-10%) side effects with statins include:

- Central nervous system: Headache, fatigue, dizziness, weakness
- Cardiovascular: Chest pain
- Dermatologic: Rash
- Gastrointestinal: Nausea/vomiting, diarrhea, heartburn
- Hepatic: Increased transaminases (>3x normal on two occasions)
- Neuromuscular & skeletal: Muscle pains/neuropathy
- Respiratory: Cough
- Miscellaneous: Influenza Headache

Ongoing adverse media reporting has raised patient concerns regarding the risk of myopathy and rhabdomyolysis with statins in general. The risk of serious muscle complications with any of the currently available statins is very rare (<1:10000) and equivalent amongst the statins. Discontinuation of statins in patients at risk could result in increased cardiovascular event rates for stroke or heart attack which far outweigh the risk of muscle complications. Fear of appropriate statin use is causing more harm than good. However, the use of the maximum doses of any of the statins should be cautioned, particularly in the high risk patient groups detailed below.

Muscle problems with statins include:

1. Myalgias: muscle pains or weakness with or without elevation of CK, a muscle enzyme as measured in the blood. This occurs in 2-10% of patients on statins and is completely reversible.
2. Myositis: myalgias with increases in creatine kinase (CK) values >10 times upper limit of normal.This occurs rarely in patients on statins.
3. Rhabdomyolysis: A more severe breakdown of skeletal muscle associated with a rise in the blood level of CK muscle enzyme above 10,000 U/L may be associated with kidney damage due to the excretion of myoglobin in the urine. Rhabdomyolysis is usually reversible with appropriate medical therapy and discontinuation of the causative medication.
4. The risk of this occurring with statins is rare (< 0.10% or < 1/1000).
5. Rhabdomyolysis is usually associated with other predisposing conditions in which maximum dose statins should be avoided:
   - pre-existing kidney impairment
   - advanced age
   - under-active thyroid
   - family history of muscular disorders
   - previous muscular toxicity with other statins
   - alcohol abuse
   - situations where increased blood levels of statins can occur such as in Japanese, Chinese or Asian populations
   - combination therapy with other cholesterol lowering medications such as gemfibrozil

Patients should report unexplained muscle pains, tenderness or weakness particularly if associated with fever or malaise.

Statin Advisory References:
1. Thompson P, Clarkson P, Karas R.H. Statin-associated Myopathy. JAMA. 2003;289:1681-1690.
2. Cholesterol and Statin review. Bandolier EBM Website.
3. Olsson GO. Safety and efficacy of rosuvastatin. www.thelancet.com Vol 3654 July 10, 2004.

E. STATIN RISK BENEFIT

Statin medications have recently received adverse publicity regarding the risk of muscle problems including rhabdomyolysis. *(See Statin Advisory)* The risks of these side effects are low and are far outweighed by the proven benefits of this class of medication. Such publicity is unfortunate in that it generates fear and uncertainty, undermines risk reduction strategies and may lead to discontinuation or under-dosing of statin medications. Such a response may result in adverse cardiovascular and cerebrovascular outcomes due to **lost benefit**. As with all drugs the pros and cons of therapy need to be weighed carefully.

The risk of serious myopathy or rhabdomyolysis with use of stains is low:

Drug	Reported Cases of Fatal Rhabdomyolysis per 1,000,000 US prescriptions since launch
Cerivastatin	3.16
Lovastatin	0.19
Simvastatin	0.12
Pravastatin	0.04
Atorvastatin	0.04
Fluvastatin	0.00
Rosuvastatin	0.00

Risk: To put risk and benefit in a clearer perspective, for every 100,000 patients with statins in large secondary outcome trials 4 will suffer rhabdomyolysis and 33 will suffer myositis
Benefit: Extrapolated to **100,000** patients, the benefits of statin therapy are:

4S Trial (6 years): prevention of 4000 deaths, 7000 nonfatal heart attacks and 6000 myocardial revascularization procedures.
CARE (5 years): prevention of 15000 cardiovascular events in unselected patients, 20700 cardi ovascular events in patients > age 60 and 22800 cardiovascular events in women.
LIPID (6.1 years): prevention of 3000 deaths, 2800 non-fatal heart attacks, 900 strokes, 2300 bypass surgeries, 2000 angioplasties and 8200 admissions for unstable angina.
HPS (5 years): prevention of 7000-10000 heart attacks, stroke or revascularization procedures.
PROVE-IT (18-36 months-mean 24 months) high dose versus moderate dose statin in patients with acute coronary syndromes demonstrates an incremental benefit of 3.9 % absolute and 16% relative risk reduction in the primary end-point - a composite of death from any cause, myocardial infarction, documented unstable angina requiring re-hospitalization, revascularization (performed at least 30 days after randomization), and stroke. For 100,000 patients treated this means the prevention of 3900 further events.
TNT (4.9 years) high dose vs low dose statin in a chronic CHD population showed similar incremental benefits on combined cardiovascular endpoints (death from CHD, nonfatal non-procedure-related myocardial infarction, resuscitation after cardiac arrest or fatal or nonfatal stroke). The incremental benefit was 2.2 % absolute and relative risk reduction of 22%. For 100,000 patients treated this means the prevention of 3400 major cardiovascular events.

In summary:

- **The risk of serious muscle problems with statins is low.**
- **The benefits of statin therapy significantly outweigh any risk.**
- **Higher dosing of statins or use of a more potent statin provides incremental benefits in high risk patients.**
- **Fear of statin adverse effects should not prevent appropriate lipid lowering therapy.**

F. HOP TO ITT BLOOD PRESSURE CALENDAR

Patient: _____

1. Monitor BP in AM before arising and 2-3 times a day after 5 minute rest.
2. Average daily and weekly systolic and diastolic readings.
3. Normal BP is Systolic ≤135/Diastolic ≤ 85 for home BP monitoring.

Condition	BP Treatment Targets
Treatment target & initiation threshold for elderly (Age≥80 - CHEP 2013 or ≥60 - JNC-8)	150/90
Treatment target & initiation threshold for office BP measurements	< 140/90
Treatment target for Ambulatory BP or Home BP measurement	Awake <135/85 or 24h mean <130/80
Treatment target for T2DM +/- nephropathy	< 130/80
Normal BP (LV Dysfunction <120/80 - AHA 2007)	< 120/70

VALIDATED HOME BP DEVICES: **OMRON**: HEM-705CP, HEM-711AC, HEM-712C, HEM-739AC, HEM 757-CAN **and LifeSource:** (AND) UA-767 CN, UA-767 Plus, UA-774 AC, UA-779, UA 787 AC

Sys/Dias	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
WEEK 1	Monitor BP 4 times daily, every day for the first week.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 2	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 3	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 4	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/

1. Monitor BP in AM before arising and 2-3 times a day after 5 minute rest.
2. Average daily and weekly systolic and diastolic readings.
3. Normal BP is Systolic ≤135/Diastolic ≤ 85 for home BP monitoring.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
WEEK 5	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 6	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 7	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 8	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 9	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/

1. Monitor BP in AM before arising and 2-3 times a day after 5 minute rest.
2. Average daily and weekly systolic and diastolic readings.
3. Normal BP is Systolic ≤135/Diastolic ≤ 85 for home BP monitoring.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
WEEK 10	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 11	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 12	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 13	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/
WEEK 14	Monitor BP 4 times daily, two days/week–choosing one weekday and one weekend day.						
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/

1. Monitor BP in AM before arising and 2-3 times a day after 5 minute rest.
2. Average daily and weekly systolic and diastolic readings.
3. Normal BP is Systolic ≤135/Diastolic ≤ 85 for home BP monitoring. *

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 3	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**
Monitor BP 4 times daily, two days a week; alternate times, i.e. AM/PM with NOON/BED							
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/

Week 4	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**
Monitor BP 4 times daily, two days a week; alternate times, i.e. AM/PM with NOON/BED							
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/

Week 5	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**	**Sys/Dias**
Monitor BP 4 times daily, two days a week; alternate times, i.e. AM/PM with NOON/BED							
AM	/	/	/	/	/	/	/
NOON	/	/	/	/	/	/	/
PM	/	/	/	/	/	/	/
BED	/	/	/	/	/	/	/
Average	/	/	/	/	/	/	/

* Reference Values For Self Recorded Blood Pressure - A Meta-analysis of Summary Data. Thijs et al. Arch Int Med. 1998; 158:481-488

LOW SODIUM EATING PLAN FOR HYPERTENSION

This eating plan will help you keep your daily sodium (salt) intake between 1500 and 2300 mg. It is low in cholesterol raising fats and rich in fruits, vegetables and fibre.

Hypertension occurs when the pressure that your blood exerts on your arteries rises above normal. Blood pressure is measured and reported as the pressure when your heart contracts over the pressure when it relaxes (systolic/diastolic). Normal blood pressure is 120/ 80 mm Hg. Blood pressure is considered high when these pressures are increased above 140/90 mm Hg.

Did you know that 3 out of 10 Canadians with hypertension could have normal blood pressure if they ate less salt?

Tips To Help Reduce Your Blood Pressure –
Eat "close to the farm", the less processed the better!
See 'Foods to Choose' in the following section for examples.

1. Limit your salt to 1500 mg per day. *See "Salt - Shake the Habit"*.
2. Eat plenty of fruit and vegetables. Aim for 7 or more servings each day.
3. Eat high fibre, whole grain foods.
4. Include low-fat dairy and alternatives.
5. Include quality low-fat protein choices.
6. Limit added fat.
7. Reduce alcohol to less than 2 drinks per day.
8. If overweight, a loss of 10% of your weight can lower blood pressure.
9. Balance healthy food choices with regular physical activity.

High blood pressure can increase your risk of heart disease and stroke. A reduction in blood pressure of 10/ 5 mm Hg can reduce your risk of stroke by 38% and heart failure by 50%! Such a reduction is achievable with a change in lifestyle factors such as improving your diet, quitting smoking or becoming more active.

Did you know that more than 75% of the salt we eat comes from prepared foods including restaurant foods? Little more than 10% comes from what we add in cooking and at the table. Your choices at restaurants and in the grocery store go a long way to reducing your salt intake.

What does 1500 mg of salt look like?
It is less than one teaspoon of salt.

Tips to reduce salt (sodium) intake

- Home prepared fresh or frozen foods are best. If using canned foods, look for labels such as “no added salt” or “low sodium”.
- Avoid adding salt to your food and omit from recipes where possible.
- Season your food with herb and spice blends... *see recipe to the right.* Check ingredient lists to avoid those with salt.
- Limit condiments such as ketchup, mustard, soy sauce etc.
- Use ingredient lists - foods listing salt or sodium at the beginning of the list or multiple times in the list are high in salt.
- Restaurant foods are often high in sodium. Try to avoid fast food but do use the restaurants’ Nutrition Information to identify lower sodium options. When eating out, ask your server if the meal can be prepared without added salt. Request sauces on the side.

Homemade Herb Blend

This multi-purpose salt free seasoning can replace the salt in your table top shaker and is great in casseroles, soups and just about any savory dish you would otherwise salt.

1 Tbsp garlic powder
1 tsp each of dried, crumbled: basil, marjoram, thyme, parsley, savory, sage
1 tsp each of ground mace (or nutmeg), onion powder, pepper
½ tsp cayenne (optional)

In a small bowl, mix together all ingredients until well blended. Store in a jar with a tight fitting lid in a cool, dry place for up to 6 months.

Source: AHA Low Salt Cookbook- 2nd ed.

Use the Nutrition Facts table to choose packaged foods with less sodium.

Those with *less than 200mg* per serving are your best choices. If the product has *more than 400mg* of sodium per serving look for a lower sodium alternative.

Nutritional Facts
Per 125 mL (87 g)

Amount			% Daily Value
Calories 80			
Fat 0.5 g			**1** %
Saturated 0.5 g + Trans 0g			**0** %
Cholesterol 0 mg			
Sodium 0 mg			**0** %
Carbohydrate 18 g			**6** %
Fibre 2 g			**8** %
Sugars 2 g			
Protein 3 g			
Vitamin A	2 %	Vitamin C	10 %
Calcium	2 %	Iron	2 %

Tips For Eating Away from Home

Restaurant foods are known for having high salt content. Choose your meals wisely.
Some tips to help limit your sodium while eating out include:

- Select a restaurant in which foods are prepared to your order and request that no salt be added.
- Choose salad over soup as an appetizer and ask for dressing on the side.
- Ask for fresh or steamed vegetables without sauces or breading.
- Grilled or baked meat, chicken or fish without sauces or breading are lower sodium.
- Avoid bread, biscuits or crackers with visible salt on top.
- Limit selections that include cheese.
- Ask for fruit based desserts with little or no pastry.
- Many chain restaurants have nutrition information available on-line. Check the restaurants website for the sodium content of the menu items before going. Select items lower in sodium.
- Balance out your day – if you eat out often, be sure to choose lower sodium foods at the meals you prepare at home.

Cheers to lower sugar!

A recent study found that cutting back on pop and sugary beverages may lower your blood pressure.
Rather than pop or juice, order water, sparkling water, unsweetend tea or coffee to complement your meal.

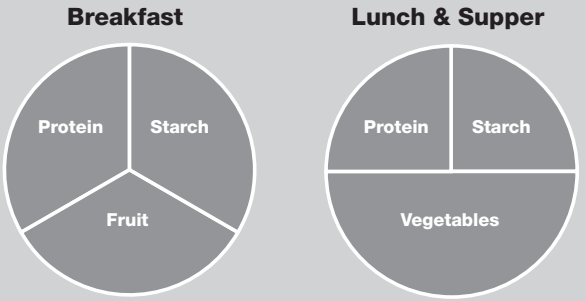
General Healthier Eating Guidelines - To Avoid Complications with hypertension.

Also available from the Ottawa Cardiovascular website: Hyperlipidemia nutrition facts sheet for details on lowering your cholesterol and Waisting Away nutrition facts sheet for information on achieving a healthy weight. Go to www.ottawacvcentre.com.

- **Start with** a balanced breakfast and **follow-up** with a balanced lunch and dinner.
- **Balance** - see Portions to Live By below.
- Add colour with **fruit and vegetables**. Eat your choices more often than drinking them as juice for more fibre and fewer calories.
- **Whole grain** starchy food choices include whole wheat pasta, whole grain bread, brown rice, whole wheat couscous, barley, quinoa or oats.
- An eating pattern rich in **plant-based** foods is rich in **fibre.** Fibre rich foods balance blood sugar, keep you feeling full, lower cholesterol and blood pressure. (and keep you regular!)
- **Protein** choices include low fat dairy or alternative choices such as milk, yogurt, cheese and lean meat and alternative choices such as lean beef, pork, chicken, fish, eggs, tofu, beans, lentils, nuts and seeds.
- Choose **milk and yogurt** with **milk fat percent (%MF) of 1% or less**. Cheese should be 20%MF or less. Lower fat fortified soy milk is also a great option.
- **Lean** meats have less "marbling" or white fat throughout the meat. Remove skin from poultry. Use cooking methods such as grilling, broiling, poaching or stir-frying in a non-stick pan to reduce fat. Try a "meatless" meal including beans, tofu or lentils for less fat and more fibre.

Portions to Live By

- One serving of whole grains is 1/2 cup cooked, not the 3 or more cups served in most restaurants! Too much of a good thing is not a good thing.
- For more details on healthy portions see **Eating Well with Canada's Food Guide** online at www.healthcanada.gc.ca/foodguide.



Avoid Portion Distortion

- One serving of whole grains is 1/2 cup cooked, not the 3 or more cups served in most restaurants! Too much of a good thing is not a good thing.
- For more details on healthy portions see Eating Well with Canada's Food Guide on line at www.healthcanada.gc.ca/foodguide.

Prepare for Success

- Prepare your foods with **limited added fat, sugar and salt**. Avoid frying.
- Add flavor with fresh or dried herbs, spices, flavored vinegars, low fat marinades and light dressings.

Great ideas for cooking with more flavor and less salt, sugar and fat can be found at your local library, book store or on line. The Heart and Stroke Foundation of Canada, the American Heart Association, the Canadian Diabetes Association and Dietitians of Canada all have great collections of healthy recipes available. Try one today.

Fat - Less Quantity, More Quality

- Men of healthy weight should keep their daily fat intake to 70 grams or less. Women of healthy weight should keep their daily fat intake to 60 grams or less. Fruit, vegetables and whole grains are naturally low in fat. Keep added fats to a minimum. Use food labels to choose foods with less fat.
- Choose **liquid or soft fats** such as olive oil, canola oil or soft non-hydrogenated margarine. Liquid and soft fats have less cholesterol-raising saturated and trans fat. Avoid deep fried foods and products with hydrogenated oils in the ingredients. This will help limit your intake of trans fats.
- **Omega 3** fats are heart healthy fats found in cold water fatty fish including salmon, mackerel, arctic char, sardines, trout and herring. Two (2) servings of fish per week is recommended as part of a healthy balanced diet. Plant sources of Omega 3's include flax seeds, walnuts and vegetables oils such as canola.

In Moderation - sweets, caffeine & alcohol.

