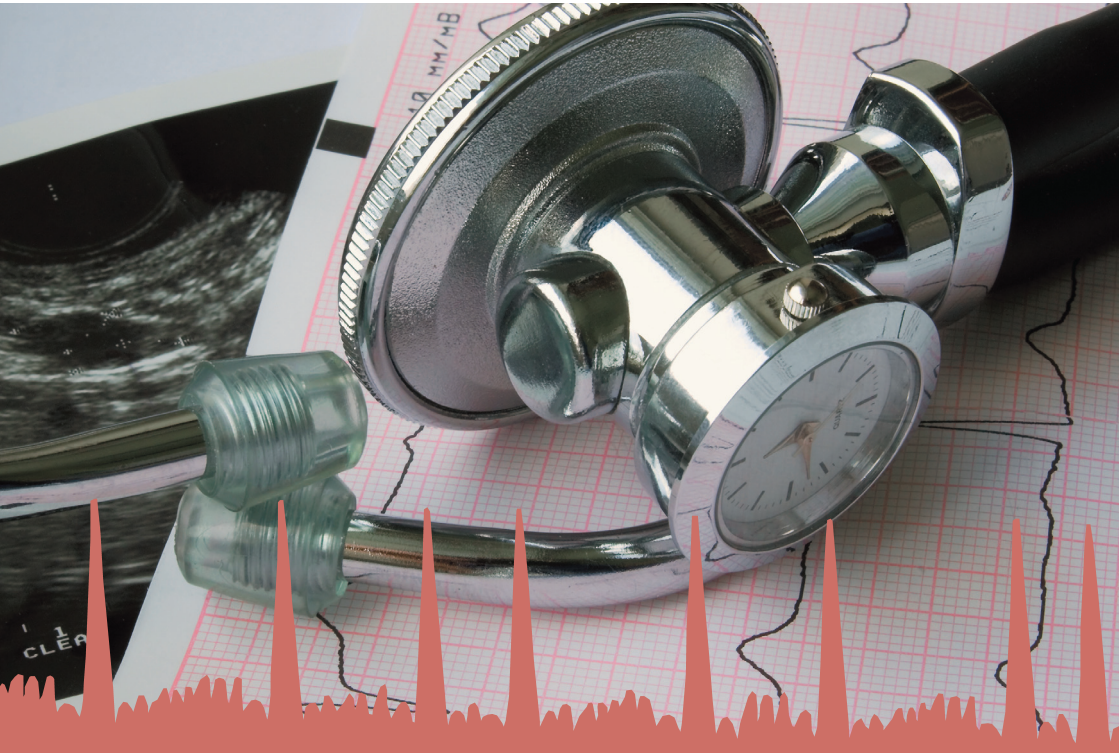
Arrhythmia Alliance

The Heart Rhythm Charity

Promoting better understanding, diagnosis, treatment and quality of life for individuals with cardiac arrhythmias



CRT Patient Information

www.heartrhythmcharity.org.uk

Introduction CRT Patient Information

This booklet is intended for use by people who have, or are about to have a Cardiac Resynchronisation Therapy (CRT) pacemaker or defibrillator implanted and for their family / carers. The information in this booklet comes from research and previous patients' experiences and gives a brief explanation of how the device works and any lifestyle changes that may be required.

This booklet should be used in addition to the information given to you by doctors, nurses and physiologists. If you have any questions about any of the information given in this booklet, please ask your nurse, doctor, cardiac physiologist or at your pacemaker clinic.

Arrhythmia Alliance (**A-A**) is a coalition of charities, patient groups, patients, carers, medical groups and allied professionals.

These groups remain independent, however, work together under the **A-A** umbrella to promote timely and effective diagnosis and treatment of arrhythmias.

A-A supports and promotes the aims and objectives of the individual groups.

Contents

Arrhythmia Alliance patient booklets are reviewed annually.

This booklet will be next updated September 2010 if you have any comments or suggestions please contact A-A.

