

A Guide to Living with Your Cardiac Implantable Electronic Device



Patient and Family Education

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A Guide to Living with Your Cardiac Implantable Electronic Device

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Introduction

You are going to have a heart device called Cardiac Implantable Electronic Device (CIED). This booklet will help you understand what a CIED is, the different types and parts of these devices, what to expect after the procedure, how to safely do your daily activities and exercise at home, how to take care of your feelings and when to come back for clinic visits.

Parts of Cardiac Implantable Electronic Devices

Battery

- It detects and analyses information from your heart and delivers the treatment if needed. (e.g., shock for a dangerous fast heartbeat rhythm).

Leads

- It is a wire that connects the device to your heart. It sends and receives signals to help control the heartbeat.



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Types of Cardiac Implantable Electronic Devices

A. Pacemaker

A pacemaker is a small device that helps to correct some types of slow heartbeat.

- **Single-Chamber Pacemaker**

A single chamber pacemaker has a battery and one lead (wire) that goes into the heart and is placed in the upper or lower chambers of the heart.

- **Dual-chamber pacemaker**

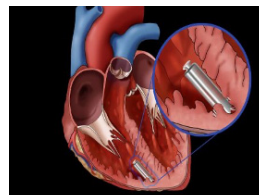
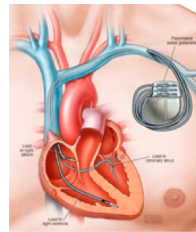
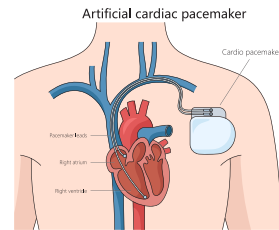
A dual-chamber pacemaker has a battery, and two leads placed in the upper or lower chambers of the heart.

- **Cardiac Resynchronization Therapy Pacemaker (CRT-P)**

A CRT-P device consists of a pacemaker that is connected to three leads. These leads are placed in the upper or lower chambers of the heart, and one inside the vein in the lower left part of the heart. This device helps to improve the function of the heart and the quality of life.

- **Leadless Pacemaker**

A leadless pacemaker is a small, one-piece device placed directly inside your heart. It does not have separate wires (leads) or battery. All the parts are inside one device, and it works from within the heart chamber.



B. Implantable Cardioverter Defibrillators (ICDs)

An implantable cardioverter-defibrillator is a device, which detects and stops irregular heartbeats. ICDs are used for patients who may experience or have experienced a dangerous fast or slow heart rhythms, including patients with weak heart muscles, and to prevent sudden cardiac death.

- **Single-Chamber ICD**

This device has one lead. It is commonly used for patients at risk of cardiac arrest or certain genetic heart rhythm problems, such as Brugada syndrome or long QT syndrome.

- **Dual-Chamber ICD**

This device has two leads. It is used for patients with dangerous fast or slow heart rhythms.

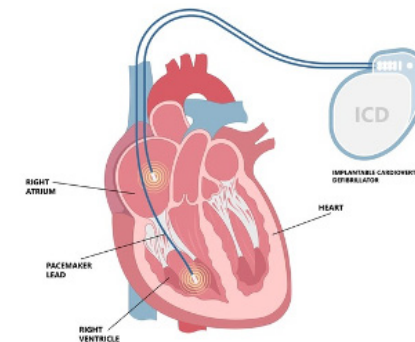
- **Cardiac Resynchronization Therapy Implantable Cardioverter Defibrillator (CRT-D)**

This device is used in heart failure patients with weak heart muscles, and it can improve heart function and reduce heart failure symptoms.

- **Subcutaneous ICD**

This is a special type of ICD which is implanted under the skin. This device uses one lead placed under your skin, not through your veins. It helps to treat dangerously fast rhythms by delivering shocks when needed.