- **Limit sweets,** candy, sugar, jam, honey, syrup regular soft drink and sweetened fruit drinks. Cakes, pies, cookies and many pre-packaged snack foods are high in calories and low on nutrients. Save choices of these foods for special occasions.
- Drink no more than **four (4) cups of coffee** or caffeine-containing beverages per day. Careful with what you add: cream, sugar and flavored syrups can add a lot of calories to your cup.
- **Limit alcohol** to less than 2 drinks per day. One (1) drink = 12 oz bottle of beer, 1.5 oz liquor, 4 oz wine.

Reducing alcohol can promote weight loss and help you lower your blood pressure.

Supplements for Hypertension Control

- Check with your Doctor, Dietitian or Pharmacist before starting a supplement.
- Heart Healthy Mixture = 1/3 ground flax, 1/3 oat bran and 1/3 psyllium. Use 2 Tablespoons per day added to foods or beverages.
- Omega 3 supplements have a small effect on reducing blood pressure. This effect is not strong enough to recommend fish oil supplement to control hypertension.

Food and Medication Interactions

- Review your medications with your Doctor, Dietitian or Pharmacist.
- Salt substitutes based on potassium such as “No Salt” or “Half Salt” are not recommended with some hypertension medications.
- Caution with grapefruit, grapefruit juice, pomelos, Seville oranges and natural licorice (glycyrrhizae glabra). Certain medications for hypertension, cholesterol and heart disease interact with these foods.

Move your body, lower your blood pressure

- Including at least 30 minutes of brisk activity, such as walking, four (4) or more days per week can lower your blood pressure.
- Start with a brisk 10 minute walk a few times per day and increase gradually from there.
- Gentle stretching exercises increase your flexibility and release tension in your muscles and joints. Aim for 4 or more stretching sessions per week.
- Strength exercises improve muscle and bone density keeping you strong and stable. Include these 2-4 times per week.
- Remember to start slowly and consult your physician before starting a new exercise program

Keeping active can lower your blood sugar, cholesterol, blood pressure, help you feel better, relieve tension and stress, improve your muscle tone and help you lose weight!

To Reduce Weight

- Eat smaller portions of foods and remember the balance of foods on your plate: 1/4 protein, 1/4 starch (including potatoes), 1/2 vegetables
- Eat 3 meals per day, no more than 6 hours apart. Don’t skip meals. Snack with fruit between meals.
- Choose foods lower in fat and sugar. Eating strategies including low glycemic index choices can be helpful. Learn more from a registered dietitian.
- Aim for a maximum weight loss of 1- 2 lbs (0.5 -1 kg) per week.
- “Waist loss” is as important as weight loss. For tips on how to trim your waist see our Waisting Away nutrition facts sheet.

For more information on hypertension and healthy eating on the net go to:
www.hypertension.ca, www.lowersodium.ca, www.sodium101.ca, www.dietitians.ca

Note: These guidelines are for people wanting to reduce the amount of salt or sodium in their diet. If a salt “restriction” is needed to help control more severe medical conditions, please consult with a Registered Dietitian to develop a more personalized low-salt/sodium meal plan.

The DASH Eating Plan – Dietary Approaches To Stop Hypertension

Following the DASH Eating Plan has been shown to lower blood pressure and cholesterol by emphasizing fruits, vegetables, and low-fat dairy. DASH also includes whole grains, fish, poultry and nuts and beans. It is low in red meats, sweets and sugar-containing beverages.

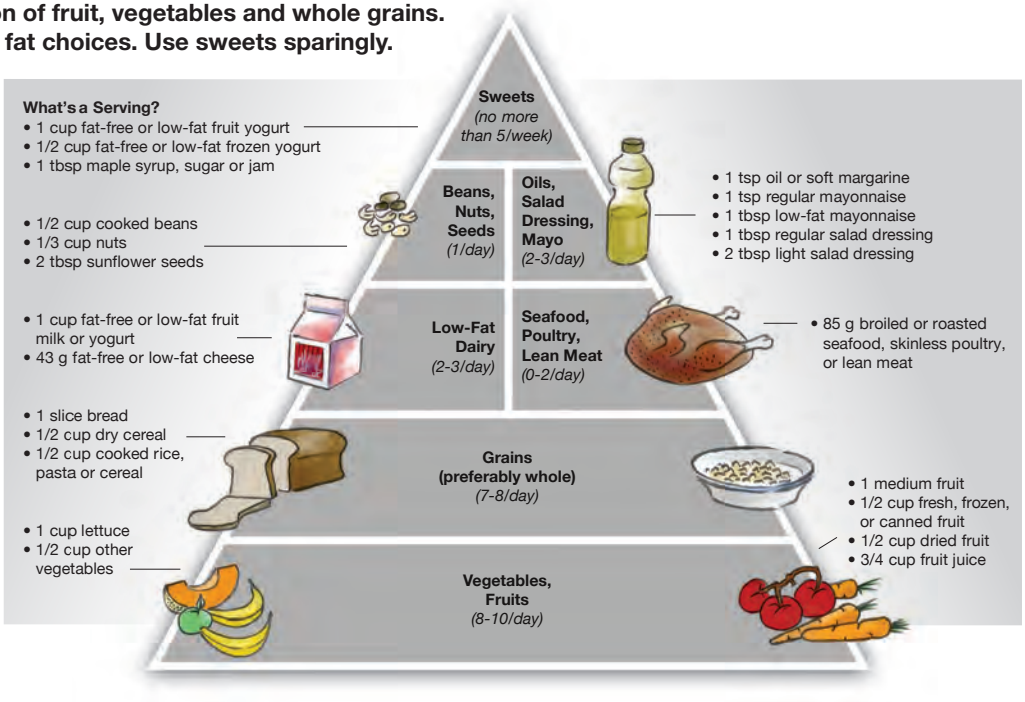
Tips for Following the DASH Eating Plan

The number of servings per day listed are for a 2000 calorie eating plan. Remember that if you are trying to lose weight you should choose lower-calorie foods from each group and replace servings of higher-calorie foods with fruit and vegetables. More details on DASH, including a lower calorie version, are available online at www.nhlbi.nih.gov/health/public/heart/hbp/dash/new_dash.pdf

Lay a Healthy Foundation of fruit, vegetables and whole grains. Add protein and healthy fat choices. Use sweets sparingly.

Here's how the DASH diet would look like if it took the shape of a pyramid. If you want to follow it, make sure you pay attention to the rather small serving sizes.

A serving of grains for example, is just half a cup of cereal, pasta or rice or a 28-gram slice of bread. That's far less than a typical bagel (110 to 140 grams), a serving of most cereals (one cup), or a restaurant-size serving of spaghetti (about three cups). Servings of seafood, poultry, meat, oils, fruits, and vegetables are also petite.



Eating Plan for Hypertension

No added salt/sodium: 1500 mg to 2300 mg of sodium per day
Read food labels for sodium content. Look for less than 400 mg per serving. Less than 200 mg is best!

FOODS TO CHOOSE	FOODS TO LIMIT OR AVOID
Vegetables and Fruit – with lots of colour!	
• All fruits and fruit juices • Any vegetables except those on "Avoid" list • Low salt tomato or vegetable juice • Low salt canned vegetables, tomato sauce, tomato paste	• Regular canned vegetables • Pickled vegetables (e.g.sauerkraut) • Tomato and vegetable juices with more than 400mg sodium/serving • Instant or canned potatoes
Whole Grains	
• Whole and multi-grain bread, cereal, rice, pasta • Most dry cereals, unsalted cooked cereals • Unsalted or low sodium crackers	• Salted crackers, bread or rolls with salted tops • Packaged breadcrumbs, breading mixes and stuffing mixes • Pre-seasoned rice or pasta "side dish" packages • Instant hot cereals, waffles and pancakes
Soup	
• Homemade soups made without salt • Low sodium broth or canned soups	• Meat extracts (e.g. bouillon, Oxo) • Regular canned soups, dried soup mixes

FOODS TO CHOOSE	FOODS TO LIMIT OR AVOID
Milk and Alternatives • Any except those on “Avoid” list - choose low fat • Limit of 1.5 oz (45g) hard cheese per day - 20 %MF or less • Limit 1 cup (250 ml) per day of one of the following: buttermilk, malted milk, Breakfast Anytime shake	• Milkshakes, Malted Milk servings over 1cup per day • Chocolate milk unless homemade with cocoa • Processed cheese slices and spreads
Meat and Alternatives • Any except those on “Avoid” list • Choose lean or low-fat choices • Canned fish without added salt - tuna, sardines • Dried beans, peas, lentils. • Canned beans, rinse well before using or choose low salt versions.	• Salted, smoked, cured or pickled meat, fish, poultry and eggs: luncheon meats, • Bacon, ham, sausages, wieners, canned and salted fish • Salted nuts, nut butters and seeds • Convenience foods - canned stews, pastas, chili
Fats and Oils • Any liquid oil - canola, olive, “vegetable” • Non-hydrogenated soft margarine • Limit commercial salad dressing to 1 tbsp (15ml) per day	• Bacon fat • Canned or dried gravies and sauce mixes • Dry mixes for salad dressings and dips
Sweets • Any except those on the “Avoid” list (in moderation)	• Commercial cakes, pies, pastries, dessert and instant pudding mixes
Beverages • Any except those on the “Avoid” list	• Water treated with water softener • Mineral water with sodium content greater than 200 mg per liter • Sports beverages such as Gatorade - unless prolonged, intense activity
Snack Foods • Unsalted popcorn, unsalted pretzels • Low sodium snack crackers	• Salted chips, cheezies, pretzels, popcorn and snack crackers
Seasonings and Condiments • Unsalted herbs, spices and seasoning blends • Vanilla extract, lemon, lime, vinegar, cocoa, dry mustard • Salt-free condiments (e.g. salt-free ketchup) • Limit of 1 tsp (15ml) per day of : barbeque, steak and Worcestershire sauces, horseradish, ketchup, prepared mustard, relish, salsa	• Salt, sea salt, salt substitutes containing salt (e.g. Half Salt) • Salted herbs and seasoning blends - check ingredients • Meat tenderizers • MSG (mono-sodium glutamate) • Regular pickles, olives and relishes • Soy sauce and oriental sauces (e.g. teriyaki)

Other Nutrition Fact Sheets Available:
Eating Plan for High Cholesterol
Eating Plan for Congestive Heart Failure
Eating Plan for Type 2 Diabetes
Waisting Away – Healthy Weight Management
Potassium Modified Eating Plan
Please visit www.cvtoolbox.com for more information

Ottawa Cardiovascular Centre
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www.cvtoolbox.com

Low Sodium Eating Plan for Hypertension, September 2010
Danielle Aldous, BSc, RD (From Original, 2005: Helene Charlebois, BSc, RD & Jasna Robinson DI)

EATING PLAN FOR HEART FAILURE

This eating plan is limits salt (sodium) to 2000 milligrams per day. This eating plan is also low in saturated and trans fat. It focuses on vegetables, fruit, whole grains and lean protein choices for overall heart health.

Heart Failure (HF)
Also called congestive heart failure (CHF), is a condition that affects the pumping function of the heart. Heart muscle that has become weak or stiff is unable to properly fill the heart chambers with blood and squeeze it out again. This results in reduced movement of oxygen rich blood from the heart to the tissues of the body. Because the heart is unable to pump well, extra fluid may build up in the lungs, legs and belly. Extra fluid in the lungs is what causes breathing difficulties with heart failure.

- Symptoms include: shortness of breath when active or when lying down, fatigue and weakness, swelling in your feet, ankles and lower legs, rapid or irregular heartbeat, reduced ability to exercise, persistent cough or wheezing, swelling of your belly, sudden weight gain from fluid retention.
- Causes include: damage to the heart from progressive blockage of the arteries (atherosclerosis), heart attack, high blood pressure, genetic defects such as faulty heart valves, chronic diseases such as diabetes and lupus, thyroid dysfunctions, obesity, inactivity, infections or viruses, alcohol abuse, drug use and chronic abnormal heart rhythms.

Tips To Help Reduce HF Symptoms

1. Limit your daily salt (sodium) intake to 2000 mg or less.
2. Fluids may need to be limited to 2000 ml (2L) per day. See FACTS below.
3. Check your weight daily. If you gain 5 or more pounds (2kg) in 1to 3 days contact your doctor.
4. Eat heart healthy, less processed foods that are low fat and high fibre.
5. If you're overweight, try to lose 5 to 10% of your present weight.
6. Be active each day. Walking is great – aim for 30 minutes each day!
7. Limit alcohol consumption.
8. Avoid smoking.

Do you know the top food sources of sodium for Canadians?
Pizza, sandwiches, submarines, hamburgers and hotdogs together accounted for almost 20% of our total sodium intake in a 2004 survey. Sodium is challenging to avoid – if you're *"sick of it"* check out www.sodium101.ca for more.

EATING PLAN FOR HEART FAILURE

Heart Failure FACTS – Focus on Salt and Fluid

Excess salt or sodium in the diet causes the body to retain more fluid.

Extra body fluid increases the work for the failing heart pump. This causes it to become progressively weaker. By reducing the salt you consume, you help your body to maintain a better fluid balance, manage the symptoms of heart failure and protect your hearts pumping ability. Your doctor may advise you to limit the fluids you drink if reduction of salt and addition of medications to remove excess water from your body are not enough to control your symptoms.

Reducing Salt

Salt from the foods you eat will hold more water, or fluid, in the body. This fluid retention contributes to swelling in the feet, ankles, legs and belly and congestion in the lungs making you feel short of breath.

Reducing salt is not easy because many of the foods we eat are processed or prepared with added salt. Cooking more from scratch and reading labels to identify foods with less salt will be a very important part of managing your heart failure.

- Keep a record of your salt intake for the day. You are aiming for less that 2000 mg in total. Use the chart below, information from the package or online sites such as www.eatracker.ca or www.calorieking.com to determine the salt you eat.
- Review your recipes. Remove added salt and replace high sodium foods with low or no sodium options. See the next page for a list of foods to avoid.
- Take the salt-shaker off the table and do not add salt in cooking. Try seasoning your food with herbs, spices and garlic. Lemon juice enhances our sense of saltiness in food.
- Read the Nutrition Facts Tables when shopping. Choose packaged foods with less than 200 mg of sodium per serving.
- Read ingredient lists. Foods listing salt or sodium at the beginning of the ingredient list or repeated times in the list are high in salt.
- Avoid fast food restaurants. Many menu items will have as much as your total daily salt intake in one serving! If it can't be avoided, review the nutrition information available in store or on line and choose options with less salt and limit the frequency of eating there.
- Focus on farm fresh, minimally processed foods. Fill your meals with vegetables, whole grains or starch and lean meat, fish, poultry or vegetarian protein choices such as beans, nuts or eggs. Select lower fat dairy choices. Replace salty, high fat snacks with fruit or vegetable based snacks. The DASH Eating plan is a great example of this style of eating. On the web, enter *Your Guide to Lowering Blood Pressure with DASH* into your search engine for a complete guide or consult with a registered dietitian for details.

More on general heart healthy eating can be found in **Eating Plan for Hypertension** and **Eating Plan for High Cholesterol** available in our clinic or on line at www.ottawacvcentre.com.

Did You Know?

One teaspoon of salt contains approximately 2300 mg of sodium. Your total daily intake, both what is in the foods you eat and what you add to your foods, should be less that what a teaspoon would hold.

Homemade Herb Blend

This multi-purpose salt free seasoning can replace the salt in your table top shaker and is great in casseroles, soups and just about any savory dish you would otherwise salt.

1 Tbsp garlic powder
1 tsp each of dried, crumbled: basil, marjoram, thyme, parsley, savory, sage
1 tsp each of ground mace (or nutmeg), onion powder, pepper
½ tsp cayenne (optional)

In a small bowl, mix together all ingredients until well blended. Store in a jar with a tight fitting lid in a cool, dry place for up to 6 months.

Source: AHA Low Salt Cookbook- 2nd ed.

Spice it Up!

Low salt doesn't have to mean bland and blah! Try adding flavor with fresh or frozen herbs and spices such as basil, parsley, ginger, garlic, oregano, and more! Find inspiration in these low sodium recipe collections: *Hold the Salt by Maureen Tilley, RD, Delicious Dash Flavours by Sandra Nowlan* or *The No Salt, Lowest Sodium Cookbook by Donald Gazzaniga.*

Where's The Salt?

Although about 80% of the salt we eat is added during processing and preparation, some salt does occur naturally in foods. Here are some details on the amount of salt in food.

FOOD	SODIUM (MG)	FOOD	SODIUM (MG)
VEGETABLES		**FRUIT**	
Fresh or frozen ½ c	1-70	Fresh, frozen, canned, ½ c	0-5
Canned or 'sauced' ½ c	140-460	Dried fruit	0-15
Tomato juice, canned, ½ c	330	**NUTS, SEEDS & LEGUMES**	
Whole Grains		Peanuts, salted, ½ c	120
Cooked cereal, rice, pasta (unsalted) ½ c	0-5	Peanuts, unsalted, ½ c	0-5
Ready to eat cereal, 1 c	0-360	Beans, cooked from dried or frozen, unsalted, ½ c	0-5
Bread, 1 slice	110-175	Beans, canned, ½ c	400
LOW-FAT OR FAT-FREE MILK & MILK PRODUCTS		**LEAN MEATS, FISH & POULTRY**	
Milk, 1 c	107	Fresh meat, fish , poultry, 3 oz	30-90
Yogurt, 1c	175	Tuna canned, water packed, no added salt, 3 oz	35-45
Natural Cheese, 1 ½ oz	110-450	Tuna canned water pack 3oz	230-350
Processed Cheese, 2 oz	600	Ham, lean, roasted, 3oz	1,020

Fluids and Heart Failure

The most effective way of reducing the fluid your body retains is to reduce your salt intake. If your heart failure is more advanced or your body continues to retain fluid despite low salt eating and use of diuretic medications ('water' pills), your doctor may advise you to limit your beverages to 2L or 2000ml per day.