Glossary of terms

Atria

Top chambers of the heart that receive blood from around the body and from the lungs. The atrium is where the heart's natural pacemaker (the sino-atrial node) can be found.

Arrhythmia

An abnormal heart rhythm.

Bradycardia

A slow heart rate, normally less than 60 beats per minute.

Bundle branch block

Loss of conduction down one of the pathways carrying electrical signals to the ventricles of the heart. Such a delay in electrical activation leads to uncoordinated and inefficient contraction of the heart.

Heart Attack

Occurs when one of the coronary arteries becomes blocked by a blood clot. The blood supply to part of the heart muscle is blocked, causing part of the heart muscle to die.

Pulse Generator

Part of the pacemaker which contains the battery and electric circuits.

Ventricles

The two lower chambers of the heart. The right ventricle pumps blood into the lungs and the left ventricle pumps blood around the body.

Ventricular Fibrillation (VF)

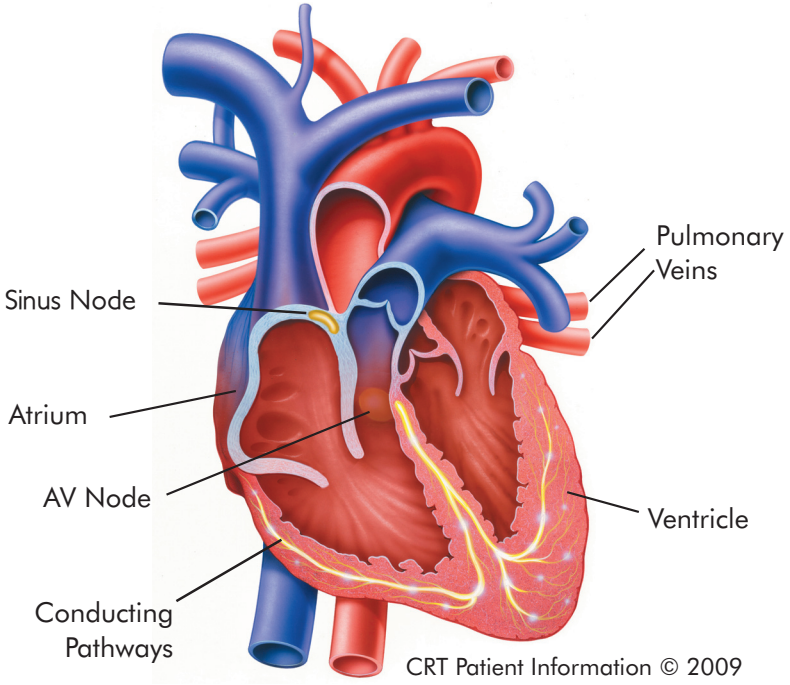
A fast, dangerous heart rhythm which causes the heart to stop pumping. This rhythm needs a shock to stop it and return the heart back to a normal rhythm. A cardiac arrest can soon follow if the rhythm is not treated quickly with a shock.

Ventricular Tachycardia (VT)

A fast potentially dangerous heart rhythm which causes the heart to pump less efficiently, and may lead to dizziness, fainting and unconsciousness. If not treated with medication, pacing or an electric shock, the rhythm may lead to Ventricular Fibrillation.

What is a CRT device?

A CRT device is a special pacemaker that specifically aims to improve the coordination of the heart's contraction. It consists of a generator placed under the skin below either the left or right collar bone which is connected to three leads. These go through a vein to your heart. Two of the leads are the same as those in a normal pacemaker. The difference between a normal pacemaker and a CRT pacemaker is the additional lead which is placed onto the back wall of the heart. There are therefore two leads stimulating the ventricles of the heart at the same time. This can improve heart function by 'retuning' the heart's contraction.



What can the CRT device do?

The CRT device is designed to pace the front and back walls of the heart at the same time to improve the coordination of the contraction. By doing this it can improve the efficiency of the heart and reduce symptoms and prevent or delay further deterioration in heart function.

Why do I need a CRT device?

