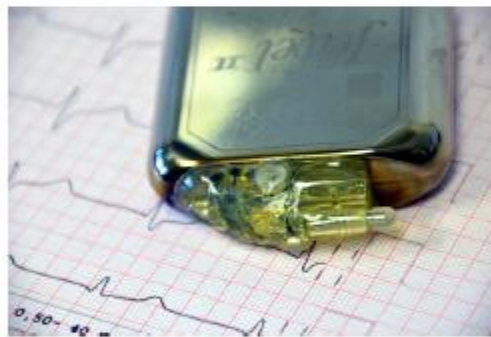




Implantable Cardiac Device

Patient Information Guide





This book was prepared by Royal Victoria Regional Health Centre (RVH) to help you understand the electrical elements of your heart and pacemaker implants.

Acknowledgements:
Southlake Regional Health Centre
Trillium Health Centre
University Health Network
William Osler Health System

Disclaimer:
The information in this book is for informational purpose only, It is not a substitute for professional healthcare advice. It is meant as a general guide to your cardiac procedure at RVH.

For any additional questions or concerns please seek advice from your healthcare professional.






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Contact information

Royal Victoria Regional Health Centre

201 Georgian Drive
Barrie, ON
L4M 6M2
Telephone Main Line: (705) 728-9802

Cardiac Device Clinic

Monday to Friday, 8 a.m. - 4 p.m. (by appointment only)
Telephone: (705) 728-9090 ext. 46215
Location:

- From RVH Main Entrance: Central Registration is located on Level 2. From the Main Entrance follow the Blue Navigation Line to Central Registration located across from Victoria's Gift Shop.
- From Atrium Entrance: Central Registration is located across from Victoria's Gift Shop.

Cardiac Interventional Unit (CIU)

Telephone: (705) 728 – 9090 ext. 47888

Location:

- We recommend that you are dropped off at RVH's Georgian entrance, before your family, friend, or caregiver parks in the Main Visitor parking lot.
- Take the Georgian (purple) elevators to level 4, located to your left once inside the Georgian entrance. Once you are on level 4, the Cardiac Interventional Unit (CIU) is located directly outside the Georgian elevator doors.




My Appointments

Intake appointment	One to one visit with Cardiologist specializing in Pacemakers.
Date: _____	At: _____
Education appointment	One to one visit with healthcare professional to provide education about pacemakers and answer any questions you may have.
Date: _____	At: _____
Echocardiogram	This may be scheduled for you if the Cardiologist would like a further imaging of your heart.
Date: _____	At: _____
Stress test	This may be scheduled for you if the Cardiologist would like a further investigations of your heart.
Date: _____	At: _____
Other test: _____	This may be scheduled for you if the Cardiologist would like a further investigations of your heart.
Date: _____	At: _____
Procedure date	On this date proceed to the Cardiac Interventional Unit (CIU) to register and prepare for your procedure.
Date: _____	At: _____
7 to 14 day follow-up	Date: _____ At: _____
3 month follow-up	Date: _____ At: _____
6 month follow-up	Date: _____ At: _____
Yearly follow-up	Date: _____ At: _____
Yearly follow-up	Date: _____ At: _____
Yearly follow-up	Date: _____ At: _____



Quick heart facts:

- Your heart is about the size of your fist and it sits in the center of your chest.
- Arteries carry blood from the heart's right ventricle to the lungs to receive oxygen. The left ventricle pumps oxygenated blood to the body.
- Veins carry blood from the body and lungs to the heart.
- 113,000 kilometers of blood vessels carry blood throughout your body.
- The heart consists of four hollow muscular chambers, and it has a series of nodes and electrical pathways that carry an electrical current to the various areas of the heart that make it contract.
- Sometimes the natural pacemaker that starts the electrical current fails to respond appropriately to the needs of your body.
- An arrhythmia is an abnormal heart rhythm that causes the heart to beat irregularly, too fast, too slow or sometimes adding or missing beats.



Why has the doctor recommended a pacemaker?

An implantable cardiac pacemaker is an electronic device that is used to initiate the heart beat when the heart's "natural pacemaker" does not work properly.

