

# Implantable cardioverter defibrillators (ICDs)

Heart Information Series Number 19



**British Heart  
Foundation**

This is one of the booklets in the *Heart Information Series*. For a complete list of booklets, see page 43.

We welcome your comments on this booklet.  
Please fill in the feedback form on page 53.

We update this booklet regularly. However, you may  
find more recent information on our website  
**bhf.org.uk**

## Contents

About this booklet	4
Why do I need an ICD?	5
Heart rhythms	8
What is an ICD?	11
How is the ICD implanted?	15
Will I be able to feel the ICD inside me?	22
What does it feel like when the ICD delivers its treatment?	23
Possible complications	25
Follow-up and battery life	28
Everyday life with an ICD	29
ICDs and electrical interference	32
Questions and answers	34
What to do if someone has a heart attack or cardiac arrest	39
For more information	42
About the British Heart Foundation	46
Useful phone numbers	49
Technical terms	50
Index	51
Your comments please	53

## About this booklet

Implantable cardioverter defibrillators – ICDs – have transformed the lives of many people with life-threatening abnormalities of the heart rhythm.

This booklet is for people who are about to have, or already have, an ICD implanted. It is also useful for family and friends who want to find out more about ICDs. It explains:

- what an ICD is and what it does
- how the ICD is implanted
- what it feels like when the ICD delivers its treatment, and
- what happens at follow-up appointments.

It also answers some common questions that people ask about ICDs.

This booklet is not a substitute for the advice your doctor or cardiologist (heart specialist) may give you based on his or her knowledge of your condition.

## Why do I need an ICD?

ICDs are used for:

- people who have an abnormal heart rhythm, and
- people who may be at high risk of developing an abnormal heart rhythm.

### Abnormal heart rhythms

The normal healthy heart has a regular beat or rhythm. Most people have a heart rate in the range of 60 to 90 beats a minute while they are resting. But in some people the pumping chambers of the heart – the ventricles – suddenly change rhythm and beat very quickly. This means that the heart cannot pump enough blood around the body.

ICDs are used to treat two types of rhythm disturbances (arrhythmias) – ventricular tachycardia and ventricular fibrillation. (We explain more about these on pages 9 and 10.) These arrhythmias have many different causes, but they most commonly happen in people who have had a heart attack and in people with cardiomyopathy (a disorder of the heart muscle). Sometimes people who have heart failure may also have an abnormal heart rhythm. On the other hand, some people who have ventricular tachycardia or ventricular fibrillation may have no other signs of heart disease.

## **If you are at high risk of developing an abnormal heart rhythm**

ICDs are also used for people who have not yet had any symptoms of ventricular tachycardia or ventricular fibrillation but who are thought to be at high risk of developing one of these abnormal heart rhythms. This includes people who have had heart attacks, people with cardiomyopathy, and people with rare conditions that affect only the electrical system of the heart, such as the long QT syndrome and Brugada syndrome.

## **Other ways of treating or preventing abnormal heart rhythms**

There are other ways of treating or preventing abnormal heart rhythms. For some people, drugs can be used. And some people may have a catheter ablation procedure or surgery to destroy or isolate the part of the heart that is causing the abnormal rhythm. However, even if your doctor recommends one of these treatments for you, he or she may also recommend having an ICD as a back-up.

## **Before you have an ICD implanted**

Before you are given an ICD, you will need to have a number of tests. These tests may include:

- monitoring your heart rhythm with a special ECG monitor
- an ultrasound scan of your heart (echocardiography), or
- cardiac catheterisation (when small devices are passed into the heart through a fine tube).

For more information on these tests, see our booklet *Tests for heart conditions*.

ICDs are only used to treat problems with the heart rhythm. They do not treat other symptoms such as chest pain or breathlessness.

People with an ICD can often live a normal life with very few restrictions. And you have the reassurance that, if you get a fast heart rhythm, you will have a built-in 'lifesaver'. In fact the whole idea of having an ICD fitted is so that you can get on with your life and not have to worry about your irregular heartbeat. You will have to make some changes to your life, but many people say that they get used to those changes after a while. We talk more about everyday life with an ICD on page 29.

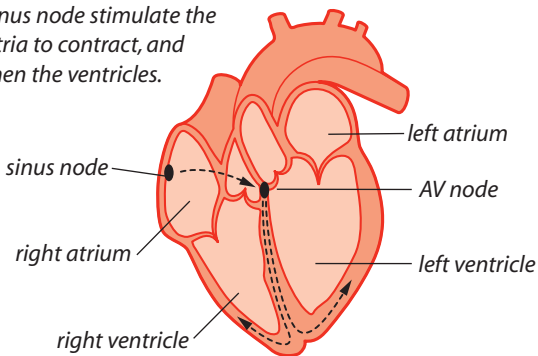
## Heart rhythms

### The normal heart rhythm

The normal heartbeat is controlled by electrical signals from a group of 'pacemaker' cells in the heart called the sinus node. These signals stimulate the synchronised contraction of the four chambers of the heart – the two atria (the collecting chambers) and the two ventricles (the pumping chambers). Each contraction (one heartbeat) forces blood out of the heart and around the arteries of your body. Most people have a heart rate of between 60 and 90 beats a minute when resting.