Some patients with heart failure have a delay in the electrical conduction through the heart. This can be identified on an electrocardiogram (ECG) and is called a bundle branch block. It leads to uncoordinated contraction of the ventricles and rather like detuning a car, leads to weaker heart contraction. The CRT device can 'retune' the heart's contraction which can improve symptoms and also slow further weakness of the heart.

What is the difference between a CRT pacemaker and a CRT defibrillator?

A CRT pacemaker is designed only to retune the heart's contraction. However, some patients with heart failure are at risk of fast irregular heart beats such as Ventricular Tachycardia or Ventricular Fibrillation that prevent effective contraction of the heart. These put your life at risk if they are not treated rapidly. A defibrillator has the ability to pace or shock the heart back into a normal rhythm in the event of such life threatening rhythms. Some CRT devices are combined with a defibrillator in the same pulse generator to give both retuning support to the heart function and protection from these fast irregular rhythms. However not all patients having a CRT device need both. Your doctor will have spoken with you before the procedure to explain which of the two options are most suitable for you.

Will I feel better?

Most patients notice some improvement in symptoms following the implantation procedure but it may take up to six months to become apparent. Some patients do not feel better than before the implant procedure, but it is rare to feel worse. Even patients with no obvious improvement in their symptoms may have a slowing of the deterioration of their condition.

How the heart works normally

The heart is a muscle, whose function is to pump blood and oxygen around your body and to all of your vital organs. It has four chambers, two at the top (the right and left atrium) and two at the bottom (the right and left ventricles). The atria contract just before the ventricles to push the blood into them and fill them fully before they contract. The ventricles then contract powerfully to push blood out to the lungs and the body.

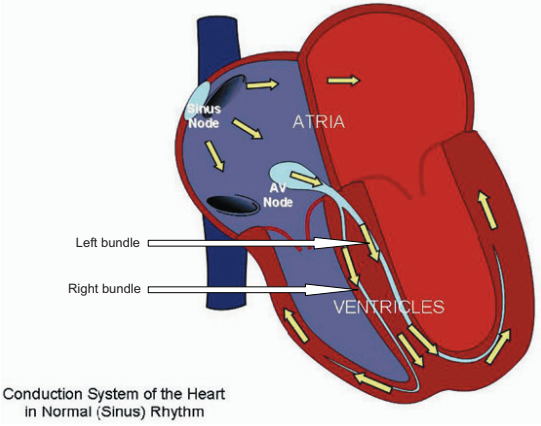
The heart and normal conduction

The heart also has an electrical system, which sends impulses (beats) through the heart causing the atria and the ventricles to contract in coordination with each other. Each normal heartbeat starts as an electrical impulse that begins in the natural pacemaker of the heart (the sinoatrial or SA node) which lies at the top of the right atrium. The electrical signal travels across the two top chambers and down through a small junction box (the atrio-ventricular or AV node) which lies between the upper and lower chambers. It then spreads through the main conduction pathways around the ventricles causing the heart to contract.

Sometimes the electrical system in your heart does not work as well as it should. This is more common in patients with heart failure. When one or other of the main conduction pathways is damaged, the distribution of the electrical current through the heart muscle is slower. This causes certain parts of the heart to contract later than others and reduces the efficiency of each heart beat.

The heart during normal rhythm (sinus rhythm)

The heart is a muscular pump which delivers blood to the body. It is divided into two upper chambers, or "atria", which collect blood returning via the veins, and two lower chambers or "ventricles", which pump blood out through the aorta (main artery) and to the lungs. Normally, the heart beats in a regular, organised way, at a rate of between 50 and 100 beats per minute. This is because it is driven by the "sinus node" an area of specialised cells which emit electrical impulses situated in the atria. These electrical impulses spread through the atria in a smooth and uniformed manner and then into the ventricles via a single connection (the "AV node") as shown in the picture. The electricity then spreads rapidly throughout the ventricles via two main conducting pathways (the bundles) (as shown in the picture).