Tips to help:

- Limit coffee or caffeine-containing beverages to 4 or less cups per day.
- Alcohol should be limited or avoided. If allowed, Men should consume 2 or fewer standard drinks per day and women should consume no more than 1 standard drink per day.
- Keep a record and count all fluids consumed including coffee, tea, milk, juices, soups, water, pop, alcohol and any other liquids consumed.
- 1 cup = 8oz = 250ml
- Measure your usual cups and glasses to determine how much they hold.
- You may want to keep an empty 2L bottle on your kitchen counter. Each time you have a drink, pour water of equal volume into the 2L bottle. As the bottle fills it will be a visual reminder that you are reaching your 2L limit.
- If you have trouble with dry mouth or thirst, try sucking on mints, chewing gum or freezing small fruit like berries or grapes and sucking on these. All of this stimulates saliva production that will wet your mouth.

Supplements

Check with your Doctor, Dietitian or Pharmacist before starting a supplement.

- Heart Healthy Mixture = 1/3 ground flax, 1/3 oat bran and 1/3 psyllium. Use 2 Tablespoons per day added to foods or beverages.
- Omega 3 fish oil supplements – doses of 1000 mg/day of EPA+DHA have been shown to be safe and beneficial for overall heart health but no specific benefits have been found for those with heart failure.
- Caution: Salt substitutes based on potassium such as "No Salt" or "Half Salt" are not recommended with some heart failure medications.

To Reduce Weight

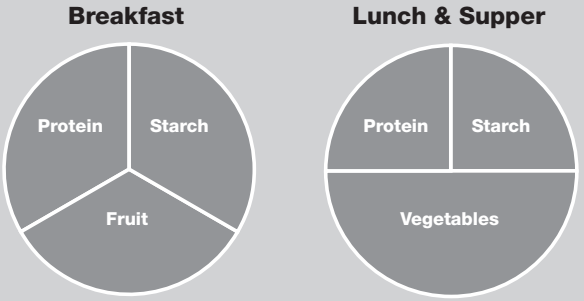
If you are overweight a gradual reduction of 5-10% of your initial weight can reduce heart failure symptoms. Suggestions include:

- Eat smaller portions of foods and remember the balance of foods on your plate: 1/4 protein, 1/4 starch (including potatoes), 1/2 vegetables
- Eat 3 meals per day, no more than 6 hours apart. Don't skip meals. Snack with fruit between meals.
- Choose foods lower in fat and sugar. Eating strategies including low glycemic index choices can be helpful. Learn more from a registered dietitian.
- Aim for a maximum weight loss of 1- 2 lbs (0.5 -1 kg) per week.

"Waist loss" is as important as weight loss. ***For tips on how to trim your waist see our 'Waisting Away – Healthy Weight Management' nutrition fact sheet.***

Portions to Live By

- One serving of whole grains is 1/2 cup cooked, not the 3 or more cups served in most restaurants! Too much of a good thing is not a good thing.
- For more details on healthy portions see **Eating Well with Canada's Food Guide** online at www.healthcanada.gc.ca/foodguide.



Nutritional Facts			
Per 125 mL (87 g)			
Amount			% Daily Value
Calories 80			
Fat 0.5 g			**1** %
Saturated 0.5 g + Trans 0g			**0** %
Cholesterol 0 mg			
Sodium 0 mg			**0** %
Carbohydrate 18 g			**6** %
Fibre 2 g			**8** %
Sugars 2 g			
Protein 3 g			
Vitamin A	2 %	Vitamin C	10 %
Calcium	2 %	Iron	2 %

Decoding Food Labels

The Nutrition Facts table found on the side of packaged food can help you make better food choices. Always check the serving size first and consider this in relation to how much of the food you usually eat.

Look for choices with less fat, saturated fat, cholesterol and sodium. Look for choices that give you more fibre.

Learn more about using food labels to make healthy choices on the web:
Health Canada – www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/cons/index-eng.php
Healthy Eating Is In Store for You – www.healthyeatingisinstore.ca

General Healthier Eating Guidelines

- **Start** with a **balanced breakfast** and follow up with a balanced lunch and supper.
- Add colour with **fruit and vegetables**. Eat your choices more often than drinking them as juice for more fibre and fewer calories.
- **Whole grain** starchy food choices include whole wheat pasta, whole grain bread, brown rice, whole wheat couscous, barley, quinoa or oats.
- An eating pattern rich in **plant based** foods is rich in **fibre**. Fibre rich foods balance blood sugar, keep you feeling full, lower cholesterol and blood pressure. (and keep you regular!)
- **Protein** choices include low fat dairy or alternative choices such as milk, yogurt, cheese and lean meat and alternative choices such as lean beef, pork, chicken, fish, eggs, tofu, beans, lentils, nuts and seeds.
- Choose **milk and yogurt** with **milk fat percent (%MF) of 1% or less**. Cheese should be 20%MF or less. Lower fat fortified soy milk is also a great option.
- **Lean meats** have less "marbling" or white fat throughout the meat. Remove skin from poultry. Use cooking methods such as grilling, broiling, poaching or stir-frying in a non-stick pan to reduce fat. Try a "meatless" meal including beans, tofu or lentils for less fat and more fibre.

Restricted Sodium Eating Plan

1000-2000mg sodium/day. Reminder: read food labels for sodium content.

FOODS TO CHOOSE	FOODS TO LIMIT OR AVOID
Whole Grains • Fresh breads (without cheese), pasta, rice • Cooked cereals without salt • Unsalted and reduced salt crackers (choose low-fat) • Choose whole and multigrain products	• Crackers, bread, or rolls with salted tops • Packaged breading, stuffing, bread or biscuit mixes • Packaged instant cooked cereals • Pre-seasoned/flavoured rice or pasta products • Commercial waffles, pancakes and muffins
Vegetables and Fruit • All fruits and fruit juices (without sodium additives) • Fresh/frozen (no salt added) vegetables • Low sodium canned vegetables • Low sodium tomato or vegetable juice • Low sodium tomato paste, canned tomatoes and tomato sauce	• Regular canned vegetables and vegetable juice • Artificial fruit flavoured crystals with sodium • Pickles vegetables (e.g. sauerkraut) • Instant or canned potatoes • Regular canned tomatoes, tomato/spaghetti sauce • No canned tomato/vegetable/clamato juice (unless low sodium)
Milk and Alternatives • Milk, yogurt, cream, sour cream - choose low fat • Low sodium cheese and cottage cheese	• Regular and processed cheese slices and spreads • Buttermilk, malted milk, evaporated or condensed milk • Hot chocolate mixes
Meat and Alternatives • Meat, poultry, fish without salt or sodium products • Eggs, tofu, legumes (without added sodium) • Unsalted peanut butter, nuts and seeds • Choose low-fat protein choices	• Salted, smoked, cured, or pickled meat, fish, and poultry: luncheon • meats, bacon, ham, sausages, wieners, sardines, herring, pickled eggs • Salted peanut butter, nuts and seeds • Convenience foods (e.g. canned: stews, pastas, beans)
Fats and Oils • Any except those on opposite list (in moderation)	• Bacon fat • Packaged gravies, sauces, salad and vegetable dips • Commercial salad dressings, salted margarine
Sweets • Any except those on opposite list (in moderation)	• Commercial cakes, pies, pastries, dessert, and instant pudding mixes
Snack Foods – Unsalted Only! • Unsalted popcorn (air popped)	• Salted chips, cheezies, pretzels, and popcorn
Beverages If fluid restricted, limit to 2000ml (8 cups) fluid per day • Any except those on opposite list	• Water treated with water softener • Mineral waters with sodium content greater than 250 mg sodium/L • Ovaltine, sports beverages such as Gatorade

FOODS TO CHOOSE	FOODS TO LIMIT OR AVOID
Soups	
• Low sodium broth or canned soups, homemade soups (made without salt)	• Meat extracts (e.g. boullion, Oxo) • Regular canned soups or dried soups mixes
Seasonings and Condiments	
• Unsalted herbs and spices • Dry mustard • Vanilla extract, lemon, lime, vinegar, cocoa • Salt-free condiments (e.g. salt-free ketchup) • Limit of 1 tsp (5 mL) per day of the following: barbeque, steak and Worcestershire sauces, horseradish, ketchup, prepared mustard, relish, salsa	• Sea salt, seaweed, Salted herbs (e.g. garlic salt) • Meat tenderizers • MSG (monosodium glutamate) • Salt substitutes containing salt (e.g. Lite Salt) • Regular pickles, olives, and relishes • Soya sauce and oriental sauces (e.g. teriyaki)
Fast Food	
• Plain 'Garden' salad – use a squeeze of lemon instead of dressing • Plain baked potato – can top with 1 tsp of soft margarine and chives	• Most contain very high levels of salt/sodium. To verify the sodium content of foods, ask for the company's "Nutritional Guide" or go to their website.

Notes:

Other Nutrition Fact Sheets Available:
Eating Plan for High Cholesterol
Eating Plan for Hypertension
Eating Plan for Type 2 Diabetes
Waisting Away – Healthy Weight Management
Potassium Modified Eating Plan
Please visit www.cvtoolbox.com for more rmation

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Eating Plan for Heart Failure, November 2010
Danielle Aldous, BSc, RD (From Original 2006 Helene Charlebois, BsC, RD & Jasna Robinson, DI)

POTASSIUM MODIFIED EATING PLAN

This nutrition fact sheet will help you change the potassium in your diet to meet the needs of your health condition.

Potassium is a mineral found in the body's blood and cells. It is needed for normal muscle and nerve function. Potassium levels are usually well balanced by our kidneys but may rise or fall if factors throw this balance off.

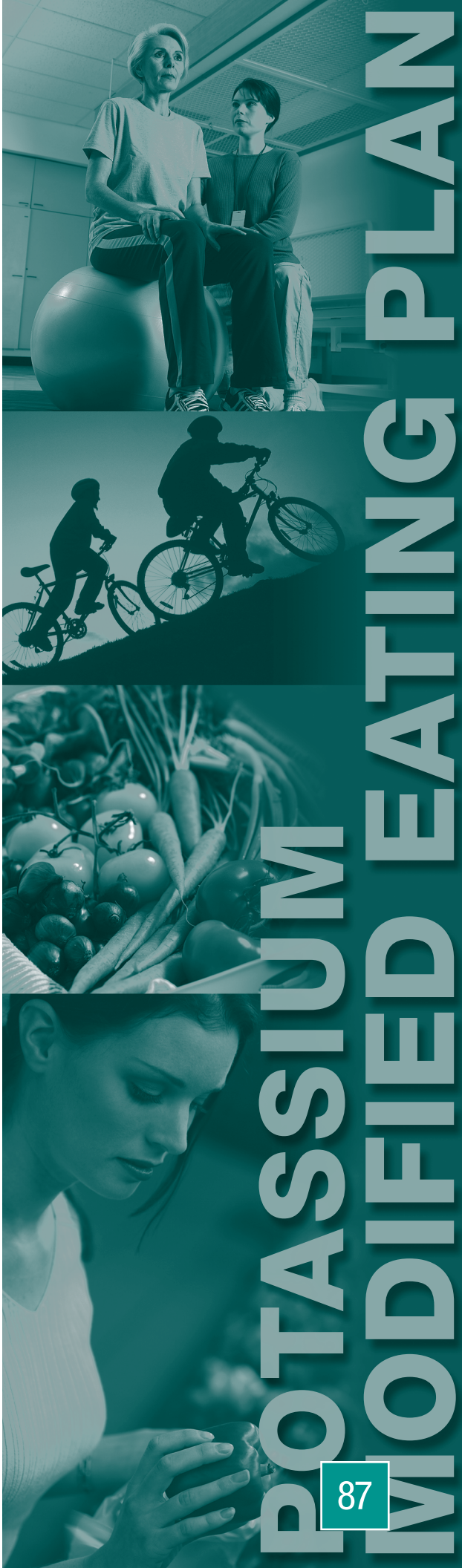
Hypokalemia: is the condition of having low blood levels of potassium. Symptoms of hypokalemia include muscle weakness, muscle aches and cramps, palpitations or "flutters" in the chest and abnormal heart rhythms. Causes include loss of potassium from the body because of vomiting, diarrhea, use of medications that increase potassium loss or change in proper kidney function. A diet high in potassium or potassium supplements may be used as treatment.

Hyperkalemia: is the condition of having high blood potassium. There may be no symptoms of hyperkalemia particularly with slowly rising potassium. Vague nausea, fatigue, muscle weakness or tingling may be noted. Slow heartbeat or heart stoppage are serious symptoms of very high potassium. Causes include poor kidney function, diseases of the adrenal gland and medications. A diet low in potassium is recommended for mild cases. Medical intervention is required for more sever cases.

Potassium and High Blood Pressure

- Increasing the potassium in your diet may reduce high blood pressure.
- The DASH Eating Plan for lowering blood pressure provided a high daily intake of potassium: 4700 mg per day.
- Potassium is found in all four food groups in Health Canada's *Food Guide to Healthy Eating*, especially in the vegetables and fruit group. Include a variety of foods rich in potassium each day.
- Some blood pressure medications commonly known as "water" pills (diuretics) alter the body's ability to regulate potassium. Talk to your doctor, dietitian or pharmacist to understand your medications. Ask if potassium based salt substitutes are safe for you to use in moderation.

More details on the DASH Eating plan are available in the Eating Plan for Hypertension nutrition fact sheet – on the web at www.ottawacvcentre.com



POTASSIUM MODIFIED EATING PLAN

To **increase potassium,** choose foods high in potassium and steam, stir fry, microwave or bake your foods.
To **decrease potassium,** choose foods low in potassium and boil or poach your foods.
Consult with a Registered Dietitian for more detailed information on foods and their potassium content.

FOODS **HIGH** IN POTASSIUM	FOODS **LOW** IN POTASSIUM
Vegetables and Fruit – many are high potassium • **Vegetables:** leafy greens (chard, beet greens, spinach), sweet potato, tomato, potato, avocado, beets, okra, vegetable juice, pumpkin, parsnips, brussel sprouts, cooked mushrooms, winter squash • **Fruit:** papaya, melon (honeydew & cantaloupe), prunes & juice, mango, figs (dried), dates, nectarine, orange & juice, kiwi, banana, pear (fresh), apricot (canned or fresh)	• **Vegetables:** sweet pepper, cabbage (raw), green or was beans, Chinese cabbage, water chestnuts (canned), peeled cucumber, lettuce, alfalfa sprouts • **Fruit:** raspberries, canned pears, apple sauce, cranberries and cranberry juice cocktail, lemon, grape juice, blueberries • Limit vegetables and fruit listed under “high potassium foods” especially tomatoes, potatoes, citrus fruit, bananas. • Avoid juices including orange, prune, grapefruit, pineapple, tomato and vegetable juice
Grain Products • All 100% bran cereals, gingerbread, granola cereal, bran flakes cereals, aats, porridge (cooked) • Whole grains are often higher in potassium than refined or “white” grains	• Choose “white” refined grain products – white bread, rice, cream of wheat
Milk and Alternatives • Yogurt, plain or fruit flavored, malted milk or Ovaltine made with milk, Chocolate milk, buttermilk, milk.	• Cheese: Colby, Swiss, cheddar, • Cream: table and sour cream
Meat and Alternatives • Cooked pinto beans, lentils, kidney beans, navey beans, blacked beans, pumpkin and squash seed kernels, cooked chickpea kernels, almonds (dry roasted), peanuts, peanut butter, tofu, fish, pork, and beef.	• Poultry, walnuts, pecans, egg – whole and whites, lamb
Fats and Oils • Not a significant source of potassium	• Most choices are low in potassium. Choose oils as a heart healthier option.
Sweets • Black strap and standard molasses	• White sugar, hard candies, jam, honey, corn syrup, gelatin. All in moderation.
Snack Foods • Mixed nuts, snack foods made with whole grains	• Choose white refined baked goods in moderation
Beverages • Juices – orange, prune, grapefruit, pineapple, tomato, vegetable, sports beverages	• Carbonated beverages, lemonade, water • Avoid juices including orange, prune, grapefruit, pineapple, tomato and vegetable juice to reduce potassium intake.