Advances in technology over the past decade have led to much smaller devices with longer battery life and numerous programmable options for diagnosing and treatment.

The implantable pacemaker generally consists of 2-3 main parts. A pulse generator which is designed to generate an electrical current, and a pacing lead system (also known as wires) which conducts the painless electrical current from the pulse generator to the area of the heart that requires stimulation.


Sinus node dysfunction is a condition or abnormality of the sinus node, your body's natural pacemaker, which can result in arrhythmias.

Bradycardia results in an abnormally slow heart rate often making the heart beat at less than 60 beats per minute.

Heart block is another type of arrhythmia experienced when there is a blockage in the electrical pathways of the heart.

Atrial Tachyarrhythmia's (i.e. Atrial Fibrillation) is a type of heart arrhythmia in which the heart's electrical impulse comes from an abnormal place in the upper chambers of the heart, rather than from the sinoatrial node — the normal origin of the heart's electrical activity.

While some people feel no symptoms at all with these arrhythmias, other people may feel dizzy, lightheaded, tired, weak or experience blurred vision, faint, have chest pain and/or shortness of breath.



Preparing for your Pacemaker Procedure


Before you come into the hospital to have your pacemaker implanted:

1. You may be booked an appointment to come into the Cardiac Device Clinic or Urgent Cardiology Clinic where you will meet with one of our very skilled health professionals for education about pacemakers, what to expect, and to answer any of your questions.
2. If they have not already been completed, the following tests may be completed while you are here:
 - An electrocardiogram (ECG) which records the electrical activity of your heart,
 - Echocardiogram (Echo) which is a non-invasive ultrasound procedure to get images of your heart,
 - Chest x-ray & blood work.
3. We ask that you bring with you to this appointment all the medications you are taking, both prescribed and over the counter in their original containers/packaging.

PLEASE NOTE:

Most pacemaker implants are completed on an outpatient basis which means you will come to the hospital on the morning of your procedure and go home later the same day. Overnight hospitalizations after a pacemaker procedure are typically not required.

Should your condition change or worsen, you are asked to call 911 and present yourself to the nearest emergency department. The Cardiac Device Clinic is not open 24 hours and does not provide emergency services.



Getting Ready for Your Pacemaker Procedure


The Cardiac Device Clinic will contact you prior to your scheduled procedure to make arrangements.

The night before your procedure:

- Do not eat or drink anything after midnight.
- Please shower or take a bath the evening before your procedure. You may use regular soap.
- Use the provided 2% chlorhexidine gluconate preoperative antiseptic skin preparation product to cleanse the appropriate area as directed, allowing the chlorhexidine to dry on the skin.
- The morning of the procedure the appropriate area shall be wiped again with the provided 2% chlorhexidine gluconate preoperative antiseptic skin preparation product, allowing the chlorhexidine to dry on the skin. Do not shower between the evening skin cleansing and the morning site cleansing.
- A member of the Cardiac Device Clinic will advise you what medications that you can and cannot take on the morning of your pacemaker procedure.
- Ensure all your prescribed and over-the-counter medications are in their original containers as you will need to bring these with you on the day of your pacemaker implant.
- It is advised that you leave valuables such as laptops, phones and jewelry at home, or that you can entrust them with the person you have accompanying you to RVH for your procedure.

The day your pacemaker is being implanted:

- Ensure that you bring your valid health card with you.
- Ensure that you have a responsible adult come with you to RVH on the day of your procedure and someone to stay overnight at home.
- You may bring with you slippers and a bathrobe.
- You will be asked to change into a hospital gown.
- An intravenous line will be inserted into your arm.
- Morning blood work and other tests may be ordered.
- You will be taken to the operating room by one of the nurses for your procedure.