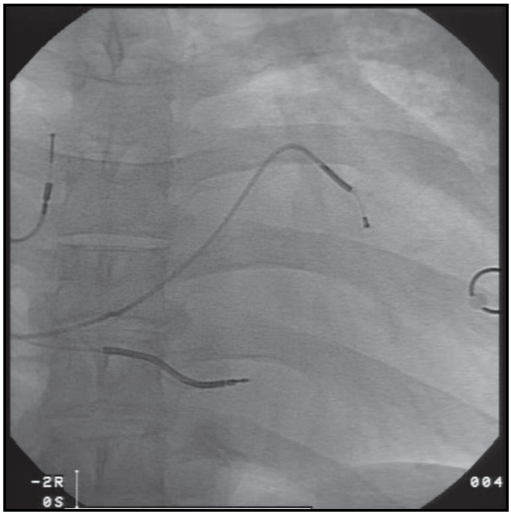
Conduction System of the Heart in Normal (Sinus) Rhythm

How is the CRT device implanted?

Your cardiologist will have explained to you why you need to have the CRT device and the benefits and risks of having one implanted. This will all be explained to you and if you agree to go ahead, you will then be asked to sign a consent form. You will also be given a booklet explaining the consent form before you sign.

Your ward nurse and a porter will take you to the cardiac pacing theatre or catheter lab. Once you are in the pacing theatre another nurse will check your details again and you will be asked to lie on a trolley or operating table.

The procedure is usually performed under a local anaesthetic and you may be given sedation, which will make you relaxed and sleepy. The doctor will inject some local anaesthetic under the skin just below your collarbone (usually the left side). This will numb the area and allow the doctor to pass the leads through the vein that comes from your arm and runs into your heart. The leads are then connected to the pulse generator box, which is about the size of a matchbox. This will be placed under the skin in your chest. The doctor may test the device during the procedure to ensure it is working correctly. You may feel your heart beat go faster as the doctor tests each lead in turn. The incision will then be closed with dissolvable or non-dissolvable stitches. If your stitches need to be removed by your GP, practice nurse or district nurse you will be informed before you leave hospital.



What are the complications of having a CRT device implanted?

Pneumothorax (collapsed lung), is caused by accumulation of air or gas in the pleural cavity around the outside of the lungs, which occurs as a result of injury during insertion of the tubes into the subclavian veins which lie under the collar bone. Depending on the size of the pneumothorax, treatment varies from observation to insertion of a chest drain, which allows the lung to re-inflate.

Infection is a risk with any pacemaker procedure. It is rare and happens less than 1 in 100 implants, but if there is infection, the device usually needs to be taken out to allow this to heal. You will be given antibiotics before the procedure and then some to take home afterwards to try to prevent this.

Lead displacement occurs uncommonly in around 1 in 100 cases. Usually this requires a second procedure to replace the lead.

Twitching / Hiccupping

The additional lead that is placed on the back wall of the heart in CRT devices can sometimes cause twitching which you might feel like a hiccup. This is because the nerve that stimulates breathing (the phrenic nerve) also runs across the back of the heart. Your doctor will try to position the lead as far away from this as possible, and will ask you to take deep breaths and cough once the leadis in place to see if the lead is stimulating the phrenic nerve while he still has the opportunity to move it to another site.
Sometimes however, the best site is one that causes occasional hiccupping. Usually the device can be programmed to avoid this.

What happens after the CRT device has been implanted?

After the procedure and once all the checks have been made, you will be taken back to the cardiology ward. You will be asked to lie in bed for a couple of hours before you can get up, eat and drink. As the wound can feel quite bruised and sore, especially for the first day or two, your nurse will give you regular painkillers. It is very important that you tell your nurse immediately if you have any pain. You will also be given some antibiotics to take before and after the procedure to minimise the risk of infection. The wound should be kept clean and dry until it has fully healed, although it is fine to have a bath or shower after the first three or four days.

