

Harefield Hospital

Your implantable cardioverter defibrillator (ICD)





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This leaflet gives you general information about implantable cardioverter defibrillators (ICDs), and what to expect before, during and after your ICD has been fitted. It does not replace the need for personal advice from a qualified healthcare professional. Please ask us if you have any questions.

What is an implantable cardioverter defibrillator (ICD)?

An implantable cardioverter defibrillator (ICD) is a small electrical device fitted to detect and stop life-threatening heart beats. An ICD is sometimes also called a defibrillator.

An ICD is used to treat two types of abnormally fast and potentially dangerous heart rhythms:

- Ventricular tachycardia (VT)

VT is a fast heart rhythm which causes the heart to pump less efficiently and can lead to dizziness, fainting and unconsciousness. If not treated with medicine or an electric shock this fast rhythm can lead to VF (see below).

- Ventricular fibrillation (VF)

VF is a fast irregular dangerous heart rhythm which causes the heart to stop pumping blood efficiently throughout the body. This rhythm is life-threatening and needs an electric shock to stop it and return the heart back to a normal rhythm.

The job of an ICD is to constantly monitor your heartbeat for an abnormal fast rhythm that starts in the ventricles. It uses anti-tachycardia pacing (ATP) to deliver a burst of fast pacemaker beats to try to stop a fast heart beat and bring the heart back to a normal rhythm.

Or, if that does not work, give one or more high energy shocks to return the heartbeat to a normal rhythm. This is called defibrillation.

An ICD is designed to give lifesaving treatment in the event of sudden cardiac arrest.

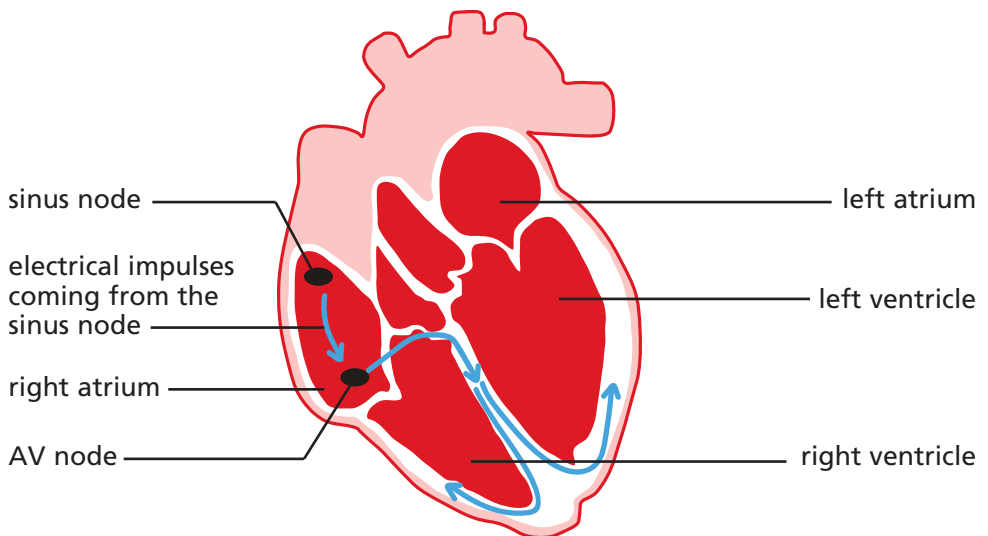
A cardiac arrest is when the heart suddenly stops pumping blood around the body. A cardiac arrest can result in death if the heart's rhythm is not restored quickly with an electric shock.

For that reason, ICDs are fitted to treat patients who have a heart condition that puts them at risk of developing abnormal heart rhythms. For example in patients who have:

- survived cardiac arrest – when the heart suddenly stops pumping blood around the body
- heart failure – when the heart muscle does not pump blood as well as it should