Other Nutrition Fact Sheets Available:
Eating Plan for Hypertension
Eating Plan for Cholesterol
Eating Plan for Congestive Heart Failure
Eating Plan for Type 2 Diabetes
Waisting Away – Healthy Weight Management
Please visit www.cvtoolbox.com for more information

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Potassium Modified Eating Plan, August 2010
Danielle Aldous, BSc, RD (From Original, 2005: Helene Charlebois, BSc, RD & Jasna Robinson DI)

EATING PLAN FOR HIGH CHOLESTEROL (HYPERLIPIDEMIA)

This plan will limit your intake of saturated fat, trans fat and cholesterol while increasing fruit, vegetables and whole grains.

Cholesterol Defined

A serum lipid test is a measure of your blood cholesterol levels. Your blood sample will be measured for four different components. The total cholesterol, triglycerides, low density lipoprotein (LDL or bad cholesterol) and the high density lipoprotein (HDL or good cholesterol) are reported to your doctor. These levels are compared to target values appropriate for reducing your risk for heart disease. If your values are not at target, improving eating habits, becoming more active, avoiding smoking and taking medications can improve your cholesterol values.

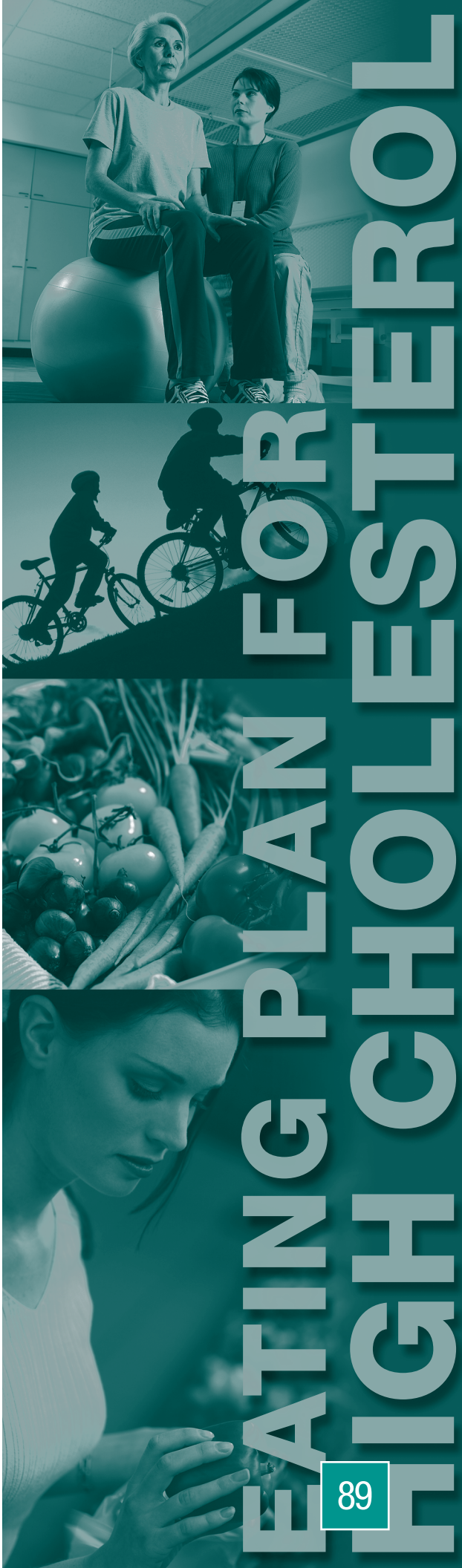
10 Tips to Help Reduce Your Cholesterol Levels

1. Eat plenty of vegetables and fruits - 7 servings or more each day
2. Eat whole grain foods rich in soluble fibre – oats, psyllium and barley
3. Include 2 Omega 3 rich fish meals per week – salmon, trout, sardines
4. Include 2 bean based meals per week – kidney beans, chickpeas, lentils
5. Eat nuts such as almonds and walnuts – small portions 5 times a week
6. Improve the quantity and quality of fats you eat
7. Oils are best for added fat – use small amounts, avoid frying
8. Be active – move your body 30 minutes each day
9. If you are overweight, work to reduce your weight by 10%
10. If your triglycerides are high, limit sugars and alcohol.

Cholesterol Facts

- High cholesterol can increase your risk of heart disease.
- Cholesterol in your blood comes from what your liver produces and what you consume in your diet. High levels of cholesterol in your blood can enter the lining of your arteries and form deposits or “plaques”. These plaques can grow overtime and block the flow of blood in your arteries. This puts you at risk for a heart attack or stroke.
- Making changes to your eating to lower your intake of saturated fat, trans fat and cholesterol, while increasing fibre, can lower your cholesterol by as much as 35%.

Build a healthy heart from the ground up – an eating plan based on fruit, vegetables, whole grains, nuts and legumes with lean protein choices is the foundation for managing your cholesterol.



Healthier Eating Guidelines for Lowering Cholesterol

- **Focus on Quantity and Quality of Fat**
  - **Quantity** – 1/4 to 1/3 of your calories can come from fat. This means that you can eat between 50 to 70 grams of fat each day. The number of fat grams that are right for you may be less or more than this depending on your gender, activity level and weight goals. A Registered Dietitian can help determine how much is right for you.
  - **Quality** – unsaturated fats support a healthy cholesterol profile. These fats are liquid or soft solid at room temperature. Oils like olive oil, canola oil, soy oil and non-hydrogenated margarines are great quality fats. Use in moderation. One teaspoon of oil, the size of your thumb tip, adds 5 grams of fat.
- **Limit saturated and trans fats, or hard fats, to 15 grams or less per day.** These fats are found in full fat dairy products, meats, poultry skin, lard, palm kernel oil, hydrogenated oils and baked goods made with these fats and oils.
- **Eat less cholesterol – aim for less than 300 mg of cholesterol per day.** Cholesterol is found only animal foods. Reducing portions of meat, avoiding high fat cuts of meat and choosing lower fat dairy choices will help.
- **Eggs** – Recent studies have shown that eating an egg a day will not increase cholesterol or risk for heart disease. However, if you have diabetes you should limit your egg consumption to no more than 6 eggs per week.
- **Nuts such as almonds, walnuts, pecans and pistachios can help lower cholesterol.** Studies show 1.5 oz or about 36 almonds 5 days per week helped reduce bad cholesterol. If you are working to lose weight a smaller portion of 10-12 nuts is recommended.

Fibre – *yes, for your heart!*

Fibre is found in plant based foods. Vegetables, fruit, whole grains, nuts, seeds, beans, peas and lentils are all great fibre sources. Functional or "soluble" fibre helps to reduce cholesterol by binding with cholesterol in your stomach and bowel. This cholesterol is then eliminated in your stool. Studies show we should include 10 to 25 grams of this fibre each day. Here is a list of the soluble fibre foods and the grams of fibre they provide.

Item	Soluble Fibre (g)	Item	Soluble Fibre (g)
Barley (1/2 c)	1	Navy Beans (1/2c)	2
Oatmeal (1/2 c)	1	Chickpeas (1/2 c)	1
Oat bran (1/2 c)	2	Carrots	1
Apple	1	Brussels Sprouts	3
Citrus (oranges)	2	Psyllium Seeds (1 Tbsp)	5
Pears	2	Metamucil (1 tsp)	2
Kidney Beans (1/2c)	3	All Bran Buds (1/3c)	2

Heart Health Mixture = 1/3 ground flax, 1/3 oat bran, 1/3 psyllium.
Use 2tbsp each day added to your food. It mixes well with yogurt, hot cereal and salad dressing.

Salt – Shake the Habit

Tips to reduce salt (sodium) intake:

- **Home prepared fresh or frozen foods are best.** If using canned foods, look for labels such as "no added salt" or "low sodium".
- **Avoid adding salt** to your food and omit from recipes where possible.
- **Season your food with herb and spice blends.** Check ingredient lists to avoid those with salt.
- **Limit condiments such as ketchup, mustard, soy sauce etc.**
- **Use Nutrition Facts Labels.** Best choices have less than 200 mg sodium per serving. Avoid packaged food with more than 400 mg of sodium per serving. Check labels carefully.
- **Use ingredient lists** - foods listing salt or sodium at the beginning of the list or multiple times in the list are high in salt.
- **Restaurant foods are often high in sodium.** Try to avoid fast food but do use the restaurants' Nutrition Information to identify lower sodium options. When eating out, ask your server if the meal can be prepared without added salt. Request sauces on the side.

Omega-3 Fats

Omega 3's are unsaturated fats found in cold water fatty fish (salmon, mackerel, arctic char, sardines, trout and herring) and in plant foods including walnuts and flax seeds. The "fish" omega-3's are commonly known as EPA and DHA. The "plant" omega-3's are known as ALA. ALA is converted to EPA and DHA in your body. Food should be your first choice to achieve your omega 3's (see below). Aim to eat 2 meals including fish each week and use the **Heart Health Mixture** as noted on the previous page. If you have heart disease or your triglycerides are high, your doctor or dietitian may recommend an Omega 3 supplement.

OMEGA 3 CONTENT OF FOODS					
Fish (2.5 oz)	**EPA/DHA (mg) per serving**	**Nuts/Seeds/Oils**	**ALA (mg) per serving**	**Enriched Foods**	**Total Omega -3 (mg) per serving**
Herring	1600	Almonds (1/4 c)	150	Milk + DHA (1 c)	20
Mackerel	1490	Wheat Germ (27 g)	190	Soy beverage + flax	700
Salmon	1300	Canola Oil (1tsp)	430	Eggs + DHA (2)	800
Sardines	1050	Soybeans	760	Omega 3 yogurt (3/4 c)	500
Trout	870	Flaxseed, ground (1Tbsp)	1600		
Arctic Char	680	Tofu (3/4c)	2020		
Tuna, white (canned)	650	English Walnuts (1/4 c)	2300		

If you have High Triglycerides

In addition to the guidelines for managing your cholesterol, you may benefit from the following recommendations:

- **Alcohol:** Men - limit to less than 2 drinks per day or 14 per week. Women – limit to 1 drink a day or 9 per week.
- Depending on your triglyceride level, your doctor may ask that you further reduce this amount.
- **Sugars** - reduce added sugar e.g. table sugar, syrup, jam, honey, molasses. Limit juice, pop, candies, sweets, chocolate and baked goods.
- If you have diabetes, work with your healthcare team to improve your blood glucose (sugar) control
- **Omega 3 supplements** – adding 2000 to 4000mg of EPA+DHA from fish oil. This should be done under the supervision of your doctor
- **Niacin by prescription** – this B vitamin may be recommended to lower your triglycerides. It also helps raise HDL (good cholesterol)

Reducing alcohol can promote weight loss and help decrease triglyceride levels.

Decoding Food Labels

Nutritional Facts
Per 125 mL (87 g)

Amount	% Daily Value
Calories 80	
Fat 0.5 g	**1** %
Saturated 0.5 g + Trans 0g	**0** %
Cholesterol 0 mg	
Sodium 0 mg	**0** %
Carbohydrate 18 g	**6** %
Fibre 2 g	**8** %
Sugars 2 g	
Protein 3 g	
Vitamin A 2 %	Vitamin C 10 %
Calcium 2 %	Iron 2 %

The Nutrition Facts table found on the side of packaged food can help you make better food choices. Always check the serving size first and consider this in relation to how much of the food you usually eat.

Look for choices with less fat, saturated fat, cholesterol and sodium. Look for choices that give you more fibre.

Learn more about using food labels to make healthy choices on the web:
Health Canada – www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/cons/index-eng.php
Healthy Eating Is In Store for You – www.healthyeatingisinstore.ca

To Reduce Weight

- Eat smaller portions of foods and remember the balance of foods on your plate: 1/4 protein, 1/4 starch (including potatoes), 1/2 vegetables
- Eat 3 meals per day, no more than 6 hours apart. Don't skip meals. Snack with fruit between meals.
- Choose foods lower in fat and sugar. Eating strategies including low glycemic index choices can be helpful. Learn more from a registered dietitian.
- Aim for a maximum weight loss of 1-2 lbs (0.5 -1 kg) per week.
- "Waist loss" is as important as weight loss. For tips on how to trim your waist see our Waisting Away nutrition fact sheet.

For a more detailed plan for weight loss please read Waisting Away - Healthy Weight Management available in our clinic or on the web at www.ottawacvecntre.com

Portions to Live By

- One serving of whole grains is 1/2 cup cooked, not the 3 or more cups served in most restaurants! Too much of a good thing is not a good thing.
- For more details on healthy portions see **Eating Well with Canada's Food Guide** on-line at www.healthcanada.gc.ca/foodguide.

Breakfast

Lunch & Supper

Prepare for Success

- Cook without adding fat – bake, broil, roast, barbeque, grill, steam
- Limit pan frying and avoid deep fat frying
- Try using 1/3 less fat than your recipe calls for
- Add flavour to food with herbs and spices – think garllic, lemon, ginger and more
- Refrigerate soups and stews and skim off fat when solid
- Use a spray of oil to prevent sticking and add flavour

Food and Medication Interactions

Review your medications with your Doctor, Dietitian or Pharmacist.

- Caution with grapefruit, grapefruit juice, pomelos and Seville oranges Certain medications for cholesterol and heart disease interact with these foods.

Supplements for Cholesterol Control

Check with your Doctor, Dietitian or Pharmacist before starting a supplement.

- **Heart Healthy Mixture** = 1/3 ground flax, 1/3 oat bran and 1/3 psyllium. Use 2 Tablespoons per day added to foods or beverages.
- **Omega 3 supplements**
  - if you have heart disease: 1000 mg per day as EPA + DHA
  - if your triglycerides are elevated: 2000 to 4000 mg per day (under the supervision of your doctor).
- Plant Sterols – consuming 2 grams of plant sterols per day from enriched foods, such as margarine with plant sterols, has been shown to reduce LDL cholesterol.
- Red yeast rice can be effective at lowering cholesterol but these products are unregulated. Their content is unreliable and therefore they are not recommended for use.
- Supplements of garlic, soy and lecithin do not appear to reduce cholesterol based on current research.
- Lecithin does not appear to reduce cholesterol.
- Coenzyme Q10 – evidence to date does not show that Co Q10 reduces muscle pain associated with cholesterol lowering medications.

Move your body, lower your bad cholesterol, raise your good cholesterol

- Including at least 30 minutes of brisk activity, such as walking, four (4) or more days per week can lower your LDL and raise your HDL.
- Start with a brisk 10 minute walk a few times per day and increase gradually from there.
- Gentle stretching exercises increase your flexibility and release tension in your muscles and joints. Aim for 4 or more stretching sessions per week.
- Strength exercises improve muscle and bone density keeping you strong and stable. Include these 2-4 times per week.
- Remember to start slowly and consult your physician before starting a new exercise program

Keeping active can lower your blood sugar, cholesterol, blood pressure, help you feel better, relieve tension and stress, improve your muscle tone and help you lose weight!

Eating Plan for High Cholesterol

Cholesterol lowering – maximum 15 mg of saturated fat per day, 300 mg of cholesterol
Read food labels for less fat, saturated fat, cholesterol and sodium and more fibre.

Note: Underlined foods are commonly higher in salt (sodium) – limit use in cases of hypertension or other condition requiring salt restriction.