Ask your nurse for a protective dressing so that you can bathe without getting the wound wet. Report any problems to your nurse. You should not lift the arm on the same side as the CRT device (usually the left side) above shoulder level

for the first two weeks. This is because there is a small chance that the leads could move out of position. However, it is important to do gentle arm and shoulder exercises to keep the arm mobile. You will probably be allowed to go home the next day provided your device is checked, there are no complications and your doctor / physiologist / specialist nurse assesses it is safe. Your device will be checked before you go home by a cardiac physiologist. This check will involve the use of a special programmer that can look at the device settings and make sure it is working properly. It will also be set to the best programme for your condition. The check will take about 15 minutes and can either be done on the ward or in the pacemaker clinic. Most patients will also have a chest x-ray to check lead positions and make sure all is well following the implant procedure. Please ask the physiologist if you have any questions or worries about the device.

You will be given an ICD identity card, emergency information and instructions at this check. You will also be given a helpline number should you have any queries later on.

Going home

Although most people are pleased to be going home, it is only natural to feel a bit worried. This is very common, especially if you have been in hospital for a long time and the device has just been put in.

However, we try to make sure that you get the help you need to return to as full and active a life as possible. Please feel free to ask questions at any time. Similarly if you feel upset or 'down' once you are at home it is very important that you talk to someone. Please contact your implanting hospital if you have any concerns.

Arm movements

Extra tissue will grow around the lead(s) after a few weeks, which will prevent them from moving out of place. Try to avoid lifting your arm for the first two weeks.

Wound site

Your wound site should take about six weeks to fully heal. Try to avoid wearing tight clothing over the wound until it has healed completely to avoid excess rubbing over the area. If you notice any redness, soreness, swelling, or any signs of bleeding/oozing from the area, report this immediately.

You may be able to feel the pulse generator under your skin as well as other lumps close by. These are the leads that are attached to the box, curled up beside the box under the skin. It is extremely important that you don't try to move the box or leads, but let your ICD clinic know if they continue to bother you.

Will I feel the treatment from the CRT device?

The device will be programmed to the best settings for your condition. Most patients cannot feel the pacemaker functioning. In some positions you may feel twitching as described above. If this occurs please tell the pacemaker clinic. They can arrange to reprogram the device.

If your CRT device is a combined pacemaker and defibrillator system, your cardiologist will program the defibrillator settings for you when the ICD is implanted.

The ICD can give the following treatments, but you may not have all of them programmed. Your physiologist or ICD nurse will be able to tell you what your device has been set to do.

- ### Anti-tachycardia pacing pulses (ATP)
  If your heart beats too fast, the device can send out faster pacing impulses which can help to get the heart back into a normal rhythm. This can be done so quickly by the ICD that many people do not know that this has even happened. However, it is not uncommon to experience palpitations or feel light headed / dizzy. If the ATP does not correct your fast heart rhythm your device will be able to deliver a shock.

- ### Cardioversion shocks
  Your ICD may be programmed to give shocks to your heart during a synchronised specific part of the heartbeat. This type of shock is used to treat Ventricular Tachycardia. These shocks are full energy shocks like a defibrillation shock and some patients may find them uncomfortable.

- ### Defibrillation shocks
  These are full energy shocks which the device will deliver if it senses that your heart is beating so fast that it is life-threatening. These fast heart rhythms are called Ventricular Tachycardia and Ventricular Fibrillation. Patients have reported that having shocks can feel like they have been suddenly kicked or punched in the chest. These shocks can be quite painful but the pain will only last for a few seconds. Others may not feel

anything if their heart is beating so fast that they have become dizzy or unconscious. If someone is with you when you have a shock, they will probably notice you jolt. No harm will come to anyone who is touching you when you receive a shock. Indeed, it can be very comforting and reassuring to have someone put their arm around you as you experience a shock.

When you come to the ICD clinic your physiologist or ICD nurse will examine your device and any treatment that you may have had will be detected.

What should I do if the CRT device gives me a shock?

You may experience warning signs that your device is about to deliver a shock, such as palpitations, or feeling light-headed or dizzy. However, this may happen so quickly that you have no warning at all. If you do think that you are about to receive a shock, you should sit or lie down on the ground. If possible, you should also let someone know how you are feeling.

