Heart Transplant
A Guide for Patients and Families
PLEASE BRING THIS BOOK WITH YOU TO THE HEART INSTITUTE

Patient Name _____________________________________________

Please complete the following information:

**Contact Person**
(relative, friend)

Name ________________________________________________

Phone Number _________________________________________
(Home)

Phone Number _________________________________________
(Cell)

**Family Doctor**
Name ________________________________________________

Phone Number _________________________________________

**Pharmacy**
Name ________________________________________________

Phone Number _________________________________________

**Cardiac Surgeon**
Name ________________________________________________

Phone Number _________________________________________

**Cardiologist**
Name ________________________________________________

Phone Number _________________________________________

**Cardiac Rehabilitation**
Name ________________________________________________

Phone Number _________________________________________

IMPORTANT

Nursing Coordinator: 613-761-4708

Please call the nursing coordinator if you have any symptoms or concerns throughout your early recovery period.
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Referral for Heart Transplant

You have been referred for a heart transplant by your doctor because he or she feels that your heart failure symptoms are getting worse and can no longer be managed effectively with medication or a less-invasive surgical procedure (e.g. special pacemaker).

Heart failure occurs as a result of one of the following:

- Coronary artery disease (blocked arteries)
- Hereditary condition
- Congenital heart disease
- Hypertension
- Viral infection
- Side effects of medication
- History of alcohol use
- Pregnancy

Heart Transplant Workup

Your workup will include a number of tests to determine your eligibility for a heart transplant. An evaluation will determine whether you:

- Have a medical condition that would benefit from a heart transplant
- Would get greater benefit from other treatment options
- Are too healthy for a heart transplant
- Are too sick to have the surgery and post-transplant treatments
- Have any conditions that would not allow you to have a transplant
- Have a social habit (smoking, drinking and/or drugs) that you need to quit before you are accepted for a transplant
- Are willing to follow the steps required after a heart transplant (i.e., frequent follow-up appointments, blood work, tests and medication schedule)
- Have the emotional stamina and social support to deal with the wait time for a donor heart and the recovery after a heart transplant

Sometimes the evaluation can be done on an outpatient basis, but it is usually completed while you are in the hospital. It takes about seven days for the tests to be completed. You may have some or all of the following tests.

Extra tests are sometimes needed. Any extra tests will be explained to you.
Blood Work

To assess the following:

- Electrolytes
- Blood counts
- Kidney function
- Liver function
- Hepatitis B and C
- HIV
- Prostate level (for men only)
- Thyroid function
- Virus status (cytomegalovirus, Epstein-Barr virus, human T-cell lymphotropic virus (HTLV))
- Toxoplasmosis
- Tissue typing to determine whether you have any antibodies in your blood
- Blood group

Basic Tests

- Urine and stool samples
- Chest X-ray
- Electrocardiogram

Heart Tests

A number of other tests will be necessary for your evaluation, including:

- An echocardiogram is an ultrasound of your heart. It shows the four chambers of the heart and indicates how well the right and left ventricles and all of the valves are working. It can also reveal any clots in the chambers, which sometimes happen with heart failure. You do not need to prepare for the test. You will be asked to wear a patient gown and to remove only your top. Electrodes will be attached to your chest, and the technician will ask you to lie on your left side. A gel will be applied to your chest and pictures of your heart will be taken with a special probe.
• **A MUGA (multiple-gated acquisition) scan** provides an exact measurement of how well the left ventricle is working as a pump. For the test, you will be given an injection through an intravenous line, which will be inserted in your arm. The tracer material given during this injection will attach itself to the red blood cells circulating in your body. A camera will then take pictures of your heart chambers and the blood vessels leading to and from the heart. The test will show how much blood the heart pumps out (ejection fraction or EF) and how quickly it is pumped out.

• **Right heart catheterization** is a test in which the tip of a catheter is inserted into a vein in your neck and then advanced into your heart using a TV screen and X-rays. The catheter is moved around inside your heart and into the blood vessels going to your lungs. This test measures the pressure levels in your heart and indicates how well your heart is working. The procedure does not take very long and you can usually walk after the test. If the catheter is inserted through your leg, you will require bed rest afterward. The following picture shows how the catheter enters the heart and the path it follows.
• **Left heart catheterization** is performed if you have not had one in the past couple of years. A catheter is inserted in your groin and is advanced up to your heart. This is done with the assistance of TV and X-ray equipment. A dye is injected that shows how well the blood is flowing through the coronary arteries and whether there are any blockages present. This takes a little longer than a right heart catheterization, and you will require bed rest for about four hours afterward.

![Diagram of catheter inserted into groin (femoral) artery and dye injected to view the coronary arteries](image)

- **A cardiopulmonary stress test** measures how well your lungs work and shows how well your heart pumps blood to your muscles as you exercise. The stress test also assesses the electrical activity of your heart. An electrocardiogram (ECG) is performed while you exercise on a treadmill or stationary bike. During the test, you will be hooked up to electrodes that will record the rhythm of your heart. You will breathe into a breath analyzer, which measures the gas exchange in your lungs. A clip will be placed on your finger to determine the percent of oxygen in your blood during the exercise. Your blood pressure and pulse will be taken at regular intervals.
Scans and Other Tests

A CT (computerized tomography) scan will be done on your chest and abdomen. You may or may not be given a contrast dye prior to the test. During the test, you will lie on a motorized table that moves you through the CT scanner, which is shaped like a large doughnut.

A carotid Doppler ultrasound will be done to make sure there are no severe blockages of the arteries in your neck. A gel is applied to the left and right sides of your neck and pictures are taken with a special probe.

Arterial blood flow studies will be done on your legs to make sure there are no blockages. Cuffs similar to a blood pressure cuff will be wrapped around each leg and will be inflated and deflated to measure the flow of blood through the arteries.

A pulmonary function test will be done if needed. This test measures your lung function. You will be asked to blow into a mouthpiece both before and after using an inhaler.

A bone mineral density test measures the density of minerals (such as calcium) in your bones using a special X-ray. As we age, we do not build up the store of calcium in our bones as quickly as when we were young. We lose calcium and other minerals making our bones more porous and sponge-like. Our bones become weaker and more at risk of breaking.

A tuberculin skin test will be done if you have a history that places you at risk of having tuberculosis.

Referrals to Other Health Care Services

During the evaluation, you will be referred to different health care professionals who are part of the transplant team. These include:

- **Social workers.** There are two social workers at the Heart Institute who are assigned to heart transplant patients and their families. You will be referred to one of them during your evaluation. They can help you with information such as:
  - Temporary living accommodations in Ottawa for you and your family
  - Disability pensions and financial information
  - Community resources and services to support lifestyle changes
  - Drug benefit plans
• **Dietitian.** The dietitian will review your diet with you and help you learn more about healthy food choices for your heart condition.

• **Physiotherapist.** The physiotherapist will review exercise and energy conservation for people living with heart failure. The physiotherapist will also review the exercise routines that are recommended post-surgery.

Specialists in other areas may be consulted during your evaluation if indicated. Some of these may include:

- Electrophysiology
- Endocrinology
- Gastroenterology
- Hematology
- Infectious Diseases
- Psychiatry
- Respirology

The information gathered from these tests and consultations is presented to a team of cardiologists, heart surgeons, other specialists, social workers, physiotherapists, dietitians and an advance practice nurse. Your medical history, diagnostic test results, social history and the results of any consultations are reviewed to determine whether you are able to survive the heart transplant procedure and comply with the continuous care needed to live a long and healthy life.

Once the decision is made, your cardiologist will give you the results.

If the team finds that a heart transplant is not something you will benefit from, you will continue to be followed by your cardiologist as an outpatient.

If the team determines that a heart transplant is something you will benefit from, the transplant advance practice nurse will review with you and your family what is involved in the heart transplant process. *Heart Transplant: A Guide for Patients and Families* will provide you and your family much of the information you will need to help you through the transplant experience.
The following diagram summarizes the transplant experience and indicates a time frame for the various stages of the process:

**Summary of the Process**

1. **Assessment**
   - From 7 days to a couple of months

2. **Acceptance**

3. **The Wait**
   - Hours to years

4. **A Suitable Donor Heart Becomes Available**
   - Operation: 4 to 6 hours

5. **Intensive Care Unit (CSICU)**
   - Your stay will depend on:
     - How sick you were
     - Complications during the surgery
     - The donor heart

6. **Surgical Ward**
   - 14 days or more
   - Prepare to go home

7. **Discharge/Recovery and Rehabilitation at Home**
   - Give yourself 6 months to completely recover
This booklet will help guide you and your family through the transplant experience. You are encouraged to become familiar with the information provided here.

As you read through the guide, write down any questions you have so that you can review them at a later date with your doctor or nurse.

The Health Care Team

The transplant team works together with you and your family to help you return to an active and productive life after your transplant. Both the Heart Institute health care professionals and your loved ones will be directly and indirectly involved in your care.

The transplant team consists of the following health care professionals:

<table>
<thead>
<tr>
<th>Transplant Cardiologists</th>
<th>Dr. Lisa Mielniczuk</th>
<th>Dr. Hassain Haddad</th>
<th>Dr. Ross Davies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transplant Surgeons</td>
<td>Dr. Khan Lam</td>
<td>Dr. Marc Ruel</td>
<td>Dr. Fraser Rubens</td>
</tr>
<tr>
<td>Transplant Advance Practice Nurse</td>
<td>Jackie Grenon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transplant Office Clerk</td>
<td>Christina Wilkins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Workers</td>
<td>Gerry Shea</td>
<td>Souad El Mansouri</td>
<td></td>
</tr>
</tbody>
</table>

613-761-5172

613-761-5468

613-761-4708
Other health care professionals who may be involved in your care during your hospital stay include the following:

- Nurses from the various units in the hospital
- Surgical advance practice nurses
- Nursing coordinators
- Physiotherapists
- Dietitians
- Pharmacists
- Various medical services

**Trillium Gift of Life Network** is an important member of our team. It is the Ontario provincial organization responsible for the distribution of hearts to patients on the waiting list across Ontario. Trillium Gift of Life Network is where your name, blood group, height, weight, and diagnosis will be entered into a database. Once this is done, your name and information becomes part of the heart transplant waiting list for patients across Ontario. Trillium Gift of Life will call us when they have a suitable heart offer for you.

**PLEASE REMEMBER**

To bring your Heart Transplant guide with you when you are called into the University of Ottawa Heart Institute for your heart transplant.
The Wait List

Once you have been accepted for transplantation, an active search for a donor heart begins. Your time on the wait list will be determined by four things:

- Your blood type
- Your body size
- How sick you are
- Antibodies in your blood that could make organ rejection a concern

Blood Type

The heart you receive will be matched to you according to your blood type. The following diagram shows which blood types can give to and receive from one another.

Patients who are type O tend to wait longer on the heart transplant wait list. This happens because more patients on the list are type O, and because type O patients can receive only type O hearts.
Body Size

The size of your body also determines how long you will wait on the list. The donor has to be close to your body size. Most people in the general population are of average size. If you are especially tall or small, you will wait longer than someone who is of average body size.

Status on the Waiting List

You will be placed on the transplant wait list according to the following criteria:

Status 1: For patients who are waiting at home.

Status 2: For patients who are admitted to hospital because their heart failure is not under good control.

Status 3: For patients who require an intravenous medication to support their hearts. For patients who need a mechanical device to support their hearts.

Status 3.5: For patients who need to be in the intensive care unit and are on two intravenous medications for their hearts.

Status 4S: For patients with lots of antibodies in their blood.

Status 4: For patients who are in the intensive care unit on life support. Also for patients who have mechanical support devices that have become infected.

The higher you are on the list, the less time you will wait. If you are a status 1 patient waiting at home, you will be on the list longer than someone who is a status 4 patient in a critical care setting. It is hard to predict how long you will wait. Some heart transplant patients wait a few hours while some wait many years.

Antibodies

You will have blood tests done during your workup to determine whether you have antibodies in your blood. Your body forms antibodies when it is exposed to foreign invaders or material including viruses, blood transfusions, previous transplants and for women, past pregnancies.

When there is a heart offer for you, your antibodies are compared to the donor antigens. If the donor heart has any antigens that match your antibodies the donor heart would not be accepted for you. This can cause your wait to be longer.
While You Wait

Most individuals stay at home while they wait. If you live a long distance from the hospital, you may need to stay in the Ottawa area while you wait. It is important that you be immediately available—within hours—when a donor heart is found. A social worker will help you with planning a temporary location for you and your family.

You will be asked to leave a list of telephone numbers with the transplant advance practice nurse (APN) so that you can be reached at any time. It is very important that members of the transplant team be able to reach you at all times.

When you are going to be away from home or change your phone number, please inform the transplant APN. Be sure to give the nurse the following information when you know you are leaving home:

- Date you are going away
- The date you will return
- The phone number where you can be reached

You cannot leave the country, go to remote areas or travel long distances if you are on the wait list. Discuss your travel plans with the transplant APN if you have any questions.