### ***Normal heart rhythm***

*Electrical signals from the sinus node stimulate the atria to contract, and then the ventricles.*

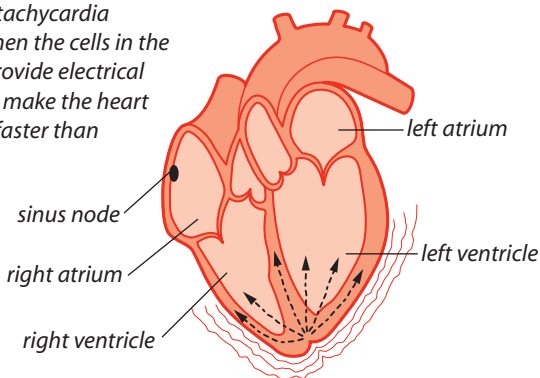


## Ventricular tachycardia

This condition develops when cells in the pumping chambers of the heart – the ventricles – produce electrical signals which ‘hijack’ the heart rhythm and make the heart beat much faster than it should. This means that there is not enough time for the ventricles to fill with blood in between contractions, and so not enough blood is pumped out. If, as a result, the brain does not get enough oxygen, the person may faint, or feel dizzy or breathless, or get a pain in the chest. In more serious cases, it could lead to unconsciousness and even death.

### ***Ventricular tachycardia***

*Ventricular tachycardia develops when the cells in the ventricles provide electrical signals that make the heart beat much faster than it should.*



## Ventricular fibrillation

Ventricular fibrillation is another problem caused by the ventricles of the heart. But this time, the heart rhythm is so chaotic that the heart 'quivers' instead of contracting and doesn't pump any blood around the body. This is fatal unless an electrical shock is delivered to the heart to restore its rhythm.

## What is an ICD?

ICD stands for ‘implantable cardioverter defibrillator’. An ICD system is made up of:

- a pulse generator, and
- one, two or three electrode leads.

A modern **pulse generator** is slightly larger than a small matchbox and weighs about 75 grams (3 ounces). It contains a battery-powered electronic circuit in a sealed unit. You can see a picture of a pulse generator on the front cover. The pulse generator is usually connected to the inside of the heart by one or more **electrode leads** which pass through a vein. These are very fine, flexible wires, covered in plastic or silicone rubber.

The ICD constantly monitors your heart rhythm. If it senses that a rhythm disturbance is beginning, it can deliver one of the following treatments.

- If the rhythm disturbance is not too serious, the ICD delivers a short series of low-voltage electrical impulses (paced beats) which will often correct the heartbeat without the need for any further action. This is called pacing.
- If the ICD senses an irregular heartbeat which needs an electrical shock, it can deliver a light electrical shock known as cardioversion.
- If this doesn’t work, or if the ICD senses a more

serious rhythm disturbance, the ICD will deliver a bigger electrical shock to your heart in order to stop the abnormal beating and get the heart rhythm back to normal. This bigger electrical shock is known as defibrillation.

There is usually a delay of between 3 and 12 seconds between the ICD detecting an abnormal heart rhythm and delivering the electrical shock. In a small number of cases, more than one shock is needed.

### ***Pacing***

*This picture shows the heartbeat of a person with ventricular tachycardia (a fast heartbeat) whose ICD delivers pacing to restore a normal rhythm.*

*ventricular  
tachycardia*

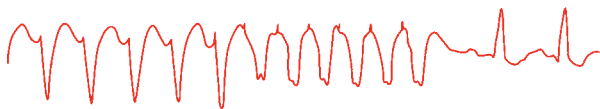
---

*pacing*

---

*normal  
rhythm*

---



## ***Delivering an electrical shock***

*This picture shows the heartbeat of a person with ventricular fibrillation (a 'quivering' heartbeat). The ICD delivers an electrical shock and restores a normal rhythm.*

*ventricular  
fibrillation*

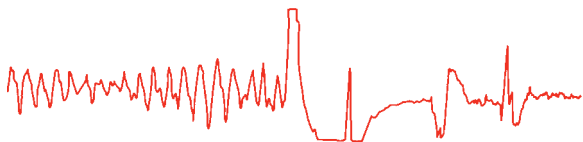
---

*electrical  
shock*

---

*normal  
rhythm*

---



## **Bi-ventricular devices and resynchronisation devices**

Some people who have heart failure may also need to have an ICD to treat an irregular heartbeat such as ventricular tachycardia or ventricular fibrillation.

Some of these people will benefit from an ICD with a single lead. However, others may need a special type of ICD called a bi-ventricular device or resynchronisation device. These devices have three electrode leads. One lead is connected to the atrium and one lead to each of the two ventricles (the pumping chambers of the heart).

