

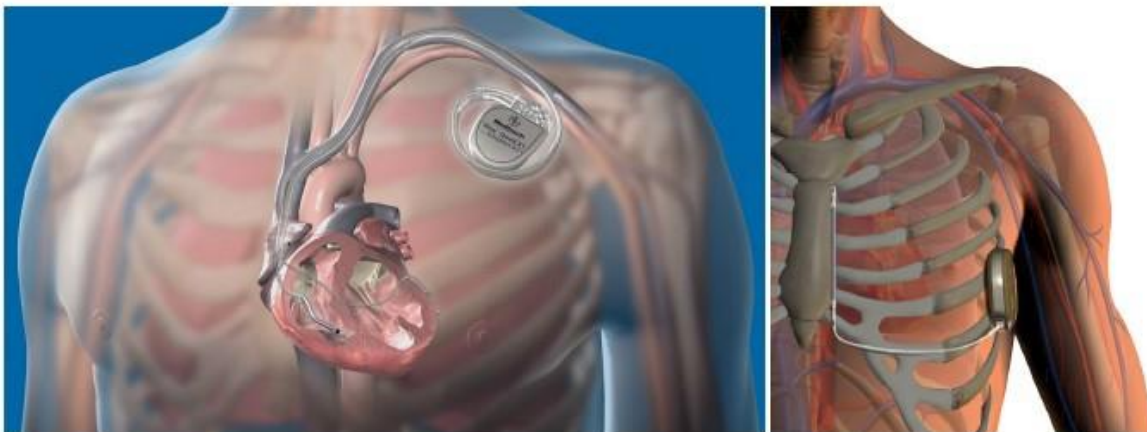
Implantable Cardioverter Defibrillator (ICD)

What is an ICD and why do we insert them?

An Implantable Cardioverter Defibrillator (ICD) is a small electrical device that monitors the rhythm of your heartbeat. When it detects an abnormal rhythm (arrhythmia) it works to restore the normal heartbeat. The ICD will have 1,2 or 3 leads attached to a box/generator that will sit in your heart and it delivers an internal shock. When the ICD detects an abnormal rhythm, it can treat it in 3 ways;

- It can prevent slow heart rates by pacing the heart.
- If the heart goes dangerously fast, it may deliver one or more “shocks” to restore normal rhythm again.
- It can terminate fast abnormal rhythms with rapid pacing.

Individuals who require an ICD are a higher risk group for dangerous heart rhythms and even sudden cardiac arrest and sudden death. ICDs have been shown to lower this risk by > 90%.



The heart electric conduction system can be altered because of many reasons;

- Damage of the muscle (ventricle) after a heart attack
- Heart Failure
- Genetic / Inherited disorders of the heart’s electrical function such as Long QT syndrome, Brugada syndrome or Catecholaminergic Polymorphic VT
- Heart muscle diseases such as Dilated, Hypertrophic or Arrhythmogenic Cardiomyopathy

What to expect during your ICD implantation

Insertion of an ICD will be carried out under conscious sedation and local anaesthetic. ICDs are usually implanted under the skin in the upper left side of the chest near to the shoulder. The procedure is carried out in the cardiac cath lab.

You will be checked in by a nurse and doctor. Bloods will be taken and an IV cannula inserted in your arm. The doctor will discuss the procedure with you and get you to sign a consent form.

You will be brought to the procedure room and placed lying on your back on the x-ray table. You will be attached to a cardiac monitor and intravenous fluids. Sedative medication will be administered. Your skin will be cleaned with an antiseptic solution and intravenous antibiotics will be administered to reduce your risk of infection. A sterile drape will be placed over you. The area will be numbed with local anaesthetic. If you are receiving a transvenous ICD this will be under your collar bone usually on the left side, If you are receiving a subcutaneous ICD (S-ICD) there will be one incision made on the left side of your chest below your armpit and another smaller incision made at the bottom of your breast bone. One to three leads are threaded through a large vein into the bottom +/- top chambers of the heart or in the case of an S-ICD under your skin below the ribs and up over your breast bone. The ICD box is then attached to the lead(s) and secured in place.

In some cases and all S-ICD cases the ICD needs to be tested by putting your heart into a fast abnormal heart rhythm / cardiac arrest and making sure that the ICD can safely shock you out of it. This takes about 20 seconds and is done with back-up defibrillation equipment to make it as safe as possible. ICD failure requiring back-up shocks from an external device are rare occurring < 1% of the time and external device failure has not occurred in > 2,000 implants at our centre.

The wound will be sutured with dissolvable sutures. The procedure duration is usually 30-60 minutes.

Radiation

Ionising radiation is used to take images during this procedure. The Radiographer will optimise your X-ray examination, keeping your radiation dose as low as possible.

As X-ray is used, women aged between 12 - 55 years old will be asked to provide the first date of their last menstrual period (LMP) and sign a "Pregnancy Status Declaration" form. If your period is overdue, a urine pregnancy test will be taken before your procedure. If you are aware that you are pregnant please inform the Nurse/Radiographer attending to you.

Radiation warning

Your procedure, which your doctor has recommended, involves the use of ionising radiation (X-rays). We monitor the radiation dose used throughout the case. High doses of radiation may be associated with some health risks, such as slightly elevated cancer risk or skin reddening. Although the doses of radiation usually incurred in a given procedure are small, it is possible that cumulative exposure received may produce a reaction such as skin reddening (very like sunburn). If levels measured indicate that the cumulative exposure could cause such skin reactions, then appropriate advice will be given and monitoring for any possible reactions instigated.