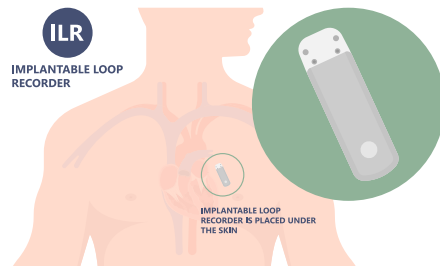
IMPLANTABLE CARDIOVERTER DEFIBRILLATOR



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C. Loop recorder

The loop recorder is a device placed under the skin to continuously record the heart rhythm over a long period (often 2–5 years). The device tells your healthcare team how the heart is beating while you do your daily activities.



Who needs Cardiac Implantable Electronic Devices?

A Cardiac Implantable Electronic Device may be needed if you experience symptoms related to an abnormal slow or fast heart rate such as fatigue, weakness, lightheadedness, shortness of breath or fainting. You may also need a device if you have a past cardiac arrest. When the heart beats too slowly or too fast, it does not pump enough blood to meet your body's needs. In some patients who have heart failure, specific devices that use three leads can help improve the heart function.

Before Cardiac Implantable Electronic Device Insertion

What do I need to know/prepare before my device insertion at home and workplace?

Rearrange your home/work environment.

- Move and store frequently used items to shoulder level only (e.g., water bottles, medicine).
- Rearrange your home/work appliances and equipment at your shoulder level or below.

Expectations after the procedure

Will I have to stay in the hospital?

Normally you will spend 2 to 3 days in the hospital following procedure.

What tests will be done after the procedure?

Normally, chest x-ray and device checks will be done after the procedure. In some cases, blood tests will be ordered, as well.

Do I need to continue taking my medications after the procedure?

Yes. You need to take all your prescribed medications as usual after the procedure unless your doctor asks you to stop it.

How can I take care of the wound dressing?

- Follow the advice of your the clinical nurse and physiotherapist regarding movements of your shoulder on the operated side. You will be given an appointment at the device clinic to check the wound soon after discharge from the hospital.
- Keep the area clean and dry all the time.

How Cardiac Implantable Electronic Devices are Inserted

Cardiac Implantable Electronic Devices are implanted under either local anesthesia or general anesthesia, based on the patient's condition. The implantation procedure usually takes one to three hours. You will be taken to a special room called the "Cardiac Catheterization Laboratory" with a special x-ray table.

Preparation before the procedure

- No food or drink for 8–12 hours before the procedure.
- An intravenous (IV) line will be inserted if you do not already have one.
- You will be given antibiotics through the IV line just before the procedure.
- You may be given medicine to help you relax.

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Caring for Your Device Site: Know the Warning Signs

In the first few weeks after your device is placed, it is normal to feel the device under your skin or see some mild bruising. This is a normal feeling and generally will go away with time. Sometimes, there will be a black or blue mark in the area of the device, this is from the surgical procedure and will disappear after few days. **But if your wound or incision area becomes red, hot, more painful, and swollen or starts to drain fluid, or develop fever notify your doctor immediately and come to the hospital. Do not wait for your next scheduled visit.**



If you are receiving blood thinner medication (e.g., Warfarin), it is very important to talk to your doctor before the procedure regarding the medication adjustments.

Safe Home Activities after Cardiac Implantable Electronic Devices Insertion

Bathing and Grooming	
DO'S	DON'T'S/AVOID
 Bring your head down when brushing or washing your hair, fixing your scarf, or washing your face.	 Avoid moving your elbow above shoulder level. (same side of implantation). Avoid applying any powder, lotion, or ointment on your wound.

Household Activities	
DO'S	DON'T'S/AVOID
 - While cooking, stir using the arm opposite the surgical side - Cellular phones must be used on the side OPPOSITE your heart device	- Avoid upper arm movement on the side of your CIED, such as reaching high, gathering and hanging things for 4 to 6 weeks. - Avoid lifting heavy weights/objects greater than 2.5 kg on the same arm (implant side), such as small child, bags, boxes for 4 to 6 weeks - Avoid pulling the arm on the implantation side for 4 to 6 weeks  - Avoid using the arm on the implantation side for vacuuming, mopping, sweeping, or ironing - Do not store your cellphone over your shirt pocket - Avoid pushing up from the chair during sit to stand  

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Use of Household Appliance

Use of consumer appliances and electronics items will not harm or cause damage to your device. Such examples are:



Electric shavers, Electric blankets, and Heating pads



E-readers or electronic tablets



Microwave ovens



Kitchen appliances, such as mixers, blenders, toasters, and coffeemakers



Computers, AM/FM radios, TV transmitters, and remotes



Home wireless devices, such as modems, routers, and headsets



Video game wireless controllers



Bluetooth wireless technology, including headsets.