As well as delivering an electrical shock to treat irregular heartbeats, this type of ICD can help to synchronise the pumping chambers of your heart (the ventricles) so that they beat in time with each other. This is called resynchronisation therapy. It is a valuable treatment for some people with heart failure, but not everyone who has heart failure will need to have it or will be suitable for it.

## How is the ICD implanted?

If your local hospital does not implant ICDs, you will need to go to a cardiac centre at a hospital to have the procedure done. It takes anything from one hour to three or more hours to implant an ICD. The length of time depends on the type of device you are having. For example, implanting a bi-ventricular device or resynchronisation device is more complicated and takes longer than other types of ICDs. You will need to stay in hospital either overnight or for one or two days. Sometimes the implant is done as a day case, which means that you don't have to stay overnight in hospital.

Most people have a local anaesthetic as well as sedation, but some may have a full (general) anaesthetic. Your cardiologist will discuss this with you before you have the implant.

Almost all ICDs that are now used are 'transvenous'. This means that the pulse generator delivers electrical signals through an electrode lead that runs inside a vein to the heart. The pulse generator is usually implanted in the upper chest near the shoulder (in a 'pectoral' position). This is similar to how most pacemakers are implanted too.

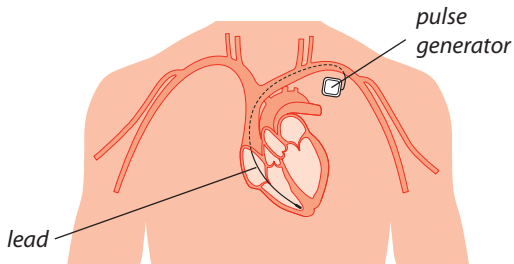
There are two stages to implanting an ICD.

- 1 First, the electrode leads are inserted.
- 2 Then, the pulse generator is implanted.

### Inserting the electrode leads

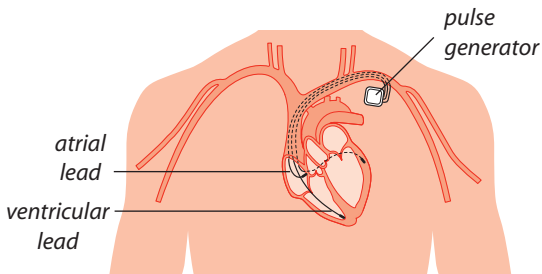
A small cut is made in the front of your shoulder just below your collarbone, and the electrode lead is fed through a vein into the right ventricle of your heart. (See the pictures on the next page.) Many people also have a second lead inserted, leading to the right atrium (upper chamber) of the heart, in order to pace the atrium and sense the rhythms there. If you are having a bi-ventricular device or resynchronisation device, a third lead is placed next to the left ventricle.

The cardiologist will check the position of the electrode lead (or leads) on an X-ray screen. When the leads are in the right place, they are secured with a stitch at your shoulder. Tests are carried out to check that the leads are working properly.



### ***Implanting an ICD with a single lead***

*A single lead is placed in the heart.*



### ***Implanting an ICD with two leads***

*Two leads are used – one is placed in the ventricle and one in the atrium.*

## Implanting the pulse generator

This is the second stage of the procedure. Once the wiring has been put in place and tested, the doctor will make a small 'pocket' or space for the pulse generator unit. As pulse generators have become smaller, most are now implanted in the 'pectoral position'. This means that it is under the muscle or skin, below the left collarbone. (In the past, the pulse generator was implanted in the abdomen instead of in the pectoral position, but this is rarely done any more.)

The doctor makes a pocket in the wall of your chest between your collarbone and your nipple, usually underneath the muscle. He or she then attaches the pulse generator to its leads and places it in the pocket.

The doctors and technicians then check that the leads are working properly. They will check that the leads can sense the rhythm of your heart, and that they can deliver pacing and an electrical shock. In some cases they may deliberately put the heart into an abnormal rhythm to make sure that the device will correct it. You would be sedated while they do this. The wound is then closed.

## Going back to the ward, and recovering from the procedure

When you get back to the ward, you will probably sleep for a couple of hours until the sedation or anaesthetic has worn off. A nurse may also attach a heart monitor to you for a few hours. Once you are fully awake you will be given something to eat and drink. Most people are walking around later the same day and are ready to leave hospital the next day. Some leave on the same day.

For the first month after having the ICD implanted, it is important that you do gentle shoulder movements to make sure that your arm remains mobile. You may need pain relief to help with this, especially in the first few days. You can usually start most of your normal activities again within two to four weeks. However, for about the first six weeks it is important that you do not raise your left arm above your shoulder. This gives the leads time to become embedded.

## Before you leave hospital

### Testing the ICD

Before you leave hospital, the doctors and technicians may do some simple tests to check that the electrodes are working properly and to program (adjust) the ICD.

The pacing action of the ICD that we described on page 11 will also be tested before you leave hospital.