A pager will be sent to your house. Instructions accompanying the pager will help you set it up. Once the pager is working and you know the beeper number, call the Transplant Office or the transplant APN and give them the number. Check the batteries on your beeper weekly and make sure it is on at all times.

While you are on the list, you may become ill now and then. You should call the transplant APN if you experience any of the following:

- Cold, flu or fever
- Infection that requires antibiotics
- Blood transfusion
- Hospitalization
- Increasing signs and symptoms of heart failure:
  - Increase in your weight (2 pounds in one day or 5 pounds in one week)
  - Decrease in your activity level
  - Increased shortness of breath
  - Swelling in your ankles and legs
  - Decreased urination
If you are hospitalized, let the doctors or nurses know that you are on the wait list for a heart and ask them to call the Transplant Office or transplant APN. It is important for you to keep the transplant team up to date on your status. This will ensure that you are in the best condition possible for your transplant. Changes in your health may affect your status on the list.

The wait time can be stressful for both you and your family. Waiting for a transplant has been described by both patients and families as if they are putting their lives on hold. Other common feelings include:

- That life is unpredictable
- Difficulty with coping at times
- Concern about finances
- Anxiety about what the future holds
- Uncertainty about being able to accomplish life goals
- That life is fragile
- Fear of the transplant process, while knowing it is the only alternative
- For spouses, awareness of the possibility of losing their loved one

These are natural feelings and ones you should talk about with your spouse, a friend or a health care worker. The social worker or transplant APN is there to help you work through these feelings.

**Relocation and a Drug Plan**

If you live far away, you may be asked to move closer to the Heart Institute before your transplant. When you are called to receive a donor heart, you will need to arrive at the hospital within four hours.

If you live more than one hour away from the hospital, you will be asked to move closer to Ottawa for at least two months following your transplant. This is necessary because of the frequent tests needed after the surgery.

The Ontario government has created a fund to help residents cover some of the cost of relocating to Ottawa. To receive this benefit, you will need to provide proof of your relocation (receipts) to the transplant APN. The APN will submit the information to Trillium Gift of Life. Trillium will cover $650 per month of your costs during your stay in the Ottawa area. Ask the APN for an information package.

If you have been paying for your medications because you do not have a drug plan, it is recommended that you obtain one. Some of the medications you will take following the transplant are very expensive.
Social Work

Two social workers at the Heart Institute are assigned to work with heart transplant patients and their families. You will be referred to a social worker during your evaluation. This professional will follow you after your transplant and can help you with information about:

- Temporary accommodations in Ottawa for you and/or your family
- Disability pensions and financial information, when needed
- Community resources and services to support lifestyle changes
- A drug benefit plan
- Monthly parking passes
A Suitable Heart Becomes Available

Where the Donor Heart Comes From

Your new heart will come from someone who has been declared brain dead and whose family consents to the donation of organs. It is an anonymous gift. Brain death is a permanent condition that usually results from some sort of head trauma or bleeding into the brain. Brain death is diagnosed by many tests and confirmed by two physicians.

When a Matching Heart Becomes Available

You will be contacted by phone or beeper when a matching heart becomes available. Do not eat or drink anything from that time on.

If you are driving, you will be asked how long it will take for you to get to the hospital. If you live a distance away from the hospital, an air ambulance may be arranged for you.

IMPORTANT

You must come to the hospital as soon as possible. Do not drive yourself and do not rush or break any speed limits.

Where to Enter the Heart Institute

You can enter the Heart Institute through the main entrance at 40 Ruskin Avenue until 9:00 p.m. After 9:00 p.m., you will have to enter the hospital through the ambulance entrance off of Melrose Avenue.

If Admitting is open, your spouse, family or friend should go there and provide them with the necessary information. If closed, they can do this the next day.
Preparing for Surgery

Once you arrive at the Heart Institute, the following things will happen to prepare for surgery:

- Blood tests will be done.
- A chest X-ray will be taken if a recent one is not available.
- Your chest will be shaved.
- You will shower with a special soap.
- The surgeon, surgical resident and anesthetist will visit you.
- Your implantable cardioverter defibrillator (ICD) will be shut off.

Two surgeons will be involved in your surgery, one to retrieve the heart and one to get you ready to accept the heart. They will work together to decide when to move you to the operating room. They will also do the final check to be sure the donor heart is in good shape for transplantation.

Sometimes the heart must be turned down at the last minute because it has become unsuitable for use. If this happens, your transplant operation will be cancelled. Try not to be discouraged. Another opportunity will come up.

If the heart is accepted and you are taken to the operating room, send your personal belongings home with your family, but make sure to keep your dentures, glasses and hearing aids.
The Heart Transplant Operation

The surgery will last from four to six hours depending on your condition. The operation may take longer if:

- You have had heart surgery in the past.
- You are on Coumadin®.
- You have a mechanical heart device.

During the transplant surgery, your own heart is removed. The back portions of the right and left atria and a portion of the pulmonary artery and aorta are left intact to serve as connections for the new heart. The healthy donor heart is removed and sutured in position to replace your diseased heart.

The right and left atria of the donor heart are joined to the back portion of your right and left atria. Your pulmonary artery and aorta are then attached or sutured to the donor heart.

Your heart has many nerve connections to your central nervous system. These help to control your heart. During a heart transplant, these nerves are cut and usually do not grow back. This is referred to as a “denervated heart.”
For you, this means your resting heart rate will be around 90 to 110 beats per minute, instead of a slower, more average, 70 to 80 beats per minute. It also means your heart will respond differently to exercise, taking longer to speed up when you start and longer to slow down after you have finished. Therefore, you should warm up and cool down whenever you exercise.

In some cases, the pacemaker centre of the donor heart, called the sinus node, does not work properly after surgery. If this happens, a permanent artificial pacemaker will be inserted before you leave the hospital.

**What Your Designated Contact Person and Family Can Expect**

**On the day of your surgery:**

- Your family can stay with you before you go to the operating room.
- Once you leave to go to the operating room, your family will be expected to remove all your belongings from your room. The length of your stay in the intensive care unit is unpredictable.
- Your designated contact person/family member will be responsible for keeping your other family members informed of your progress.

**During your operation:**

- Your designated contact person/your family are welcome to wait in the Family Lounge on the main floor. Please check in with the volunteers at the desk.

**After your operation:**

- Once the surgery is compete, the surgeon will meet with your designated contact person if he/she is here waiting in the family lounge, or telephone him/her after surgery. If your contact person chooses to wait at home during the operation, he/she should let the nursing coordinator know.
- Your contact person may come visit you after speaking with the surgeon. This may take some time. You should ask a volunteer to arrange this.
- Your designated contact person will receive two progress calls from the nurse after the operation. One should be between 9:00 p.m. and 10:30 p.m., during the evening following your surgery and the other will be between 9:00 a.m. and 10:30 a.m. the next morning. However, surgery schedules are unpredictable and these times may vary from case to case. The CSICU will provide your contact person with the contact information of the unit you will be staying in.

**Please Note**

Our privacy policy only allows us to share information with the individuals that you have specifically designated as contacts.
Visits from Family Members

When it is time for your family to see you, a volunteer or nursing coordinator will bring them to the Cardiac Surgery Intensive Care Unit (CSICU). Visits should be short and restricted to immediate family.

While you are in the CSICU, your family can visit you for short periods of time (one or two family members at a time). The visiting procedure for the CSICU is as follows:

- Your family should check with the volunteers at the front desk in the Main Lobby (Ruskin Street entrance). Volunteers are there from 9:00 a.m. to 9:00 p.m.
- The volunteers will call CSICU to arrange the visit.
- You are only allowed up to two visitors at a time. Special arrangements can be made for visits from children under the age of 12.
- Your visitors may be asked to wait at times while care is being given to you.
- Before entering, your family member must use the hand washing gel.
- There is no visiting between 6:45 a.m. and 7:45 a.m. and again between 6:45 p.m. and 7:45 p.m. while the nurses are giving a patient report.

Note: Your family members cannot visit you if they have a cold, fever, diarrhoea, cough, or any other signs of infection.

After you are transferred out of CSICU, your family can visit you according to the following guidelines:

- **Visiting Hours:** 10:00 a.m. to 1:00 p.m. and 2:00 p.m. to 8:00 p.m.
- **Rest Period:** 1:00 p.m. to 2:00 p.m. Please do not visit during the rest period.
- Only two visitors at a time at the bedside
- Family who are ill should stay at home

Press Inquiries

A heart transplant is still considered important news in many communities. Information about you and your family is never given out to the media by the University of Ottawa Heart Institute without your knowledge and consent.

Donor Information

When you and your family are ready, the transplant APN or your surgeon will give you information about the donor. You will be informed of the donor's age, sex and cause of death, if you so desire. To protect patient privacy, the donor's location will not be released. Both parties are to remain anonymous but can communicate with one another through the Trillium Gift of Life Network.
You may write a letter of thanks to the donor family. In this letter, you can express your appreciation for the gift you have received and what it has meant for you. You should not identify yourself in the letter. Do not seal the letter. Once you have completed it, give the letter to the transplant APN. He or she will forward it to the Trillium Network, who will review it and then pass it on to the donor family. Your letter will be appreciated by donor family members. It will help their healing process and let them know that their difficult loss has helped another individual.

**After the Operation**

**Cardiac Surgical Intensive Care Unit (CSICU)**

After the surgery, you will be cared for in the CSICU. The number of days you will stay in this unit will depend on:

- Your general condition before the surgery
- Whether there were any complications during the surgery
- How well the donor heart responds to being restarted after transplantation

You will have many tubes attached to you after surgery. The following table explains what they are for and when they can be removed:

<table>
<thead>
<tr>
<th>Type of Tube</th>
<th>Description</th>
</tr>
</thead>
</table>
| Breathing tube                    | • Connected to a ventilator  
• Talking not possible with this tube in place  
• Communicate with the nurse by using your hands. If you are having incision pain, rub your chest with your hand.  
• Removed once your vital signs and blood work are stable |
| Chest tubes                       | • Exit your body near the bottom of your chest  
• Drain blood from around your heart and lungs  
• Removed when they are no longer draining |
| Special intravenous line in your wrist | • Measures your blood pressure  
• Removed when your vital signs are stable |
| Special catheter in your neck | • Measures pressure levels inside your heart  
• Removed when your vital signs are stable |
| Two special wires near the bottom of your chest | • Used to pace your heart, if required  
• Removed the day before you are discharged |
| Catheter in your bladder | • Drains urine from your bladder  
• Makes some patients feel like they have to urinate  
• Removed once you are more active |
| Pain medication intravenous line | • Pain medication given on a continuous basis  
• Discontinued once breathing tube is removed  
• Replaced by oral pain medication |

**About pain:**

- If you are having incision pain, it is important that you let your nurse know. He or she has no other way of knowing.
- Your chest incision pain will not be completely gone, but it should not stop you from moving or breathing properly. On a scale from 0 to 10 (10 being the worst pain you can imagine and 0 being none at all), your pain should be around level 3.

A couple of hours after the breathing tube is removed, you will sit up on the side of the bed. The sooner you move, the faster your healing process will be. Remember to support your chest and not to use your arms to move. Physiotherapy will review this with you and your nurses will remind you.

You will not be able to drink right away because there is a risk of choking. Be patient. Your nurse will give you something to drink when it is safe.
Transfer to Nursing Unit H3

You will be transferred to the ward when your vital signs are stable, most of the lines have been removed and you can move around with the help of one person.

When you are transferred to the ward, you will still have an intravenous line in your neck, pacer wires and a portable heart monitor.

The goals for your care on H3 are to increase your independence by:

• Improving your strength, mobility and coordination
• Getting you more involved in your care by taking your own pills
• Prepare you and your family for discharge through education
• Continue to watch for changes in your condition

It is important for you to get up and move as soon as possible. This will prevent you from developing complications such as pneumonia, clots in your legs and constipation.

When you move, it is important for you to remember not to use your arms. This will cause the bones in your chest to rub together and become inflamed. This inflammation can lead to an infection that is particularly dangerous for heart transplant patients.

Your length of stay in the hospital will depend on your condition. You will be discharged once you:

• Have stable vital signs and your incisions are healing well
• Show no sign of infection
• Are mobile and independent
• Can safely take your own medications
• Have completed your discharge training
• Have your home care and other services in place
• Have had one biopsy showing no signs of rejection

Before you are discharged, the transplant APN will review with you and your family information on anti-rejection medications, rejection drugs and infection self-monitoring.
When you are discharged to go home, make sure you have:

- Someone at home with you for the first two weeks. If you do not have anyone to stay with you once you are discharged, please let the social worker or transplant APN know. Arrangements will be made for you.
- A calendar printed from the Transplant Office
- A list of your medications
- Your follow-up appointment with your cardiologist
- Your appointments for your next biopsy and blood work
- Requisitions for your blood work
- Your prescription for cyclosporine, if you are on the drug. Your prescription should be written and brought to the Heart Institute pharmacy the day before discharge. If you live in Ontario, this is where you will pick up your cyclosporine.
- If you were followed by other services (infectious disease, endocrinology, etc.) find out whether you need a follow-up appointment with them.