Hair dryers or Irons



Turn off electrical equipment or move away from it if you experience palpitations or rapid irregular heartbeats or lightheadedness.

Clothing

- Loose-fitting tops and front opening shirts may feel better and easier to manage till your wound heals.
- Women may pad the bra strap around the incision. You may wear a front opening bra, strapless bra or no bra at all.

Driving, Traveling and Seat Belts

It is advisable to discuss it with your doctor first.



Driving

- Usually, you may resume driving after 4-6 weeks.
- Speak with your physician for any concern / clarification.
- Many people find it more comfortable to use a padded seat belt cover while driving. You can buy one or simply fold a small towel and place it over your shoulder and device site to reduce pressure. Remember, wearing your seat belt is required by law and helps keep you safe.



Traveling

- Air Travel is usually safe 4-6 weeks after the procedure.
- Always carry your device identification card when you are travelling.

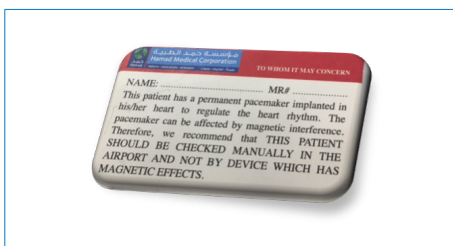
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Airport/Hotels/Department stores security checkpoint

- Passing through the metal detector and anti-theft systems will not damage your device.
- Walk normally and do not lean or stay any longer than needed near the security system.
- If security personnel insist on using a handheld scanner, tell them that you have an implantable device and ask them to check manually because the detector scanner has magnet which can affect the function of your device. You can show them your device traveling card, as in picture A and B.



Picture A



Picture B

Managing Your Emotions

Health is not only physical, but it also includes your feelings. Patients may experience stressful feelings after a heart device is inserted. At times you may feel worried, fear, depressed, and even angry.

This is quite common, especially during the first few months or years after the procedure. It is normal to feel this way. There are many ways to help you cope with these feelings and feel better over time.

Talk to other people. Talk to your family and friends (support group) or talk to your doctor. Talking and expressing your feelings can help you understand and accept them.

Learn more about relaxation. Too much stress can make you tired and affect your sleep. You can manage stress by doing things like praying, meditating, or taking slow, deep breaths.

Deep Breathing. This is a simple technique that can help relieve you from stress. Breathe in through your nose, hold your breath for 3 seconds, and then slowly breath out through your mouth.

Have regular exercise. Regular physical activity can help reduce stress, build your strength, and help you gain confidence in your daily activities. Ask your doctor, clinical nurse and physiotherapist what type/ kind of exercise program you may engage in during and after your recovery.

Activities To Avoid for the First 4-6 Weeks After Your Procedure

During the first 4-6 weeks after device insertion, you need to:

- Avoid heavy lifting, pushing, or pulling with the arm on the same side as your device avoid stretching or reaching over your head or behind your back.
- Avoid swimming and keep the wound area clean and dry.
- Check with your doctor before resuming activities, such as driving or showering.



We encourage you to move your arm (same side of surgery) regularly up to shoulder level to prevent frozen shoulder.



If you are having any type of medical/surgical procedure inform your health care provider that you have CIED.

Follow-up After Cardiac Implantable Electronic Device Insertion

It is important to regularly check your device to make sure that it is functioning properly. Your doctor and clinical nurse will schedule follow-up checks every 4-6 months or through device remote home monitoring. Examining and adjusting your device is quick and painless. There is special equipment that communicates with your device, allowing adjustment of its function without any additional procedures.



