



Having an implantable cardioverter defibrillator (ICD) implant

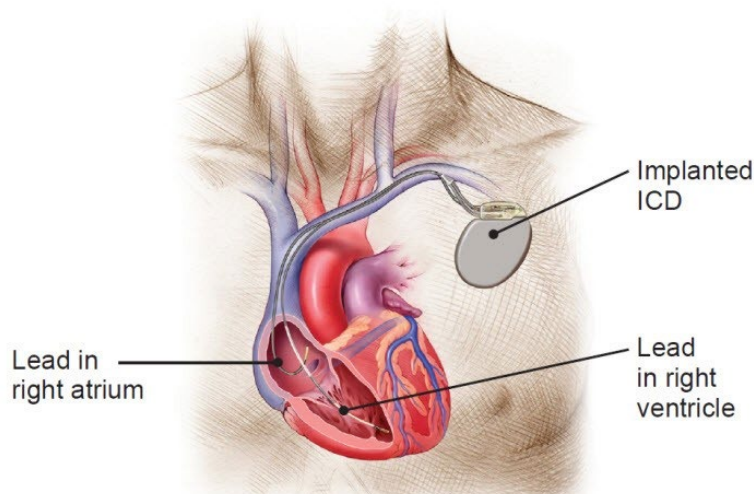
This leaflet explains what having an implantable cardioverter defibrillator entails and how it may affect your daily life.

What is an implantable cardioverter defibrillator (ICD)?

An ICD is an electrical device that is implanted under the skin of the chest to monitor and treat dangerously fast heart rhythms. Most ICDs also have the ability to function as a pacemaker too. An ICD is slightly bigger than a pacemaker and has two main components: the generator and one or more wires called leads. The generator contains the battery, capacitors and computer components that make the ICD work. The leads are special wires that allow the device to transmit small electrical impulses, which cause the heart to contract, as well as continuously monitor the heart rhythm.

ICD's can be implanted with either one, two or three leads. The type of ICD you receive will depend on your clinical diagnosis.

Transvenous ICDs are implanted below the left collarbone, but may also be implanted below the right collarbone, with the leads being inserted via veins into the heart.



Transvenous ICD, *Image provided courtesy of Boston Scientific.*
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Why do I need an ICD?

You have had or are at greater risk of having an abnormally fast heart rhythm which could be dangerous. This could result in you experiencing symptoms such as palpitations, dizziness, or in serious cases, a cardiac arrest. A cardiac arrest is when an abnormally rapid heart rhythm such as ventricular tachycardia (VT) or ventricular fibrillation (VF) prevents the heart from being

Compassionate

Aspirational

Resourceful

Excellent

able to pump blood around the body in an effective manner. An ICD will continuously monitor the heart rhythm and deliver therapy to correct the arrhythmia as required.

In addition, a biventricular ICD can help to improve symptoms for people who have heart failure with dyssynchrony (when the two lower chambers of the heart do not beat in time with each other). This is known as cardiac resynchronisation therapy and uses the pacemaker function of the device to help the heart pump more effectively by synchronising the two lower chambers of the heart.

Common conditions that may require the implantation of an ICD are:

- Ischaemic cardiomyopathy (heart muscle damage after a heart attack)
- Heart failure with dyssynchrony (the two lower chambers of the heart do not beat in time with each other)
- Dilated cardiomyopathy (abnormally stretched heart muscle, a condition which may be hereditary)
- Hypertrophic cardiomyopathy (abnormally thickened heart muscle, a condition which may be hereditary)
- Brugada syndrome (affects the way the electrical signals travel through the heart, a condition which may be hereditary)
- Long QT syndrome (affects the way the electrical signals travel through the heart, a condition which may be hereditary)
- Arrhythmogenic ventricular cardiomyopathy (AVC), where muscle cells may be replaced with fatty and fibrous scar tissue, a condition which may be hereditary
- Idiopathic cardiomyopathy (the cause or mechanism is unknown)

How does an ICD work?

The ICD continuously monitors the heart rhythm and will be able to treat an arrhythmia in one of two ways.

- **Fast pacing:** The first therapy involves the delivery of fast electrical impulses to the heart to restore a normal rhythm. This is known as antitachycardia pacing (ATP).
- **Shock:** If the ATP is unsuccessful, then the device is able to deliver one or more shocks to restore the heart to a normal rhythm.

What are the risks and benefits?

The main benefit is the lifesaving protection against dangerously fast heart rhythms. A biventricular ICD can also improve symptoms of heart failure and help to slow progression of the disease.