Some Final Instructions for Returning Home

For the first six weeks following discharge:

- No heavy lifting (more than 20 pounds)
- No driving

Vision

The general anaesthetic given to you during your surgery can take time to wear off. This may affect your vision. Do not change your eyeglass prescription right away. Wait a couple of months. If the problem persists, see your eye doctor.

Exercise

Exercise is very important to your physical and mental well-being. Before discharge, your nurses and physiotherapists will work with you to improve your mobility and coordination, as well as build your strength and endurance.

Usually, by the time you are ready for discharge, you will be able to tolerate a walk around the H3 unit and a climb of two flights of stairs.
After discharge, you will be able to resume normal activities. However, it is important that you maintain an exercise program and that you gradually increase your walking to 20 minutes, both morning and afternoon. The physiotherapist will give you further guidelines in this area.

**Sexual Activity**

It is normal during the early part of your recovery to be too tired to think about sex. As you begin to feel better, plan to have sex at a time when you are feeling rested and comfortable. Wait for several hours after you have had a large meal or a lot to drink before having sex.

Sexual relations with your partner require about the same energy as climbing two flights of stairs. If you can climb two flights of stairs without shortness of breath or chest discomfort, sexual activity can be resumed.

When having sex, make sure you use a position that does not require you to hold yourself up with your arms until your sternum has healed (at least six weeks). Find a position that is comfortable for both you and your partner.

**Readjustment Phase**

You should expect the first three months after your transplant to be a period of major adjustment. During this time, the fear of infection, rejection and drug side effects will subside. It will be at least six months before you feel like your old self again. Try not to get discouraged with your progress.

After the initial high following the operation comes the realization of lifelong monitoring, reconditioning and possible change in vocation. The support of family and friends becomes very important during this time.

**Weight**

You should be aware that weight control is difficult for some post-transplant patients. Your appetite may increase from the effect of your medications. Maintain good common sense eating habits, which include eating three meals a day and drinking low-calorie beverages such as water and skim milk. If you drink soft drinks use diet options. Keep your intake of sweets and high calorie foods to a minimum.

Your weight will be monitored during your outpatient biopsy and clinic visit. Keeping your own daily weight record is recommended.
Smoking

Do not smoke! Smoking is bad for your new heart. It constricts blood vessels and robs the heart of much needed oxygen by displacing oxygen with carbon monoxide in the blood.

Smoking also damages the delicate lung tissue and can lead to lung infection, not to mention cancer. Because you are taking immunosuppressive medications, you are already at risk for developing lung infections. Smoking will add to this risk.

Second hand smoke is equally harmful!

Driving

Generally, six to eight weeks after your operation, the sternum, or breastbone, is sufficiently healed for you to drive again. However, your cardiologist must assess you and may decide to do further tests to see if it is safe for you to drive. This will be discussed with you during one of your clinic visits.

Sun Protection

Because of the medications you are taking, you are at greater risk for skin damage from the sun, which could lead to skin cancer. You must apply sunscreen containing a minimum sun protection factor (SPF) of 25 before going out into the sun. This will provide 97% protection from the sun's rays. If you have a tendency to burn, you should stay out of the sun as much as possible.

Return to Work

The aim of transplantation is to help you return to work or to your pre-transplant active status.

When and if you return to work will depend on how well you are recovering and the type of work you do. A vocational counsellor is available through the rehabilitation program to help you.

Sometime within the first six months post-transplant, you may no longer require or may no longer be eligible for disability insurance. Lifelong disability is not expected or guaranteed.
Dental Care

Once you have had your transplant surgery and are on immunosuppressive therapy, it will be more important than ever that you maintain a high standard of oral hygiene. Bacteria in your mouth can enter your bloodstream through your gums and infect your heart.

You can prevent dental complications by:

- Brushing after every meal
- Using dental floss at least once a day
- Cleaning dentures or prostheses after every meal

Regular dental checkups, every six to 12 months, will also help. Ask your cardiologist whether antibiotics are required before and after your dental appointments.

Medical Alert Bracelet

Prior to discharge, the transplant coordinator will give you a MedicAlert application form. You may also obtain this form from your nurse or pharmacist. In an emergency, this bracelet will alert medical personnel that you are a heart transplant recipient and are on immunosuppressive drugs.

The following should be engraved on your bracelet:

- Heart Transplant
- Immunosuppressive Drugs
- Cyclosporine (or Prograf)
- CellCept
- Prednisone
- Any Drug Allergies

Follow-up Schedule After Discharge

Blood Work

You will need to complete blood work two to three days prior to each clinic visit. If you are having a biopsy, you can complete the blood work the same day as your biopsy.
Remember to leave 12 hours between your evening dose of anti-rejection medication and your morning blood work. Do not take your medications until after your blood work is done.

The Heart Institute lab is located on the second floor of the Heart Institute, near the clinics.

Clinic Visits

Clinic visits will follow your biopsy schedule. After two years, your visits will be every six months to annually.

During your clinic visit, the transplant APN or cardiologist will assess you, review your lab work and medications, and inform you of any changes.

The dates for your next appointments for blood work, clinic and biopsy will be given to you by the transplant clerk.

Cardiac Biopsy Schedule

You will have at least one heart biopsy before you leave the hospital. After discharge your biopsy schedule will be:

- Weekly for the first month
- Bi-weekly for the second month
- At three months, six months, nine months, one year, 18 months and two years
- Two weeks after any episode of rejection that requires treatment

This schedule may be changed according to your condition.

Diagnostic Tests

The following tests will be completed after your heart transplant:

- A myoview (annually)
- Angiogram (schedule determined by your cardiologist)
- Echocardiogram (annually)
- ECG and chest X-ray (annually)
- Blood work (as needed)
Rehabilitation

Once you are discharged, it is recommended that you join the rehabilitation program to help you get your health back on track.

An intake session is usually booked prior to starting physiotherapy. Your physiotherapist can give you the date of your intake session. This session is completed in the Rehab Department on the 2nd floor. You will be asked about your past medical history and current medications. There are also some forms that you will have to fill out. The session can take up to 3 hours.

You have some options when it comes to rehabilitation. It is strongly recommended that you attend a program at a centre so that you will benefit from all of the programs they offer. If you do not live in Ottawa ask your physiotherapist if there is a program near your home.

You may also be able to work on rehabilitation at home. Speak to your physiotherapist about this.
Inside your body there is a protective mechanism called the immune system. It is the body’s defense against infection by foreign invaders such as bacteria and viruses. Through a series of steps called the immune response, the immune system attacks organisms and substances that can invade your body and cause disease. The immune system is made up of cells, tissues and organs. There are two kinds of immunity—innate and adaptive.

Innate immunity is the body’s first line of defense and is provided by barriers like:

- Skin
- Tears
- Mucus
- Saliva
- Rapid inflammation of tissues

Adaptive immunity starts after the invader gets past the first line of defense (skin, tears, etc.). Adaptive immunity:

- Is specific, tailoring each response to act on a particular invader
- Has a memory, allowing it to respond more quickly when the same type of invader attacks in the future
- Can recognize the difference between self and non-self

One of the immune system’s functions is to tell the difference between self and non-self. Every cell in your body carries distinctive molecules that distinguish it as being a part of the self that is your body. Your immune system does not attack the cells that carry this “self” marker. The immune system lives peacefully with these cells.

Foreign materials carry “non-self” markers. The donor heart also carries these markers which your immune system will recognize as foreign. Once it is transplanted, an immune response will be triggered and your immune system will attack the donor heart. Immunosuppressive drugs “turn off” your immune response to the transplanted heart without seriously impairing your ability to fight infections. The most common immunosuppressive drugs are cyclosporine, Prograf®, prednisone, and CellCept®.

Your immune system will be most active right after your heart transplant. During this time, you will take higher doses of immunosuppressive drugs. As time goes on, your immune system will be less active and the doses of your medications will be altered. Because your immune system remembers foreign invaders, you will take these medications for the rest of your life.
Acute Rejection

Even with the right care and medicines, you may still have at least one acute rejection episode. Acute rejection is most likely to happen within the first year after your transplant but can also occur years later. Most rejection episodes are mild and are usually treated successfully with medications while you are at home.

Rejection can occur without your knowing, and it is often found during your regular follow-up tests and routine clinic visits. This is why it is important for you to keep all of your appointments.

You should still be aware of the signs and symptoms of rejection and report them immediately. Treatment is more effective if rejection is caught early:

- Shortness of breath from mild exertion
- Progressive weight gain of about 2 pounds a day with ankle swelling
- Irregular or fast heartbeat
- Loss of energy and appetite
- Flu-like symptoms (fatigue, chills, nausea, aching feeling, fever)

Rejection is an ongoing concern for transplant recipients, so it is extremely important for you to take your medications exactly as prescribed.

Cardiac Biopsy

At present, cardiac biopsy is the only reliable means of diagnosing acute rejection. A biopsy can detect rejection before any permanent damage is done to your heart. The schedule for your biopsies will be as follows:

- Weekly for the first four weeks after transplantation
- Every two weeks for the second month
- Then at three months, six months, nine months, 12 months, 18 months and two years
- Two weeks after any acute rejection episode and treatment

Cardiac biopsies are done on an outpatient basis. If your biopsy is scheduled for a Tuesday, it will be in the afternoon. If it is scheduled for a Thursday, it will be in the late morning. You will be sent instructions for the procedure from the Transplant Office.
Prior to your biopsy, it is important that you:

- Have nothing to eat or drink up to two hours beforehand
- Contact the Transplant Office for instructions if you are on a blood thinner called Coumadin
- Contact the Transplant Office for instructions if you are on diabetic medications
- Take all other regular medications as prescribed

During the biopsy, you will:

- Be in a special room with X-ray equipment
- Lie on a hard table and be connected to a heart monitor
- Have green drapes placed around your head, neck and chest
- Be given an injection in your neck to numb the area (this will be the only time you will feel discomfort)
- Have a catheter inserted into the jugular vein in your neck once your neck is fully anesthetized
- Have an instrument called a bioptome inserted through this catheter into your heart. The bioptome has small jaws on the end that open and close, allowing it to take small tissue samples of your heart. Four to five samples, about 2 millimeters in size, will be taken.
- Possibly feel a few extra beats of your heart. This is normal. You will also feel a slight tugging sensation, but it will not be painful.
- Have pressure and a bandage applied over the puncture site
The specimens are sent to the pathologist for examination, and a preliminary verbal report is given to the transplant APN within 24 hours of the procedure.

Complications from cardiac biopsy are very rare. If they do occur, it is during or immediately after the procedure. Therefore, it is important to report any:

- Chest pain
- Shortness of breath
- Fast or irregular heartbeat

You may be asked to sit in the waiting room 15 minutes to one hour after the biopsy.

You may remove the bandage after 24 hours. Do not do any heavy lifting for 24 hours after the procedure.

Before you cough or sneeze put pressure on the puncture site with your hand. If the site starts to bleed, apply pressure for 10 minutes. If the bleeding does not stop, you should seek medical attention.

**Results of the Biopsy**

The number of rejection cells found in the biopsy samples indicates the level, or grade, of rejection. The categories in the grading system include zero, mild, moderate and severe. The grade of rejection, along with other factors, helps to determine the treatment necessary.

The biopsy results are usually available late the next day. You will receive the results at your clinic appointment. If the biopsy indicates rejection that needs treatment, you will be contacted right away by the transplant APN with instructions. Most episodes can be treated safely with oral medication while you are at home.

The oral medication used to treat rejection is prednisone. You will be given high doses of prednisone for three days and then a reduced dose of 20 milligrams until your next biopsy. If you have diabetes, you should monitor your blood sugar more closely during this anti-rejection therapy and call the physician who takes care of your diabetes if your sugar increases.

Your cardiologist may choose to alter the other immunosuppression medications you are taking to better treat your rejection.
Other Types of Rejection

Chronic Rejection

Another type of rejection is called chronic rejection. This occurs when the body slowly and continuously attacks the donor heart. Chronic rejection affects the vessels that supply blood to the heart muscle. Over many years, it will cause a narrowing of these vessels, decreasing the blood supply to the heart muscle and gradually reduce heart function.

Heart transplant patients usually do not get angina, but a small percentage can. If you notice chest pain with activity or a rest contact the transplant office. If you are more short of breath with activity and do not have any chest pain contact the transplant office.

Evidence of this rejection may be determined by an angiogram, a cardiac CT scan, or a myoview.

Antibody Mediated Rejection

Antibody mediated is caused by circulating antibodies in your blood. It can occur immediately after your heart transplant or years later.