During your Procedure

- Once in the operating room, you will be moved to the operating room table and connected to monitors so that the team can observe your heart rate and oxygen levels.
- You will be administered a mild sedative through the intravenous in your arm. You will be awake for the procedure and will be able to respond to the team.
- You should not feel any pain, however you may experience some pressure or tugging. Should you experience discomfort you should communicate this to the team.
- You will not be able to see the procedure being done and you will need to lie still during the procedure.
- The doctor implanting your pacemaker will wash your chest, neck, shoulders and upper arms with a cold disinfectant solution to remove bacteria from the skin and prepare for the incision.
- You will be covered with a large sheet and the doctor will freeze the area just below your collarbone, typically on the left side.
- You may feel a small pin-prick and slight stinging sensation as the freezing is being administered.
- A small 2-4 inch incision is made just below the collarbone.
- The pacemaker wires are inserted into your heart by a vein that is located in your shoulder area. The team uses special imaging equipment to help anchor the leads into the correct place in your heart. The leads will then be checked to ensure they deliver the correct electrical impulse to your heart.
- The incision will be closed with sutures which will dissolve on their own. Steri-strips are applied to the outer layer of your skin over the sutures then a bandage is applied to cover the area.
- The whole procedure takes approximately 1 to 1.5 hours.



What are the risks and side effects?

- A lung could collapse which happens if air builds up in the space between the lung and the chest wall. This can be treated and people recover well.
- Although the risk is low, other concerns may arise during the procedure such as a heart attack, stroke, or the need for an emergency surgery.
- Health concerns after the procedure may include: pain, bleeding, or bruising soon after the procedure, blood clots and swelling of the arm, infection in your chest near the pacemaker, or unforeseen device issues that need another procedure to fix them such as pacemaker lead moves out of place.

Recovering After your Pacemaker Procedure

- Once the procedure has been completed you will be moved to the recovery area of the Cardiac Interventional Unit (CIU) where you will be monitored.
- The healthcare team will make arrangements for you to have a chest x-ray and an ECG before you are discharged home. In addition to this, a member of the Cardiac Device Clinic team will visit you in the recovery area of the CIU and check your new pacemaker to ensure that it is functioning properly.
- A small wand connected to a computer will be placed over your chest and the implanted pacemaker and wand will communicate with each other. This is not painful and the information that the wand received is stored so that it may be retrieved when you return to RVH for your follow-up appointments.
- If you are an inpatient here at RVH you will be transferred back to your bed once recovered.
- If you came from another hospital where you were an inpatient, you will be recovered here at RVH then transferred back to your original hospital.

Possible Signs of an Emergency




If the Pacemaker clinic is closed, Go to your nearest Emergency Department or walk in clinic or call 911 should you experience the following:

- **Shortness of breath** or increase work to breathing after your pacemaker implant or sharp chest pain when breathing in.
- **Extreme swelling** in the arm or wrist of the same side as the pacemaker implant,
- **Bleeding** from around the bandage. Do not remove the bandage.
- **Infection** such as extensive redness or drainage from the incision area, temperature above 38°C/101°F, extreme pain or tenderness over incision.
- **DO NOT** permit any healthcare professional to make an incision or put a needle into your pacemaker site, as this may cause infection.

Most people are aware of their pacemaker for a short time following its implantation, but this sensation usually decreases with time

Pacemaker Insertion Site Care

1. There will be a bandage over the incision after the procedure.
2. The incision will be closed by suture material that will dissolve on its own and does not need to be removed. This will happen within 2 to 6 weeks after your procedure.



Pacemaker Insertion Site Care Continued

3. Please keep your dressing dry and clean for 48 hours and then remove completely.
4. Once the dressing is removed, you may leave incision exposed to air. A light, dry gauze dressing may be applied to prevent your clothing from rubbing against incision.
5. Do not touch, rub or scratch at your incision or pacemaker area. Keep your hands off the incision as much as possible.
6. You may shower after 4 days post procedure. Gently wash your incision with mild soap and water, then pat area dry with clean towel.
7. Please **DO NOT** apply any cream, powder, or antibacterial ointment to incision even if suggested by physician or health care professional.
8. Observe your incision and seek medical treatment should you experience:
 - Extensive redness or drainage from the incision site,
 - Extreme tenderness or pain over the incision site,
 - Or your temperature rises above 38°C/101°F.
9. Please notify clinic if you attend emergency department or walk-in clinic related to infection.
10. Some discomfort, tenderness and bruising are common around your incision. This generally resolves over a few days to a week.
11. If your seatbelt is rubbing on your incision you can wrap belt with small towel for padding over site. You must wear seatbelt.
12. A member of the Cardiac Device Clinic will examine your pacemaker incision sight on your initial follow-up appointment in the Cardiac Device Clinic.