After a shock you should recover quite quickly. Even if you feel well after the shock you should still contact the implant centre as soon as you can to arrange to have your device checked. You may need to leave a message on an answering machine, but your call will be returned as soon as possible. It may not be necessary to have the device checked following each shock unless you feel unwell, but inform your implanting centre that a shock has occurred at your next check-up.

If you do feel unwell after a shock or if your device has given you several shocks, please dial 999 for an ambulance to take you to your nearest hospital. Your device will be checked to find out why the shocks were given. If you do call for an ambulance, make sure you tell the paramedics that you have a device implanted and show them your identity card along with any emergency instructions you have been given. This will inform them of exactly which type of device you have and what the best course of action will be.

Getting back to normal

Having a CRT device implanted can be seen as a rather big event in your life. However with help and support, most people can adapt well over time. After a fairly short recovery period you should be able to return to previous activities however some restrictions will apply for your own safety.

Driving

Patients who have had a CRT pacemaker implanted can drive after one week, although most centres suggest waiting until the first check at six weeks to make sure that the leads are stable.

The rules are different if your CRT device also contains a defibrillator. The Driving and Vehicle Licensing Agency (DVLA) have strict guidelines in relation to patients who have had a defibrillator implanted whether or not they are safe to drive. There are some restrictions but these vary depending on why you have had your device fitted. It is very important that you discuss this with your nurse, physiologist or doctor at your hospital who will explain this in more detail. You can access the DVLA guidelines at;

http:/www.direct.gov.uk/en/motoring/driverlicensing/medicalrulesfordrivers

You will also need to inform your insurance company that you have had a defibrillator device fitted.

Physical activity

A certain level of exercise is important to keep your heart healthy and after the CRT device is implanted patients are encouraged to do sensible graded exercise. It is natural to be concerned about the possibility of damaging the device, or, if you have a combination device, the defibrillator delivering a shock or stressing the heart.

Following your initial recovery, normally about 4-6 weeks, it is recommended that you try to increase your level of activity if possible. You may be offered cardiac rehabilitation or exercise testing to restore your confidence. Once your wound has fully healed, you will be able to go swimming if you wish.

Contact sports, such as rugby, are not advised as the device or leads may become dislodged. However, some people do play contact sports with appropriate protection but please talk to the doctors, nurses or physiologists at your pacemaker clinic before doing so.

Sexual Activity

It is very common to be reluctant to resume sexual activity especially if you have a combined CRT - defibrillator device. However the device will not cause any harm to your partner, even if a shock is delivered to you during intercourse.

DIY

You can safely use equipment (such as electric drills) as long as they are in good working order, although you should keep them away from your pacemaker site.

Electromagnetic Interference

Electromagnetic interference will not damage your pacemaker but may stop it from delivering any treatment for the period of time that you are in contact with it. Most electrical equipment that you come into contact with in day-to-day life, such as radios, fridges, cookers, computers and microwaves, will not affect your pacemaker as long as they are in good working order. However, should you ever feel dizzy or experience palpitations whilst using an electrical appliance, you should move away from the appliance and telephone the physiologist or doctor at the pacemaker clinic for advice.

When buying electrical equipment / tools / appliances the instructions often say "do not use if you have a Pacemaker / ICD". This is usually to protect the manufacturer from being sued and is not normally a problem. If you do come across any of these items talk to your pacemaker clinic who will check it out for you.

Magnets

Do not carry magnets or place a magnet over your chest! Avoid carrying stereo or hi-fi speakers as they contain strong magnets that can interfere with your device.

Shop doorway security systems

There is a very small risk of interference to your device, so you are advised to walk through shop doorways at a normal pace and not to wait around in this area.

Electronic ignition systems

Avoid leaning over the alternator in a car whilst the engine is running, otherwise it is generally safe to work as a mechanic.

Medical equipment / other hospital treatments

Most equipment used by your hospital or GP surgery will not cause any problems to your device. However it is advised that you let medical and dental staff know that you have a device as technical support may be required before some treatments.