Having an ICD implanted is usually a safe procedure. Complications from this procedure are rare but may include:

- **Pain:** you will be given local anaesthetic and sedation if you wish. There may be discomfort during the procedure around the area where the incision is made, but if it is painful please speak up and we will give you more medication as necessary.
- **Bleeding and bruising around the ICD site:** (common).

- **Keloid scar formation:** an enlarged raised scar that can be skin coloured, pink or darker than the surrounding area (*uncommon*).
- **Arrhythmia:** the heart rhythm can be temporarily disrupted during the procedure; most often experienced as feeling 'extra' beats which quickly resolve (*2 in 100 people experience this*).
- **Haematoma:** a large collection of blood at the implantation site. A pressure bandage may be applied to help decrease the haematoma, but it may require drainage in more severe cases. (1 in 100).
- **Pneumothorax:** this is an accidental puncture to the lung, which may be caused when inserting a needle into a vein. This can be detected on a chest x-ray following the procedure and can sometimes rectify itself without any treatment but may require a chest drain (1 in 100).
- **Lead displacement:** this usually occurs within the first month of insertion, which is why you are asked to limit the movements of the arm on the side of the ICD. A repeat procedure may be required to reposition or replace a dislodged lead (5 in 100).
- **Infection:** antibiotics are given routinely to prevent infection. Serious infections will likely require the removal of the device and leads (1 in 100).
- **Tamponade:** a collection of blood may develop around the heart if it is punctured by one of the leads. This will be treated promptly while you are still in the hospital (1 in 500).
- **Death:** this is extremely rare but could theoretically occur following inadvertent perforation of the heart, or due to a dangerous rhythm occurring at the time of implant from which you cannot be resuscitated (*1 in 1000*).

Before the procedure

- On the day of the procedure, you will be admitted to our cardiac day ward which is known as the 'Jim Shahi Unit' (JSU), located on level 1 in Battle Block. The JSU unit is an emergency unit and there may be unforeseen delays. Please bring some reading material along to occupy you while you wait.
- You may have a light breakfast and drink as normal prior to the procedure.
- Most people can continue to take their regular medications. Please refer to the accompanying letter for specific instructions on this. If you have any concerns regarding your medications, please ring the Jim Shahi Unit (JSU), 0118 322 6502 for clarification.
- It is common to have an MRSA swab prior to the implant, and details about this will be given in your letter.
- If you are pregnant, or think you may be pregnant, you should notify a member of the administration team prior to the procedure.
- Tell one of the nurses if you have any allergies.
- Please be sure to bath or shower prior to your procedure, avoiding any moisturizers or oils to the skin.

During the procedure

- A nurse will undertake some pre-procedure checks, including taking your blood pressure, an electrocardiogram (ECG) to assess your heart rhythm and insert a small tube (cannula) into your arm. The tube is used to give you a one-off dose of antibiotics at the start of the procedure. This helps to minimise the risk of infection. The tube can also be used during the procedure to give any other medications, such as pain relief or sedation as required.
- The risks and benefits of the procedure will be explained to you, and you can raise any questions you might have with the doctor. You will then be asked to sign a consent form.
- Having an ICD implanted is a relatively straightforward process and is carried out in a room called a catheter lab, which looks like an operating theatre. The team usually consists of one or more cardiology doctors, a cardiac physiologist, one or more nurses and a radiographer. All members of the team will be wearing a hat and mask.
- You will be taken into the catheter lab and asked to lie flat on a narrow table. You will be attached to a heart monitor (ECG), have a blood pressure cuff put on your arm and a probe attached to your finger.
- Your chest area will be cleaned with an antiseptic solution and a sterile sheet placed over you. This will cover your face temporarily.
- The doctor will inject a local anaesthetic into the skin near to where your ICD will be inserted. This will sting initially but the skin will soon become numb. A small cut is made where the device will be implanted, and the doctor will make a 'pocket' for the device to sit in. You may feel a tugging sensation when this is being done, which may be uncomfortable.
- One or more leads are then passed through a vein via the same incision and are positioned into the heart under X-ray guidance. The leads are then connected to the generator once the team is happy with the physiological parameters. The generator will be placed into the pocket that was created earlier.
- The skin is closed with absorbable stitches or glue. The wound site is then covered with a transparent dressing that allows for close monitoring of the wound at home. The procedure can take between 1 and 3 hours, depending on the type of ICD you are having.
- You will then spend 2-4 hours recovering on JSU ward, where you will have a chest X-ray and a post implant device check. Your post implant care will be explained during the post implant check.

What happens after the ICD implant?

You will usually be able to go home later in the afternoon or evening depending on the time you had the procedure done. In some cases, you may need to stay overnight.

You are not allowed to drive yourself, so please arrange for a friend or relative to pick you up from the hospital and stay overnight with you.