FOODS TO CHOOSE	FOODS TO LIMIT OR AVOID
Vegetables and Fruit • Fresh and frozen are best • Unsweetened canned fruit, unsalted canned vegetables • Limit fruit juice with elevated triglycerides • Low sodium vegetable juice • Avocados and olives in moderation for healthy fat	• Vegetables prepared with butter, cream or sauce; battered and deep fried • Fruit packed in heavy syrup or sugar; sweetened fruit juice, fruit drinks, sports drinks
Whole Grains • bread, buns, rolls, pita bread, English muffins and tortillas • low fat crackers, breadsticks, melba toast, soda crackers (unsalted tops) • Unsweetened hot or cold cereal – oats, oat bran, psyllium for soluble fibre • Brown rice, barley • Whole grain pasta • Low fat baked goods – add oat bran, ground flax to boost fibre	• Avoid “white” products • Cheese or egg bread, croissants, sweet rolls • Crackers over 5 grams of fat per serving, commercial crumb coatings • Sweetened cereals • Pasta with butter, cream or cheese sauce, chow mien noodles, ramen noodles • Commercial muffins, cakes, donuts, Danish, high-fat cookies
Beverages • Water, soda water, mineral water • Sugar-free soft drinks • Coffee, Tea – limit to 4 cups per day • Cereal beverages (e.g. Postum, Ovaltine)	• Regular tonic water • Regular soft drinks, lemonade, sweetened iced tea, regular drink crystal mixes • Flavored instant coffee • Liqueurs, Cocktail mixes
Milk and Alternatives • Any with 1% Milk Fat (MF) or less • Cheese with less than 20% MF – occasional use	• All milk products which are more than 1% MF • Cheese 21% MF or higher

FOODS TO CHOOSE	FOODS TO LIMIT OR AVOID
Meat and Alternatives • Fish and shellfish: fresh, frozen-unbattered, canned in water • Poultry: chicken, turkey – without skin • Meat: lean cuts, fat trimmed – Beef: round, rump, sirloin, extra lean/lean ground – Veal: round, rump, tenderloin – Lamb: leg, loin, shank, lean ground – Pork: tenderloin, back bacon, ham – Deli Meat: ham, roast beef, pork, turkey, turkey or reduced fat wieners – Wild Game: moose, venison, rabbit • Legumes: chickpeas, kidney beans, lentils, lima beans, soybeans, split peas, tofu • Eggs: if you have diabetes, limit to 6 per week • Nuts: unsalted almonds, walnuts, pecans, pistachios – limit 1/4 c per day • Peanut butter: natural or non-hydrogenated or light • Seeds: flax, pumpkin, sesame, sunflower	• Fish canned in oil, commercially fried, frozen battered fish • Poultry: duck, goose, fried or battered chicken, chicken wings • Meat: fatty marbled meats, ribs, medium/regular ground meat, organ meats, bacon, sausage (unless low fat), canned meats • Deli meat: pate, bologna, salami, high-fat luncheon meats, wieners • Peanut butter with hydrogenated oil
Fats and Oils Limit added fats to 3 teaspoons per day. • Oils: olive, canola, corn, peanut, sesame, soy, sunflower • Margarine: non-hydrogenated soft (regular or light) • Salad dressing/Mayonnaise: low calorie, calorie reduced, oil-free, homemade with recommended oils • Low fat sour cream, cream cheese • Gravy: defatted	• Hydrogenated or block margarine, butter, lard, shortening, suet • Salad dressings made with cheese or regular sour cream • "Tropical" oils: palm kernel, coconut • Full fat gravy, cream sauces
Sweets • Sugar: substitutes (e.g. sucralose,), low sugar jams, jellies, syrups • Sugar free: candies, gelatins, gum • Baked goods: low in sugar, fat and high fibre • Frozen desserts: low fat, low sugar ice cream, ice milk, frozen yogurt and sherbet • Cocoa powder	• Sugar – use in moderation • Regular jams, jellies, syrups • Regular candies, gelatins, gum • Baked goods - regular cakes, pies, cookies - avoid "white" foods • Frozen Desserts: regular ice cream, ice milk, frozen yogurt, sherbet • Chocolate bars, chocolate
Snack Foods • Popcorn: hot air popped or low fat microwave • Pretzels, baked chips, rice crisps and cakes	• Popcorn – regular and high fat microwave, corn chips, potato chips, cheesies
Miscellaneous • Condiments (ketchup etc), herbs, spices, vinegar, pickles • Soups: prepared with skim milk or fat-free stock, bouillon, broth, consommé	• Soups - cream

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Eating Plan for High Cholesterol, August 2010
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EATING PLAN FOR TYPE 2 DIABETES

This eating plan is low in refined grains and sugar, low in saturated and trans fat and high in fibre. It focuses on eating regularly timed meals and selecting low glycemic index foods.

Type 2 Diabetes affects how your body uses and stores glucose. Glucose comes from digestion of sugars and starches in the foods we eat. Our body produces a hormone called insulin that it uses to remove glucose from our blood. In Type 2 diabetes our body may not be making enough insulin or our body is not properly responding to the insulin it is making. Glucose levels in our blood rise and can cause both short term and long-term effects on our body.

- Symptoms include: unusual thirst, frequent need to urinate, weight change, lack of energy, blurred vision, frequent infections, cuts and bruises that are slow to heal, tingling in the hands and feet.
- Risk factors include: being overweight, a parent or sibling with diabetes, having diabetes while pregnant (gestational diabetes), impaired glucose tolerance or impaired fasting glucose, high blood pressure, high cholesterol, polycystic ovary syndrome, being of Aboriginal, Hispanic, Asian, South Asian or African descent.

Did You Know?

More than **3 million Canadians have diabetes** and more than **90% of these have Type 2 Diabetes**.

Tips to Help Keep Your Blood Sugar levels in a Healthy Range

1. Eat three balanced meals per day, no more than six hours apart. Limit added sugars and sweets.
2. Eat a combined total of at least 7 servings of vegetables and fruit each day.
3. Eat your fruit rather than drinking it as juice.
4. Include small portions of whole-grain starchy foods at each meal.
5. Eat lower glycemic index foods. *See 'Go Low GI'.*
6. Drink water instead of regular pop and fruit drinks. Tea, coffee and low calorie juices and beverages are great too.
7. Include lean protein choices at each of your meals.
8. Make lower fat choices, avoid frying your foods and limit add on fats such as butter, margarine and oil.
9. Move your body for at least 30 minutes every day – walking is great!
10. If you are overweight, try to lose 5 to 10% of your present weight.

Blood Glucose Target Ranges
Fasting: 4.0 -7.0 (empty stomach or no food for at least 3 hours)
Postprandial: 5.0-10.0 (2 hours after a meal)

Type 2 Diabetes FACTS – Focus on Carboyhdrate, Fibre and Glycemic Index

- Over time, high blood sugar causes damage to your blood vessels and can result in blindness, heart disease, kidney problems, circulation problems, nerve damage and erectile dysfunction.
- By choosing appropriate portions of carboydrate containing foods and selecting ones that have more fibre and a lower glycemic index, you help improve you blood glucose control.

Go Low GI – Foods and Their Glycemic Index

Glycemic index is a scale (0-100) ranking how quickly a carbohydrate containing food will digest into glucose in our blood. High GI foods break down quickly whereas low GI foods break down slowly. With low GI foods you feel full longer and you body's insulin has more time to perform its job and remove glucose from the blood.

Hint: Hint low GI foods are generally 'close to the farm.'

LOW GI FOODS (55 OR LESS) CHOOSE MOST OFTEN	**MEDIUM GI FOODS (56-69)**	**HIGH GI FOODS (70+)** CHOOSE LESS OFTEN
Whole grain bread	Couscous	White bread
Pumpernickle bread	Rye bread	Instant mashed potatoes
Oatmeal	Instant Oatmeal	Corn Flakes, Rice Krispies
All-Bran cereal	Shredded Wheat	Refined, sweetened cereals
Converted rice	Cream of Wheat	Instant rice
Brown & Basmati rice	Whole grain crackers	Bagels
Bulgur, Barley, Quinoa	Pita bread	Waffles/pancakes – made with white flour
Firm cooked pasta	Long grain white rice	Soda crackers
Beans, peas, lentils	Apricot, banana	French fries
Apples, peaches, pears	Cantaloupe	Dried dates/figs
Grapefruit, oranges	Pineapple, raisins	Sweetened fruit juice
Berries, cherries, grapes	Canned fruit in juice	Parsnips, pumpkin
Kiwi, Mango, Plum	Cranberry juice	Rutabaga, turnip
Avocado	New potatoes	Broad beans
Sweet Potato	Beets	Refried beans
Carrots, broccoli	Sweetened condensed milk	Ice cream
Cauliflower, corn		Soft drinks
Leafy vegetables		Glucose
Low fat milk, soymilk, yogurt and cottage cheese	*Adapted from "The GI Diet" Rick Gallop	

Tips for using the Glycemic Index

- Think low and slow - choose from the low and medium GI foods most often.
- Balance your choices with lean protein choices and healthy fats. Protein and fat also slow the digestion, keep you feeling full and slow the release of glucose into your blood.
- More details can be found online at www.gidiet.com or www.diabetes.ca/files/glycemicindex_08.pdf

Did you know?

The Glycemic Index diet was developed by David Jenkins, a professor of nutrition and reasearcher at the University of Toronto.

Balancing Carbohydrates ('Carbs')

Along with the glycemic index approach, it is important to understand and control the amount of carbohydrates you eat and drink to better manage your blood glucose.

Here are some tips:

1. Carbohydrate is the nutrition term used for starch, sugar and fibre.
2. Spacing your carbohydrates over the day helps your body to keep a stable glucose level.
3. Starch choices that are higher in fibre contribute less to raising your blood glucose. Use the Nutrition Facts panel to choose cereal, bread, crackers, rice and other grain or starch choices that have at least 2 grams of fibre per serving.
4. Breakfast should be 1/3 starch or grain, 1/3 fruit and 1/3 protein.
5. Lunch and supper should be 1/2 vegetables, 1/4 starch and 1/4 protein.
6. Snack choices can help prevent dips in blood glucose that can occur if your meals are more than 4 hours apart or if you are very active.
7. Choose snacks with about 20 grams of carbohydrate. Fruit, vegetables, high fibre granola bars, whole grain crackers with cheese or peanut butter are just a few options.

Sugar and Refined Starches

See it to Believe it!
1 tsp = 5 grams sugar

- Table sugar, brown sugar, honey, maple syrup and molasses are all simple sugars and they all have 5 grams of carbohydrates or "carbs" in a teaspoon.
- Simple sugars such as these and 'white' or refined starches break down quickly and cause blood glucose to rise quickly.
- A quick rise in blood glucose can often be followed by an equally quick drop.
- This can lead to cravings for more sugary foods and feelings of hunger and fatigue.
- Aim to choose packaged foods with less than 10 grams of sugar per serving
- Avoid adding sugar, reduce the amount or substitute a non-sugar sweetener for baking such as Splenda (sucralose)

The Canadian Diabetes Association has an excellent summary sheet on sugars and sweetners.
Find it on line at www.diabetes.ca/files/en_sweeteners_final.pdf or call 1-800-BANTING to request a copy.

Did you know?

A standard can of regular pop contains the equivalent of 10 tsp of sugar and a 2L bottle of pop has 1½ cups of sugar! Water is the best beverage for quenching your thirst.

Decoding Food Labels

The Nutrition Facts table found on the side of packaged food can help you make better food choices. Always check the serving size first and consider this in relation to how much of the food you usually eat.

Nutritional Facts
Per 125 mL (87 g)

Amount			% Daily Value
Calories 80			
Fat 0.5 g			**1** %
Saturated 0.5 g + Trans 0g			**0** %
Cholesterol 0 mg			
Sodium 0 mg			**0** %
Carbohydrate 18 g			**6** %
Fibre 2 g			**8** %
Sugars 2 g			
Protein 3 g			
Vitamin A	2 %	Vitamin C	10 %
Calcium	2 %	Iron	2 %

Look for choices with less fat, saturated fat, cholesterol and sodium. Look for choices that give you more fibre.

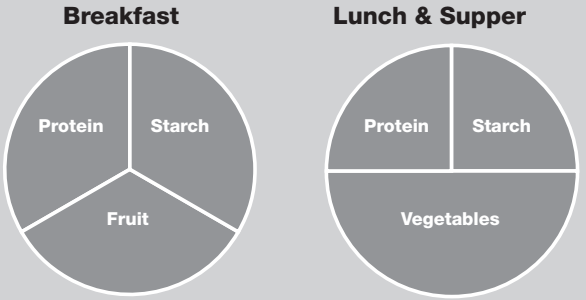
Learn more about using food labels to make healthy choices on the web:
Health Canada – www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/cons/index-eng.php
Healthy Eating Is In Store for You – www.healthyeatingisinstore.ca

Did you know?

Fibre is a carbohydrate that does not raise blood sugar. Using the Nutrition Facts, you can subtract the grams of Fibre from the grams of Carbohydrate. Only count the remaining carbohydrate toward your meal plan.

Portions to Live By

- One serving of whole grains is 1/2 cup cooked, not the 3 or more cups served in most restaurants! Too much of a good thing is not a good thing.
- For more details on healthy portions see **Eating Well with Canada's Food Guide** online at www.healthcanada.gc.ca/foodguide.



How Many carbs are right for me?

- Carbs are one of the energy nutrients. We all have diferent energy needs based on our activities, age, gender, goals to maintain or lose weight just to name a few.
- In general, most adults need 45 to 60 grams of carbohydrates per meal.
- Using food labels will help you to choose foods to provide about this amount of carbohydrate per meal.
- To plan your meal you should know that in each of the following foods there are about 15 grams of carbs:
  - 1slice of bread (the size of a CD case)
  - ½ cup of cereal
  - 1 piece of fruit (the size of a tennis ball)
  - 1 cup of low fat milk
- Vegetables are very low in carbs and are often considered 'free' – load up!

Exchange lists indicating the portions of food to provide 15 grams of carbohydrate are available. Ask a registered dietitian for more details.

If you are using insulin to control your blood sugars, you may want to learn more about balancing your carbohydrates with an approach called Carbohydrate Counting. Ask to speak with a registered dietitian.

Fibre

- When reading food labels look for foods higher in fibre.
- Bread choices should have at least 2 grams per slice. Cereal choices should be 4 grams or more per serving.
- Grandually increase your fibre intake and aim for 30 grams each day.
- Fibre is a carb that does not digest. When reading the Nutrition Facts table, subtract the fibre grams from the total grams of carbs to determine the carbs that contribute to your meal.

To Reduce Weight

If you are overweight a gradual reduction of 5-10% of your initial weight can inprove blood glucose control. Suggestions include:

- Eat smaller portions of foods and remember the balance of foods on your plate: 1/4 protein, 1/4 starch (including potatoes), 1/2 vegetables for lunch and supper
- Eat 3 meals per day, no more than 6 hours apart. Don't skip meals. Snack with fruit between meals.
- Choose foods lower in fat and sugar. Eating strategies including low glycemic index choices can be helpful. Learn more from a registered dietitian.
- Aim for a maximum weight loss of 1- 2 lbs (0.5 -1 kg) per week.

"Waist loss" is as important as weight loss. ***For tips on how to trim your waist see our 'Waisting Away – Healthy Weight Management' nutrition fact sheet.***

Staying Healthy with Diabetes

Being overweight or obese makes your body more insulin resistant. This makes controlling blood sugars more challenging. Excess weight and diabetes are both risks factors for heart disease.

For more details on Weight Management, Cholesterol or Hypertension see: **Eating Plan for Hypertension**, **Eating Plan for High Cholesterol** and **Waisting Away - Healthy Weight Management**. All are available from the Ottawa Cardiovascular Centre website. Go to www.ottawacvcentre.com.

Type 2 Diabetes Eating Plan

Choose Low Glycemic Index Foods Whenever Possible!

FOODS TO CHOOSE	FOODS TO LIMIT OR AVOID
Whole Grains	
• Whole and multi grain breads, whole wheat pasta, brown rice • Low-fat and multigrain crackers • Low-sugar, whole-grain cereals • Oatmeal, bran, bulgur, buckwheat • Low-fat, whole grain baked goods with added bran or oat bran	• White breads, croissants, sweet rolls, high-fat white crackers, waffles • Short-grain and minute rice – white rice • Sweetened refined cereals • Commercial muffins, cakes, doughnuts, Danish pastries, high-fat cookies • Avoid “white” foods (white flour, white sugar)
Vegetables and Fruit – with lots of colour	
• Dark green leafy vegetables • Eat an abundance fresh/frozen vegetables • Unsweetened, fresh, frozen or canned fruits	• Parsnip, pumpkin, white potatoes (high GI) • Dried fruits and fruits in heavy syrup • Sweetened fruit juices
Milk and Alternatives	
• Dairy products with less than 1% fat • Cheese should be 10-20% MF	• Milk products higher than 1% fat • Cheese higher than 21% MF and creams
Meat and Alternatives	
• Fish (canned in water, fresh, frozen), seafood • Skinless chicken and turkey • Lean meats with fat trimmed, wild game • Lean cold cuts (but watch the salt content) • Legumes, tofu • Eggs (up to eight per week)	• Fish with butter or breading • Fried chicken, poultry with skin, wings • Fatty marbled meats, ribs, regular ground meats, organ meats • High fat processed and canned meats: bacon, sausages, patés, bologna, salami, wieners
Meat and Alternatives	
• Olive, canola, soybean, sesame, sunflower oils (3 tsp • or less per day) • Non-hydrogenated soft margarinesLow-calorie dressings and mayonnaise • Light peanut butter, nuts (watch salt and calories) • Unsalted seeds: flax, pumpkin, sunflower • Defatted gravy and low-sugar condiments • Cocoa powder or a small piece of dark chocolate	• Hydrogenated oils, coconut and palm oils • Shortening, butter, lard, hard margarines • Peanut butter with palm or hydrogenated fat • No more than 1/4 cup nuts per day (high calories) • Heavy gravy, cream sauces, high-sugar condiments • Chocolate and carob
Sweets (in very small amounts)	
• Sugar substitutes and artificial sweeteners, low sugar jams/jellies/syrups • Sugar-free candies, gelatins, gum • Low-sugar and high fiber baked goods • Low-fat and low-sugar frozen dessert	• Sugar and regular jams, jellies, syrups, candies, gelatins, gum, honey • Regular cakes, pies, cookies • No “white” foods (white flour, white sugar) • Regular frozen desserts
Snack Foods	
• Popcorn without salt, butter, or hydrogenated oils • Choose low fat, low sugar snack foods	• Regular popcorn, chips, pretzels, cheesies, corn chips

Alcohol

- Limit alcohol to less than 2 drinks per day (1 drink = 12 oz beer or 1.5 oz liquor or 4 oz wine)
- Alcohol is not recommended if you:
  - have high triglycerides (type of blood fat)
  - have liver problems
  - are pregnant or breastfeeding
- If you choose to drink alcohol, remember:
  - To drink with your meal or snack (not on an empty stomach)
  - To drink slowly or dilute with water or diet soda
  - That liqueurs, sweet wines and dessert wines have more sugar
  - To wear your MedicAlert indicating that you have diabetes – alcohol can cause a low blood sugar reaction which, if left untreated, may require medical attention

Supplements

Check with your Doctor, Dietitian or Pharmacist before starting a supplement.