The doctors don't usually test the electrical shock function of the ICD again before you leave hospital, but occasionally this may be necessary. If so, the testing may be done while you are either wide awake or slightly sedated. The doctor will send out some special test impulses from the ICD in order to cause an abnormal heart rhythm. The ICD will then respond with the appropriate treatment for the rhythm disturbance and hopefully will correct it immediately. If, for some reason, the ICD does not work properly, your doctors will be able to use an external defibrillator to return your rhythm to normal.

You will also have a routine chest X-ray after the procedure to check the position of the leads.

You may have to have stitches removed but most doctors use soluble stitches which dissolve on their own. Before you go home, you will be told what type of stitches you have.

### **Information about your ICD**

Before you leave hospital, the staff will give you information on everyday life with an ICD, including

information on driving and what you should avoid doing. For more on this, see page 29. They will also explain any special features of your ICD. For example, some ICDs can be programmed to make a special sound when they are about to deliver a shock, or when the battery is getting low, or if there are problems with the electrode leads. These features vary from one device to another.

You will also be given the phone number of your ICD clinic which you can call if you have any questions. Most hospitals ask patients to contact the ICD clinic when their ICD delivers its first shock. You will be given a phone number to call if this happens. You can write all these numbers on page 49 of this booklet.

You will be given a defibrillator identity card which gives information about the type of ICD you have. Always carry this with you so that, if there is an emergency, the doctors, nurses or ambulance staff will know exactly what sort of device you have had implanted. You may also want to ask about the MedicAlert scheme. This is when you wear a bracelet and can alert a medical centre if you have an emergency. The hospital staff, or the staff at your ICD clinic, can tell you more about this scheme.

## **Will I be able to feel the ICD inside me?**

Most people are aware of the ICD, but get used to it quickly. In some people, the outline of the defibrillator may show under the skin.

## What does it feel like when the ICD delivers its treatment?

This varies greatly from one person to another. The information below is a rough guide to what it might feel like.

If an ICD is delivering pacing impulses, you may feel some palpitations – like a ‘fluttering’ in your chest.

If the ICD delivers an electrical shock, it will probably feel like a fairly heavy thump in your chest. You may find this distressing – especially the first time it happens. The shock is less intense than a shock from mains electricity or from a spark plug of a car.

Some people don’t get any warning before the shock is delivered. Other people can get warning symptoms before the shock – for example, dizziness or palpitations. If the rhythm disturbance is serious, it is possible that you may collapse before the shock is delivered. So, if you do get any warning symptoms, you should sit down or lie down so that you don’t injure yourself. Once the shock has been delivered and your heart is back in a normal rhythm, you may want to rest and recover for a few minutes before starting any activity again.

If you still feel unwell after the shock has been delivered, you should go to the accident and emergency department of a hospital. They can then assess you and monitor your heart rhythm, and will be able to contact your ICD clinic if necessary.

## Possible complications

Complications from having an ICD are rare.

There is always a risk during any operation on the heart, but the risk is generally not life-threatening. However, some people who need an ICD already have a damaged heart and may be at greater risk from any form of surgery. Your doctor will discuss the risks with you before you have your ICD fitted.

There is a small risk of infection whenever anything is implanted into the body. If any part of the system gets infected, either immediately after the implantation or later, the infection may spread. If this happens, the whole ICD system may need to be removed. Many doctors use antibiotics when they implant an ICD, to keep the risk of infection as small as possible. If your wound becomes red or swollen, you should call the helpline number at your ICD clinic immediately to get advice.

In a few rare cases, the pulse generator may break through the skin and will need to be implanted again.

Occasionally, one of the electrode leads to the heart may break or move. This happens more often with bi-ventricular devices or resynchronisation devices

than with other types of ICD. Occasionally you may feel a lump under the skin which could be where a lead has moved close to the surface. If this happens, tell your GP immediately, and avoid prodding yourself in that area. Very rarely, a pulse generator may have an electronic failure, but the follow-up visits are designed to prevent and detect this.

Very occasionally, you may receive one or more inappropriate shocks – sometimes a series of them one after the other. If this happens, you should call 999 or go immediately to the accident and emergency department of a hospital. The staff there will temporarily stop the ICD by placing a magnet over it. While it is safe for doctors to do this in hospital, it should never be done anywhere else.

With some people, the treatment given by the ICD will not help them as it should. If this happens and you are unwell, you should call for an emergency ambulance by dialling 999.

If you have any heart emergency and your ICD does not seem to have worked, then you will need normal cardiopulmonary resuscitation (rescue breathing and chest compressions) until the

emergency services arrive. We describe what to do on page 39.

If your ICD gives you a series of shocks one after the other, or if you have any other heart emergency, call 999 for an ambulance or go immediately to the accident and emergency department of a hospital.

## Follow-up and battery life

An ICD battery lasts, on average, for between four and six years, depending on the type of ICD used and how often the device has delivered either pacing or shock treatments. When the battery runs low, you will normally have to have a new pulse generator fitted. You will need to spend one or two days in hospital for this procedure to be done. A new cut will be made – usually on top of the old scar so that you don't end up with several scars.