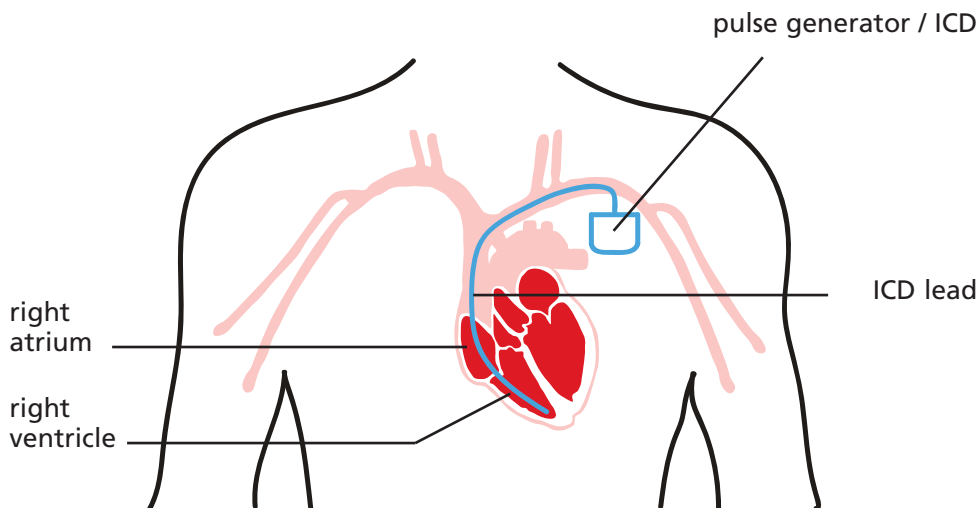
How the heart works

The heart is essentially a pump made of muscle which is controlled by electrical signals. Your heart has its own natural pacemaker – the sinus node (located in the upper right chamber of the heart). The sinus node sends regular electrical impulses to make your heart beat. These impulses are transmitted through the atrioventricular (AV) node and along tissue within the heart muscle causing the lower chambers of the heart to contract and pump blood out of the heart and around your body.



How an ICD works

An ICD is a small device. It consists of a pulse generator which has a battery and a computer circuit, and one or more ICD leads that deliver electric pulses to the heart when your own system fails to work properly. An ICD provides pacemaker functions (keeps your heart from going too slowly) as well as defibrillation.



The type of ICD needed depends on your heart condition:

- a single chamber ICD has 1 lead
- a dual chamber ICD has 2 leads
- a cardiac resynchronisation therapy defibrillator or CRT-D (sometimes called a biventricular ICD) has up to 3 leads

A CRT-D works like a traditional ICD but is designed to resynchronise (co-ordinate) the heart's contractions which can improve heart function and reduce heart failure symptoms.



Most ICDs are powered by a lithium battery which sits within the pulse generator and usually needs to be replaced every 6 to 12 years. The battery life depends on how the ICD is programmed for your heart condition and how often you receive treatment from the ICD.

Please note

If you have a CRT-D, you still need to:

- take your heart failure medicine
- and keep in touch with your local heart failure nurse

Before the procedure to fit your ICD

You have a pre-admission appointment 2 to 3 weeks before your procedure.

At this appointment, you meet a clinical nurse specialist or cardiac physiologist who discuss your procedure in detail and answer any questions you may have.

You also have some tests

- Blood tests – to check different areas of your general health.
- MRSA (meticillin resistant staphylococcus aureus) swabs – to check if you have MRSA bacteria on your skin or in your nose. This is a routine test for patients admitted to the hospital. It is an important test that helps to stop the spread of MRSA (sometimes referred to as a 'superbug').

Having your ICD fitted

You may have your ICD fitted and leave hospital the same day, or you may need to stay in hospital overnight.

A doctor, cardiac physiologist, radiographer and a nurse are present during the procedure.

The procedure usually takes place in a cardiac catheter laboratory (cath lab) and takes between 30 minutes to 1 hour. A CRT-D can take longer.

You lie flat on a special X-ray table. A small 5cm (2in) long cut is made just below the collarbone (clavicle), usually on the left side of your chest, to fit the ICD. The lead is passed inside a vein and positioned correctly, using X-ray to guide it. The lead is then tested and connected to the pulse generator.

The pulse generator is placed under fatty tissue or deeper under the muscle and the small cut closed using stitches.

The stitches in the wound dissolve over time, so you do not need to have them removed. We use a type of clear glue to cover the wound.

Procedures are carried out using local or general anaesthetic. Your doctor discusses this with you before your procedure.

Local anaesthetic

Local anaesthetic is used to numb the area of the body where the ICD is being fitted. This means you are awake during the procedure. However, if you feel anxious, we can give you a small amount of sedation to help you relax.

You may experience slight discomfort or pressure while the ICD is being fitted, but it should not be painful.

General anaesthetic

General anaesthetic may also be used to put you to sleep while the ICD is fitted.