Please take your ID card with you whenever you go to hospital. It may also be useful to contact your implanting centre for advice before you go into hospital for any investigations or operations that are not associated with your device.

It is safe for you to have X-rays, CT scans and mammograms. However you must not have magnetic resonance imaging (MRI) scans. Some electrical nerve and muscle stimulators (TENS units) may cause interference with pacemaker devices but this depends on where they are being applied. If this form of treatment is suggested to you then you should contact your pacemaker clinic for advice.

Operations

If you require an operation, you must tell your surgeon and anaesthetist that you have a CRT device implanted. If you have a combined CRT-defibrillator device it may be necessary to temporarily switch off (deactivate) the shocks therapies for the duration of the operation.

This can be done through a programmer, but equally using a magnet taped over your ICD. This will prevent unnecessary shocks being given during your operation, especially when diathermy is used as this can be sensed by the ICD.

Deactivating defibrillator shocks

Cardiac resynchronisation therapy is designed to improve the heart and delay further deterioration in your condition. The defibrillator portion of combined devices can be temporarily switched off so that you don't get shocks during operations as described. However, there may be certain circumstances which would cause you to consider having the shock portion of a combined device 'deactivated'. For example, if you are diagnosed with a terminal illness, you may not wish to have the added burden of worrying if you will be shocked by your device when this will no longer provide life-saving treatment.
This will only be carried out at your request and if you have been fully informed of your choices and have signed a consent form. Should circumstances change, shock treatments can be easily switched back on.

Travel

You can safely travel abroad with your CRT device, but you are advised to show the security staff your identification card and ask to be searched by hand. This is because the hand held wands can temporarily interfere with your pacemaker.

Walk through the metal detector archway if asked to do so, but the metal casing of the device may set off the airport security alarm. The detector will not cause any harm to your device provided you walk briskly through the arch. You will need to make sure that your travel insurance company is aware that you have a pacemaker. Some insurance companies require written confirmation from your cardiologist that you are fit to travel. Travel companies may also try to increase your insurance premiums to outrageous levels and it is suggested that you shop around if this happens. Many pacemaker clinics carry a list of pacemaker-friendly insurance companies. If you wish, you may be given the address of ICD clinics in the area you are visiting.

Please contact the pacemaker clinic at least six weeks before you intend to travel or check the manufacturer's website for information. Please be aware that your doctor may advise against you visiting very isolated or remote destinations.

Arc welding

This should be avoided.

Mobile phones / iPods / MP3 players

Some studies have shown that mobile phones and MP3 players can affect the pacemaker if held within six inches of the device. It is therefore recommended that you do not keep them in a coat or shirt pocket over the device. Keep the handset more than six inches away; ideally hold your phone over the ear on the opposite side to the device. Avoid direct contact with the antenna whilst making or receiving a call.

Pacemaker Clinic Visits

Your device should be checked regularly and visits may be necessary more often just after the device is fitted. During each clinic visit, the physiologist will examine your device using a special programmer. This machine allows the settings and the battery life of your device to be examined. All the information is saved on a computer disc and stored in your records. Your wound will also be checked and you may have other tests done. Please also take this opportunity to discuss any questions or concerns you have. You may also see the cardiologist or registrar at your clinic visit.

Depending on your device model, you may not always physically need to attend an out-patient appointment at the hospital. Some checks can be carried out remotely and the pacemaker clinic will inform you if this is possible with your particular device. *For further information please see the A-A booklet on 'Remote Monitoring of ICDs'.*

Changing the device

Normally a CRT device battery lasts between five and seven years. Your battery will be checked at every visit to the pacemaker clinic and staff at the clinic will be able to predict when you need a new pulse generator. It will not be allowed to completely run down. In order to have the generator replaced, you will need to be admitted to hospital. The procedure is similar to having your first pacemaker fitted, but it will not usually involve having new leads put in and you usually can go home on the same day. Unfortunately you will be restricted from driving for a week after the new box has been put in, unless there have been any other problems. Clinic staff will be able to advise you on your individual case.