During each follow-up visit to your ICD clinic, the ICD battery will be checked, and other checks will be done too. Your ICD can be 'interrogated' electronically to find out what it has done since your last visit, using a device called a programmer. This is a small device which is placed on your skin over the ICD. It uses electromagnetic or radio signals to communicate with the ICD and to adjust it if necessary.

The discussion you have with the follow-up and support teams is an important part of your follow-up visit. Each hospital structures its follow-up differently, but you can contact a member of the follow-up team at any time. Don't hesitate to contact them if you have any problems.

## Everyday life with an ICD

Your ICD has been designed to allow you to lead as normal a life as possible. However, you may need to adjust your lifestyle.

### Driving

#### **If you have a car or motorbike licence**

*If you have had ventricular fibrillation or tachycardia*

After you have had your ICD implanted, you must tell the Driver and Vehicle Licensing Authority (DVLA, Swansea SA99 1TU). You will not be allowed to drive for the first six months after your ICD has been implanted.

You can start driving again as long as:

- your ICD has been implanted for at least six months
- your ICD has not delivered any electrical shock or pacing that has made you faint, collapse or feel dizzy within the last six months, and
- you go to regular follow-up sessions at your ICD clinic.

You will need to renew your licence every three years.

*If you have not had ventricular fibrillation or ventricular tachycardia before*

If you have not had ventricular fibrillation or ventricular tachycardia before, the driving restrictions described on page 29 only apply for one month rather than six months. This applies to people who had an ICD fitted because they were at risk of getting ventricular fibrillation or ventricular tachycardia. And it applies to many (but not all) people who have a bi-ventricular device or resynchronisation device.

For more information on driving restrictions for people with an ICD, visit the DVLA website at [www.dvla.gov.uk](http://www.dvla.gov.uk) or call them on 0870 600 0301.

Not being able to drive is a big lifestyle change for many people, so it may be worth planning beforehand how you will get around until you can start driving again.

### **If you have a passenger-carrying vehicle (PCV) licence or a large goods vehicle (LGV) licence**

If you have an ICD implanted, you will not be able to hold a PCV or HGV licence.

## Sports and physical activity

You should avoid doing activities that could be dangerous if your ICD delivered its treatment – for example, skiing, swimming alone, or climbing ladders or scaffolding.

You should also avoid heavy contact sports as these could damage the skin over your ICD or the ICD itself. However, there are lots of activities that you can do safely with an ICD – such as brisk walking, which is a very good form of exercise – and it's important to stay physically active. You can get more advice about exercise and sports from your ICD clinic.

Ask your doctor or nurse if you can join a cardiac rehabilitation programme. The programme usually includes specially designed exercise sessions as well as advice on lifestyle including healthy eating and relaxation techniques. The exercise sessions will give you the confidence to exercise safely.

## ICDs and electrical interference

The performance of your ICD can be affected by strong electromagnetic fields. Although ICDs are usually well shielded to help protect them, you need to be aware of potential risks.

Signals from electromagnets, spot-welding machines, large loudspeakers for audio systems, anti-theft devices, metal detectors (such as those used in airports), and radio or television transmitters can produce different amounts of electrical interference. Some equipment used in hospitals, including certain types of scanners, can have the same effect. Here is some general advice.

- If you work in heavy industry, you should check with your health and safety officer about any magnets and electromagnets at work. And you should always check with a technician at your ICD clinic as well.
- Avoid going through metal-detector security devices used at airports (see page 35 for more on this).
- Avoid standing around or near the anti-theft devices at the doors of shops and libraries. Just walk through them quickly.
- If you have an ICD, you can't have an MRI scan.

For information about other medical tests and treatments, see page 37.

- Microwave ovens do not affect ICDs unless the microwave is not working properly.

## **Mobile phones**

There is a small risk that a digital mobile phone could cause interference if it is very close to the ICD. For this reason, we recommend that you keep your mobile phone at least 10 centimetres (about 4 inches) away from your ICD. If you are using one yourself, always use it on the side away from where your ICD is implanted. You don't need to worry if someone else is using one in the same room as you.

**If you have any questions about electrical interference, ask the staff at your ICD clinic for advice.**

## Questions and answers

### **What happens if somebody is touching me when my ICD is delivering an electrical shock?**

If someone is touching you when your ICD delivers a shock, they are not at risk of getting a shock but they may feel a slight tingling sensation which is not dangerous.

You may 'jump' or 'cry out' when you feel the shock and this may frighten people who are with you. It is important that they stay calm, stay with you and reassure you. Relatives and friends need to know that it is safe for them to be there, and also that if you do get an electrical shock it can be very comforting for you to have them there with you. Give your friends and relatives the useful phone numbers that you write in on page 49 of this booklet, so that they will know who to contact and when.

### **Will I still have to take my medicines?**

After you have had your ICD implanted, you may need to continue taking your medicines because of your heart condition – for example, if you have angina or heart failure. This medication may be a combination of drugs to control your heart rhythm and to treat any other existing conditions. Your cardiologist will talk to you about this. It is useful to make a list of all the medicines you are currently

taking and keep it up to date with any changes that are made.