- **Heart Healthy Mixture** = 1/3 ground flax, 1/3 oat bran and 1/3 psyllium. Use 2 Tablespoons per day added to foods or beverages. The fibre in this blend is good for both your heart and blood glucose control.
- **For high triglycerides** (a type of fat in the blood more commonly high with diabetes):
  Omega 3 supplements – adding 2000 to 4000mg of EPA+DHA from fish oil. This should be done under the supervisionof your doctor.

Move your body, burn the glucose

- Aim to be active for 30 minutes at least 5 days per week (150 minutes/wk). Start with brisk walking for 10 minutes a few times per day and increase gradually from there. Be sure to have your doctors approval before engaging in an exercise program.
- Strength exercises can be included 2 -4 times per week to keep the bones strong and build lean muscle.
- A leaner body is better able to use the insulin it produces to manage blood glucose.
- Measure your blood sugar before and after exercise. Typically your readings after exercise will be lower.
- Be prepared incase your blood sugar drops too low during or after exercise. Treatments are listed below.
- If you take medications that have a risk of causing low blood sugar it is best to exercise with someone and take a cell phone with you for emergencies. Let someone know where you will be and approximately when you will return. Take emergency glucose with you and wear your MedicAlert.

Keeping active can lower your blood sugar, lower your blood pressure, help you lose weight, help you feel better reduce the amount of medication you need, relieve tension or stress, improve your heart and lung function and improve your muscle tone! Look at all those benefits!

Recognize and be ready to treat low blood glucose

Usually we are concerned about blood glucose being too high but certain medications*, exercise, a missed meal or an illness can cause you to experience a low blood sugar.

- What is low? A blood glucose below 4.0
- Symptoms: shakiness, fatigue, excessive hunger, headache, blurred vision or dizziness, cold clammy or sweaty skin, pale colour in face, weakness.
- Treatment:
  - Take 15 grams of fast acting carbohydrate such as glucose tabs, 3 packets of sugar dissolved in water, ¾ c fruit juice or regular pop, 6 LifeSaver candies or 1 tablespoon of honey. Wait 15 minutes. If symptoms do not resolve treat again.
  - If symptoms resolve but the next meal is more than an hour away, have a snack with 15 to 20 grams of carbohydrate and some protein such as ½ a sandwich or cheese and crackers.

** Medications more likely to cause a low blood sugar include Amaryl, Diabeta, Diamicron, Gluconorm and Insulin.*

Other Nutrition Fact Sheets Available:
Eating Plan for Hypertension
Eating Plan for High Cholesterol
Eating Plan for Heart Failure
Healthy Weight Management
Potassium Modified Eating Plan
Please visit www.cvtoolbox.com for more information

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WAISTING AWAY
Healthy Weight Management

So, you want to lose some weight? Food is something you need to live with every day of your life so trying to avoid it is not easy, it is impossible! You need to replace old habits with new, healthier food behaviors.

The goal is to choose **good, wholesome, healthy foods** more often to nourish that powerhouse body of yours and to keep treats for your truly special times.

Your health belief mantra should be, "I want to keep my body functioning at its best so that I can feel great and prevent diseases as much as I can." **YOU ARE WHAT YOU EAT** so eat well and stay well!

WAISTING AWAY

Yes, it is all about the **WAIST**. Studies show that being overweight in the abdominal area, often referred to as "the big belly syndrome" puts you at increased risk of having cardiovascular disease, diabetes, hypertension and the syndrome. Did you know that a simple 10% weight loss can improve your health by as much as 30%? What a good trade off! So, let's get started.

STEP 1 Making changes: Being and staying healthy is not a destination; it is a journey towards your good health. It is much easier to lose weight than to keep the **weight OFF permanently**. The trick is that you must be ready to make some changes to your lifestyle patterns.

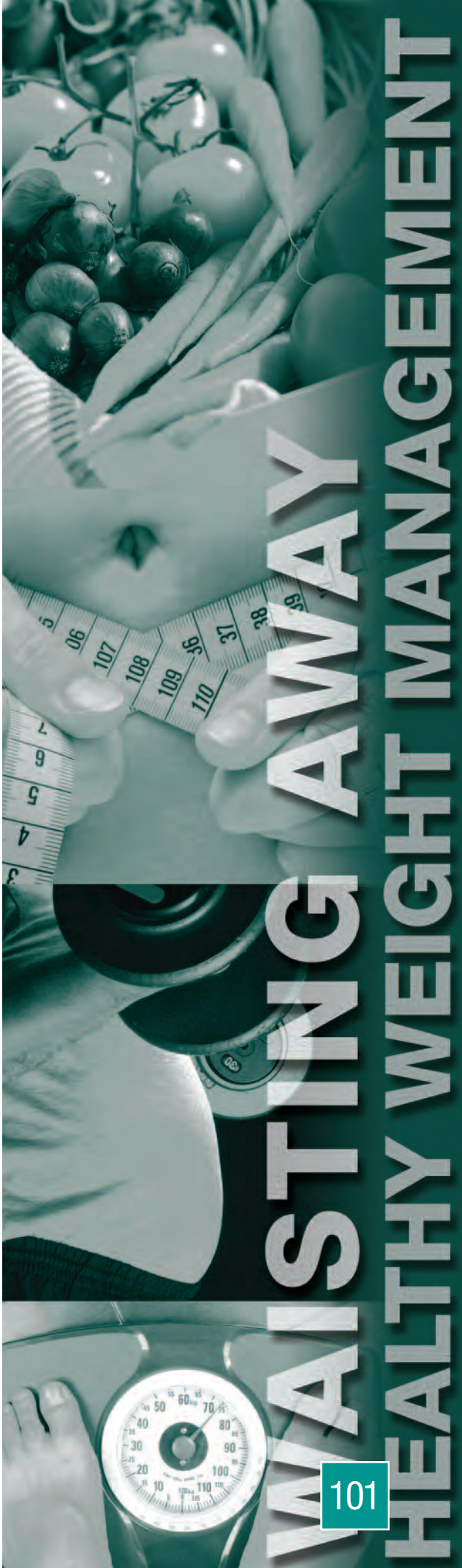
STEP 2 Getting Ready: You need to get yourself and your environment ready for the long term goal of **getting healthy, being healthy and staying healthy**.

- Purge your kitchen cupboards and fridge of unhealthy processed foods. These foods are usually very sweet and/or salty and are usually made of white sugar / white flour.
- Create a positive health environment. Do not keep your "danger foods" (foods that are just too tempting to resist) in the house or at work. Reserve your treats for occasions outside the home or office but make sure these danger foods do not come home with you.

STEP 3 Setting up for Success: Keep your kitchen full of **great tasting healthy foods**!

- Fruits (fresh, canned and unsweetened or canned in fruit's own juices)
- Vegetables (fresh, frozen, bagged and canned - keep some everywhere!)
- Whole grain, whole wheat starches – breads, cereals, pasta, brown rice
- Lean meats, poultry & fish, nuts/seeds, eggs, low fat dairy products, legumes, soy products, etc.
- At work, keep **healthy foods** in your desk drawer for those late day munchies. Try some individual fruit packs, nuts and seeds, tuna and granola bars **(100 calories)**.

NOW, YOU ARE READY TO START THE FIRST DAY OF THE REST OF YOUR HEALTHY LIFE!



SUPER SAVVY WEIGHT LOSS TIPS

Try these super savvy weight loss tips. Start with a few at a time and keep adding new tips. These strategies will allow you to **build your own** healthy lifestyle pattern. Make sure that you try each tip for at least 2 weeks. This gives you a chance to see what works and what does not work for you.

TIP 1: Eat only whole wheat, whole grain starchy foods

Why? Eating **whole grain, high fibre foods** will keep you feeling full, longer and will help stave off those hunger pangs. Starchy foods made of refined, processed, bleached flours/sugars will be digested quickly and leave you feeling empty and hungry.

How? When buying starchy foods, stick to whole wheat, whole grain breads, pasta, cereals, crackers and brown rice. Be label savvy: choose whole grains that have more than **3 grams of fibre** per serving.

TIP 2: Eat foods with a low Glycemic Index (GI)

What is the Glycemic Index (GI)? The GI is a scale that ranks carbohydrate-rich foods by how much they raise blood sugar levels (resource- Canadian Diabetes Association).

Why? **Eating lower GI foods** will help you:

- control your appetite = will keep you feeling full, longer
- control your blood sugar levels
- control your cholesterol levels

How? See the GI Table in our Eating plan for Type 2 Diabetes, go to www.diabetes.ca for more details

- Eat lots of vegetables. Include fruit with meals or a snack. Choose low fat dairy products. All of these foods contain carbohydrates and have a low glycemic index.
- Plan your meals with foods in the low/medium GI categories.
- Try different lower GI grains such as barley, bulgur, millet, quinoa which have lower GI values.

Hint: High fibre and unprocessed foods are best as they digest slowly.

TIP 3: Meal balancing

Try to have **3 balanced meals per day** which include fruits, vegetables, proteins and starches.

Why? Many diets fail in the long run because they do not satisfy you, leaving you feeling hungry and frustrated. Meal balancing is the key to healthy eating and to keeping you on track. You need the right combination of foods: adequate protein, whole grain starch and colorful vegetables & fruits.

How? Plan on eating 3 meals per day, everyday. Make sure that all meals include an adequate portion of protein as protein will slow down the digestion of your meal and help keep you full, longer. **See meal/plate examples.*

TIP 4: Plan your snacks

Why? A **small snack between meals** will keep your meal-time eating in check. Snacking keeps your blood sugars more stable so that you do not get home and "rip the fridge door off". Being over-hungry usually means making unhealthy food choices and/or eating larger portions.

How? Try to plan a small snack 1 hour before lunch and 1 hour before supper. **See snack examples.*

- **Morning snack** – 80 calories = a fruit or yogurt.
- **Afternoon snack – This is the important one!** The goal of the afternoon snack is to "ruin your supper" as this is the time we tend to overeat. Try to keep your snacks between 100-150 calories. A piece of fruit and a small protein source like a handful of nuts, a piece of cheese, a yogurt or even some hummus are great choices.
- You should snack on a regular basis but not too much. Research shows that snacking can make up more than 40% of our total calories for the day. Our snack choices are just too high in calories and usually not very nutrient dense.
- **Evening snack** – Try to keep this snack to under 100 calories. Whether you have a salty tooth or a sweet tooth, now is the time to indulge in your **favorite snack food**. Buy the 100 calorie snack bags; try to keep it to one bag per night. If this is too much of a problem, remember to not keep your danger foods in the house.
- Granola bars – for a healthy choice, make sure to read the label. A healthy granola bar will have more than 3 g of fibre and less than 10 grams sugar.

TIP 5: Watch your portion sizes or "PORTION DISTORTION"

Why? The bottom-line in weight management is "**We just eat too much".** The term used today is "portion distortion" which was more or less created by the food industry: supersizing, meal deals, etc. The average restaurant plate size is almost double what it was 20 years ago. Be aware and be conscious of what a true portion size should be and what it should look like.

How?

- When reading food labels, the portion size is displayed at the top of the **Nutrition Facts Panel**. Measure it out on your plate. We are usually not very good at eyeballing a portion size so it is always best to measure. Be portion savvy mainly with your protein, starch and treat servings. You can load up on those veggies and try to have 2-3 fruit per day.
- For treats, divide larger snacks into individual portions. Don't think that you will "leave some on my plate once I am full": chances are, you will eat more.

TIP 6: Beverages have calories too!

Why? Remember that specialty coffees, teas, alcoholic drinks, soda, fruit punch, power drinks, etc. are high in calories, while water and diet sodas are 'calorie-free'. Even though diet drinks are free of calories (or may contain <5 mg of sugar), they are not healthy; your goal is to be healthier so choose these less often.

How? **Water, water, water!** Often, we are thirsty and not hungry so try some water first. If you drink a high calorie beverage, start with a small portion (250 ml) and then, have a glass of water to follow. If you do not like the "taste" of water, add a few flavor crystals or a twist of lemon, lime or orange.

Beverage	Calories	Beverage	Calories
Low fat milk (250 mL)	100 calories	Pop (1 bottle = 460 mL)	240 calories
Light Beer	67 to 100	Beer on Tap (600 mL)	250 calories
While wine (175 mL)	115 calories	Chai Tea Latte	250+ calories
Red wine (175 mL)	120 calories	Large 'Energy' Drinks	280 Calories
Beer (1 bottle = 350 mL)	150 calories	Specialty Coffee Latte	90 to 400 calories
Coolers	200 calories	Fruit Smoothie	400 to 800 calories

EXERCISE

TIP 1: Start Walking—every little bit counts!

- **Walking** will help you feel better about yourself which in turn will drive you towards wanting to be healthier. Count your steps with a **pedometer** or keep track of your walking time.
- To start, try to reach 150 minutes per week of activity = 2.5 hours.

Why? By exercising regularly, you will not only feel better but you will also reduce your risk of certain diseases. Even without weight loss, regular exercise such as walking will benefit your health.

How? Start slowly: go for 15 minutes every day = 105 minutes per week. Your goal is to achieve 20 minutes of walking 7 days per week = 140 minutes (so add 10 minutes on the weekend) or you can do 30 minutes 5 days per week. Every little bit counts.

- No time during the week? Be a "weekend warrior" to get your activity completed. Try to do 1 hour on Saturday and then 1 hour on Sunday; the remaining 30 minutes can be done over your mid-week lunch hour.
- For weight maintenance: Research shows that once you lose the weight and want to keep it off, you will need to do 270 minutes of activity per week = 4.5 hours.
- Remember, this is gradual; keeping variety in your activity selection will be key to your long term goal.

TIP 2: Use a pedometer to count your steps

Why? Health Canada suggests **walking 10,000 steps per day** for optimal health. This is the eventual step goal but go slowly at first. By walking more, you will diminish your waist line and decrease your total body fat. This is a great way to help prevent and/ or treat disease states such as diabetes and heart disease.

How?

- Buy and wear a pedometer on your pant waistband. It is best to place it between your belly button and your hip bone as it works like a pendulum. As you walk, the pendulum will swing back and forth, counting your steps. You may need to move it forward or backward on your waistband for maximum step counting.
- **Record your steps** for a few days to establish a baseline step count. Once you have your average daily steps, try to increase at intervals of 500 steps daily for one week; continue to increase until you reach 10 000 steps every day. This may take a month or two so go slowly.

TIP 3: Use your muscles; keep fit through muscle building.

Why? New research shows that as we age, we lose 10% of muscle mass per decade. ***"If you do not use it, you will lose it."***

How? Start slowly with arm weights around the house. You can use **small hand weights**, a can of soup or a filled bottle of water. For the legs, simply put a boot on your foot and do some side and back leg raises. You can do these while sitting or standing. To maximize your workout, sit on a stability ball in front of the TV for a 30 minute program. At all commercial breaks, lift some hand weights and do some leg lifts; stop once the program restarts. Just by sitting on the ball, you will be exercising your "core" = abdominals.

Note: For a 30 minute TV program, there are usually 4 commercial breaks. **WHAT A GREAT, EASY WORKOUT!**

DRINK YOUR WATER

Keep **well hydrated** as you exercise and all day long.

Recommendations: 2-3 litres of fluids per day; half (1/2) of this amount should be WATER with the other half being any other type of fluid for example: juice, milk, coffee, tea, soup, jello, etc.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast							
Protein							
Starch							
Fruit							
Other							
Snack							
Lunch							
Protein							
Starch							
Vegetable							
Vegetable							
Other							
Snack							
Supper							
Protein							
Starch							
Vegetable							
Vegetable							
Other							
Snack							
Activity total of 150-200 minutes per week or 2.5-3 hours – Short or long, it all adds up!							

Weekly Goals:

How did you feel about your food choices this week? 

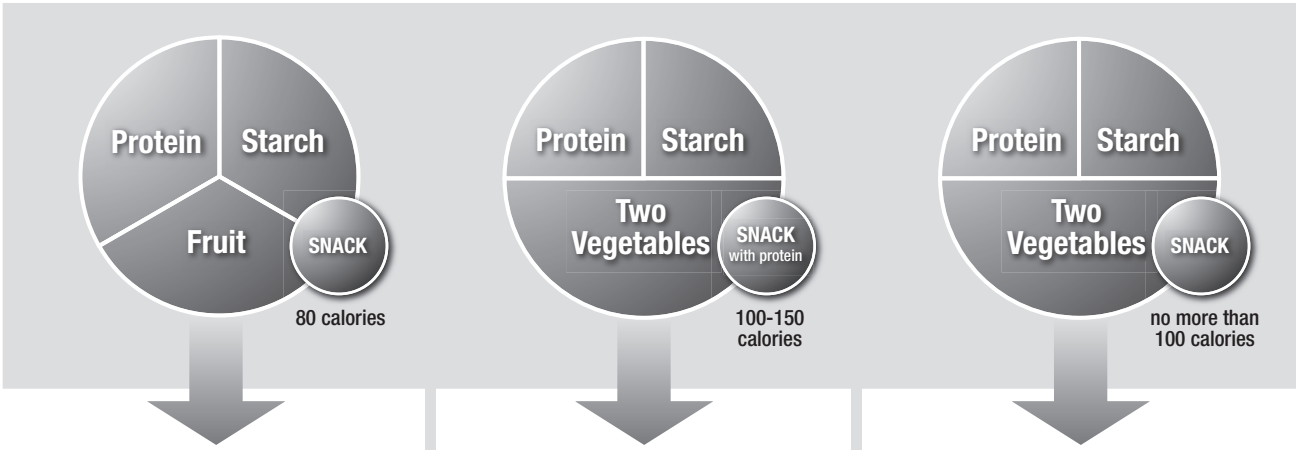
How did you feel about your exercise this week?