Sedation / Anaesthesia

Local anaesthetic with or without sedation is given for your ICD procedure. Intravenous painkillers are usually given to ease any pain or discomfort you may experience. Your nurse will continuously monitor your breathing and oxygen levels and provide oxygen if required. If you experience discomfort please inform your nurse so further analgesic medication can be administered as required.

You will be awake for the procedure for a transvenous ICD but will have a general anaesthetic if you are having an S-ICD.

Please use the following guidelines when sedation is administered;

- Sedation can cause drowsiness and increase your risk of falling.
- Do not drive after your procedure. Please make arrangements for an adult to collect you to bring you home the next day.
- Do not consume alcohol within 24 hours post procedure.
- Avoid making any legal decisions or signing any legal documentation.
- Do not operate heavy machinery.

Your role in the procedure

You will be required to lie flat and refrain from touching the sterile working area. If you feel any discomfort or uncomfortable symptoms during the procedure for example pain, dizziness or shortness of breath please let your doctor or nurse know so they can assess you and take measures to help you get more comfortable.

On the day of your ICD insertion

- You can have a light breakfast (e.g. Tea & Toast) the morning of your procedure
- On the day of your procedure, it is recommended to have a shower to clean your skin.
- Bring in a list of your regular medications.
- The nursing staff will place you in a gown and clean your skin with an antiseptic wash
- An IV line will be inserted and antibiotics will be administered.

Blood Thinners

- If you are taking Aspirin and / or a second antiplatelet medication such as Clopidogrel (Plavix), Ticagrelor (Brilique) or Prasugrel (Effient), please continue these without any interruption
- If you are on Warfarin, you should skip 3 doses prior to your procedure
- If you are on Dabigatran (Pradaxa), Rivaroxaban (Xarelto), Apixaban (Eliquis) or Edoxaban (Lixiana), you should not take this the day before or on the morning of your procedure.
- If you are on your blood thinner because you have a metallic heart valve or because you have had a stroke or mini-stroke please call the cath lab nursing staff on 01 8032312 to confirm that it is safe and appropriate for you to stop your blood thinners prior to your procedure

Post procedure

- You will be monitored overnight in the hospital and discharged the following day. Please bring an overnight bag with you.
- An x-ray and pacemaker check will be performed the morning after your pacemaker insertion.
- You will need to keep your arm in a sling for 24 hours and limit arm movements.
- A dressing will be in place over the ICD wound site for 3-5 days, you must keep this clean and dry. Avoid showering/direct water to the site for minimum 3 days.
- You may need to take oral antibiotics post procedure to reduce infection. You will be given a prescription before your discharge.
- When the local anaesthetic wears off you may experience some discomfort at the insertion site. Over the counter analgesic medication such as paracetamol may be taken 6-8 hourly for comfort.
- The doctor will decide about restarting regular medications (e.g. blood thinners)
- It is encouraged to reduce arm movement above shoulder height for 4-6 weeks to allow appropriate lead settlement.
- A follow up appointment will be given to you for the ICD Clinic before you are discharged.

Potential Complications

The procedure is usually relatively painless though minor discomfort such as the following may occur:

- Possible discomfort when injecting local anaesthetic
- Pressure or pain while the doctor is implanting the pacemaker. Let the doctor know if you feel discomfort as additional local anaesthetic can be given.
- Minor bleeding, bruising, redness, swelling at site
- Possible palpitations while the leads are being moved into the correct position inside the heart.
- Usually there is some bruising around the pacemaker site following the procedure.
- Possible reaction to medications administered
- If bleeding occurs, a pressure dressing may be placed on the wound to stop it. Very rarely the wound may need to be reopened to remove collected blood and treat the source of bleeding.
- Lead dislodgement requiring reopening of the incision and repositioning of a lead occurs in < 5% of cases.
- ICD shock failure requiring external rescue shock

Serious complications happen very infrequently in less than 1% of cases. They include:

- Cardiac perforation resulting in bleeding around the heart. This could require emergency surgery to stop the bleeding.
- Infection of the pacemaker or insertion site that may require complete removal of the pacemaker and leads

Extremely rare complications occurring in less than 1 in 1,000 cases:

- V Fib storm requiring multiple shocks
- Heart attack
- Stroke

If you notice any of the above complications, please contact 01 803 3213 for further advice. However, if you become acutely unwell, then call 112 or seek help at your local A&E.

Living with your ICD

Your doctor will notify you as to when you can resume driving, however, if you drive for a living refer to RSA guidelines for further information.

- Speak to your doctor about resuming day to day activities or sports.
- Avoid heavy lifting to reduce your risk of lead displacement for 4-6 weeks.
- It is essential that you attend your follow up appointments as they will monitor your device settings and battery life.
- You should receive a heart rhythm device I.D. card from Heart Rhythm Ireland in the post within 4 weeks of the procedure. Please carry this with you at all times. Contact 41-687-1457 if you do not receive your ID card.
- When passing through airport, it is possible for the magnets of the walk through metal detector to deactivate the ICD, so always opt for a manual 'wand' check.

Useful websites:

https://www.rsa.ie/Documents/Licensed%20Drivers/Medical_Issues/Medical%20Fitness%20Guidelines.pdf

<https://www.hse.ie/eng/health/az/p/pacemaker-implantation/>

www.medtronic.com

www.bostonscientific.com



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