### **Can I travel with an ICD?**

Having an ICD should not prevent you from travelling. Flying is not a problem, but it is always a good idea to carry a 'defibrillator identification card' to show to security staff because you should avoid passing through the magnetic field of the metal-detector security devices used at airports. (See page 32.)

If you are travelling abroad, your ICD clinic may be able to give you the name of a medical contact in the country you are visiting, for you to use if there is an emergency.

### **Is it normal to feel 'low' after the ICD has been implanted?**

People experience a range of feelings, both in hospital and when they go home. People take different amounts of time to adjust to the ICD, and to come to terms with the events that may have led up to having the ICD inserted. Most feel reassured that the device is there to treat any serious rhythm disturbance that may happen.

You may find that your sleep pattern is disturbed and you may feel more aware of your heartbeat,

even when it is normal. It will take time to adjust to this, but most people feel back to normal after a couple of months. You may find it helpful to discuss how you are feeling with your GP or with the doctor, nurse or technician at the follow-up clinic. They are all there to help you.

### **Can I resume a normal sex life?**

Yes, as soon as you feel that you have recovered from the procedure – usually between two and four weeks after your ICD has been implanted.

Many people, especially the partners of those with ICDs, worry that having sex may trigger an abnormal heart rhythm and cause the ICD to discharge an electrical shock while they are in close contact with their partner. Even if this does happen, your partner is in no danger at all and is unlikely to feel anything – unless, of course, you jump slightly as a result of the shock from the ICD. However, it is very rare for people to get a shock from their ICD during sex. You may find it helpful for you and your partner to talk to your nurse or cardiologist about sex, so that you can both feel reassured that it is safe.

### **Can other rhythm disturbances upset things?**

Some people have rhythm disturbance in the upper chambers of the heart (the atria), such as

atrial fibrillation. This can sometimes cause the ventricles (the lower chambers of the heart) to beat quickly and the ICD may deliver a shock because of the very fast heartbeat. If this happens, your doctors may re-programme your ICD in order to prevent it happening again. They may also give you medication to help stabilise the rhythm. It is very important that you report to your ICD clinic any shocks that your ICD has given you.

### **What happens if I need any other medical tests, or an operation?**

If you are due to visit the dentist, have any tests, or an operation, let the medical staff know that you have an ICD. They may ask your ICD clinic's advice on whether they will need help with monitoring your ICD during your test or operation. You cannot have an MRI scan if you have an ICD. If you have an accident such as a bad fall or a car accident, you should tell the doctor or nurse that you have an ICD, in case it needs to be re-checked.

### **What's the difference between an ICD and a pacemaker?**

If a pacemaker senses a slow heart rhythm, it delivers pacing impulses. An ICD does this too but, if it senses a fast heart rhythm, it will also deliver a

burst of rapid pacing, or an electrical shock, to get the heart rhythm back to normal.

### **What support is available to me and to my partner?**

The support available varies from one hospital to another. Ask your local ICD clinic what services are available. For example, there may be a cardiac rehabilitation programme, a support group, or a nurse clinic where you and your partner can talk through any concerns with a specially trained nurse or another health professional.

### **My partner and family want to restrict my activities now that I have an ICD. How do I reassure them that I can get back to my normal life?**

It is not unusual for partners and relatives to get scared about their loved one returning to normal activities. If you find that your partner or your family are being over-protective, it may help if you ask your nurse to talk to them. This can help to reassure them about your condition.

**Remember that the doctors and technicians at your ICD clinic can give you advice on any aspect of your ICD.**

## What to do if someone has a heart attack or cardiac arrest

Ideally, everyone should know what to do if someone has a heart attack or cardiac arrest. About three in every four cardiac arrests happen away from hospital and there may be nobody else around to help.

The British Heart Foundation co-ordinates courses around the country, called *Heartstart UK*, to train people in emergency life support. For more details contact Heartstart UK at the British Heart Foundation.

### If someone has a heart attack

- 1 Get help immediately.
- 2 Get the person to sit back in a comfortable position.
- 3 Phone 999 for an ambulance.

### If a person seems to be unconscious

- Approach with care. To find out if the person is conscious, gently shake him or her, and shout loudly, 'Are you all right?'
- If there is no response, shout for help.
- You will need to assess the casualty and take suitable action. Remember **A, B, C – Airway, Breathing, Circulation.**

# A *Airway*

Open the person's airway by tilting the head back and lifting the chin.



# B *Breathing*

## *Check*

Look, listen and feel for signs of breathing for up to 10 seconds.

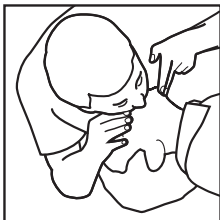
## *Action: Rescue breathing*

If the person is unconscious and not breathing, phone 999 for an ambulance.

Put the person face upwards on the floor.

Open the airway again and give two of your own breaths to the person. This is called 'rescue breathing'.