The symptoms associated with this type of rejection are:
- Shortness of breath from mild exertion
- Progressive weight gain of about 2 pounds a day with ankle swelling
- Irregular or fast heartbeat
- Loss of energy and appetite
- Flu-like symptoms (fatigue, chills, nausea, aching feeling, fever)

A biopsy and blood tests are used to identify this type of rejection.
For your body to accept your transplanted heart, it is necessary to suppress the function of your immune system. Doing this will allow your new heart to function properly. The immnosuppressive drugs you will be taking will leave your immune system active enough to fight infection.

The most commonly used drugs to suppress your immune system include Neoral<sup>®</sup> (cyclosporine), Prograf<sup>®</sup> (tacrolimus), CellCept<sup>®</sup> (mycophenolate) and prednisone.

The doses of your medications will be determined by your transplant cardiologist and will be based on the results of blood tests, biopsies and other factors. Your transplant cardiologist should be the only person to change the doses of your medications.

**IMPORTANT**

Never change your medication doses on your own.

Take all your medications exactly as directed. If you have any questions about your medications, check with the transplant APN, transplant cardiologist or your pharmacist.

Notify your transplant physician or APN if you:

- Have severe or continued nausea, vomiting or diarrhea
- Are experiencing possible side effects or new symptoms from the medications
- Have been prescribed a new medication by a physician or dentist
- Choose to take over-the-counter medication, as some of these drugs may interact with your medications

You should know the names of your medications, how often you take them and what they are for.

It is important to obtain all written prescriptions for your medications at the time of your regularly scheduled appointments with your cardiologist. It is your responsibility to keep track of all remaining refills on your prescriptions and to avoid running out of your medication between doctor appointments.
Medications

Prograf®/Tacrolimus – A Calcineurin Inhibitor (CNI)

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<tr>
<th>Prograf 0.5 mg</th>
<th>Prograf 1 mg</th>
<th>Prograf 5 mg</th>
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<td>Yellow</td>
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| DIN #00243164 | DIN #02175991 | DIN #02175983 |

Purpose

Prograf blocks the action of immune cells that might cause your body to reject your transplanted heart (immunosuppressant). If you are started on this medication, you will take it for the rest of your life.

How to Take Prograf

It is important to take Prograf at the same time each day, every 12 hours. You can take Prograf with or without food. Do not crush or chew the capsules.

Your dosage of Prograf is determined by the level of the drug in your blood. It is important that you take your evening dose 12 hours before your morning blood test. For example, if you take your evening dose at 8:00 p.m., your blood work should be completed at 8:00 a.m. the next day, before you take your morning dose. This reading of your blood will let your cardiologist know whether to increase or decrease your dosage.

As time progresses, your dosage of Prograf will be changed. A higher dosage is required immediately after the transplant, but as time moves on, it will be decreased. Your Prograf will be adjusted according to your needs by your transplant cardiologist.
Side Effects

The following is a list of side effects, which you may or may not experience:

- Decreased resistance to infection
- High blood pressure
- Dizziness, headache, poor sleep, tremor, seizures
- Ringing in the ears
- Numbness and tingling around the mouth; flushing
- Increased blood sugar levels
- High blood potassium levels
- Constipation, diarrhea, nausea, vomiting, gas, cramps, increased appetite
- Anemia (low blood iron), increased bruising
- Pins and needles in the hands and feet; increased sensitivity to touch
- Leg cramps, muscle pain, joint pain
- Osteoporosis
- Abnormal kidney function
- Needing to urinate at night, more frequent urination in general
- Unusual dreams, elevated mood or mood fluctuations
- Acne, hair loss, increased sweating, increased risk for skin cancer

Storage

Store your Prograf at room temperature of 15 °C to 30 °C. Keep your medications away from heat, moisture and direct sunlight, and always keep Prograf out of the reach of small children.

Missed Doses

It is very important that you not miss any doses. If you do miss a dose, take it within two or three hours of the scheduled time. Otherwise, skip the missed dose and go back to your regular schedule.

Do not take two doses at the same time or use any extra medicine to make up a missed dose. If you have a stomach flu and are vomiting, call the transplant APN for advice.
Warnings

- This medicine may cause high blood pressure. Get a blood pressure monitor so that you can check your blood pressure on a regular basis at home.
- Never stop this medication on your own.
- Never allow yourself to run out of Prograf.
- Prograf will make you more sensitive to the sun. You should wear a sunscreen with an SPF of 25 or greater.
- Pregnancy is not recommended when taking this medication. Studies in animals have shown harm to the fetus. No information about how the drug affects a human fetus is available.

Foods, Beverages and Supplements to Avoid

- Grapefruit juice may increase the prograf blood levels and it toxic effects on your body
- High fat foods will decrease the blood level of Prograf
- St. John’s wort will decrease the amount of Prograf in your system.
- Avoid cat’s claw and echinacea; these will stimulate your immune system.

Drug Interactions

There are many prescription and non-prescription medications that can interact with Prograf, affecting the way the drug works in your body. Make sure your pharmacist knows you are on Prograf. Call your cardiologist or the transplant APN to find out if new medications are safe to take with Prograf.

Some Important Points

- Antacids can affect the absorption of Prograf should be taken two hours or more before or four hours after Prograf.
- Avoid anti-inflammatory medications, such as ibuprofen (Advil®, Motrin®), Indocin®, Naprosyn® and Diclofenac®
- Avoid the antibiotic erythromycin or any other antibiotics in the same drug family.
Neoral®/Cyclosporine – A Calcineurin Inhibitor (CNI)

<table>
<thead>
<tr>
<th>Neoral 25 mg</th>
<th>Neoral 100 mg</th>
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<td>Grey</td>
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Purpose

Cyclosporine works by inhibiting the action of blood cells that might cause the rejection of your transplanted heart (immunosuppressant). If you are prescribed this medication, you will be on it for the rest of your life.

How to Take Cyclosporine

It is important that you take cyclosporine at the same time each day, every 12 hours. You can take cyclosporine with or without food. Do not crush or chew the capsules.

If you take liquid cyclosporine:

- Measure the dose using the syringe provided with the medication.
- Mix the medication in a glass container only.
- You can mix the drug with milk or juice to make it taste better. If you do, always mix it with the same beverage.
- Do not mix the drug with very cold or hot drinks.
- Stir well and drink it right away. Rinse your glass with more of the mixing beverage and drink what is left to make sure you get all of the remaining medication.

Your dosage of cyclosporine is determined by the level of the drug in your blood. It is important that you take your evening dose 12 hours before your morning blood test. For example, if you take your evening dose at 8:00 p.m., your blood work should be completed at 8:00 a.m. the next day, before you take your morning dose. This reading of your blood will let your cardiologist know whether to increase or decrease your dosage.

As time progresses, your dosage of cyclosporine will be changed. A higher dosage is required immediately after the transplant, but eventually, it will be decreased. Your cyclosporine will be adjusted according to your needs by your transplant cardiologist.
Side Effects

The following is a list of side effects, which you may or may not experience:

- Increased risk of infection
- Hypertension
- Headache
- Seizures
- Increased fatigue
- Increased hair growth
- Nausea, diarrhea, indigestion
- Swollen and inflamed gums
- Tremor; pins and needles of an arm or leg; muscle contractions; joint and muscle pain
- Increased blood sugar; increased cholesterol
- Abnormal kidney function
- Low blood iron level
- Acne, itchiness, oily skin, increased risk for skin cancer
- Night sweats
- Ringing in the ears

Storage

Store your cyclosporine at a controlled room temperature; do not refrigerate. Keep your medications away from heat, moisture and direct sunlight, and always keep cyclosporine away from small children.

Liquid cyclosporine should be used within two months after it has been opened. Keep this medicine in its original foil wrap. Do not store the capsules in your pill box or ask you pharmacist to put it in a blister pack with the rest of your pills.

Missed Doses

It is very important that you not miss any doses. If you do miss a dose, take it within two or three hours of the scheduled time. Otherwise, skip the missed dose and go back to your regular schedule.

Do not take two doses at the same time or use any extra medicine to make up a missed dose. If you have a stomach flu and are vomiting, call the transplant APN for advice.
Warnings

- This medicine may cause high blood pressure. Get a blood pressure monitor so that you can check your blood pressure on a regular basis at home.
- Tell your cardiologist or the transplant APN if you have swollen gums. Brushing and flossing regularly will help you avoid gum problems. Massaging your gums is also helpful. You may need to see your dentist more frequently.
- Never stop this medication on your own.
- Never allow yourself to run out of cyclosporine.
- Cyclosporine will make you more sensitive to the sun. You should wear a sunscreen with an SPF of 25 or greater.
- Pregnancy is not recommended when taking this medication. Studies in animals have shown harm to the fetus. No information about how the drug affects a human fetus is available.

Foods, Beverages and Supplements to Avoid

- Grapefruit juice may increase the blood level of cyclosporine and its toxic effects on your body
- St. John’s wort will decrease the amount of cyclosporine in your system.
- Avoid cat’s claw and echinacea; these will stimulate your immune system.

Drug Interactions

There are many prescription and non-prescription medications that can interact with cyclosporine, affecting the way the drug works in your body. Make sure your pharmacist knows you are on cyclosporine. Call your cardiologist or the transplant APN to find out if new medications are safe to take with cyclosporine.

Some Important Points

- Antacids should be taken two hours before or 4 hours after cyclosporine.
- Avoid anti-inflammatory medications, such as ibuprofen (Advil®, Motrin®), Indocin® and Naprosyn®.
- Avoid the antibiotic erythromycin or any other antibiotics in the same drug family.

Desjardins Pharmacy

All Ontario heart transplant patients must obtain their prescriptions for Neoral cyclosporine at the Desjardins Pharmacy at the Civic Campus of The Ottawa
Hospital. This medication is not available through community pharmacies. Although Neoral cyclosporine is paid for by the provincial government, a dispensing fee will be charged.

The Desjardins Pharmacy (613-761-4157), at the Civic Campus of The Ottawa Hospital, provides outpatient services Monday through Friday, 8:00 a.m. to 4:00 p.m. (with the exception of statutory holidays). The Desjardins Pharmacy requires 24 hours' notice for the refilling of prescriptions.

Quebec residents can get their cyclosporine through their community pharmacies.

If you are filling a prescription for cyclosporine in another province or country, make sure that you are given the Neoral brand of cyclosporine. There are different brands of cyclosporine. Each is absorbed differently by your body and will result in different blood levels of the drug. You can avoid this problem by making sure you always have enough Neoral cyclosporine with you.

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**Cellcept®/Mycophenolate Mofetil**

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<th>CellCept 250 mg</th>
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DIN #02192748 | DIN #02237484

**Purpose**

This medicine is used to prevent organ rejection by suppressing your body's immune system. It will be necessary for you to take this medication for the rest of your life.
How to Take CellCept

CellCept is taken twice a day, once in the morning and once in the evening. It is best to take this medication on an empty stomach, but it may be taken with food. Do not break, crush or chew the tablets. Do not use a pill that is broken.

If you are taking liquid CellCept, measure the liquid dose with the syringe provided by the pharmacy. Do not use a regular household teaspoon to measure the medication. Ask your pharmacist for a medication syringe when you pick up your prescription.

When you are on this medication, your white blood cell count will be monitored. If your white blood cell count drops below 4, the dose of CellCept may be adjusted by your cardiologist. Do not stop or adjust this medication unless your cardiologist or the transplant APN tells you to.

As time progresses, the dosage of your CellCept may be increased. This will depend on your white blood cell count and how well you tolerate the medication.

Side Effects

The following is a list of side effects, which you may or may not experience:

- Increased risk for infection
- Nausea, vomiting, stomach pain, diarrhea, constipation
- Headache, mild weakness
- High blood pressure
- Swelling in your hands or feet
- Numbness or tingling
- Anxiety, sleep problems, mood changes
- Easy bruising or bleeding
- Muscle and joint pain
- Increased risk for cancer
- Low blood iron, low white blood cell count, low platelets
- Increased cholesterol, increased blood sugar
- Abnormal kidney function
Storage

Store your CellCept in its original container at room temperature and away from moisture, heat and direct sunlight. CellCept may be stored in a refrigerator, but do not freeze it. Always keep your medication away from small children.

If using liquid CellCept, throw away any unused medication that is more than 60 days old. Talk to your pharmacist about the proper disposal of your medication.

Missed Doses

It is very important that you not miss any doses. If you do miss a dose, take it within two or three hours of the scheduled time. Otherwise, skip the missed dose and go back to your regular schedule.

Do not take two doses at the same time or use any extra medicine to make up a missed dose. If you have a stomach flu and are vomiting, call the transplant APN for advice.

