

Implantation of an Implantable Cardioverter Defibrillator (ICD)

Your doctor has recommended that you are fitted with an Implantable Cardioverter Defibrillator (ICD). An ICD is a small, metal, battery-powered device which works in a similar way to a pacemaker. It sends impulses (fast pacing) to your heart muscle when your heart beats too quickly (which can cause life-threatening heart rhythms). These life-threatening heart rhythms are called ventricular tachycardia (VT) and ventricular fibrillation (VF). If your heart continues to beat too quickly, it will then give shock treatment to your heart. The ICD can also treat slow heart rhythms by working as a pacemaker and stimulating the heart chambers to pump at the same time.

The procedure is normally carried out using local anaesthetic (to make your skin and the area below go numb) and sedation (to make you feel drowsy). If appropriate, we may recommend that you are given a general anaesthetic. Your cardiologist will discuss which of these is the most suitable anaesthetic for you to have.

How do I prepare for the procedure

We will let you know before you come for the procedure (usually by letter), whether there are any specific instructions you need to follow. The letter will include important directions for stopping eating and drinking.

Please make sure you have a shower, bath or wash before you come into hospital/on the ward before your procedure. This helps to make sure your skin is clean and reduces the risk of infection.

What happens before the procedure?

The doctor (or nurse) will explain the procedure to you, including the risks and benefits. You will then be asked to sign a consent form to confirm you are happy for the procedure to go ahead.

You will need to change into a hospital gown for the procedure. You may be able to keep your underwear on as long as it contains no metal (such as sequins or poppers).

Before the procedure, a small plastic tube (called a cannula) will be inserted in your arm, so that we can give you antibiotics (to reduce the risk of infection), pain relief and sedation during the procedure. The sedation will make you feel relaxed and sleepy but you will not be fully asleep.

If you have any concerns, please do not hesitate to ask, as we would like you to be as relaxed as possible about the procedure. We will be happy to answer any queries you may have.

What happens during the procedure?

The ICD will be implanted under your skin and in a pocket that the cardiologist will make in front of the muscle on the left or right of your upper chest (usually the left). Occasionally it is implanted under the muscle layer. As with any surgical procedure, there will be a visible scar, but we make every effort to use the smallest cut possible. Afterwards, you may be able to feel a small bump in your skin over the top of the ICD.

We will then insert the leads into your heart, using X-ray images to guide the doctor. The ICD will then be connected to your heart using one or two flexible leads that pass through a vein under your collar bone. Moving the leads inside your heart is completely painless.

During the procedure we may need to test the shock function of the ICD. This will

depend on your medical history. At this point you will be given more sedation and we will 'bring on' a life-threatening heart rhythm (VF) under controlled circumstances. The ICD will then be programmed to treat the heart rhythm with shock therapy.

When the ICD has been implanted (and tested if needed) the wound will be closed using a single long stitch in the skin, rather than lots of small stitches. This may be a non-dissolvable stitch, which will need to be removed by the Practice Nurse at your GP's surgery, or may be a dissolvable stitch, which will disappear over the next few weeks. You will be told which stitch you have and what you need to do before you are discharged. The wound will be covered by a dressing. Please keep it covered for seven days and do not get it wet. After seven days you can remove the dressing and bath and shower as normal. If at any point you have any concerns about your wound, please see your practice nurse or GP.

The procedure time varies, but can take around two to three hours.

Benefits

The main benefit of having an ICD is that it works to protect you from the risk of sudden cardiac death due to dangerously fast heart rhythms (VT or VF). The ICD can also treat some rhythm disturbances without you being aware of it, by fast pacing, and without shocks.

Risks

All medical procedures have a risk of complications. There are some risks associated with implantation of an ICD that are important to know about:

- There is a 1% (1 in 100) risk of developing a collapsed lung (pneumothorax) as a result of a lead perforating (making a hole) in a lung. This often requires no treatment, but you may need a tube called a chest drain to be inserted to help reinflate your lung.
- There is a 0.2% (1 in 500) risk of developing a collection of blood around your heart (cardiac tamponade), as a result of a small hole being made to the inner lining of your heart during the procedure. This often requires no treatment, but you may need to have a small drain inserted to drain away the blood.
- There is a 3% (3 in 100) risk of one of the leads becoming dislodged. If this happens, the lead would need to be repositioned soon after the ICD is implanted. We will carry out a chest X-ray to check for this after the procedure.
- There is a 2% (2 in 100) risk of the lead failing (not working). We would need to replace the lead during a further procedure.
- There is a 5% (5 in 100) risk of receiving an inappropriate shock from the device.
- There is a 3% (3 in 100) risk of developing an arrhythmia (altered heart rhythm) during the procedure.
- Bruising over and around the ICD site is common, but not usually serious. About 5% (5 in 100) of people develop a collection of blood called a haematoma over the ICD; this normally goes away on its own, but occasionally will need to be drained.
- There is a 0.5% (1 in 200) risk of the area around the ICD and/or the leads becoming infected after implantation, which then results in the ICD and leads being removed. To minimise this risk, you will be treated with antibiotics before and after the implantation (extraction).
- There is a 0.1% (1 in 1,000) risk of death from this procedure.
- You will experience pain from this procedure. We strongly advise that you take regular painkillers to help with this, which we will provide.