Contacting the pacemaker clinic

Most pacemaker clinics / support services run between 9am and 5pm, Monday to Friday. Ask staff at your implant centre about arrangements to contact them outside these hours.

Please feel free to discuss any concerns with your doctor, physiologist or specialist nurse, at any time.

Useful websites

A list of useful sites can be found at:- www.heartrhythmcharity.org.uk This list is not exhaustive and it is constantly evolving. If we have excluded anyone, please accept our sincerest apologies and be assured that as soon as the matter is brought to the attention of the Arrhythmia Alliance, we will quickly act to ensure maximum inclusiveness in our endeavours.

If you wish to contact us direct please phone on +44 (0) 1789 450 787 or email: info@heartrhythmcharity.org.uk

Please feel free to discuss any concerns with your doctor, physiologist or specialist nurse, at any time.

Further reading

The following list of Arrhythmia Alliance patient booklets are available to download from our website or to order please call +44 (0) 1789 450 787.

- Arrhythmia Checklist - Could your heart rhythm problem be dangerous?
- Atrial Fibrillation (AF)
- AF Checklist
- Blackouts Checklist
- Bradycardia (Slow Heart Rhythm)
- CRT/ICD
- CRT Patient Information
- Catheter Ablation
- Drug Treatment for Heart Rhythm Disorders (Arrhythmias)
- Electrophysiology Studies
- Exercising with an ICD
- FAQs
- Genetic Testing for Inherited Heart Disorders
- Highlighting the Work of Arrhythmia Alliance
- ICD
- Implantable Device Recall
- Implantable Loop Recorder
- Long QT Syndrome
- National Service Framework Chapter 8
- CRT/Pacemaker
- Pacemaker
- Palpitation Checklist
- Remote Monitoring for ICDs
- Sudden Cardiac Arrest
- Supraventricular Tachycardia (SVT)
- Tachycardia (Fast Heart Rhythm)

Please help us to improve services for all those affected by arrhythmias and to save lives by making a donation today. Please complete the donation form below and return to PO Box 3697, Stratford upon Avon, CV37 8YL or visit www.heartrhythmcharity.org.uk and click the donate icon.

Membership is free to individuals, however, if you would like to make a DONATION please complete and return.

I would like to make a donation to A-A and enclose:	£
I have made a donation to A-A via PAYPAL at www.arrhythmiaalliance.org.uk to the sum of:	£
I have arranged a standing order from my Bank/ Building Society Account to A-A, (min amount £10p.a.)	£
Please tick here if you agree to Gift Aid your subscription/donation	☐ Tick here

Gift Aid

Name of taxpayer:.....

Address:.....

..... Postcode: .....

Please allow Arrhythmia Alliance to claim an extra 28p for every £1 you donate at no cost to you. I want Arrhythmia Alliance to treat all donations I have made since 6 April 2000, and all donations I make from the date of this declaration until I notify you otherwise, as Gift Aid donations. I currently pay an amount of income tax and/or capital gains tax at least equal to the tax that Arrhythmia Alliance reclaims on my donations in the tax year. I may cancel this declaration at any time by notifying A-A. I will notify A-A if I change my address. Please note full details of Gift Aid tax relief are available from your local tax office in leaflet IR 65. If you pay tax at a higher rate you can claim further tax relief in your Self-Assessment tax return.

Standing Order Authority

My Bank:

Bank Address:

Please Pay: A-A, Account: 02685818 Sort Code: 30-98-26, Lloyds TSB Plc, 22 Bridge St, Stratford upon Avon, CV37 6AG

The Sum of £/€/$:	On (1st Date): / / 20.....
And after this, every: Month / Year (delete)	Account No.:
Sort Code:	Signature:
Date:	Please hand this form in to your Bank

Credit Card Payment

Card Type:	Expiry Date:
Card Number:	Amount of £/€/$:
Name on Card:	Address:

Arrhythmia Alliance

The Heart Rhythm Charity

Executive Committee

endorsed by DH Department of Health

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Please remember these are general guidelines and individuals should always discuss their condition with their own doctor.

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