Warnings

- Avoid inhaling or direct contact with the powder in the capsules or direct contact with the oral suspension.
- Do not use a pill that is broken. The medicine from the pill can be dangerous if it gets in your eyes, mouth, nose or on your skin.
- If contact occurs, wash skin thoroughly with soap and water; rinse your eyes with plain water.
- This medicine may cause high blood pressure. Get a blood pressure monitor so that you can check your blood pressure on a regular basis at home.
- Never stop this medication on your own.
- Never allow yourself to run out of CellCept.
- Pregnancy is not recommended when taking this medication. The use of CellCept during pregnancy is associated with increased risk of miscarriage and birth defects. Women of childbearing years must use contraception. It is recommended that you use two forms of birth control when taking CellCept.
Foods, Beverages and Supplements to Avoid
None

Drug Interactions with CellCept

- Antacids will decrease the absorption of CellCept and should only be taken two hours before or four hours after CellCept.
- Magnesium supplements can decrease the absorption of CellCept and should be taken either two hours before or four hours after CellCept.
- Questran can decrease the absorption of CellCept.
- Acyclovir (Zovirax®), ganciclovir and valganciclovir can increase the blood concentrations of these drugs and the blood concentration of CellCept.

Prednisone

Purpose

Prednisone is prescribed in low doses to prevent organ rejection. It is prescribed in high doses to treat acute rejection.

How to Take Prednisone

Prednisone is taken once a day. It is best to take the dose with food to prevent stomach upset. Prednisone is supplied in 5 mg tablets. When large doses are required, 50 mg tablets are available.

As time progresses, you may be weaned off of prednisone. Do NOT stop or adjust this medication unless instructed by the transplant APN or your cardiologist.

Side Effects

The following is a list of side effects, which you may or may not experience:

- Increased risk for infection
- Poor sleep, nervousness
- Headache
- Mood swings
- Increased appetite, indigestion
- Nausea, vomiting, abdominal distension, irritation of the lining of the stomach (ulcers)
- Hair growth, acne, skin bruising, fragile skin
- Increased blood sugar (diabetes)
- Decreased potassium, especially if on a diuretic
- Joint pain, muscle wasting
- Fluid retention, rounding of the face
- Weakening of the bones (osteoporosis)
- Delayed wound healing
- Cataracts

**Storage**

Store your prednisone at room temperature and away from moisture, heat and direct sunlight. Always keep your medication away from small children.

**Missed Doses**

It is very important that you not miss any doses. If you do miss a does, take it as soon as possible, then go back to your regular dosing schedule. If you do not remember until the next day, skip the missed dose entirely.

Do not take two doses at the same time or use any extra medicine to make up the missed dose. If you have a stomach flu and are vomiting, call the transplant APN for advice.

**Warnings**

- Do not alter the dose of this medication without instructions to do so from your cardiologist.
- Do not suddenly stop this medication. You must be gradually weaned off prednisone.
- If you have diabetes, monitor your blood sugar more frequently (especially with high doses of prednisone), and inform your diabetes doctor of any increases in your blood sugar.
- If you are experiencing higher levels of anxiety and stress, inform your cardiologist.
- Annual eye exams are important when taking prednisone because the drug can increase risk for glaucoma and cataracts.
- This medicine may cause high blood pressure. Get a blood pressure monitor so that you can check your blood pressure on a regular basis at home.
- Take calcium and vitamin D supplements because prednisone makes your bones fragile and more prone to fractures.
• Prednisone will make you more sensitive to the sun. You should wear a sunscreen with an SPF of 25 or greater.
• Tell your doctor that you are on prednisone before:
  ▪ Having any skin tests
  ▪ Any kind of surgery or emergency treatment
  ▪ Treatment for an injury

Foods, Beverages and Supplements to Avoid

• Alcoholic beverages are not recommended. Alcohol irritates the stomach lining, as does prednisone, putting you at higher risk for ulcers.
• Prednisone interferes with calcium absorption. Because caffeine also affects calcium absorption, limit your caffeine intake.
• St. John’s wort may decrease prednisone levels.
• Avoid cat’s claw and echinacea; these will stimulate your immune system.

Drug Interactions

• Antacids can decrease the absorption of prednisone and should be taken two hours before or after prednisone.
• Taking diuretics with prednisone can increase the loss of potassium from your body.
• Anti-inflammatory drugs—such as ibuprofen (Advil®, Motrin®), Indocin® and Naprosyn®—can increase the irritation to your stomach when combined with prednisone.
• The anticoagulation (blood-thinning) effects of Coumadin® may be increased with prednisone. It is important to monitor your international normalized ratio (INR).

A Few Final Notes

• In the summer, wear a sunscreen with an SPF of 25 or greater because these medications put you at greater risk for skin cancer.
• See a dermatologist if you have a suspicious spot on your skin.
• These medications put you at greater risk for infection. See Infection Prevention (p. 50) for the signs and symptoms of an infection and what to do if you get an infection.
Other Medications

The medications used to suppress your immune system have side effects, which will have to be managed with other medications. These medications are described below.

Enteric Coated Aspirin (Entrophen®, Novasen®)

Aspirin is prescribed to help prevent the narrowing of the coronary arteries in the transplanted heart. You will take either 325 mg or 81 mg (a baby aspirin tablet) daily.

Nystatin (Mycostatin®)

Nystatin is prescribed to prevent yeast or thrush infections in your mouth. The usual dose of 5 ml is taken four times a day. Swish the medicine around in your mouth and hold it there for as long as possible, gargle and then swallow. You will be discharged from the hospital on this medication and will take it for a couple of months until you are on a lower dose of prednisone.

Antihypertensives (Blood Pressure Medication)

It is not unusual to have a problem with high blood pressure after a transplant. Some of the drugs used to treat high blood pressure include:

- Calcium channel blockers, such as Norvasc® and Cardizem®
- ACE inhibitors, such as Coversyl®
- Diuretics, such as Lasix® and Dyazide®

It is helpful if you have a blood pressure monitor at home so that you can check your own blood pressure. The top blood pressure number, or systolic reading, should be around 130. A top number that is more than 140 would need to be treated. The bottom number, or diastolic reading, should be around 80. A number that is more than 95 would need to be treated.

Occasionally, your blood pressure can drop too low when it is treated. The following are possible symptoms of low blood pressure. Let your cardiologist or the transplant APN know if you experience the following after starting the medication:

- Fatigue, lack of energy
- Dizziness and light-headedness when standing up and moving around
• Fainting
• Blurred vision
• Poor concentration
• Nausea
• Cold, clammy, pale skin
• Unusual thirst

To minimize these symptoms, get up slowly and move gradually from a lying to sitting and then standing position. This will decrease the sudden drop in blood pressure that you will experience if you go directly from lying to standing. If you are taking an ACE inhibitor for your blood pressure, try taking it at bedtime instead of in the morning. If these suggestions do not help decrease your symptoms, call the transplant APN or your cardiologist.

**Cholesterol Medications**

This group of drugs is used in combination with dietary therapy and exercise to decrease the levels of cholesterol and other fats in your blood. Decreasing cholesterol and fat will help prevent narrowing of the coronary arteries in the transplanted heart. Cholesterol medications include:

- Lovastatin (Mevacor®)
- Atorvastatin (Lipitor®)
- Pravastatin (Pravachol®)
- Rosuvastatin (Crestor®)
- Simvastatin (Zocor®)
- Ezetimibe (Ezetrol®)
- Fenofibrate (Lipidil Supra®)
- Gemfibrozil (Lopid®)
- Niacin (vitamin B₃)

The goal is to have total cholesterol that is less than 4.0; LDL, or bad, cholesterol of less than 2.0; HDL, or good, cholesterol of more than 1.0; and triglycerides of less than 1.7

**Antiviral Medications**

You may need to take an antiviral medication after your transplant or you may need one later on as a result of a viral infection. It would be wise for you to belong to a drug plan because these drugs can be quite expensive. These medications include:

- Valganciclovir (Valcyte®) (cite DIN #02245777 to determine if your drug plan covers this medication)
- Acyclovir (Zovirax®)
- Famciclovir (Famvir®)
- Valcyclovir (Valtrex®)
Medications for Your Stomach

You will be started on a medication to protect your stomach right after your surgery. You may be taking something already and this may be continued. These medications include:

- Omeprazole (Losec®)
- Rabeprazole (Pariet®)
- Pantoprazole (Pantoloc®)
- Esomeprazole (Nexium®)
- Ranitidine (Zantac®)
Testing of the Donor Heart

Donors have a number of blood tests to make sure their organs are safe for donation. Two of these blood tests are for cytomegalovirus (CMV) and toxoplasmosis. A positive test for CMV and/or toxoplasmosis does not mean that the donor heart is unsafe. It may mean that you need to take a few extra medications after your transplant.

About Cytomegalovirus (CMV)

Cytomegalovirus is related to the herpes virus. Eighty to 90% of the adult population has CMV. Most people are infected by the time they are two years old or during their teen years.

Most individuals do not experience any symptoms. Some will have a mononucleosis-like illness. CMV does not cause a serious illness or require treatment in the general population.

While CMV is not a concern for the general population, it is a concern for transplant patients. Based on your results and the donor’s results for CMV, you may or may not be given the antiviral medication valganciclovir for the first three months after your transplant. Valganciclovir prevents infections caused by CMV.

This medication is very expensive. Make sure it is covered by your current drug plan.

About Toxoplasmosis

Toxoplasmosis is an infection caused by the parasite *Toxoplasma gondii*, which is found in the feces of cats and in contaminated foods. You can contract the parasite by handling cat litter or soil containing contaminated cat feces. The parasite can sometimes be found in raw, unwashed vegetables and undercooked meat products, as well as in contaminated drinking water.

The number of people with toxoplasmosis increases with age and varies from 8 to 60% of the population, depending on geographical location. The parasite causes either no symptoms or a flu-like illness in healthy individuals.

Toxoplasmosis is not a concern for the general population but is a concern for someone who has had a transplant. Based on your results and the donor’s results
for toxoplasmosis, you may or may not be given the antibiotic Septra for the first year after your heart transplant. Septra prevents infections caused by toxoplasmosis. If you have an allergy to Septra, please let your transplant cardiologist know.

**General Information**

The drugs that you take to prevent rejection of your heart interfere with the body’s ability to fight infection. You will be most at risk of developing infections during the first six months after your transplant, and when you have to be treated for rejection with increased doses of your medications.

Make sure you get enough rest, eat a well-balanced diet and exercise regularly. Maintaining a healthy lifestyle will boost your resistance to infections and help you fight any you do get.

You need to be able to balance safe practices with the routines of your daily activities. **You do not need to live in a plastic bubble.** Most germs are acquired either through direct contact—usually with your hands—or breathing them in (inhalation).

**Prevention of Infection Spread Through Direct Contact**

Wash your hands (even after gloves are used) with an antimicrobial soap and water:

- Before preparing food and before eating
- Before and after touching wounds—your own or someone else’s
- Before touching mucous membranes (e.g., rubbing your eyes or touching the inside of your mouth)
- After touching pets and animals
- After gardening, touching plants or soil
- After changing diapers
- After touching secretions (e.g., saliva) and excretions (e.g., urine)
- After touching items that have been in contact with human or animal feces (e.g., bedpans, bedding, toilets, litter boxes)

Wash cutting boards, dishes, counters, utensils and hands with hot soapy water after contact with raw meat, poultry, seafood, or unwashed fruits or vegetables.
Prevention of Respiratory Infections (Infection of the Airway)

Most respiratory infections are spread through direct contact or inhalation. The following can help reduce your chances of getting a respiratory infection:

- Preventing infection from other people:
  - Wash your hands frequently and thoroughly, especially before touching mucous membranes.
  - Avoid close contact with anyone who has a cold. If this is impossible, people that are sick should wear surgical masks when near you.
  - For the first three to six months after transplant, avoid crowded places where close contact with sick individuals is possible, such as in shopping malls, public transportation and elevators.
  - Avoid children who have recently been immunized.
  - Avoid tobacco smoke. Smoking and second-hand smoke put you at risk for bacterial and viral infections.
  - Avoid exposure to people with known active tuberculosis.
  - Avoid activities or occupations where exposure to tuberculosis is more likely, such as in prisons, jails, homeless shelters and certain health care settings. Decisions about continuing to work in these environments should be discussed with your cardiologist.

- Preventing exposure to mould and fungus
  - Do not smoke marijuana. This will expose you to mould spores (Aspergillus).
  - Avoid construction, excavation and other dust-laden environments because there may be a high concentration of mould spores (Aspergillus) in these areas.
  - Avoid contact with soil, fertilizer or decaying vegetation (compost heaps), which can harbour mould. Gardening and farming are not recommended for the first year after transplant, but if this is not possible, masks can be worn.
  - Avoid areas such as chicken coops, silos and caves where bird droppings can be found. Fungal spores (Cryptococcus, Histoplasma, Coccidioides) can be spread through bird excrement. Masks should be worn if this avoidance is not possible.
Water Safety

- If there is a “boil water” advisory in your community, make sure you boil the water for at least one minute. Personal-use filters and/or bottled water may be used instead of boiling your water. Make sure the filter and bottled water are of good quality.
- Avoid water from private and public wells that are not tested regularly for bacteria.
- Do not drink water from a lake or river.
- Avoid swimming in water that is likely to be contaminated with human waste, and avoid swallowing water during swimming.