You may also be given a small amount of sedation to help you relax.

Anaesthetists give a general anaesthetic. Anaesthetists are doctors who specialise in pain relief and the care of patients who have procedures.



You meet your anaesthetist at the cath lab. Once you are on the cath lab X-ray table, you receive oxygen through a face mask and the anaesthetist starts to give you the anaesthetic medicine.

After your procedure

After your ICD has been fitted you are taken to a ward. You need to stay in bed for a few hours. We X-ray your chest to make sure the leads are in the correct position and to check for any complications.

A cardiac physiologist also takes a photo of your wound site and checks the function and settings of your ICD.

Before you leave the hospital, we give you an ICD identification card with details of the make and model of your device.

It is important to keep a copy of this with you all the time. You need to show it to medical, dental or other healthcare staff before a treatment or procedure because on rare occasions some equipment may interfere with your ICD. If that is likely to happen your ICD may need to be temporarily switched off (deactivated) using either a magnet or a programmer.

We also give you a home monitor (see page 14 What is home monitoring?).

Caring for your wound

There may be some tenderness and bruising around the area where the ICD has been fitted. You may have more tenderness and bruising if you take a blood-thinning medicine.

You need to keep the area where the ICD has been fitted clean and dry. The glue covering the wound is water resistant, so you may take a shower anytime from two hours after the procedure. However, you need to avoid soaking the wound, in a bath or going swimming, for example, until it is fully healed.

The glue will peel off naturally.

Any procedure where the skin is broken carries a risk of infection. You will be given a course of antibiotics to take home to prevent infection.

During your recovery

- Gently rotate your arm and shoulder (on the ICD side of your body) in small circles each day to gradually increase your arm movement over time.
- Avoid putting strain on your wound. You should not take part in any activity that involves lifting your elbow above shoulder level. You need to avoid lifting any heavy objects and taking part in sports for 4 to 6 weeks.
- Check your wound for increased redness or tenderness, swelling or discharge (oozing fluid). If you are worried about your wound, contact the ICD clinic (see Contact details on page 18).

What to do if you feel unwell

If you experience shortness of breath, chest pain or swelling/bleeding from the wound in the first few days after going home, please contact the ICD clinic or a clinical nurse specialist (CNS).

During evenings and weekends, or public holidays, please phone the hospital switchboard and ask to speak to the cardiology registrar on-call (see Contact details on page 18).

You should always contact your GP first if you have a general medical problem. If your GP thinks the problem is related to your heart condition, you will then be referred to us.

Follow-up appointments

You will need follow-up appointments at the ICD clinic for the rest of your life. This is because you need to have your ICD checked regularly. It is important you attend each follow-up



appointment, so healthcare professionals can make sure that your device is programmed for your individual needs and that the battery lasts for as long as possible.

You usually have your first follow-up appointment 4 to 6 weeks after your ICD is fitted and then after another 3 months.

If there are no complications, we will arrange to monitor you from your home monitor based on your individual needs and see you in person for clinic appointments as needed until the battery is nearing the time when it will need replacing. We may then arrange more frequent appointments until your ICD battery needs replacing.

What to bring to follow-up appointments

Please bring these things with you to each follow-up appointment:

- any paperwork from recent hospital admissions
- clinic letters from your cardiologist
- and a list of your current medicines

Living with your ICD

An ICD does not restrict your lifestyle. If your first check is satisfactory you will be able to continue with your normal daily activities.

Driving

You must inform the Driving and Vehicle Licensing Agency (DVLA) and your insurance company that you have been fitted with an ICD because abnormal heart rhythms can affect your ability to drive safely.

You must not drive for between 1 to 6 months following your ICD implant. The amount of time depends on the reason your doctor has recommended the ICD.

You must also stop driving for at least 6 months and inform the DVLA if you have symptomatic anti-tachycardia pacing (ATP) and / or shocks from your ICD at any time.

Please ask your cardiologist or healthcare staff at the ICD clinic for further advice.

For more information, please see the DVLA website:

[**www.gov.uk/defibrillators-and-driving**](http://www.gov.uk/defibrillators-and-driving)

Using household electrical items

ICDs can be affected by strong magnetic or electrical fields. Problems with household electrical items are rare because ICDs have a metal casing to shield them from interference and can detect and remove unwanted electrical activity.

