NHS
Royal Cornwall Hospitals
NHS Trust

Implantation of an Implantable Cardioverter Defibrillator (ICD)

affix patient label

What is an Implantable Cardioverter Defibrillator (ICD)?

Your doctor has recommended that you have an Implantable Cardioverter Defibrillator (ICD). An ICD is a device like a pacemaker. It is a heart regulator and monitor implanted under your skin, which consists of a generator (about the size of a large matchbox) and one or more fine wires called electrodes.

The ICD can provide the following treatments:

- **Anti-bradycardia pacing pulses** – if your heart beats too slowly, the ICD can send small impulses to the heart, generating extra heartbeats when required to speed it up. These are called paced beats.
- **Anti-tachycardia pacing pulses (ATP)** – if your heart beats too quickly, the ICD can send out faster pacing impulses, which can help the heart get back to a normal rhythm. This is done within seconds.
- **ICD shocks** – if your heart rate is very fast, the ICD delivers a shock within your chest to treat life-threatening heart rhythms and restore a normal heart rhythm. This can feel like a hard blow or kick to the chest.

Why do I need this procedure?

The main benefit of having an ICD is that it protects you from the risk of sudden cardiac death due to abnormal fast heart rhythms (ventricular tachycardia or ventricular fibrillation). You will have been advised to have an ICD implanted because you have had, or are at high risk of having, a serious and fast heart rhythm abnormality which may be a threat to your life. You may even have survived a cardiac arrest. Having an ICD may be the best way of treating you and prolonging your life.

What does it involve?

You will usually come in to hospital on the day of your procedure. A nurse will complete a pre-procedure check list and you will be given a hospital gown to change into. A specialist doctor will explain the proposed implantation to you and ask you to sign the consent form to confirm that you understand the procedure and agree to go ahead with it. Please ask any questions you want. A porter will take you to the Cardiac Catheter Lab where you will have the procedure.

1. You will have a local anaesthetic, heavy sedation or rarely general anaesthetic for your procedure. Antibiotics will be given into a vein before we begin the procedure.
2. An incision (cut) is made under your collarbone.
3. The electrode(s) (leads) are inserted into a large vein (blood vessel) that lies just under your collar bone, and positioned in your heart using X-ray screening for guidance.
4. Once in position, the electrode(s) are connected to the generator, which is placed in a pocket under your skin, in front of your shoulder.
5. Once in place, the skin is closed using dissolvable stitches and/or skin glue. Very rarely non-dissolvable stitches are used. If this is the case we will inform you after your procedure and advise when they need to be removed.

How long does it take?

The procedure takes about an hour.

Will I have any pain or discomfort?

As you will be given an anaesthetic, the procedure shouldn't hurt. Your shoulder may feel uncomfortable for a week or so afterwards. You may have swelling and bruising but this should return to normal in two to three weeks.

You will be able to feel the ICD beneath your skin but don't worry, it won't pop out. It may feel rather strange at first.

What happens afterwards?

You will stay in hospital overnight and go home the next day. Once back on the ward and fully awake (if applicable) you should be able to eat and drink. Please ask for painkillers if you need them.

You may have a chest X-ray to check that the electrodes are in the correct position and that there has been no damage to your lung.

The following day, a cardiac technician will check the ICD. A sensor is held over the ICD to programme it. This is painless, but you may be aware that your heart is beating slightly faster than normal. The device is then checked to make sure it is effective at stopping your fast heart rhythm.

When can I go home?

- Please make sure that a friend of relative collects you and takes you home.
- You should be able to return to your normal activities in a week or so.
- Avoid vigorous arm movements for a few weeks, but otherwise move your arm normally.
- We will give you an ICD registration card (plus information from the manufacturer) following your implantation. Please carry it with you and show it to any dentist or doctor who may treat you.
- If you notice redness, swelling or a discharge at the site of your implant (signs of infection), **please tell your GP immediately** as infection can spread.

Are there any risks or complications?

The implantation is usually very successful, but as with all procedures there are some small risks.