Food Safety

- Avoid drinking unpasteurized beverages and eating foods made with unpasteurized milk.
- Do not eat raw or undercooked eggs, including foods containing raw eggs.
- Avoid eating raw or undercooked meat, poultry and fish.
- Freeze meat for several days before cooking. This reduces the chance of infection.
- Avoid all raw or undercooked seafood, raw seed sprouts and raw green onions.
- Avoid cross-contamination when preparing food. Keep cooked and raw foods separate; use cleaned or separate cutting boards.
- Avoid soft cheeses (feta, Brie, Camembert) and cheese made with unpasteurized milk.
- Fruits and vegetables should be washed well; fast food restaurants and salad bars are best avoided.
- Hot dogs and turkey franks should be thoroughly cooked.
- Leftovers should be reheated to steaming hot.
- Community picnics and buffet events are best avoided as food is often left at room temperature for too long.

Animal Contact and Pet Safety

- Avoid contact with animals that have diarrhea.
- Be careful about what your pet eats and drinks. Do not allow your pet to eat raw meat, garbage or another animal’s stool or to drink water from the toilet bowl.
- Wash your hands carefully after handling pets.
- Avoid cleaning birdcages, litter boxes and animal feces. If this is not possible, disposable gloves and a standard surgical mask should be worn. Cat litter boxes should be changed daily.
- Avoid contact with stray animals; you could get scratched or bitten.
- Avoid animal scratches.
• Avoid contact with reptiles, chicks or ducklings.
• Wear gloves to clean an aquarium.
• Avoid acquiring pets, especially cats that are younger than one year of age.
• Do not let your pet lick your mouth or any open cuts or wounds.
• Avoid exotic pets, such as monkeys and ferrets, and wild animals, such as raccoons, bats and skunks.
• Avoid mosquito bites. Using insect repellent and staying indoors at dawn and dusk can help prevent exposure to West Nile virus during mosquito season.
• Cover sandboxes.

Safe Sexual Practices

When not in a long-term monogamous relationship, always use latex condoms during sexual contact to avoid exposure to sexually transmitted diseases. Avoid exposure to feces during sexual activity.

Travel Safety

Get expert travel advice, including a review of your vaccination status prior to travelling to tropical or developing countries. A travel medical consultation should be completed four to six weeks prior to your vacation. Review with the travel medical consultant which vaccines are safe for transplant patients.

The following travel clinic is recommended:

Tropical Medicine and International Health Clinic at the Ottawa Hospital, General Campus
Dr. Anne McCarthy
613-737-8856

Websites with Travel Information

Public Health Agency of Canada

Centers for Disease Control and Prevention
http://wwwnc.cdc.gov/travel

Travel Health Online
  • Website registration required
  • Reviews required vaccines, travel clinic, travel advisories and other issues
While travelling in developing countries, you should:

- Avoid tap water as well as ice and beverages made with tap water.
- Avoid fresh fruit juices.
- Drink only bottled water or canned beverages.
- Eat only fruits and vegetables that can be peeled.
- Eat steaming hot foods.
- Follow the warnings found in the “Food Safety” section.

Finally, be flexible when planning your travel. By making small changes in your itinerary, you may be able to lower your risk for certain infections. Wherever you go, make sure you have travel insurance.

**Vaccinations**

You and your family should make sure that your vaccinations are up to date. Here are some helpful hints for vaccinations:

- Live vaccinations are not administered to transplant patients. Examples include Sabin oral polio, measles, mumps, rubella, yellow fever or smallpox.
- Inhaled influenza vaccine is a live vaccine and should not be administered to transplant recipients or their family members.
- Discuss the timing of vaccinations after heart transplant with your cardiologist. The general rule is that vaccinations can resume one year following transplant surgery.
- Sometimes the vaccinations given after transplant do not last as long. The levels (titers) of some vaccines in your blood can be monitored to determine if they are still high enough.
- Pnuemovax, for pneumonia, should be repeated regularly (every three to five years) after transplantation.
- Travel vaccines should be reviewed with your cardiologist or travel medical consultant.
Vaccinations that are safe and recommended after transplant:

<table>
<thead>
<tr>
<th>Vaccine Type</th>
<th>Recommended after Transplant</th>
<th>Monitor Vaccine Titers/Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tetanus</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><em>S. pneumoniae</em></td>
<td>Yes. This should be administered before transplantation and repeated every three to five years after initial vaccination.</td>
<td>Yes</td>
</tr>
<tr>
<td><em>N. meningitidis</em></td>
<td>Yes. Recommended only for college freshmen, members of the military or travellers to high-risk areas.</td>
<td>No</td>
</tr>
<tr>
<td>Rabies</td>
<td>Yes. Recommended only for exposures or potential exposures because of occupation or hobby.</td>
<td>No</td>
</tr>
</tbody>
</table>
Signs and Symptoms of Infection

It is important for you to be able to recognize the signs and symptoms of an infection and to report these as soon as possible to your family doctor, cardiologist or transplant APN. The earlier the treatment, the better the outcome. Call the transplant APN if you are unsure about your condition and what you should do.

The signs and symptoms of common sites of infections, along with the actions to take, are described in the following table.

<table>
<thead>
<tr>
<th>Sites and Conditions</th>
<th>Signs and Symptoms</th>
<th>Actions</th>
</tr>
</thead>
</table>
| **Lungs**            | • Fever above 38 °C with or without chills  
                       • Persistent cough  
                       • Sputum that is brownish, yellow or green  
                       • Chest pain that is aggravated by a cough or deep intake of breath  
                       • Shortness of breath  
                       • Faster pulse rate  
                       • Aches and pains, increased tiredness  
                       • Headache, decreased appetite | ✓ See your family doctor  
                                                                                 ✓ If you are prescribed an antibiotic check for interactions between the antibiotic and your medication with your pharmacist  
                                                                                 ✓ If your pharmacist cannot give you an answer about interactions call the Transplant APN |
| **Sinuses**          | • Yellow or green mucous  
                       • Pain around your eyes and nose  
                       • Head pain when bending over |           |
<table>
<thead>
<tr>
<th>Sites and Conditions</th>
<th>Signs and Symptoms</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skin</strong></td>
<td>• A cut or wound that is red, swollen and warm to the touch</td>
<td>✓ Clean any cuts, wounds right away</td>
</tr>
<tr>
<td></td>
<td>• A cut or wound that is draining yellow or green liquid</td>
<td>✓ See your family doctor if an infection is suspected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Go to the nearest ER if you require stitches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Call the transplant APN or your cardiologist if you notice a cold sore or shingles. Antivirals are needed to treat this.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Antivirals do not interact with your medications but the dose may need to be adjusted according to your kidney function. Check this with your pharmacist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ If you are prescribed an antibiotic check for interactions between the antibiotic and your medication with your pharmacist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ If your pharmacist cannot give you an answer about interactions call the Transplant APN</td>
</tr>
<tr>
<td><strong>Cold Sores (Mouth)</strong></td>
<td>• Sores on your lips, in your mouth or down your throat</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Discomfort when swallowing</td>
<td></td>
</tr>
<tr>
<td><strong>Shingles</strong></td>
<td>• A rash with fluid filled blisters that travels in a straight line on one side of the body, usually on the chest, but may occur anywhere</td>
<td></td>
</tr>
<tr>
<td>Sites and Conditions</td>
<td>Signs and Symptoms</td>
<td>Actions</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Stomach and Bowels</td>
<td>• Diarrhea, nausea or vomiting</td>
<td>✓ Make sure you are able to take your medication and keep it down</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Take Gravol 30 minutes to one hour before your medications are due if you are experiencing nausea and vomiting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Sip small amounts of fluid throughout the day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ Eat food that is easy on your stomach: bananas, apple sauce, tea biscuits or toast (BRAT diet)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ If you are not able to take your medications or keep any fluids down, call the transplant APN, your family doctor or go to the nearest emergency department</td>
</tr>
<tr>
<td>Urinary Tract or Bladder Infection</td>
<td>• Burning or stinging when urinating</td>
<td>✓ See your family doctor</td>
</tr>
<tr>
<td></td>
<td>• Frequent urination with little output</td>
<td>✓ If in doubt, call the transplant APN</td>
</tr>
<tr>
<td></td>
<td>• Cloudy or a foul-smelling urine</td>
<td>✓ Antivirals do not interact with your medications but the dose may need to be adjusted according to your kidney function. Check this with your pharmacist</td>
</tr>
<tr>
<td></td>
<td>• Bloody urine</td>
<td></td>
</tr>
<tr>
<td>Genital Herpes</td>
<td>• Painful sores in the genital area</td>
<td>✓ If you are prescribed an antibiotic check for interactions between the antibiotic and your medication with your pharmacist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✓ If your pharmacist cannot give you an answer about interactions call the Transplant APN</td>
</tr>
</tbody>
</table>
Physiotherapy and Rehabilitation

Pre-transplant

In the pre-transplant phase, the physiotherapist will be involved in your care with the following goals in mind:

- Assessing your past and present level of function and exercise tolerance.
- Teaching you general principles of exercise and how to self-monitor your response to activity.
- Initiating, when possible, an individualized exercise program that will improve your flexibility, strength and endurance in preparation for your transplant. This may be started in hospital if you remain hospitalized as you wait for your transplant or given as a home program. We know that your exercise capacity is limited pre-transplant, but staying active before transplantation will help with your recovery after surgery.
- Reviewing the post-operative physiotherapy routine and explaining the role of physiotherapy in this phase.

Post-transplant

In the post-transplant phase, the physiotherapist will first start to work with you in the intensive care area. The main goals of physiotherapy post-transplant are:

- Assisting you in keeping your lungs clear and well expanded. You will be taught to perform deep breathing and coughing exercises. If required, the physiotherapist will use hands-on techniques to assist you with secretion clearance.
- Helping you improve your strength and flexibility. You will be shown specific arm and leg exercises similar to those done in the pre-transplant phase.
- Helping you improve your endurance. This will begin with daily walks that will progressively become longer as your condition improves. Once your program is determined, the nurses will also assist you with your walks. When you are steady on your feet and your condition is stable, you will be expected to do some of the exercise sessions on your own while in hospital. This will help to improve your confidence in exercising independently.
- Reviewing general exercise principles as they apply to transplant recipients and the self-monitoring tools introduced in the pre-operative phase.
- Preparing you for discharge home. Your physiotherapist will give you a home exercise program and talk to you about cardiac rehabilitation program options.
Outpatient Cardiac Rehabilitation

It is vital after transplantation that you continue leading a heart-healthy lifestyle. Cardiac rehabilitation programs can help you manage risk factors such as high blood sugar, high blood pressure, elevated cholesterol, weight gain, inactivity and stress.

Cardiac rehabilitation programs usually include specific information and assistance with physical activity, nutrition, stress management, return-to-work counseling and other social and emotional services to help you develop a plan that is specific to your needs. There is assistance to help you to remain smoke-free, if you need it.

At the University of Ottawa Heart Institute, there are two program options. The primary, on-site program is for participants who are able to come to the Heart Institute twice a week to exercise as part of a group. The case-managed home program is for participants who prefer to exercise at home and receive weekly guidance and answers to questions by phone. No matter which option you choose, you will be encouraged to demonstrate commitment and to set goals and priorities for the lifestyle changes you wish to make.

If you live too far away to benefit from the rehabilitation services of the Heart Institute, your physiotherapist will endeavour to find a cardiac rehabilitation program near you and assist you with the referral process.

Exercise Guidelines Pre- and Post-Transplant

Exercise Components

Once assessed by the physiotherapist, you will be performing various exercises included in the following sections of the Transplant Guide. Your physiotherapist will help you determine which exercises you may start. Your program will progress to include all of the components outlined below. In the pre-transplant phase, only a partial program may be possible.

1. **Warm-up**: General exercises involving lying/sitting/standing, range of movement and strengthening

2. **Aerobic Training (peak activity)**: Walking, stationary bike, treadmill, light weights

3. **Cool-down**: Slower activity and stretching
Each of the above components is important to any exercise program. The warm-up and cool-down components allow your heart and limbs to adjust to the more strenuous peak activity you will perform.

During the warm-up and the cool-down, your heart receives messages from nerves, which cause the heart rate to speed up and slow down. A transplanted heart, however, behaves differently. Your new heart relies on special chemicals in your bloodstream called catecholamines. These chemicals will allow your heart to respond to exercise, only more slowly than before. For this reason, the warm-up and cool-down components of your exercise program are even more important after transplantation.

**Self-monitoring**

You will be taught to use three methods of monitoring your exercise response. You will also be given a log sheet to use as a daily record of your progress.