However, we recommend that you keep power cables and household electrical equipment such as WiFi routers, mobile phones, hairdryers, microwaves and DIY / garden tools at least 15cm (6in) from your ICD when using them.

You should also avoid using transcutaneous electrical nerve stimulation (TENS) machines.

Induction hobs (used for cooking) generate an electromagnetic field that may interfere with your ICD. If you have an induction hob, keep at least 60cm (2ft) between the top of the hob and your ICD.

If a magnet is placed very close to your ICD, it will switch off (deactivate) the device for the period it is in close contact with the ICD. This means you need to avoid placing magnets close to your ICD.

Going back to work

Please ask your consultant for advice if you work in any environments or with any equipment that may affect your ICD, electrical fields or strong magnets, for example.



Exercise

Exercise should not generally affect your ICD. However, exercise can sometimes start abnormal heart rhythms in some patients. Please speak to your cardiologist about how and when you should start exercising.

There is a small risk of damage to your ICD from very forceful contact, so you should avoid heavy contact sports, such as kickboxing and rugby.

You should also avoid doing certain sports alone, swimming, for example. These situations could be dangerous if you were to develop an abnormal heart rhythm and get a shock from the ICD.

Cardiac rehabilitation courses are available at Harefield Hospital and many other NHS centres. These courses can help give you confidence about exercising. If you would like attend one of these courses, speak to your clinical nurse specialist or doctor.

Sex

For most patients, having sex is not a medical risk. The natural heart rate increase that happens during sex is the same as the heart rate increase when you exercise. If you receive a shock during sex, your partner may feel a tingling sensation. The shock is not harmful to your partner.

Travelling abroad

There are no formal restrictions to travelling abroad. Please remember to take your ID card with you to show to security staff and make sure you have enough medical insurance.

Airport security staff may do a hand search or check you with a handheld metal detector. In some countries, the authorities insist that you walk through the security gates. If this happens, just walk quickly through the gates. It is unlikely that your ICD will be affected.

We recommend you have a look at the locations of local healthcare facilities available in case you need medical attention while you are away.

If you plan to be away for a long time, contact the ICD clinic (see Contact details on page 18) to arrange your follow-up appointments in advance. Please take your home monitor if you are away for more than 2 weeks.

MRI scans (magnetic resonance imaging)

You may be able to have an MRI (magnetic resonance imaging) scan. Most modern ICDs and leads are MRI compatible. If you need MRI scans in the future, you must inform the scanning department that you have an ICD and present your ID card.

The ICD will need to be checked and reprogrammed for the duration of the scan. You should also ask us for advice when you next attend the ICD clinic.

Frequently asked questions

What is phrenic nerve stimulation?

One of the leads on a CRT-D is located inside the veins that run around the outside of the heart. This lead's role is to make the left ventricle beat and resynchronise (co-ordinate) the heart's contractions.

Sometimes an electric pulse from the lead can stimulate the phrenic nerve which controls the diaphragm (a muscle that helps you breathe in and out). This makes your diaphragm twitch (move suddenly). This may feel uncomfortable, but it does not do you any harm.

If this happens, we can usually fix the problem by changing the way your ICD is programmed.

If you have this problem during the first few weeks after the procedure to fit the CRT-D or it develops over time, please contact the ICD clinic (see Contact details on page 18).



What is home monitoring?

We give home monitors to all our ICD patients. A home monitor is a small device that we ask you to plug into a mains electricity socket in your bedroom when you get home.

The home monitor will then automatically collect and securely send information about your heart health and ICD function to the ICD clinic.

You need to make sure the home monitor is turned on at all times.

If any problems are detected, we will contact you.

Benefits of home monitoring

Home monitoring has these benefits:

- ICD problems can be detected earlier
- patients do not need to visit the ICD clinic in person as often

When will I need to attend the ICD clinic in person?

We will contact you when we need to see you in person at the ICD clinic. You may need to attend the clinic for tests or to change the way your ICD is programmed, for example.

Please make sure you:

- tell us if your contact details change
- always leave your home monitor plugged in and switched on
- contact us as soon as possible if you need to cancel or change any ICD clinic appointments

What should I do if I get a shock from my ICD?

Every patient is different and experiences getting a shock from an ICD differently.

If you get a shock from your ICD but otherwise feel well, please phone the ICD clinic. (see Contact details on page 18).