Close the person's nostrils with your fingers and thumb and blow into the mouth. Make sure that no air can leak out and that the chest rises and falls.



# C

## Circulation

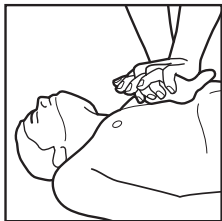
### Check

Check for signs of circulation. This means checking for signs of normal breathing, coughing or movement. Take no more than 10 seconds doing this.

### Action: Chest compression

If there are no signs of a circulation, or if you are at all unsure, start chest compression.

Find the notch at the bottom of the breastbone. Measure two fingers' width above this. Place the heel of one hand there. Place your other hand on top. Press down firmly and smoothly 15 times. Do this at a rate of about 100 times a minute – that's faster than one each second.



Repeat 2 rescue breaths and then 15 chest compressions. Keep doing the 2 rescue breaths followed by 15 chest compressions until:

- the casualty shows signs of life, or
- professional help arrives, or
- you become exhausted.

## For more information

### British Heart Foundation website

**bhf.org.uk**

For up-to-date information on the BHF and its services.

### Heart Information Line • 08450 70 80 70

(A local rate number.)

An information service for the public and health professionals on issues relating to heart health.

### Publications and videos

The British Heart Foundation (BHF) also produces other educational materials that may interest you.

To find out about these, or to order your

**Publications and videos catalogue**, or to order publications, please go to **bhf.org.uk/publications**, call the **BHF Orderline on 0870 600 6566** or e-mail **orderline@bhf.org.uk**. You can download many of our publications from **bhf.org.uk/publications**.

Our publications are free of charge, but we would welcome a donation.

## Heart Information Series

This booklet is one of the booklets in the *Heart Information Series*. The other titles in the series are as follows.

- 1 Physical activity and your heart
- 2 Smoking and your heart
- 3 Reducing your blood cholesterol
- 4 Blood pressure
- 5 Eating for your heart
- 6 Angina
- 7 Heart attack and rehabilitation
- 8 Living with heart failure
- 9 Tests for heart conditions
- 10 Coronary angioplasty and coronary bypass surgery
- 11 Valvular heart disease
- 12 Having heart surgery
- 13 Heart transplantation
- 14 Palpitation
- 15 Pacemakers
- 16 Peripheral arterial disease
- 17 Medicines for the heart
- 18 The heart – technical terms explained
- 19 Implantable cardioverter defibrillators (ICDs)
- 20 Caring for someone with a heart condition
- 21 Returning to work with a heart condition
- 22 Diabetes and your heart

## **Heart health magazine**

*Heart health* is a free magazine, produced by the British Heart Foundation especially for people with heart conditions. The magazine, which comes out four times a year, includes updates on treatment, medicines and research and looks at issues related to living with heart conditions, like healthy eating and physical activity. It also features articles on topics such as travel, insurance and benefits. To subscribe to this **free** magazine, call **0870 600 6566**.

## **Heartstart UK**

For information about a free, two-hour course in emergency life-support, visit our website at [bhf.org.uk](http://bhf.org.uk) or contact Heartstart UK at the British Heart Foundation. The course teaches you to:

- recognise the warning signs of a heart attack
- help someone who is choking or bleeding
- deal with someone who is unconscious
- know what to do if someone collapses, and
- perform cardiopulmonary resuscitation (CPR) if someone has stopped breathing and his or her heart has stopped beating.

## Heart support groups

A heart support group gives you, your partner and family the chance to meet and talk to people who have gone through similar experiences. Some of these groups may be specifically for people with ICDs.

The British Heart Foundation keeps an up-to-date list of all heart support groups in England and Wales which are linked to the British Heart Foundation. To find out the nearest one to you, call 020 7487 7110.

## About the British Heart Foundation

The British Heart Foundation (BHF) is the leading national charity fighting heart and circulatory disease – the UK's biggest killer. The BHF funds research, education and life-saving equipment, and helps heart patients return to a full and active way of life.

We rely on donations to continue our vital work. If you would like to make a donation, please ring our **credit card hotline on 0870 606 3399**. Or fill in the form opposite.





**Please send me information about the following.**

- BHF publications**
- Giving regular donations**  
*Regular donations through a standing order give us the long-term support we need. Just tick for information on how to set up a standing order.*
- Remembering us in your Will**  
*Many people choose to leave a gift to their favourite charities in their Will. We can send you a useful information pack to tell you how to go about it.*
- Local fundraising activities and sponsored events**
- Payroll giving**  
*How you and your work colleagues can donate from your salaries before tax.*
- Buying BHF Christmas cards and gifts**
- Becoming a volunteer in a British Heart Foundation shop**

**Please send your form to the British Heart Foundation. The address is over the page.**

## Useful phone numbers

Before you go home after having the ICD implanted, ask the hospital or clinic staff for the phone numbers of who to call for each of these situations. Write all the phone numbers here.