The pacemaker leads that have been placed inside your heart will not be stable for approximately 6 weeks. Until you have been advised that the leads are secure, you will need to adhere to the following specific instructions:

Arm limitations

1. One to two days after your surgery you must begin moving your arm on the side where the pacemaker was implanted so you do not end up with limited movement in your shoulder in the future.

A gentle exercise that you may commence is:

Hold your arm outstretched to the side, no higher than shoulder level and make several circular movements (8-10) three times per day.



<https://fitnessvigil.com/shoulder-impingement-exercises>

3. Do not lift the arm of the affected side above your shoulder height for 4 weeks. Do not lift, push, or pull anything greater than 10lbs (4.5kg). You should limit repetitive movements such as vacuuming, swimming, golfing, raking, shoveling, etc.
4. If you only had a battery change (pack change) or pacemaker replacement only without lead replacement, there are generally no arm restrictions.
5. You and your doctor will decide when you may resume your regular activities, return to work and sexual activities.
6. Avoid swimming in pools, lakes or hot tubs until incision is completely healed (approx. 4 weeks).

Driving

Check with your physician for when you may resume driving. You typically cannot drive for 1 week post implant or until after 1 week follow up appointment in device clinic.

Other

Ensure you drink adequate non-alcoholic fluids for the first 24 hours after your pacemaker implant.

After you have had your pacemaker implanted you will be provided the model number, serial number and the name of the manufacturer of your pacemaker. Your new pacemaker will be registered with the manufacturer and you will receive from them, in the mail, a laminated pacemaker card usually 3 months post. You must carry this on your person at all times.


PACEMAKER IDENTIFICATION CARD	
Name	_____
Address	_____
City	State Zip code
Phone	Blood type
I'm wearing a pacemaker. In an emergency, contact _____	
Doctor	_____
Phone	_____
Address	_____
City	State Zip code
Hospital	_____
Hospital Phone	_____
Hospital Address	_____
City	State Zip code
Type of pacemaker	_____
Type of leads	_____
Manufacturer	_____
Date of implant	_____
Paced rate	_____
Model	_____
Serial Number	_____

<http://www.heart.org/HEARTORG/Conditions/Arrhythmia/PreventionTreatmentofArrhythmia/Pacemaker-Identification-Card>



<https://www.medicalert.ca>

It is highly suggested that you invest in a medical alert bracelet. It can be used by first responders, such as emergency medical personnel, to be aware of your implanted pacemaker in case of an emergency



While all pacemakers are under strict quality control, there are situations and items that may impact the functioning of your pacemaker. You should familiarize yourself with the following information:

Other medical procedures

If you require any type of surgery or treatment you need to inform the healthcare providers that you have a pacemaker.

MRI imaging:

- Cautioned in patients with permanent pacemakers due to the MRI's magnetic field, unless MRI compatible. Check MRI compatibility with your device clinic.

Radiation:

- diagnostic X-rays do not affect pacemaker function,
- radiation therapy can damage the circuitry and the pulse,
- generator should be shielded or relocated.

Other possible medical sources of interference:

- TENS machine
- Electrolysis,
- Electrocautery,
- Cardioversion/ defibrillation.

Dental work:

- you should inform your dentist that you have a pacemaker.

Cell phones and other equipment

Cellular phones: should be used on the opposite ear to the side where your pacemaker was inserted. Efforts should be made to not store your phone close to your pacemaker i.e. the breast pocket of your shirt on same side as your pacemaker.

General household appliances: are safe to use however they should be in good condition and ensured that they are properly grounded.

Anti-theft detectors: function on the principle of generating an electromagnetic field in order to detect an embedded "tag" on merchandise. This same electromagnetic field may affect your pacemaker however, typically only under very unique circumstances. You are unlikely to feel any effects of this electromagnetic field on your pacemaker.