Name: **Week Starting:**

Comments:

WEEKLY FOOD JOURNAL DETAILS
JOURNALING BRINGS SUCCESS!

Meal Balancing and Examples



PROTEIN
- Low fat milk/yogurt
- Peanut butter/eggs

STARCH
- High fibre cereal
- Whole grain toast

FRUIT
- Berries/whole fruit
- 125ml pure fruit juice

SNACK
- Fruit or yogurt

PROTEIN
- Lean meats/deli/fish
- Legumes/cheese/nuts/eggs

STARCH
- Whole grain wrap/pita bread
- Grain crackers/bread

VEGETABLES
- Lettuce, tomato, cucumber & vegetable juice
- Vegetable soup/salad/crudités

SNACK
- Fruit + cheese or yogurt
- Veg sticks + hummus or low fat cream cheese

PROTEIN
- Lean meats/fish/poultry/ legumes/tofu

STARCH
- Brown rice
- Whole grain pasta
- Potato – white/sweet/yams

(Avoid starch at supper for bonus weight loss)

VEGETABLES
- Tons of vegetables (fresh, frozen or bagged are best)

SNACK
- 100 calories (treat!)

Portion Sizes According to 2008 Eating Well with Canada's Food Guide

Vegetables and Fruit
- 125 mL (½ cup) fresh, frozen or canned vegetable or fruit or 100% juice
- 250 mL (1 cup) leafy raw vegetables or salad
- 1 piece of medium-sized fruit

Grain Products
- 1 slice (35 g) bread or ½ bagel (45 g)
- ½ pita (35 g) or ½ tortilla (35 g)
- 125 mL (½ cup) cooked rice, pasta, any grains
- 30 g cold cereal or 175 mL (¾ cup) hot cereal

Milk and Alternatives
- 250 mL (1 cup) milk or fortified soy beverage
- 175 g (¾ cup) yogurt
- 50 g (1½ oz.) cheese

Meat and Alternatives
- 75 g (2 ½ oz.) 125 mL (½ cup) cooked fish, shellfish, poultry or lean meat
- 175 mL (¾ cup) cooked beans
- 2 eggs
- 30 mL (2 Tbsp) peanut butter

Tips to Help You!
- Eat foods as close to the 'farm' as possible
- Eat whole foods = fruits, vegetables, grains
- Eat nutrient dense foods (powerhouse foods)
- Eat good fats = unsaturated fats (avoid trans & saturated fats)
- Eat lower Glycemic Index Foods (GI) – see www.glycemicindex.com

Snacks
- Important to include snacks to avoid being 'over-hungry' at meal-time. Simple snacking = a protein source with a piece of fruit.

Read food labels (see the 'Nutrition Facts' panel)
Grains: More than 3 grams fibre, less than 10 grams sugar per serving
Fruits: All are great; canned (in own juices and unsweetened)
Vegetables: All are great; if canned less than 400 mg sodium per serving
Dairy: less than 5 grams fats, less than 10 grams sugar per serving
Protein: Choose lean meats, fish, poultry and alternatives

Exercise
- Every time you move, it all adds up; walk, skip, jump, lift, dance. **ENJOY!**

For more information on healthy eating, please see www.cvtoolbox.com, www.dietitians.ca, www.eatrightontario.ca, www.heartandstroke.com Call 1-877-510-5102 to speak to a Dietitan.

JOURNALING AND PARTY TIPS

JOURNALING

The research is conclusive; journaling brings **successful weight loss** for the short and long term. See our website at www.ottawacvcentre.com for more journaling sheets.

Don't like journaling? Start with writing down only the really challenging **"danger times"** of your eating pattern. For example, if you are a night time eater and just cannot stop, start writing down everything you eat and drink after the supper meal. This will help bring more awareness around your behavior and eventual understanding and change. Try it for one week!

TIP 1: Journaling can also help in meal planning

Why? To optimize your **success at weight loss** and being healthier, it is a good idea to plan your meals and snacks ahead of time. This will help you avoid the last minute rush for food ideas and food preparation. Failure to plan usually leads to the purchase of fast food, high fat and high salt unhealthy food choices.

How? Use the journal sheet to plan the night before for the following day. Write down all your 3 meals and your snack choices depending on your home and work schedule for the next day. Remember, all days are different; we are more out of routine in this fast paced world than in routine. Planning 1, 2 or 3 days ahead is smart goal setting.

YES YOU CAN...PARTY HEALTHY

Festive occasions do not equal "weight gain". You can eat without ruining your weight loss efforts by following some simple tips.

TIP 1: Focus on keeping your weight stable instead of trying to lose weight

Why? With all the tasty treats available, **avoiding weight gain** is a big enough challenge without worrying about losing weight. Don't set yourself up for failure by making unrealistic goals for yourself.

How? Weigh yourself at the same time everyday to watch how your weight changes. Give yourself permission to gain a few pounds (two or three) but no more.

TIP 2: Make a plan

Why?
- If you give yourself **permission** to "cheat", then you won't have feelings of guilt or failure when you sample your favourite foods. Decide ahead of time what you will and will not eat.
- You will then be able to enjoy the foods you love, avoid the foods that you can live without and help prevent bingeing.

How? **Think ahead** about where you will be, what types of foods will be there and which foods you really want to eat. Decide on reasonable portions of your favourites and arrive at the party with a plan.

TIP 3: Don't go to parties hungry

Why? Usually, parties are full of foods that are high fat and high calorie. If you're "starving" when you get to the party, you'll be much more likely to overeat, and less likely to **make healthy food choices**.

How? Spoil your appetite before going to the party. Have a small meal or a big snack with a serving of protein. This tip will help your brain make better choices when faced with all the goodies.

TIP 4: Keep a drink in your hand

Why? At holiday parties, the eating tends to be social, which means that you are eating while you socialize, and not paying attention to what you are putting in your mouth. Having a drink in your hand keeps your hands busy, and you're less likely to **eat without thinking**.

How? Keep a drink in the hand that you would use to grab food, and sip it slowly throughout the evening (but don't forget to keep in mind the calories found in popular drinks).

Go to www.ottawacvcentre.com for more information on party tips, meal and menu planning, snack lists and food labels.

The EMERALD® Weight Management Program can help you with your weight loss efforts and get you healthier. Please see our website at www.ottawacvcentre.com for more information and more SUPER SAVVY WEIGHT LOSS TIPS. Please ask your family doctor for a referral to EMERALD.

Other Diet Sheets Available:
Eating Plan for Hypertension
Eating Plan for Cholesterol
Eating Plan for Congestive Heart Failure
Eating Plan for Type 2 Diabetes
Potassium Modified Eating Plan

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Waisting Away November 2010
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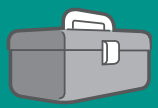

www.cvtoolbox.com

Altace® Patient Information Sheet

Dear Patient,

You have been prescribed **ALTACE®** (Ramipril), which is an ACE inhibitor. This medication is an anti-hypertensive (blood pressure lowering) agent, but it also has important vascular protective properties independent of its blood pressure lowering effects.

In the landmark **HOPE**[1] trial, 9297 high-risk patients defined as:

- Age ≥ 55 years
- Evidence of vascular disease: coronary artery disease (CAD), cerebrovascular disease (CVA) or peripheral vascular disease (PVD)
- Diabetes plus one other cardiovascular risk factor (HPT, elevated total cholesterol, elevated LDL, smoking, documented Microalbuminuria-small amounts of protein in the urine)
- Not known to have low ejection fraction (a measure of a weakened heart)

were randomized to receive **ALTACE® 10 mg PO OD** at HS or placebo over a five year period. The primary outcome was a combination of MI (heart attack), CVA (stroke) or death from all cardiovascular causes. The study was stopped early because of the clear evidence of a beneficial effect of **ALTACE®** (Ramipril).

Results included:

- Reduced death from cardiovascular causes 26% RRR[2]: ARR[3] 2% (282 vs 377, p<0.001)
- Reduced MI (Heart attack) by 20% RRR: ARR 2.4% (450 vs 570, p<0.001)
- Reduced CVA (Stroke) by 32% RRR: ARR 1.5% (156 vs 226, p< 0.001)
- Reduced death from any cause 16% RRR: ARR 1.8% (482 vs 569, p=0.005)
- Reduced revascularization (angioplasty or bypass surgery) procedures 15% RRR:ARR 2.3%;
- Reduced cardiac arrest 37% RRR: ARR 0.5% (37 vs 59, p< 0.001)
- Reduced heart failure 23% RRR: ARR 2.5 % (417 vs 535, p< 0.001)
- Reduced complications related to DM (diabetes) by 16% RRR: ARR 1.2%

The mechanism of benefit relates to the vascular protective effects of ACE inhibitors which improve blood vessel dilatation, prevent fibrosis and scarring of blood vessels, reduce blood clotting and blood vessel inflammation and promote natural anti-oxidant properties.

These medications are intended for lifelong protection in **ANY PATIENT** with

- Stroke or TIA (transient ischaemic attack)
- Heart attack or angina
- Angioplasty or bypass surgery
- Peripheral vascular disease or abdominal aneurysm
- Diabetes with another risk factor

To date ALTACE® is the only ACE inhibitor proven to provide this level of vascular protection and the only ACE inhibitor with the indication for vascular protection.[4]

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1 The Heart Outcomes Prevention Evaluation Study Investigators. Effects of an angiotensin converting enzyme inhibitor, ramipril, on cardiovascular events in high-risk patients. N Engl J Med 2000; 342:145-153.
2 RRR = relative risk reduction
3 ARR = absolute risk reduction
4 Clinical trials of other ACE inhibitors have shown benefit on CHF and post-MI patients. Trials in HOPE study populations are underway.

What you need to know about your ALTACE®?

ALTACE® has been prescribed in your case:

- ❍ To treat high blood pressure
- ❍ For vascular protection
- ❍ To treat CHF (congestive heart failure)
- ❍ To treat left ventricular dysfunction (weakened heart muscle) after a heart attack
- ❍ To protect your kidneys from vascular damage
- ❍ To reduce the amount of protein leaking through your kidneys

ALTACE® has been prescribed at a dose of:

- ❍ 1.25 mg daily (starting dose in patients with kidney failure)
- ❍ 2.5 mg daily (usual starting dose)
- ❍ 5.0 mg daily
- ❍ 10 mg daily (usual target dose)

The therapeutic goal is to increase **ALTACE®** to the highest tolerated dose to provide maximum vascular protection.

ALTACE® common side effects include:

- Dry non-productive cough (1-10%)
- Dizziness, especially with first dose or if you are dehydrated
- Angioedema (swelling or the face and throat). This is a rare occurrence but if it happens stop the medication and contact your physician immediately.
- Elevated potassium – should be monitored with a blood test within 2 weeks of starting medication
- Rising serum creatinine (a measure of kidney function) – should be monitored with a blood test within 2 weeks of starting medication

In general **ALTACE®** is well tolerated. The risk of a serious side effect is < 1 %.

ALTACE® Patient Instructions:

- Take exactly as directed. For vascular protection **ALTACE®** is given in the evening.
- Do not discontinue without consulting prescriber.
- Hold **ALTACE®** and consult prescriber if excess dizziness or Angioedema
- **ALTACE®** does not eliminate need for diet, exercise or other lifestyle modifications
- Do not us NSAID's (anti-inflammatory agents), potassium supplements or salt substitutes without consulting prescriber
- **ALTACE®** should not be used in women of childbearing years appropriate contraceptive precautions are taken

IF you have any questions concerning ALTACE® Consult your doctor.

Coversyl® Patient Information Sheet

Dear patient,

You have been prescribed **COVERSYL**® (Perindopril), which is an ACE inhibitor. This medication is an anti-hypertensive (blood pressure lowering) agent, but it also has important vascular protective properties independent of its blood pressure lowering effects.

The landmark **EUROPA**[1] trial studied 12218 patients with stable coronary heart disease defined as previous heart attack (MI), angiographic evidence of coronary disease, prior angioplasty or bypass surgery or male patients with a positive stress ECG, echo or nuclear heart scan. Congestive heart failure was an exclusion from this study. Eligible subjects were randomized to receive either 8 mg of **COVERSYL**® or placebo and followed for an average of 4.2 years. Mean age of the patients was 60 years with a range of 24-90 years.

Results included:

- ↓ Cardiovascular mortality, MI or cardiac arrest by 20% RRR[§]: ARR*1.9% (488 vs 603, p<0.0003) : NNT[†] 53
- ↓ Cardiovascular mortality by 14% RRR: ARR 0.6% (215 vs 249, p<0.107) : NNT[†] 167
- ↓ Non-fatal MI by 22% RRR: ARR 1.4% (295 vs 378, p< 0.001) : NNT[†] 71
- ↓ Total mortality, non-fatal MI, unstable angina or cardiac arrest 14% RRR: ARR 2.3% (904 vs 1043, p=0.0009) : NNT[†] 43

[§] RRR = relative risk reduction * ARR = absolute risk reduction [†] NNT= number needed to treat

The mechanism of benefit relates to the vascular protective effects of ACE inhibitors which improve blood vessel dilatation, reverse atherosclerosis (hardening of the arteries), stabilize arterial plaques, improve function of the cells lining the blood vessels, reduce blood clotting and blood vessel inflammation and promote natural anti-oxidant properties.

These medications are intended for lifelong protection in any patient with:

- Prior heart attack or unstable angina
- Chronic coronary artery disease documented at angiography
- Males with positive stress ECG, echo or nuclear studies
- Prior angioplasty or bypass surgery

COVERSYL® is the second ACE inhibitor shown to have cardio-protective properties and the **EUROPA** trial extends the benefit of ACE inhibitors to a much younger and lower risk population. Administration of this medication should be considered in **ALL PATIENTS WITH CAD**.

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[1] Efficacy of perindopril in reduction of cardiovascular events among patients with stable coronary artery disease: randomised, double-blind, placebo-controlled, multicentre trial (the EUROPA study) *The EURopean trial On reduction of cardiac events with Perindopril in stable coronary Artery disease Investigators.* Lancet 2003; 362:782-88.

What you need to know about your COVERSYL®

COVERSYL® has been prescribed in your case:

- ❍ To treat high blood pressure
- ❍ For vascular protection
- ❍ To treat CHF (congestive heart failure)
- ❍ To treat left ventricular dysfunction (weakened heart muscle) after a heart attack
- ❍ To protect your kidneys from vascular damage
- ❍ To reduce the amount of protein leaking through your kidneys

COVERSYL® has been prescribed at a dose of:

- ❍ 2.0 mg daily (starting dose in patient > age 70 and patients with kidney failure)
- ❍ 4.0 mg daily (usual starting dose)
- ❍ 8.0 mg daily (target dose)

The therapeutic goal is to increase **COVERSYL®** to the highest tolerated dose to provide maximum vascular protection.

COVERSYL® side effects include:

- Dry non-productive cough
- Dizziness, especially with first dose or if you are dehydrated
- Elevated potassium – potassium level should be monitored with a blood test within 2 weeks of starting ACE inhibitors medication
- Elevated serum creatinine (a measure of kidney function) – creatinine level should be monitored with a blood test within 2 weeks of starting medication
- Angioedema (swelling or the face and throat). This is a rare occurrence but if it happens stop the medication and contact your physician immediately.

In general **COVERSYL®** is well tolerated. The risk of a serious side effect is <1 %.

COVERSYL® Patient Instructions:

- Take exactly as directed.
- Do not discontinue without consulting prescribing physician.
- Hold **COVERSYL®** and consult prescribing physician if excess dizziness or angioedema occurs.
- **COVERSYL®** does not eliminate need for diet, exercise or other lifestyle modifications.
- Do not use NSAID's (anti-inflammatory agents), potassium supplements or salt substitutes without consulting prescribing physician.
- **COVERSYL®** should not be used in women of childbearing years unless appropriate contraceptive precautions are taken.

If you have any questions concerning **COVERSYL®** consult your doctor.

MAVIK® Patient Information Sheet

You have been prescribed **MAVIK®** (trandolapril) which is an ACE inhibitor. This medication is an anti-hypertensive (blood pressure lowering) agent, but it also has important vascular protective properties independent of its blood pressure lowering effects.

The landmark **TRACE**[1] trial studied 1749 patients after a heart attack. These patients had evidence of left ventricular dysfunction (weakness of the heart muscle) corresponding to an ejection fraction of less than or equal to 35% (normal > 55%). Eligible subjects were randomized to receive either 1mg of MAVIK® (trandolapril) between day 3 and day 7 or placebo, followed by 2 mg after 2 days, and after 4 weeks the dose was increased to 4mg, one a day. Patients were followed for an average of 24-50 months. Mean age of patients was 67.7 years. Benefits were seen from the first month.