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Your Exercise Program After Cardiac Implantable Electronic Device Insertion

Why do I need to do exercise?

Exercise makes your heart stronger and helps you pump blood more easily.

It also helps:

- Lower your blood pressure.
- Control your blood sugar.
- Reduce your cholesterol levels.
- Maintain a healthy weight.
- Improve your blood circulation.
- Feel more energetic.
- Reduce your stress level.
- Improve your sleep.

Is it safe for me to exercise?

Exercise is safe and important after getting a heart device. While you are in the hospital, your the clinical nurse and physiotherapist will help you find the safe exercises that are right for you.

Will my heart rate go too fast when I exercise?

Most heart devices can find the difference between a fast heartbeat caused by exercise, and one caused by a heart problem. Ask your Doctor and Clinical Nurse Specialist about how high your heart rate can safely go during exercise—this safe limit depends on your medical condition.

Can exercise damage the leads of my Device?

Like any other device, the wires of your device can slowly get wear and tear over time. It is minimal with the movements of everyday life and exercises which do not involve extreme



Know your device

- Type of device you have
- Your upper and lower heart rate settings in the device

When do I start exercising?

Your exercise will start in the hospital with the help of a Clinical Nurse Specialist. After you leave the hospital, you can continue doing the exercises at home, following the physiotherapist's guidance.

How can I exercise safely?

A well-planned exercise program is safe and helps you to increase your fitness. Make sure to follow the proper steps: begin with a warm-up, then do your main exercises (called conditioning), and finish with a cool-down. It is also important to keep track of how hard you are working during exercise.

Start your exercise with warm-up

- A good warm-up slowly gets your heart beating faster and helps more blood reach your muscles.
- It gently raises your body temperature and helps prevent sore muscles after exercise.
- It also helps you get mentally ready for your workout.
- A proper warm-up can be around 10 minutes of easy activity, like slow walking or gentle joint movements that do not make you feel too tired.

End your exercise with cool-down

- A cool-down after exercise means slowing down your level of activity gradually.
- It helps your heart rate and breathing to return toward resting levels gradually.
- It helps prevent you from feeling dizzy or faint, which can happen if you stop exercising too quickly. It helps to remove waste products from your muscles, which can build during conditioning exercise.
- You should perform low intensity exercise for a minimum of 10 minutes for an effective cool-down.

Progress with conditioning exercises

- The conditioning exercise is the main part of your exercise program.
- Exercise in this phase includes brisk walking, cycling, jogging, or running—these are called aerobic exercises.
- Exercise intensity must be increased slowly and gradually, particularly for those who have previously done very little exercise.
- Always check with your doctor or physiotherapist before starting any hard or intense exercises.



Warm Up



Conditioning



Cool Down

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Exercise monitoring

You can monitor the exercise intensity using:

- Heart rate
- Talk test
- Rate of Perceived Exertion (RPE) Scale

Heart Rate

- Place your arm so that your palm is facing up.
- Take the second and third fingers of your other hand and place them over the blood vessel as shown below (Do not use your thumb).
- Gently feel for the pulse.
- Count your heart rate for one minute.
- The maximum heart rate you can reach during exercise should be discussed with your physician; this will be based on your clinical condition.



Always check your resting heart rate before starting an exercise

Talk Test

When you are doing exercise, you should be able to carry on a conversation easily, if not, you are working too hard, slow down a little.

Rate of Perceived Exertion (RPE) Scale

During exercise, we want you to measure your exertion level to know how hard the exercise affects you and how tired you are. RPE is the tool used to rate your exercise intensity. When you come to know how hard your body feels, it will be easy for you to adjust the intensity for your exercise. This scale rates the intensity of exercise from «6» to «20». «6» indicates No exertion and «20» indicates "Maximal Exertion".