Your doctor will recommend that you have an ICD if they feel that the benefits of the procedure clearly outweigh the risks. The figures quoted in this document are average figures for all cases. Your Cardiologist will discuss with you any specific risks that may apply to you, before the procedure.

Driving restrictions

After having an ICD implantation, there will be driving restrictions in line with the DVLA. We will be able to give you advice on these restrictions before you go home.

If you hold an HGV or PSV licence you will be permanently barred from driving. If you have a taxi licence you will need to speak to your taxi licencing authority.

Alternatives

Your doctors have recommended that this is the most appropriate treatment for your condition. If you wish to discuss alternatives, please talk to the doctor before you sign the consent form.

What happens after the ICD implantation?

Once you are fully awake, you should be able to eat and drink. The ICD will be checked the following working day, to make sure it is working correctly. You will also have a chest X-ray to confirm everything is in the right place and there are no complications. If everything is well you are likely to be able to go home.

You will need to travel home with a relative or friend. You should not go home on public transport after this procedure. You will need to be taken home by car. This will be more comfortable for you and also quicker for you to return to the hospital if there are any complications on the journey home.

How does the ICD work?

The ICD will be programmed to the best settings for your condition. It will be able to give you the following treatments:

Bradycardia pacing pulses

If your heart beats too slowly, the ICD can send small impulses to it, generating extra heartbeats when required. These are called paced beats. As these impulses are very small they are not painful and normally go unnoticed. The device can tell when pacing is needed and will provide this for as long as necessary.

Anti-tachycardia pacing (ATP) pulses

If your heart beats too quickly, the ICD can send out faster pacing impulses which may help your heart get back to a normal rhythm. This can be done within a few seconds and you may not be aware this has happened. You may experience palpitations or feel light-headed or dizzy when your heart is beating too quickly.

ICD shocks

If your heart rate is very fast, or if the ATP has not corrected the rhythm, the ICD can deliver a shock. The sensation of these shocks varies for each person, and has been reported as a push to the chest, thump in the back or a big jolt. If you experience one of these shocks it can lead to a loss of confidence and anxiety, for which help is available. It is important that you contact the ICD nurses if you have a shock. You should not drive after a shock or collapse. Any shock that has happened will be recorded on the device and the cardiac physiologist or ICD nurse will be able to see this during your follow-up checks. The ICD nurses can be contacted at the John Radcliffe Hospital, Oxford.

Tel: **01865 221 667**

Follow-up appointments

You will normally be seen in the ICD outpatient clinic after approximately 8 weeks and then usually every 6 months after this. This is to monitor that the defibrillator is working and to check the recorded information.

When the time comes for the battery (generator) to be replaced, you will need to come into hospital for a small operation for a new ICD to be fitted.

How to contact us

Cardiac Rhythm Management Office	01865 220 981 (Monday to Friday, 9.00am to 5.00pm)
Cardiac Angiography Suite	01865 572 675 (Monday to Friday, 7.30am to 9.00pm)
Cardiology Ward	01865 572 675 (24 hours)
ICD Nurse Nurses	01865 221 667 (Monday to Friday, 8.00am to 5.00pm)

Further information

For further information, we recommend the following websites:

British Heart Foundation

Tel: 0300 330 3322

Website: www.bhf.org.uk

British Cardiovascular Society

Website: www.bcs.com

Arrhythmia Alliance

Tel: 01789 867 501

Website: www.heartrhythmcharity.org.uk

Please note:

The department where your procedure will take place regularly has professional observers. The majority of these observers are health care professionals, qualified or in training and on occasions, specialist company representatives. If you do not wish observers to be present during your procedure please let a doctor or nurse know.

If you have a specific requirement, need an interpreter, a document in Easy Read, another language, large print, Braille or audio version, please call **01865 221 473** or email **PALSJR@ouh.nhs.uk**