Results Included:

- ↓ All Cause Mortality by 22% RRR[§] ARR* 7% (369 vs. 304, p = 0.001) NNT[†] 14
- ↓ Cardiovascular Death by 25% RRR ARR 7% (288 vs. 226, p = 0.001) NNT 14
- ↓ Sudden Death by 24% RRR ARR 3% (133 vs. 105, p = 0.03) NNT 33
- ↓ Progression to severe Heart Failure by 29% RRR ARR 6% (171 vs. 125, p = 0.003) NNT 17

[§]RRR= relative risk reduction *ARR= absolute risk reduction [†]NNT= numbers needed to treat

The **TRACE DIABETES STUDY**[2] studied 237 patients in the same patient population as above, but with Diabetes as well. Results included:

- ↓ All Cause Mortality by 36% RRR, NNT = 6.3 (p = 0.01)
- ↓ Cardiovascular Death by 44% RRR (p = 0.001)
- ↓ Sudden Death by 54% RRR (p= 0.01)
- ↓ Progression to severe Heart Failure by 62% RRR (p = 0.001)

The landmark **BENEDICT**[3] trial studied 1204 hypertensive patients with type 2 diabetes and normal urinary albumin excretion. Patients were randomized to either MAVIK® 2mg (trandolapril) or Isoptin SR® (verapamil) 180mg plus MAVIK® (trandolapril) or Isoptin SR® (Verapamil) vs. Placebo. Average age was 62 years and duration of type 2 diabetes was 7.7 years. Mean BMI was 29.1. Mean baseline Blood Pressure was 150.8 over 87.4mm Hg and urinary albumin excretion was < 20 microg/min (< 30 microg/day). Patients were followed for 3 years.

Results Included:

- ↓ MAVIK® (trandolapril) reduced the risk of developing microalbuminuria by 53% RRR (p = 0.01) vs. Placebo. Results were independent of blood pressure control. NNT 39 patients for three years.

The mechanism of benefit relates to the vascular protective effects of ACE inhibitors which improve blood vessel dilatation, reverse hardening of the arteries, stabilize arterial plaques, improve endothelial function by reducing blood clotting and blood vessel inflammation and promote natural antioxidant properties. In a combined analysis of three major ACE inhibitor studies[4] [**HOPE, EUROPA and PEACE** – the latter conducted with MAVIK® (trandolapril)] ACE inhibitors significantly reduced all-cause mortality (7·8 vs. 8·9%, p=0·0004), cardiovascular mortality (4·3 vs. 5·2%, p=0·0002), non-fatal myocardial infarction (5·3 vs. 6·4%, p=0·0001), all stroke (2·2 vs 2·8%, p=0·0004), heart failure (2·1 vs. 2·7%,p=0·0007), coronary-artery bypass surgery (6·0 vs.6·9%, p=0·0036) and the composite outcomes of cardiovascular mortality, non-fatal myocardial infarction, or stroke (10·7% vs.12·8%,odds ratio, 0·82; 95% CIs 0·76–0·88; p<0·0001).

MAVIK® (trandolapril) is the only ACE inhibitor shown to have renal protective properties at an early stage of nephropathy. The **TRACE** and **BENEDICT** trials extend the benefit of ACE inhibitors to type 2 diabetics and should be considered in **ALL PATIENTS WITH DIABETES**.

What you need to know about MAVIK® (trandolapril):

MAVIK® (trandolapril) has been prescribed in your case:
- ❍ To treat mild to moderate essential hypertension.
- ❍ Following and acute heart attack.
- ❍ To treat left ventricular dysfunction (weakened heart muscle) after a heart attack with or without heart failure.
- ❍ To improve survival and reduce hospitalizations due to heart failure.

MAVIK® (trandolapril) has been prescribed at a dose of:
- ❍ 0.5mg capsule daily (dosage for renal impairment below 30ml/min/1.73m2 and liver impairment.)
- ❍ 1mg capsule daily (usual starting dose)
- ❍ 2mg capsule daily
- ❍ 4mg capsule daily (maintenance dose post MI.)

The therapeutic goal is to increase **MAVIK®** (trandolapril) to the highest tolerated dose to provide maximum vascular protection.

MAVIK® (trandolapril) side effects include:
- Dry non-productive cough
- Dizziness, especially with first dose or if you are dehydrated
- **Angioedema** (swelling or the face and throat). This is a rare occurrence but if it happens stop the medication and contact your physician immediately.
- Elevated potassium – potassium level should be monitored with a blood test within 2 weeks of starting ACE inhibitors medication
- Serum creatinine (a measure of kidney function) – should be monitored with a blood test within 2 weeks of starting medication

In general **MAVIK®** is well tolerated. The risk of a serious side effect is < 1 %.

Patient Instructions:
- Take exactly as directed.
- Do not discontinue without consulting prescribing physician.
- Hold **MAVIK®** (trandolapril) and consult prescribing physician if excess dizziness or angioedema occurs.
- **MAVIK®** (trandolapril) does not eliminate need for diet, exercise or other lifestyle modifications.
- Do not use NSAID's (anti-inflammatory agents), potassium supplements or salt substitutes without consulting prescribing physician.
- **MAVIK®** (trandolapril) should not be used in women of childbearing years unless appropriate contraceptive precautions are taken.

IF you have any questions concerning MAVIK® (trandolapril) consult your doctor.

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1. Kober L, Torp-Pederson C, et al. A Clinical Trial of the Angiotensin-Converting Enzyme Inhibitor Trandolapril in Patients with Left-Ventricular Dysfunction after Myocardial Infarction. NEJM 1995; 333:1670-6.
2. Gustafsson I, Torp-Pederson C, Kober L, Gustafsson F, Hildebrandt P on behalf of the TRACE Group. Effect of Angiotensin-Converting Enzyme Inhibitor Trandolapril on Mortality and Morbidity in Diabetic Patients with Left Ventricular Dysfunction After Acute Myocardial Infarction. JACC 1999; 34: 83-89.
3. Rugenenti P, Fassi A, et al. For the Bergamo Nephrologic Diabetes Complications Trial (BENEDICT) Investigators. Preventing Microalbuminuria in Type 2 Diabetes. NEJM 2004;351 (19): 1941-51.
4. Dagenais G, Pogue J et al. Angiotensin-Converting Enzyme Inhibitors in Stable Vascular Disease without Left Ventricular Systolic Dysfunction or Heart Failure: A Combined Analysis of Three Trials. Lancet 2006; 368: 581–88.

PLAVIX® Patient Information Sheet

You have been prescribed **Plavix®** (clopidogrel), which is an anti-platelet medication. Antiplatelet agents are medications which interfere with the action of small clotting elements in the blood called platelets. Platelets stick to bleeding sites and damaged areas in side blood vessels and begin the clotting process. Aspirin is the best known and most widely used antiplatelet agent. These agents are used to treat unstable angina and to prevent stroke and heart attack.

Plavix® is indicated for the reduction of atherothrombotic events including recent MI (myocardial infarction, heart attack) recent stroke or transient ischaemic attack (CVA or TIA) or peripheral arterial or vascular disease (PAD/PVD). **Plavix®** is administered along with aspirin to patients who have developed unstable angina, an acute coronary syndrome (ACS), non ST elevation myocardial infarction (NSTEMI) or undergone coronary angioplasty and stenting (PCI). **Plavix®** may be administered on its own in patients allergic to or intolerant of aspirin or in patients who have failed aspirin therapy.

Plavix® has been studied in over 80,000 patients:
In the **CAPRIE**[1] Trial 19,185 patients with prior heart attack, prior stroke or peripheral vascular disease received either **Plavix®** 75 mg daily or ASA 325 mg daily. **Plavix®** resulted in 0.8% absolute risk reduction (ARR) and 8.7% relative risk reduction (RRR) in the combined endpoint of ischaemic stroke, myocardial infarction or other vascular death.

The **CURE**[2] study included 12,562 patients with ACS without ST segment elevation (unstable angina or NSTEMI) and presenting within 24 hours of onset of the most recent episode of chest pain or symptoms. Patients were required to have either ECG changes of lack of blood supply to the heart (ischemia without ST segment elevation) or elevated cardiac enzymes or troponin I or T to at least twice the upper limit of normal. Patients were randomized to receive **Plavix®** (300 mg loading dose followed by 75 mg/day) or placebo, and were treated for up to one year. Patients also received aspirin (75-325 mg once daily) and other standard therapies such as heparin.

In **CURE** there was a reduction in the primary outcome (CV death, MI, or stroke) of 2.1% ARR in the **Plavix®**-treated group and a 20% RRR (p=0.00009) for the **Plavix®**-treated group. At the end of 12 months, the co-primary outcome (CV death, MI, stroke or refractory ischemia) was reduced by 2.3% ARR and 14% RRR (p=0.0005) for the **Plavix®**-treated group.

In **PCI-CURE**[3] 2658 patients with NSTEMI undergoing coronary angioplasty received either **Plavix®** or placebo in addition to ASA for a mean duration of 8 months. The primary endpoint was a composite of cardiovascular death, myocardial infarction, or urgent target-vessel revascularisation within 30 days of PCI. In the **Plavix®** group there was a 1.9% ARR and a 30% RRR in the primary endpoint (p=0.03).

Plavix® was also studied in ST elevation MI (STEMI) in **COMMIT**[4] - a large outcome study conducted in China. The trial included 45,852 patients presenting within 24 hours of the onset of the symptoms of suspected myocardial infarction with supporting ECG abnormalities including ST elevation, depression or LBBB. Patients were randomized to receive **Plavix®** (75 mg/day) or placebo, in combination with aspirin (162 mg/day), for 28 days or until hospital discharge whichever came first.

The co-primary endpoints were death from any cause and the first occurrence of re-infarction, stroke or death. **Plavix®** significantly reduced the relative risk of death from any cause by 7% RRR and 0.6% ARR (p = 0.029), and the risk of the combination of re-infarction, stroke or death by 9% RRR and 0.9% ARR (p = 0.002).

What you need to know about Plavix®

Plavix® has been prescribed in your case:

- ❍ As an alternative to ASA due to allergy or intolerance
- ❍ As an alternative to ASA due to aspirin failure
- ❍ In addition to ASA due to ACS/NSTEMI
- ❍ In addition to ASA due to angioplasty with stenting PCI
  - ❍ with bare metal stent (BMS)
  - ❍ with drug eluting stent (DES)
- ❍ In addition to ASA due to ST elevation MI (STEMI)
- ❍ As an alternative to ASA due to TIA or CVA
- ❍ In addition to ASA due to PAD/PVD
- ❍ In addition to ASA due to carotid stenting
- ❍ In addition to ASA due to peripheral vascular angioplasty/stenting

Plavix® side effects include:

- Bleeding: In **CAPRIE**[1] the risk of major bleeding with **Plavix®** was 2% vs. 2.7% with ASA. In **CURE**[2] the risk of major bleeding was higher at 3.7% **Plavix®** +ASA vs. 2.7% for ASA + placebo. Ninety-two percent % of this population was receiving heparin or LMWH. In **CLARITY**, the incidence of major bleeding was similar between groups (1.3% versus 1.1% in the **Plavix®** + aspirin and in the placebo + aspirin groups, respectively).
- Thrombotic thrombocytopenic purpura (TTP): Rare cases of thrombotic thrombocytopenic purpura (usually occurring within the first 2 weeks of therapy), resulting in some fatalities, have been reported; Report excessive or spontaneous bruising to your physician.
- Allergic reaction: swelling of face, skin rashes, wheezing
- Other side effects include: Fatigue, influenza like symptoms, headache, dizziness, confusion, cough, shortness of breath, upper respiratory symptoms, abdominal pain, nausea and diarrhea, joint pain, muscle pain, back pain, abnormal liver or kidney function tests.

Plavix® patient instructions:

- Take **Plavix®** exactly as directed.
- Interruption of **Plavix®** particularly in patients with drug eluting stents (DES) could result in acute stent thrombosis (sudden blockage) and severe heart attack!!!
- **Plavix®** should not be used in women of childbearing years unless appropriate contraceptive.
- **Plavix®** safety and efficacy have not been established in children.
- **Plavix®** should be used with caution in patients with severe liver or kidney impairment (experience is limited).

In general dual anti-platelet therapy should be continued for up to a year after an episode of unstable angina, an ACS, a non-STEMI or following coronary angioplasty and stenting. In some patients with drug eluting stents (DES) it may be necessary to continue the **Plavix®** for longer than a year.

In your case **Plavix®** should be continued for a minimum duration of:

❍ 3 months ❍ 6 months ❍ 9 months ❍ 1 year ❍ 2 years ❍ Indefinitely

Do not discontinue without consulting your prescribing physician.

NB: Use of **Plavix®** with PPIs (proton pump inhibitors): Losec® (omeprazole), Nexium® (esomeprazole), Prevacid® (lansoprazole) or Pariet® (rabeprazole) may reduce the cardio-protective effects of **Plavix®**. Use of Pantoloc® (pantoprazole), Zantac® (ranitidine), Pepcid® (famotidine), Axid® (nizatidine) does not interfere with **Plavix®**.

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1 "A Randomized, Blinded, Trial of Clopidogrel Versus Aspirin in Patients at Risk of Ischaemic Events (CAPRIE). CAPRIE Steering Committee," *Lancet*, 1996, 348(9083):1329-39.

2 Yusef S, Zhao F, Mehta SR, et al, "Effects of Clopidogrel in Addition to Aspirin in Patients With Acute Coronary Syndromes Without ST-Segment Elevation," *N Engl J Med*, 2001, 345(7):494-502.

3 Mehta SR, Yusuf S, Peters RJ, et al, "Effects of Pretreatment With Clopidogrel and Aspirin Followed by Long-Term Therapy in Patients Undergoing Percutaneous Coronary Intervention: The PCI-CURE Study," *Lancet*, 2001, 358(9281):527-33.

4 ZM, Jiang LX, Chen YP, et al, "Addition of Clopidogrel to Aspirin in 45,852 Patients With Acute Myocardial Infarction: Randomized Placebo-Controlled Trial. COMMIT (Clopidogrel and Metoprolol in Myocardial Infarction Trial) Collaborative Group," *Lancet*, 2005, 366(9497):1607-21.

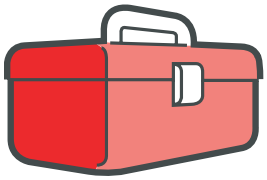
N. CV RISK FLOWSHEET

Patients with Coronary and Other Vascular Disease

Rx (✓)	Risk Intervention	Date ✓ Achieved	Date ✓ Achieved	Date ✓ Achieved	Date ✓ Achieved
	Ideal body weight: BMI < 27 kg/m^2 (ideally< 25 kg/ m^2)				
	Girth: *Targets* M < 94 cm (37 inches); F<88cm (34.6 inches). Lower in South Asians M< 90 cm and F < 80 cm. W/H M< 0.95; F< 0.9.				
	Physical activity: Minimum goal > 150 min/week				
	Smoking Goal: Complete cessation				
	Lipid Management:				
	Primary goal: LDL < 2.0 (1.8) mmol/L or ≥ 50% LDL↓				
	Secondary goal: non-HDL chol ≤ 2.6 mmol/L.; Apo-B<0.8 g/L				
	Metabolic Syndrome HDL ≥ 1.0 mmol/L M HDL ≥ 1.3 mmol/L F				
	TG < 1.7 mmol/L				
	Apo B: ***Hi risk < 0.8 g/L; Mod risk < 1.05 g/L; Low risk < 1.2 g/L***				
	Blood pressure: *Targets* <135/85 mm Hg for HBPM/ABPM <130/80 mm Hg for DM/CAD/CKD <120/80 mm Hg for LVD				
	Diabetes: *Targets* FBS 4-7 mmol/L 2hr PC Glucose 5-10 mmol/L HbA1C ≤ 7% Consider ≤ 6.5 % in selected patients or 7.1 - 8.5% if high risk of hypoglycemia, frail, elderly, multiple co-morbidities.				
	MAU: *Targets* Spot urine < 20/mg/L ACR < 2.0 Men ACR < 2.8 Women				
	Antiplatelet agents: ASA, Clopidogrel, Ticagrelor or Prasugrel				
	Anticoagulants: Target INR _____ or NOAC				
	ACE inhibitor/ARBs: Post-MI				
	ACE inhibitor/ARBs: Vascular protection/CAD				
	Beta-blockers: Post-MI				

Rx (✓)	Risk Intervention	Date ✓ Achieved	Date ✓ Achieved	Date ✓ Achieved	Date ✓ Achieved
	Beta-blockers CHF/LV Dysfunction: LVEF < 40%				
	Rx: Omega-3 fatty acids (salmon oil or flax) 1-3 gm/day				
	hs-CRP High risk > 3.0 mg/L; Mod risk 1.0-3.0 mg/L; Low risk < 1.0 mg/L				
	HRT: Off				

Adapted from: AHA Medical/Scientific Consensus Panel Statement. Circulation 92:2 -3, 1995.
International Task Force for Prevention of CAD



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