You will be given an ICD information pack while recovering on the day ward and can read this when you get home. This will provide you with further details on the post implant care.

- **Wound care:** the wound will be closed with either absorbable stitches or a special type of skin glue. If the wound has been covered with a dressing, please keep it on for 7 days. If glue has been used, this will gradually flake off as the wound heals. You should keep the wound dry for 7 days. If you notice any signs of redness, swelling, oozing, or bleeding from the

wound or have a high temperature, please contact the cardiac rhythm management (CRM) team so that this can be dealt with as soon as possible. The cardiac care unit (CCU) can be contacted out of hours (contact details below).

- **Limiting arm movement:** you will be given a sling to wear for the first 24 hours to remind you not to move the arm on the affected side. You should limit your arm movements to below shoulder height for the first 4-6 weeks to minimise the chance of a lead dislodging. You should avoid doing activities such as swimming or golf during this period and avoid heavy lifting. It is important to continue to do small movements of the arm to prevent a frozen shoulder.
- **Driving:** you must tell the DVLA that you have had an ICD fitted.
 - Group 1 licence: if your device was implanted prophylactically (as a preventative measure) or you had a heart rhythm that did not incapacitate you, driving may resume 1 month after implantation if you remain asymptomatic and no ICD therapies have been delivered. If you had a cardiac arrest or had an abnormal rhythm that was associated with incapacity, you will not be able to drive for 6 months.
 - Group 2 licence (e.g. HGV driver): you must not drive, and your licence will be refused or revoked permanently. Further information can be found on the DVLA website.
 - If you receive any type of therapy from your device, you may need to notify the DVLA and stop driving for a further period of 6 months. Please ask your doctor for guidance in this regard.

Guidance is subject to change so please ensure you check the DVLA website for up-to-date advice: www.gov.uk/guidance/cardiovascular-disorders-assessing-fitness-to-drive#implantable-cardioverter-defibrillator-icd

- **Insurance:** you should tell your driving and travel insurance company that you have had an ICD fitted.
- **Electrical gadgets, mobile phones, and magnets:** the recommendation is to keep all electrical gadgets and mobile phones 6 inches (15cm) away from your device. It is best not to keep your mobile phone in a shirt or jacket pocket that may be near to your device. If you have an induction hob, you should aim to keep your device 1-2 feet away from the hob. Properly maintained household appliances, including microwaves are safe to use.
- **MRI scanners:** most newly implanted devices are MRI conditional and are designed to allow you to safely undergo an MRI scan if required. Certain conditions need to be met and settings may need to be adjusted prior to and after having an MRI. A member of your medical team can contact the Cardiac Rhythm Management Team if you require an MRI.
- **An ICD identification card** will be given to you, and you should **always carry this around with you**. This is particularly important when attending a hospital or a dental appointment and when travelling.
- **A device check** will be arranged for you in 6 weeks' time. It is important to attend regular checks to ensure the appropriate functioning of your ICD. Some of these checks may be done remotely via a home monitoring system, which will be explained to you on the day of implant or at your first check.

Useful contact information

Cardiac Rhythm Management (CRM)/ Devices Clinic: 0118 322 6636 (Mon - Fri, 8am -6pm)

Jim Shahi Unit (JSU): 0118 322 6502 (Mon - Fri, 8am -6pm)

Cardiac Care Unit: 0118 322 6684 (Mon - Sun, 6pm - 8am)

Clinical Admin Team (CAT 11) (bookings): 0118 322 6676 (Mon - Fri, 8am - 5pm)

British Heart Foundation: www.bhf.org.uk

Arrhythmia Alliance www.heartrhythmalliance.org/aa/uk/patient-booklets

DVLA www.gov.uk/guidance/cardiovascular-disorders-assessing-fitness-to-drive#implantable-cardioverter-defibrillator-icd

This leaflet is printed privately for the Cardiac Fund. It was set up in 1976 for the purpose of providing cardiac services that would otherwise not be available through National Health resources. Our Cardiac Laboratory was equipped through the fund and many other areas in the Department have also benefited from equipment and staff training.

If you would like to contribute, please scan the QR code below to donate direct to the fund online, alternatively, cheques should be made payable to:

The Royal Berks Charity Cardiac Fund U226

Royal Berks Charity

Royal Berkshire NHS Foundation Trust London Road

Reading RG1 5AN Telephone 0118 322 8860 www.royalberkscharity.co.uk

To find out more about our Trust visit www.royalberkshire.nhs.uk



Please ask if you need this information in another language or format.

RBFT Cardiac Rhythm Management Clinic, June 2024

Next review due: June 2026.