1. **Dyspnea Index**

   The Dyspnea Index measures of shortness of breath by counting out loud from 1 to 15 in eight seconds. The goal is to stay at level 2 or better:

   - **Level 0:** Can count to 15 without taking a breath in the middle of the sequence
   - **Level 1:** Must take 1 breath in the middle of the sequence
   - **Level 2:** Must take 2 breaths
   - **Level 3:** Must take 3 breaths
   - **Level 4:** Must take 4 breaths

2. **Rating of Perceived Exertion (RPE) Scale**

   This is a number-based scale used to describe the level of effort required to perform a task, activity or exercise. The number you choose should reflect your overall level of effort and fatigue (exertion). There is no right or wrong answer.

   For exercise, your rating should be between 3 and 5 on the scale.

   **RPE Scale**

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Nothing at all</td>
</tr>
<tr>
<td>1</td>
<td>Very easy</td>
</tr>
<tr>
<td>2</td>
<td>Easy</td>
</tr>
<tr>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>Somewhat difficult</td>
</tr>
<tr>
<td>5</td>
<td>Difficult</td>
</tr>
<tr>
<td>6</td>
<td>More difficult</td>
</tr>
<tr>
<td>7</td>
<td>Very difficult</td>
</tr>
<tr>
<td>8</td>
<td>+</td>
</tr>
<tr>
<td>9</td>
<td>++</td>
</tr>
<tr>
<td>10</td>
<td>Very, very difficult (almost maximal)</td>
</tr>
</tbody>
</table>
3. Pulse Measurement

- **When:** Take your pulse at rest, during or immediately after peak exercise and at the end of cool-down.

- **Where:** May be taken at the radial artery (palm side and thumb side of your wrist) or at the carotid artery (side of your neck in front of the muscle that runs between the back of your ear and the front of your chest).

- **How:** Count the number of beats you feel in 10 seconds and multiply by six. You must begin counting with zero instead of one. This will tell you the number of times your heart beats in one minute. This is known as your heart rate or pulse.

- **Why:** The guideline to follow, especially when first starting an exercise program post-transplantation, is to limit yourself to 20 to 30 beats over your resting heart rate. This range provides you with a safe limit for exercising your heart and getting a training effect.

Remember, it is important that you feel comfortable with exercise. If you feel light-headed or dizzy, have nausea caused by exercise, have chest pain or new leg pain, have excessive fatigue or shortness of breath, you should stop exercising, rest and contact your health care team before resuming exercise.
Helpful Physical Activity Tips

**Eating:** It is best to wait an hour after a meal before you exercise. This is because extra energy is required for digestion.

**Pace and Intensity:** Exercise at a level that allows you to maintain light conversation during the activity.

**Terrain:** Walk on flat ground initially. If you cannot avoid hills, walk slower when going uphill.

**Weather:** Avoid exercising in extreme temperatures. If it is very hot and humid, walk earlier in the morning and later in the evening. If it is extremely cold and windy, it may be best to exercise indoors or during the middle of the day.

**Progression:** If you miss a day of exercise, resume your program at the same level the next day instead of increasing your activity level. If you miss two or more days, reduce the amount of exercise for the next session. If you have been ill, it is best to contact your health care team before resuming your exercise program.
Home Exercise Program Pre-transplant

If you are sent home to wait for your transplant, you may be able to start a limited exercise program. Your physiotherapist will let you know what would be appropriate to start with at home. It is understood, however, that your condition may change while you wait and your exercise program may have to be adjusted accordingly or even halted. This is why it is important to self-monitor your response to exercise or activity.

Warm-up:

Aerobic Exercise:

Cool-down:

If you have any questions about your exercise program pre-transplant, please call the number below and leave a message for your physiotherapist.

613-798-5555 x13102

Physiotherapist: ____________________________________
Physical Activity Log Pre-transplant

**Target Heart Rate Range:** 20 to 30 beats above resting heart rate

<table>
<thead>
<tr>
<th>Date</th>
<th><strong>Morning Exercise</strong></th>
<th><strong>Afternoon Exercise</strong></th>
<th><strong>Comment/ Symptoms</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HR Pre</td>
<td>Warm-up</td>
<td>Dyspnea Index</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>
Home Exercise Program Post-transplant

Please refer to the exercise guidelines in the pre-transplant phase for further details.

Once you are home, you are expected to continue performing exercise on a daily basis. It is important that you continue to include a warm-up, aerobic training and a cool-down. The physiotherapist has developed a physical activity program for you to complete during your first weeks at home. This program will progress when you start cardiac rehabilitation according to your abilities and personal activity goals.

Warm-up:

Aerobic Exercise:

Cool-down:

If you have any questions about your exercise program post-transplant, please call the number below and leave a message for your physiotherapist.

613-798-5555 x13102

Physiotherapist: ____________________________
# Physical Activity Log Post-transplant

**Target Heart Rate Range:** 20 to 30 beats above resting heart rate

<table>
<thead>
<tr>
<th>Date</th>
<th>Morning Exercise</th>
<th>Afternoon Exercise</th>
<th>Comment/Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

- **HR Pre**: Heart rate before exercise
- **Warm-up**: Warm-up duration
- **Dyspnea Index**: Dyspnea index during exercise
- **RPE**: Rating of Perceived Exertion during exercise
- **HR Duration/Distance**: Heart rate during exercise duration/distance
- **Cool-down**: Cool-down duration
- **HR Post**: Heart rate after exercise
- **HR Pre**: Heart rate before exercise
- **Warm-up**: Warm-up duration
- **Dyspnea Index**: Dyspnea index during exercise
- **RPE**: Rating of Perceived Exertion during exercise
- **HR Duration/Distance**: Heart rate during exercise duration/distance
- **Cool-down**: Cool-down duration
- **HR Post**: Heart rate after exercise

__Note:__ The table is designed to track physical activity details for both morning and afternoon exercises, including heart rate, dyspnea index, ratings of perceived exertion, and cool-down periods. Comments or symptoms related to exercise can also be recorded in the designated column.
Sitting Exercises

Deep Breathing
Place hands on stomach and take a deep breath. Feel hands move out. Exhale fully and feel hands move in. Repeat deep breaths ____ times.

Shoulder Flexion
Lift one arm straight up and over your head as far as possible while you inhale. Return arm to your side as you exhale. Repeat ____ times with each arm.

Trunk Rotations
With feet flat, turn upper body as far as possible toward one side. Hold for three seconds. Return to starting position. Repeat ____ times to each side.

Shoulder Exercise
Lift both shoulders up as high as you can, and let them relax down. Repeat ____ times.
Standing Exercises

Ankle Exercise
Sit with your back straight and hands in your lap or at your sides. Straighten one knee, pulling your toes towards you. You will feel pulling in your calf and the muscles in your thigh will tighten. Move your ankle back and forth 3 times then lower your leg slowly. Repeat _____ times with each leg.

Knee Raise
Raise knee up toward your chest and then lower it to the starting position. Repeat with other knee. Keep alternating right and left. Repeat ____ times.

Toe Raises
Gently rise up on toes, then roll back on heels. Repeat ____ times.

Mini Squat
Holding a stable surface for balance, slowly bend knees. Keep both feet on the floor. Repeat ____ times
Hip Abduction
Holding a stable surface, move one leg straight out to your side. Return to starting position. Keep back straight and avoid leaning over when bringing your leg out. Repeat ____ times with each leg.

Hip/Knee Flexion
Holding a stable surface, raise knee to hip level, then lower knee. Repeat ____ times with each leg.

Trunk Rotation
With hands on hips and feet slightly apart, turn your upper body as far as possible toward one side. Hold for three seconds. Return to starting position. Repeat ____ times to each side.

Trunk Lateral Flexion
Stand with feet shoulder width apart, knees soft. Slide arm down side of body toward your knee. Hold for three seconds. Return to starting position. Repeat ____ times to each side.

Shoulder Flexion
Place arms at your sides. Slowly raise one arm straight up and over your head as far as possible while you inhale. Return arm to your side as you exhale. Repeat ____ times with each arm.

Shoulder Exercise
Lift both shoulders up as high as you can, and let them relax down. Repeat ____ times.
Lower Leg Stretching Exercises

After you walk, we recommend that you stretch your legs. You may support yourself on the wall, but do not put too much weight through your arms.

Keeping back leg straight with heel on floor and toes pointing forward, lean into wall until a stretch is felt in calf. Hold ____ seconds. Repeat with other leg. Repeat ____ times. Do ____ sessions per day.
Living a healthy lifestyle is very important after your transplant. Now that you are ready to “get on with your life,” it is time to begin a nutrition plan that will help keep you and your heart healthy.

There are three goals to healthy eating:

1. **Eat a wide variety of foods**
   - Every day enjoy:
     - Fruits and vegetables rich in nutrients, such as potassium, magnesium, vitamins A and C, and fibre
     - Whole-grain breads, cereals, brown rice and whole-wheat pastas rich in fibre
     - Lean meats, chicken and fish rich in protein
     - Low-fat milk, yogurt and cheeses rich in calcium and vitamin D

2. **Control your risk factors for coronary heart disease, including your weight and waist size**
   - Too much body weight may increase your cholesterol, triglycerides and glucose. This can increase your risk for heart disease, even if you did not have heart disease before your transplant.
   - Be aware of how much you eat. It is important to reach and keep a healthy body weight. Most people gain weight in the first year after transplant. This is because they are better able to digest food and feel better. Transplant patients gain an average of 10 to 20 pounds, but some gain more than that.
   - Extra weight, especially around your waist, means your heart has to work harder. It is easier to prevent weight gain than it is to lose it once you have put it on!

3. **Lessen the nutrition-related side effects of your immunosuppressive drugs, which include:**
   - Salt and fluid retention
   - Loss of potassium
   - Loss of calcium
   - Increase in hunger and the resulting weight gain due to overeating
   - Increase in sugar, fats and cholesterol in the blood
Some Helpful Dietary Hints

- Eat three meals daily, using the plate pictured below as a guideline for portion sizes, instead of one or two large meals. Enjoy a small snack if you wish.
- Plan your meals ahead of time (see sample meal plans).
- Eat slowly; allow your body time to tell you it is full.
- Remember that how much you eat counts.
- Choose smaller servings (a small instead of large potato, ¾ cup of rice instead of 1 cup, 4 ounces chicken breast instead of 6 or 8 ounces). Filling your plate as suggested in the picture on the next page will help guide the variety of foods and amounts you eat.
- Use a list when buying groceries and do your shopping after you have eaten. You will be less likely to make impulse purchases.

A Closer Look at Foods to Choose and Enjoy

Fruits and Vegetables (Aim to fill half of your plate)

- Choose more dark green, red and orange fruits and vegetables daily. Examples include tomatoes; red, yellow or green peppers; sweet potatoes, broccoli, peas, carrots, red cabbage, apricots, oranges, mango, all berries, dried fruit, kiwi and melons.
- Include fruit when choosing a dessert or snack.
- Choose fresh or frozen vegetables instead of canned.
Grains (Starch) (Aim to fill one-quarter of your plate)

- Choose high-fibre cereals, such as oatmeal, shredded wheat and All-Bran Bran Buds® with psyllium.
- Choose whole-grain breads, such as whole wheat, multigrain, pumpernickel and rye.
- Choose brown rice, barley, quinoa, bulgur and whole-wheat pasta.
- Add 1 tablespoon ground flax seed to salads, cereal, soups, yogourt, casseroles and baked goods. Purchase flax as meal or grind the seeds in a coffee grinder and store in an airtight container in the freezer.
- Enjoy air-popped popcorn or light microwave popcorn, unsalted pretzels, homemade bagels, pita chips, vanilla wafers and ginger snaps.
- Only on rare occasions, eat commercial products that are high in harmful trans fats and/or salt: cream-filled or shortbread cookies, pies, croissants, doughnuts, pastries, cake-like muffins and salty snack foods.

Meats and Meat Alternatives (Protein) (Aim to fill one-quarter of your plate)

- Select only lean cuts of meat and trim all visible fat. Remove skin from poultry before cooking.
- Choose fish two to four times per week. Examples include salmon, tuna, mackerel and sardines. Avoid deep-fried batter-coated fish.
- Include meatless meals a few times a week. Enjoy vegetarian chili, burritos with beans, split pea or lentil soup, hummus, meatless curries, baked beans, tofu, soy burgers and Veggie Ground Round™.
- Choose omega-3 eggs more often than regular eggs to a maximum of two to three eggs per week.
- Use healthy cooking methods, such as baking, broiling, stir frying, steaming, roasting, poaching, grilling and barbecuing.
- Only on rare occasions, eat deli meats, such as bolognas, salami, sausage, bacon, hot dogs and pepperoni, which are high in harmful fats and salt.

Milk Products

- The recommended daily intake for calcium is 1,500 mg and for vitamin D is 400 IU. If you are not a milk drinker, it is recommended that you take a supplement.
- Choose lower fat dairy products, including skim milk and plain or fruit yogourt with 1% milk fat (MF) or less, frozen yogourt, ice milk and lower fat cheese with 15% MF or less.
• Only on rare occasions, eat regular milk products, such as whole milk, butter, cheese, sour cream and cream cheese.