Metal Detectors/Airport Security Systems

- Metal detectors and airport security systems are not likely to affect the operation of your pacemaker. They do however detect the metal components of your pacemaker.
- Airport screening/security devices (walk through or hand-held wand) cannot tell the difference between your pacemaker and a potential concealed dangerous object, so when you walk through the screening archways or have the hand-held wand passed around you may trigger the alarm. You may be asked to undergo additional search method (i.e. hand search). **DO NOT** let them wand directly over device. As this may interfere with device.
- It is essential that you carry your pacemaker identification card with you because showing it to the airport security personnel will be most helpful.

Regular and Occupational Activities

- The pacemaker should not interfere with sexual relations.
- Some occupational equipment such as chain saws, electrical welders, or jack hammers can be hazardous. Because resuming regular duties in your current occupation may interfere with your implanted pacemaker, you should discuss this with your Cardiologist.

If you are unsure about sources of interference with your implanted pacemaker, do not hesitate to call the pacemaker manufacturer.

Death and your Implanted Permanent Pacemaker

Death of a loved one can be a very challenging time for families to deal with the loss. Your wishes for your care at, and after death are very significant to not only your family but healthcare team as well.

- If your wishes are to be buried, the pacemaker can be buried with you.
- If your wishes are to be cremated, the pacemaker must be removed. Your family can speak to the funeral home, mortuary, or service that you have chosen to provide interment and funeral services for arrangements. Please ensure that your doctor and family are aware of your request.



Pacemaker follow-up appointments

After you have had your pacemaker implanted you will require several follow-up appointments with the Cardiac Device Clinic at specified time intervals as noted below. It is imperative that you keep your scheduled appointments, as these have been schedule to ensure your pacemaker is working properly.

- 7 – 14 days post pacemaker implant,
- 3 months post pacemaker implant,
- 6 months post pacemaker implant,
- Every year (if non-dependent).

The front of this information guide includes another place for you to write down your scheduled appointments. Please ensure that you bring the following to every visit:

- Your valid health card,
- Your Pacemaker Identification Card,
- Medications, bring both prescribed and over-the-counter medications in their original containers/package,
- This information guide so that you can ask questions and take note (pages have been included in the back of this information guidebook for you to list questions you may have and take notes at your appointments).

The following can be expected at your follow-up appointment:

- Pacemaker follow-up and testing,
- Pacemaker Identification Card Review,
- Medication review,
- The name and contact information of your Cardiologist.

The Cardiac Device Clinic can be very busy and there may be some waiting. It is suggested that you do not plan other follow-up appointments around the same time as your pacemaker implant follow-up. We appreciate your patience.

Notices and recalls

- All pacemakers are under strict government quality control guidelines.
- Your pacemaker and leads have been thoroughly tested during every step of the manufacturing process. Despite this, and with all devices, not all are 100 per cent foolproof and may be subject to a recall or , require additional observation/programming.
- Should a problem or recall arise with your pacemaker, you will be notified by the Cardiac Device Clinic of the issue and discuss next steps and management.
- It is therefore essential, that the Cardiac Device Clinic is made aware of any change in your address or phone number.
- Carry your Pacemaker Identification Card with you as this contains essential information about your pacemaker such as model, serial number and settings.

Pacemaker Manufacturer Contact Information

Manufacturer	Telephone	Website
Abbott/ St. Jude Medical/ St Paul, USA	905-812-8600	https://www.sjmglobal.com/
Biotronik Canada Inc. Etobicoke, ON	416-620-0069	https://www.biotronik.com/en-ca
Boston Scientific (Guidant) World Headquarters Marlborough, Massachusetts	1-800-268-4487	http://www.bostonscientific.com/en-US/patients/about-your-device/pacemakers.html
Livanova/ Sorin Group (ELA)	1-800-387-4563 (toll-free within Canada) 416-751-8787	http://www.livanova.com/home.action
Medtronic of Canada Mississauga, ON	1-800-268-5346	http://www.medtronic.com/ca-en/your-health/treatments-therapies/pacemakers.html

Notes:

Questions to ask the doctor:

- 1.
- 2.
- 3.
- 4.
- 5.

Important information to tell the doctor:

Informative websites:

Heart and Stroke Foundation of Canada

Heart Rhythm Society

Canadian Heart Rhythm Society

<http://www.heartpoint.com/pacerintro.html>