If you have any questions about your ICD

---

If your ICD delivers an electrical shock

---

Where to go, or who to call, in an emergency

---

Other useful numbers

---

---

---

---

## Technical terms

<b>arrhythmia</b>	A disorder of the heart rhythm.
<b>atria</b>	The two upper chambers of the heart.
<b>cardiac arrest</b>	When the heart stops pumping and 'quivers' or fibrillates instead.
<b>catheter ablation</b>	A procedure used to correct certain types of heart rhythm disorders.
<b>heart failure</b>	When the heart becomes less efficient at pumping blood round the body, either while you are resting or active.
<b>pacing</b>	When the ICD delivers electrical impulses to 'pace' the heart.
<b>palpitation</b>	An awareness of the heartbeat, for example when it feels as if it is beating abnormally fast or slow, irregularly or heavily.
<b>pectoral</b>	To do with the chest.
<b>transvenous</b>	Through a vein.
<b>ventricle</b>	The two pumping chambers of the heart.
<b>ventricular fibrillation</b>	A life-threatening disturbance in the heart rhythm which causes the heart to quiver or 'fibrillate' in a disordered way.
<b>ventricular tachycardia</b>	A condition where there is a fast heart rate – between 120 and 200 beats a minute – in the ventricles (the two larger chambers of the heart).

## Index

arm exercises .....	19
battery life .....	28
bi-ventricular device .....	13
Brugada syndrome .....	6
card (defibrillator identification card) .....	21
cardiac arrest .....	39
cardioversion .....	11
catheter ablation .....	6
complications .....	25
defibrillation .....	12
driving .....	29
electrical interference .....	32
electrical shock .....	12, 13, 23, 34,
electrode leads .....	11, 16
everyday life .....	29
exercise .....	19, 31
feelings .....	35
flying .....	35
follow-up .....	28
heart attack .....	39
heart failure .....	5
heart rhythm .....	8
abnormal heart rhythms .....	5
normal heart rhythm .....	8
ventricular fibrillation .....	10
ventricular tachycardia .....	9
implanting the ICD .....	15
infection .....	25
interference .....	32
leads .....	11, 16
long QT syndrome .....	6

MedicAlert bracelet .....	21
medicines .....	34
mobile phones .....	33
MRI scan .....	32
normal heart rhythm .....	8
over-protectiveness .....	38
pacing .....	11,12
pectoral position .....	15,18
phone numbers .....	49
pulse generator .....	11,18
recovery after the implantation .....	19
rehabilitation programme .....	31
resynchronisation device .....	13
resynchronisation therapy .....	13
security devices .....	32
sex .....	36
shock .....	12,13,23,34
sleep .....	35
sports .....	31
support groups .....	38,45
testing the ICD .....	19
tests .....	6,37
transvenous implantation .....	15
travelling .....	35
ventricular fibrillation .....	10
ventricular tachycardia .....	9

## Your comments please

We would be very interested to hear your views about this booklet.  
Please fill in this form and send it to:

### British Heart Foundation

FREEPOST WD513

LONDON W1E 1JZ.

#### 1 How did you get this booklet?

I got it directly from the British Heart Foundation.

My GP or practice nurse gave it to me.

I got it from a display at my GP's surgery or health centre.

A nurse or doctor at the hospital gave it to me.

I got it from a display in a hospital.

A friend or relative gave it to me.

Other (Please give details.) \_\_\_\_\_

#### 2 Do you find this booklet...

very helpful?

helpful?

not very helpful?

not at all helpful?

#### 3 Do you find this booklet ...

very easy to understand?

easy to understand?

not very easy to understand?

#### 4 What do you think of the design of the booklet (how it looks, the size of the text, the front cover, the size)?

Very good

Good

Not very good

Poor



5 Are there any issues that you need to know about that are not covered in this booklet? If so, what are they?

---

---

---

---

---

---

6 Do you have any other suggestions for how we could improve this booklet?

---

---

---

---

---

---

7 Are you...

...a patient with a heart condition?

...a carer (for example, a relative or friend of someone with a heart condition)?

Other (Please give details.) \_\_\_\_\_

## **Acknowledgements**

The British Heart Foundation would like to thank all the GPs, cardiologists and nurses who helped to develop the booklets in the *Heart Information Series*, and all the patients who commented on the text and design.

Particular thanks for their work on this booklet are due to:

- Jayne James, Senior Lecturer in Nursing, Faculty of Health and Social Care, University of the West of England
- Dr Anthony Nathan, Consultant Cardiologist, St Bartholomew's Hospital, London
- Jenny Tagney, Cardiology Nurse Consultant, Bristol Royal Infirmary, Bristol.

Edited by Wordworks.





*Heart health* is a free magazine produced by the British Heart Foundation especially for people with heart conditions. See page 44 for more information.

**British Heart Foundation**

14 Fitzhardinge Street, London W1H 6DH

**Phone:** 020 7935 0185

**Website:** [bhf.org.uk](http://bhf.org.uk)

**Heart Information Line • 08450 70 80 70**

*(A local rate number.)*

An information service for the public and health professionals on issues relating to heart health.