- Lung puncture – depending on whether we use a needle to access your vein, there is up to 1% chance of puncturing the lung. This is because the vein used for the electrode/s runs close to the lung. If we have used a needle to access your vein we will carry out a chest X-ray before you go home to check whether there is any escaped air. Often no corrective treatment is needed but sometimes the escaped air has to be removed using a small drain (tube).
- Electrode slipping – there is a 1-2 % chance of the electrode slipping out of place. If this happens it must be repositioned under X-ray guidance with a further operation.
- Infection – the 1-2% risk of infection is minimised using antibiotics given before the procedure commences. If infection occurs the pacemaker system may need removing with another operation.
- Bruising – there is a small risk of a major bruise/haematoma which may rarely require removal with a separate operation. A small amount of bruising is usual and settles within a few days.
- Electrode failure – defibrillator electrodes are associated with up to 10% long-term failure rate that may require electrode removal and/or replacement. Defibrillator electrode removal may in itself be a high risk procedure when the electrode has been in place for many years.
- Inappropriate shocks – about 5% of patients implanted with an ICD will receive an ICD shock when one was not required because there has either been a malfunction with the electrode or the defibrillator thinks it has seen a dangerous heart rhythm.

For some patients the risks may be higher; please speak to your specialist doctor before your operation if you have any worries.

When can I drive?

There are driving restrictions related to having an ICD and these will be discussed with you. As a guide:

- If you have already had a fast heart rhythm or if you have had a collapse you must not drive for 6 months and must inform the DVLA that you have had an ICD implanted. Before you are allowed to resume driving the DVLA will contact your cardiologist to check you are fit to resume driving.

- If your ICD is being implanted because you are at risk of having a fast heart rhythm in the future, but have not had one before, or collapsed before, you must not drive for one month and must inform the DVLA that you have had an ICD implanted.
- If you are having a replacement ICD, you cannot drive for one week.

How long will my ICD last?

The ICD will last for years but the batteries will eventually run down (on average after 6-9 years) and then it will have to be replaced. The battery will be monitored when you have your regular device checks.

You may not require an ICD to be fully active for your whole life, especially if your health changes significantly (such as developing strokes, end-stage heart/kidney/lung failure, cancer etc). When a defibrillator is inactivated, the rapid pacing and shock functions are turned off but the defibrillator can still function as a basic pacemaker when needed.

Will I need further appointments?

Yes, you should attend regular check-ups at an ICD clinic. Some of the monitoring can be done with equipment supplied by the hospital but used at home with the phone and/or the Internet.

Do I need to take any precautions?

If you get a single shock from your ICD and you feel well, phone your local ICD clinic within 24 hours. It is not urgent but needs to be recorded. However, if you get a single shock from your ICD and you feel unwell or if you get several shocks from your ICD, phone 999 and ask for urgent medical help.

- **Mobile phones** – it is safe to use a mobile phone, but keep it as far as possible from your ICD, using the opposite ear or a headset.
- **Electronic surveillance** – security at airports or anti-theft devices in shops can interfere with ICDs. They are safe provided you go through quickly, do not linger, and inform security staff.
- **MRI scans** – there may be restrictions on MRI scanning but increasingly devices are used that are compatible with MRI scanning. Other scans are safe.
- **Lithotripsy** – this is a type of treatment for kidney stones, which is unsuitable for patients with ICDs.

Any questions?

If you need any more information or have any queries please contact the Cardiac Investigation Unit on 01872 252726.

Further support and information is available from the:

British Heart Foundation
08450 708070
www.bhf.org

Arrhythmia Alliance
Helpline - +44 (0)1789 867501
PO Box 3697
Stratford-Upon-Avon
Warwickshire CV37 8YL
www.heartrhythmcharity.org.uk

If you would like this leaflet in large print, Braille, audio version or in another language, please contact the General Office on 01872 252690

Patient copy

CONSENT FORM 1
PROCEDURE SPECIFIC PATIENT AGREEMENT

NHS
Royal Cornwall Hospitals
NHS Trust

NHS number: .....
Name of patient: .....
Address: .....
Date of birth: .....
CR number: .....