Fats and Oils
Healthy unsaturated fats can help to improve your lipid (cholesterol) profile.
• Choose olive or canola oils, safflower, sunflower, corn, sesame, walnut or peanut oil. When cooking with oil, heat at a medium temperature.
• Choose non-hydrogenated margarines.
• Choose lower fat varieties of mayonnaise, salad dressings and sour cream.
• Choose natural nut butters (peanut, almond, hazelnut).
• Enjoy unsalted nuts and seeds. These foods not only contain healthy fats but are loaded with calories, so have a handful, not a bowlful!
• Only on rare occasions, eat butter, lard and hydrogenated fats, such as shortening and hard margarine.
• Only on rare occasions, eat deep fried foods, including snack foods made with hydrogenated vegetable oils.
• Read the nutrition labels, compare similar items and choose those with less saturated and trans fat.

A Word about Salt
It is recommended that you continue to follow a lower sodium diet of 2 g per day. Some points to help you keep your salt intake down include:

• Season your food with fresh or dried herbs, unsalted spices, lemon juice and flavored vinegars. Try premade seasoning blends, such as Mrs. Dash® or McCormick No Added Salt®.
• Avoid adding salt in cooking and at the table.
• Only on rare occasions, eat processed foods, such as deli meats, canned/packaged soups, pickles, soy sauce, salted snack foods, commercial meat coatings, frozen dinners, vegetable juices, canned vegetables and fast foods.
• Read the nutrition labels, compare similar items and choose foods with less sodium.

A Word about Alcohol
Alcohol consumption should be eliminated or severely restricted after your transplant. Alcoholic drinks are high in calories, low in nutrients and can increase the level of triglycerides in your blood. Even more important is the fact that alcohol can harm your liver's function. Cyclosporine and other medications are broken down in the liver. So, for your medications to work properly and safeguard your new heart from rejection, it is important that your liver be healthy and work well.
If you have a history of high alcohol intake, you should not drink alcohol. Otherwise, an occasional drink is allowed on special occasions.

- Limit alcohol to a maximum of one serving.
- One serving equals 45 ml (1.5 ounces) of liquor, 355 ml (12 ounces) of beer or 125 ml (4 ounces) wine.
- Add club soda to wine for a wine spritzer or diet ginger ale to beer for a beer chaser.

A Word about Sugar

High blood glucose (sugar) levels are common after transplant, even if you have no history of hyperglycemia or diabetes. You may require added medications to manage your blood sugar. Following the suggestions already mentioned above will help to keep your blood glucose levels in the normal range. Below are some additional tips:

- Limit sugars and sweets, such as refined sugar, regular soft drinks, fruit drinks, candies, jams, syrups and honey.
- Choose sugar-reduced products.
- Increase fibre intake.
- Eat three meals daily at regular times, including breakfast.
- Space your meals no more than six hours apart. You may benefit from a healthy snack. A snack should be taken at least two hours after a meal.

The University of Ottawa Heart Institute offers Heart Healthy Nutrition Workshops throughout the year. For a schedule of class times, call 613-761-4753, or visit www.ottawaheart.ca/heart_disease/pwc.htm
## Heart Healthy Eating

### Sample Meal Plan 1

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breakfast</strong></td>
<td>175 ml (¾ cup) oatmeal or cream of wheat with:</td>
</tr>
<tr>
<td></td>
<td>• 10 ml (2 tsp.) ground flax seed</td>
</tr>
<tr>
<td></td>
<td>• 5 ml (1 tsp.) brown sugar</td>
</tr>
<tr>
<td></td>
<td>• 250 ml (1 cup) skim milk</td>
</tr>
<tr>
<td></td>
<td>• 125 ml (½ cup) frozen or fresh berries</td>
</tr>
<tr>
<td></td>
<td>1 (35 g) toasted whole-grain bread</td>
</tr>
<tr>
<td></td>
<td>5 ml (1 tsp) non-hydrogenated margarine</td>
</tr>
<tr>
<td></td>
<td>1 cup coffee or tea (optional)</td>
</tr>
</tbody>
</table>

| **Lunch** | Turkey sandwich:                                                 |
|           | • 2 slices whole-grain bread                                     |
|           | • 10 ml (2 tsp.) non-hydrogenated margarine                      |
|           | • 50 g (2 oz.) sliced turkey                                      |
|           | • romaine lettuce                                                |
|           | • sliced tomato                                                  |
|           | • pepper                                                         |
|           | 500 ml (2 cups) tossed green salad                               |
|           | Salad dressing (mix: 1 tsp. olive oil, 2–3 tsp. balsamic or white vinegar) |

| **Snack** | 1 medium fruit (pear, apple or orange)                           |
|           | 175 g (¾ cup) low-fat fruit yogourt                              |
|           | 6 (30 g) whole grain crackers                                    |

| **Supper** | 75–100 g (3–4 oz.) Grilled Halibut Steaks* with Tomato Salsa (see recipe on next page) or 75–100 g (3–4 oz.) poultry or lean meat |
|            | 250 ml (1 cup) steamed broccoli and carrots drizzled with lemon and 5 ml (1 tsp.) olive oil |
|            | 250 ml (1 cup) cooked rice or couscous                           |
|            | 125 ml (½ cup) peach or banana slices with                       |
|            | 125 ml (½ cup) frozen yogourt                                    |

*Other fish can be used in this recipe.

**Note:**
- If you drink coffee or tea, use milk instead of cream and use sugar in moderation.
- Sodium content is based on no salt added to cooking or at the table.
Nutritional Information for Sample Meal Plan 1

<table>
<thead>
<tr>
<th>This Menu</th>
<th>Recommendation</th>
<th>Servings from Canada’s Food Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories: 1,800</td>
<td></td>
<td>Vegetables &amp; fruit: 7</td>
</tr>
<tr>
<td>Total fat: 43 g</td>
<td>less than 60 g</td>
<td>Grain products: 7</td>
</tr>
<tr>
<td>Saturated fat: 11 g</td>
<td>less than 15 g</td>
<td>Milk &amp; alternatives: 2</td>
</tr>
<tr>
<td>Fibre: 30 g</td>
<td>25–35 g</td>
<td>Meat &amp; alternatives: 2</td>
</tr>
<tr>
<td>Sodium: 1,565 mg</td>
<td>less than 2,000 mg</td>
<td></td>
</tr>
</tbody>
</table>

Recipe: Grilled Halibut Steaks with Tomato Salsa

1½ lb. halibut steaks*

Tomato Salsa Sauce

½ cup finely diced cucumber
½ cup finely diced sweet red pepper
2 tbsp. finely diced red onion
1 small ripe tomato, finely diced red wine vinegar
2 tsp. chopped fresh coriander (optional)
Dash hot pepper sauce
1 tsp. olive oil
⅛ tsp. salt and pepper to taste

In bowl, combine cucumber, red pepper, onion, tomato, vinegar, coriander (if using), hot pepper sauce and oil; stir to mix. In food processor, purée half of the salsa mixture; combine with remaining salsa.

On greased grill over medium heat or in broiler, grill fish, turning once, for about four minutes on each side or until fish flakes easily with a fork. Place on serving platter or plates and spoon salsa over.

Makes four servings.

Source: The New Lighthearted Cookbook, Anne Lindsay.
Sample Meal Plan 2

| Breakfast          | 175 g (¾ cup) Cheerios or Bran Flakes  
|                   | 30 ml (2 tbsp.) All-Bran Bran Buds® or 5 mL (1 tsp) psyllium*  
|                   | 250 ml (1 cup) skim milk  
|                   | 1 banana  
|                   | 1 cup coffee or tea (optional)  
| Lunch             | Pita with Salmon Salad:  
|                   | • 1 whole-wheat pita bread  
|                   | • 50 g (2 oz.) canned salmon mixed with  
|                   | • 1 tbsp. lemon juice  
|                   | • 1 tbsp. light mayonnaise  
|                   | • chopped celery and parsley  
|                   | 250 ml (1 cup) raw veggies, such as cucumber, carrots and peppers  
|                   | 1 orange or 2 kiwi  
| Snack             | 1 oz. (30 g) light cheese (15% MF)  
|                   | 1 apple or 125 ml (½ cup) grapes  
| Supper            | 90 g (3 oz.) Barbecued Lemon Chicken (see recipe)  
|                   | 250 ml (1 cup) mixed vegetables, such as cauliflower, broccoli and asparagus) stir fried with 1 tsp. olive oil and herbs of your choice  
|                   | 250 ml (1 cup) pasta or 1 medium potato  
|                   | 5 ml (1 tsp.) oil or non-hydrogenated margarine  
|                   | 175 g (¾ cup) low-fat fruit yogourt  

* Psyllium is available in most grocery stores, bulk food or natural food stores.

**Low-Sodium Cooking Tips:**
Use less salt in cooking and at the table. To add flavour to your meals, use:
- Fresh or dried herbs and unsalted spices
- Lemon juice and vinegars
- Mrs. Dash™ or McCormick No Added Salt™ seasoning blends
### Nutritional Information for Sample Meal Plan 2

<table>
<thead>
<tr>
<th>This Menu</th>
<th>Recommendation</th>
<th>Servings from Canada’s Food Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories: 1,500</td>
<td>less than 50 g</td>
<td>Vegetables &amp; fruit: 7</td>
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<tr>
<td>Total fat: 36 g</td>
<td>less than 11 g</td>
<td>Grain products: 5</td>
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<tr>
<td>Saturated fat: 10 g</td>
<td>25–35 g</td>
<td>Milk &amp; alternatives: 2</td>
</tr>
<tr>
<td>Fibre: 27 g</td>
<td></td>
<td>Meat &amp; alternatives: 2</td>
</tr>
<tr>
<td>Sodium: 1,420 mg</td>
<td>less than 2,000 mg</td>
<td></td>
</tr>
</tbody>
</table>

### Recipe: Barbecued Lemon Chicken

4 boneless, skinless chicken breasts
Juice of 1 lemon
2 tsp. olive oil
2 cloves garlic, minced
1 tsp. dried oregano
Pinch cayenne pepper

In shallow dish, arrange chicken in single layer.
In small dish, combine lemon juice, oil, garlic, oregano and cayenne; mix well.
Pour over chicken and turn to coat both sides. Let stand at room temperature for
20 minutes or cover and refrigerate up to six hours.
On greased grill, cook chicken over medium heat for four to five minutes on each
side or until meat is no longer pink inside.
Alternatively, chicken can be cooked in a large skillet over medium-low heat,
turning often, until chicken is tender, about 35 to 45 minutes.

Makes four servings.

Source: *The New Lighthearted Cookbook* by Anne Lindsay
Ontario East Transplant Support Group (OETSG)

The Ontario East Transplant Support Group is a non-profit organization whose mission is to provide support, knowledge and encouragement to those who are either pre- or post-organ/tissue transplant. In addition, the OETSG seeks to inform the public through seminars and presentations about the need and benefits to others of organ donation.

You may find the web page for the OETSG through the following link: www.oetsg.com/index.php

Contact for the various chapters is as follows:

Kingston OETSG
c/o 351 Quarry Pond Court
Kingston, Ontario K7K 7L5

Ottawa OETSG
c/o 1750 Courtwood Crescent, Suite 300
Ottawa, Ontario K2C 2B5

Peterborough OETSG
c/o 613 Ludgate Street
Peterborough, Ontario K9H 2B9

Quinte OETSG
c/o 134 County Road 16
RR #2
Milford, Ontario K0K 2P0
Canadian Transplant Association (CTA)

The Canadian Transplant Association was created in 1987 to raise awareness about organ donation and celebrate the success of transplants in saving lives.

It is a non-profit organization comprised of transplant recipients, athletes and volunteers dedicated to promoting organ donation through public advocacy and events, including the National Transplant Games and World Transplant Games. It is also a support network, offering programs to help donors and recipients live full lives after transplantation. The CTA has a speaker’s bureau in each region in Canada. You may contact the association through its web site or toll-free number if you have a request.

The web page for the CTA may be accessed through the following link:
www.organ-donation-works.org/english/abo-mission.htm

Contacts for the CTA are as follows:

Dave Smith, President
Canadian Transplant Association
11230-72 Avenue
Edmonton, Alberta T6G 0B5
Email: davidsmith@txworks.ca

Neil Folkins, Membership Development,
Canadian Transplant Association
11649 St. Albert Trail
Edmonton, Alberta T5M 3L6
Email: neilfolkins@txworks.ca

Toll free: 1-877-779-5991

Links to Other Associations

American Heart Association: Transplant Living:
www.heart.org www.transplantliving.org

Canadian Association of Transplantation: Transplant Recipients International Organization
www.transplant.ca www.trioweb.org

Heart and Stroke Foundation: Trillium Gift of Life:
www.heartandstroke.com www.giftoflife.on.ca