	6	No exertion at all
	7	Extremely Light
	8	
	9	Very Light
	10	
	11	Light
	12	
	13	Somewhat Hard
	14	
	15	Hard
	16	
	17	Very Hard
	18	
	19	Extremely Hard
	20	Maximal Exertion

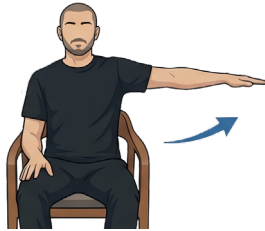


We recommend aiming for moderate activity, keeping your effort between "11" (Light) and "13" (Somewhat hard).

Exercise after surgery

The following are a few exercises which are useful soon after your surgery. It is recommended to perform 10 repetitions, three times a day for first 4 to 6 weeks.

	Exercise: Hand-grip exercise Action: Close and Open Fingers		
 Palm Opening	 Palm Closing		
	Exercise: Elbow exercises Action: Bend and straighten your elbow		
 Elbow Bending	 Elbow Straightening		
	Exercise: Shoulder exercises Action: Swing your arm (Pendular exercises)		
 Rotate Clockwise and Anticlockwise	 Forward and Backward	 Sideways	

	Exercise: Lift your arm Action: Forward up to shoulder level (Picture A) Sideways up to shoulder level (Picture B)	
 Lifting Arm (A)	 Lifting Arm (B)	
	Exercise: Rotate the arm Action: Keep your elbow at 90 degrees close to your body and move your forearm in and out	
 Arm Rotation A	 Arm Rotation B	

Warning signs to stop exercise:

- Excessive shortness of breath or unable to talk.
- Chest pain or tightness or pain in your arms, neck, jaw, or stomach
- Dizziness, lightheadedness
- Excessive sweating
- Blurred vision
- Very fast heartbeat or irregular heartbeat (palpitations)
- Nausea and vomiting
- If you have an ICD/CRT-D and receive a shock from the device.



If you experience any of these signs or symptoms, it is important that you STOP your exercise immediately and take rest. Call emergency number 999 if the symptoms persist.

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Carry your Device card always with you.

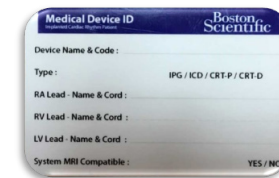
Exercise Considerations

- Do not lift the arm on the side where the device is placed (usually the left side) above shoulder level for the first 4 to 6 weeks.
- Do not lift objects weighing more than 2.5kg on the side where the device is placed for 4 to 6 weeks after the surgery.
- Do not exercise during illness or infection, including the common cold.
- Avoid competitive motor sports (for example, car racing, motorcycle) and contact sports. (e.g., football, boxing).
- Wear comfortable loose clothes and walking shoes with good support.
- In very humid, hot or cold and windy weather, walk indoors where the environment is more controlled (e.g. shopping mall).
- After eating, wait for one hour before doing any exercises.
- If you have chest pain or discomfort while exercising, immediately stop and rest.
- Consider exercising and walking with a friend (Buddy system) and take your mobile phone with you.



Things to Remember

- You should know the type and manufacturer's name your device.
- Always carry your device ID card (as in the picture below) especially when you travel.
- Follow-up your appointment
- Some electrical devices can affect the working of your implanted device such as: MRI scans, physiotherapy treatment machines etc.
- Before having any medical procedure, like an MRI scan, you should first talk to your doctor. MRI is usually allowed only 6 weeks after the time your device was inserted. Your doctor will also check if your heart device and its wires (leads) are safe for MRI. If you are going to have any kind of surgery, make sure to talk to your doctor about it before the operation.
- It is safe to walk through places where security screening devices or check points are being used. Make sure you walk quickly through them, and it may sound like an alarm.



When to Report to The Emergency Department

You should report to the emergency department when you notice these symptoms:

- Increased drainage, bleeding, oozing from the insertion site.
- Increased opening of the wound incision where the device was inserted.
- Redness, swelling or warmth around the device insertion site.
- Increased body temperature (greater than 37°C) after the procedure.
- Fever, shaking or chill, dizziness.
- Fast heartbeat.
- If you have an ICD/CRT-D and receive a shock from the device, call 999 and report immediately to the emergency department.
- Report to the emergency department by attending physically and inform designated nurse with your symptoms and that you have CIED.