AFFIX PATIENT LABEL

Implantation of an Implantable Cardioverter Defibrillator (ICD)

Insertion of wires to heart chambers and attaching to electronic pulse generator +/- induction and termination of arrhythmia

STATEMENT OF HEALTH PROFESSIONAL (to be filled in by health professional with appropriate knowledge of proposed procedure, as specified in consent policy)

I have explained the procedure to the patient. In particular, I have explained the intended benefits:

- *To manage heart rhythm (causing dizzy spells, black outs, fast heart beating, dangerous rhythms etc)*

Significant, unavoidable or frequently occurring risks:

- *Bleeding, bruising, infection (2-3%) and pain*
- *Defibrillator electrode failure (lifetime risk up to 10%)*
- *Inappropriate shocks (5%)*

Uncommon but more serious risks:

- *Pneumothorax (damage to lung covering leading to air leak and lung collapse), pleural effusion, pericardial effusion, damage to blood vessels (including those supplying the heart), dangerous heart rhythms or cardiac perforation (occurs in 1 in 100 procedures and risk of death less than 1 in 500 procedures)*

Uncommon possible later issues:

- *Displacement of pacemaker leads, major bleeds needing re-exploration, scarring*

Any extra procedures which may become necessary during the procedure:

- *Blood transfusion (required very infrequently)*
- *Pleural or pericardial drain (required very infrequently)*
- *Other procedure (please specify):*

I have also discussed what the procedure is likely to involve, the benefits and risks of any available alternative treatments (including no treatment) and any particular concerns of this patient.

I have given and discussed the Trust's approved patient information leaflet for this procedure: Implantable cardioverter defibrillator (ICD) (CHA3088) which forms part of this document.

I am satisfied that this patient has the capacity to consent to the procedure.

This procedure will involve: ☐ General and/or regional anaesthesia ☐ Local anaesthesia ☐ Sedation

Health Professional signature: ..... Date: .....

Name (PRINT): ..... Job title: .....

STATEMENT OF INTERPRETER (where appropriate)

I have interpreted the information above to the patient to the best of my ability and in a way in which I believe he/she can understand.

Interpreter signature: ..... Name (PRINT): ..... Date: .....

affix patient label

Implantation of an Implantable Cardioverter Defibrillator (ICD)

STATEMENT OF PATIENT

Please read this form carefully. If your treatment has been planned in advance, you should already have a copy of the patient information leaflet which describes the benefits and risks of the proposed treatment. If not, you will be given a copy now. If you have any further questions, do ask - we are here to help you. You have the right to change your mind at any time, including after you have signed this form.

I agree to the procedure or course of treatment described on this form.

I understand that you cannot give me a guarantee that a particular person will perform the procedure. The person will, however, have appropriate experience.

I understand that I will have the opportunity to discuss the details of anaesthesia with an anaesthetist before the procedure, unless the urgency of my situation prevents this. (This only applies to patients having general or regional anaesthesia).

I understand that any procedure in addition to those described on this form will only be carried out if it is necessary to save my life or to prevent serious harm to my health.

I understand that tissue samples will only be taken in relation to the procedure explained to me. No samples will be taken for quality control, clinical education or research purposes.

I have been told about additional procedures which may become necessary during my treatment. I have listed below any procedures **which I do not wish to be carried out** without further discussion.

.....

I have received a copy of the Consent Form and Patient Information leaflet: Implantation of an Implantable cardioverter defibrillator (CHA3088) which forms part of this document.

Patient signature: ..... Name (PRINT): ..... Date: .....

A **witness** should sign below if this patient is unable to sign but has indicated his or her consent.
Young people / children may also like a parent to sign here (see guidance notes).

Witness signature: ..... Name (PRINT): ..... Date: .....

CONFIRMATION OF CONSENT (to be completed by health professional when the patient is admitted for the procedure, if the patient has signed the form in advance).

On behalf of the team treating the patient, I have confirmed with the patient that they have no further questions and wish the procedure to go ahead.

Health Professional signature: ..... Date: .....

Name (PRINT): ..... Job title: .....

Important notes (tick if applicable):

☐ See advance decision to refuse treatment ☐ Patient has withdrawn consent (ask patient to sign/date here)

Patient signature: ..... Name (PRINT): ..... Date: .....

File copy

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