If this happens outside office hours or over the weekend, you should phone the clinic when it is next open. In an emergency, you can also phone the hospital and ask to speak to the cardiology registrar on-call who is available 24 hours a day (see Contact details on page 18).

However, if you get one shock and feel unwell – or if you get more than one shock – please phone 999. You will be taken to the accident and emergency department at your local hospital. You should contact us as soon as you can.

If you get a shock from the ICD, it does not affect anyone who is in contact with you at the time. If you are struggling to adjust after having had a shock please contact the ICD clinic for help with your ICD.

Please note: All ICDs are equipped with an alarm to alert patients to possible problems with the device. The alarm makes a sound or vibrates (depending on the type of ICD). If the alarm goes off you need to contact the ICD clinic as soon as possible. We will have a look to see why the alarm is going off.

Remember: Royal Brompton and Harefield hospitals do not have accident and emergency (A&E) departments.



ICD patient support

Some patients may feel a little anxious after having an ICD implanted. This is perfectly normal. If you are finding it hard to adjust to life with your ICD or if you have any concerns, please ask for help and contact the ICD clinic.

You may find it helpful to join a patient support group where you can share experiences with other patients in the same situation. If you are interested in finding out more, please ask us for details. Your GP may also be able to refer you to local psychology services.

The importance of planning for the future

People who develop a terminal illness – a health condition you are likely to die from – may decide they no longer want to receive shocks from the ICD.

They (or their families) may find that shocks from the ICD become unpleasant and are no longer helpful. For example, if a person is dying from an illness not related to their heart condition and shocks from an ICD will not save their life.

If a person or their family decide they no longer want ATP or shocks from the ICD

- We can switch off just the defibrillator function of the ICD.
- This will leave the pacemaker function working as usual to prevent slow heart rhythms.

Talk to your family and friends

We recommend that you discuss with your family and friends what could happen if you become terminally ill. Please make them aware of your wishes concerning the ICD functions.

We know that conversations about end of life care can be difficult and emotional, but it is important to have them early.

The decision to switch off an ICD function may need to be taken by your relatives if you become too unwell to make it yourself.

Our supportive and palliative care team can also be helpful when difficult decisions need to be made. (see Contact details on page 18).

Switching off an ICD defibrillator function

Arranging to have an ICD defibrillator switched off takes a little time. You or a member of your family first need to contact the ICD clinic (see Contact details on p18).

When the ICD defibrillator function is switched off

- The ICD continues to provide pacemaker function to prevent slow heart rhythms.
- The ICD no longer provides ATP or shock therapy in the event of fast abnormal heart rhythms (VT or VF).
- Turning off the ICD defibrillator function:
 - is straightforward
 - is not painful
 - does not by itself cause death.
- Any decision to switch off the defibrillator function is reversible. If your health changes, the function can be switched on again.



Contact details

Harefield Hospital

ICD clinic

01895 828 553

(Monday to Friday, 8.30am to 4.30pm)

Email: **gstt.pacinghh@nhs.net**

Clinical nurse specialists

01895 826 580 or via the main hospital switchboard on

0330 12 88121, and ask the operator for **bleep 6339** (available Monday to Friday, 8am to 4pm)

Email: **gstt.devicenurseshh@nhs.net**

Supportive and palliative care team

01895 828 922

(Monday to Friday, 8.30am to 4.30pm)

If you feel unwell during evenings, weekends or public holidays please call **0330 12 88121** and ask to speak to the cardiology registrar on-call.

Useful information

For more general information about pacemakers, visit:

- Arrhythmia Alliance
www.heartrhythmalliance.org
- British Heart Foundation
www.bhf.org.uk

If you have concerns about any aspect of the service you have received in hospital and feel unable to talk to those people responsible for your care, call the Patient Advice and Liaison Service (PALS) on:

- Royal Brompton Hospital – 020 7349 7715
- Harefield Hospital – 01895 826 572

Or email gstt.rbhh-pals@nhs.net. This is a confidential service.

Royal Brompton Hospital
Sydney Street
London
SW3 6NP
Phone: 0330 12 88121

Harefield Hospital
Hill End Road
Harefield
Middlesex
UB9 6JH
Phone: 0330 12 88121

Website: www.rbht.nhs.uk

Royal Brompton and Harefield hospitals are part of Guy's and St Thomas' NHS Foundation Trust

Language and accessible support services

If you need an interpreter or information about your care in a different language or format, please contact the department your appointment is with.