

# Having a CRT-D implanted to manage your heart rhythm /condition

## Cardiac Rhythm Management

Information for Patients

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### Introduction

A Cardiac Resynchronisation Therapy Defibrillator (CRT-D) is a special device that aims to make the pumping chambers of the heart beat in time with each other. It will treat your heart if you were to develop a rhythm that is too fast, too slow or that misses beats.

This booklet aims to help you understand why you may need this device, what happens when you come in hospital to have it put in (implanted) and after care when you go home.

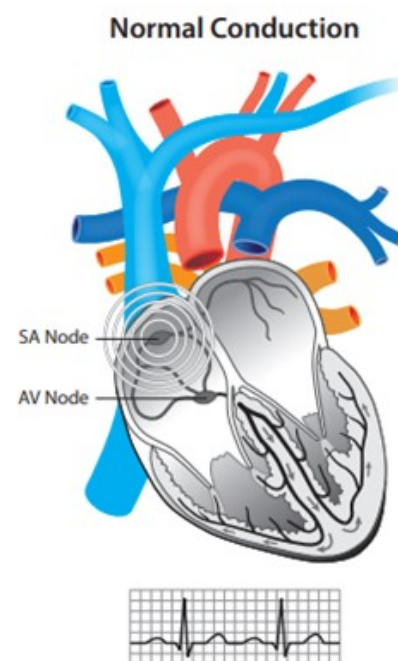
### How does the heart beat normally?

The heart is a pump that is responsible for moving (circulating) the blood around your body and to your brain.

The pump is driven by a electrical circuit which starts from your hearts natural pacemaker called the SA node which sits in the right upper chamber of the heart called the right atrium.

The electrical signals spread through the atria causing the muscle to contract and squeeze the blood into the bottom of the heart.

The signals are then received by the middle junction box in the heart (AV node). They are then slowed down as it passes down to the bottom chambers of the heart (ventricles) by some 'conduction pathways' called bundle branches. This causes the bottom chambers (ventricles) to contract and squeeze the blood around the body and brain from the left side or to the lungs from the right side.



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or call 111 for non-emergency medical advice**

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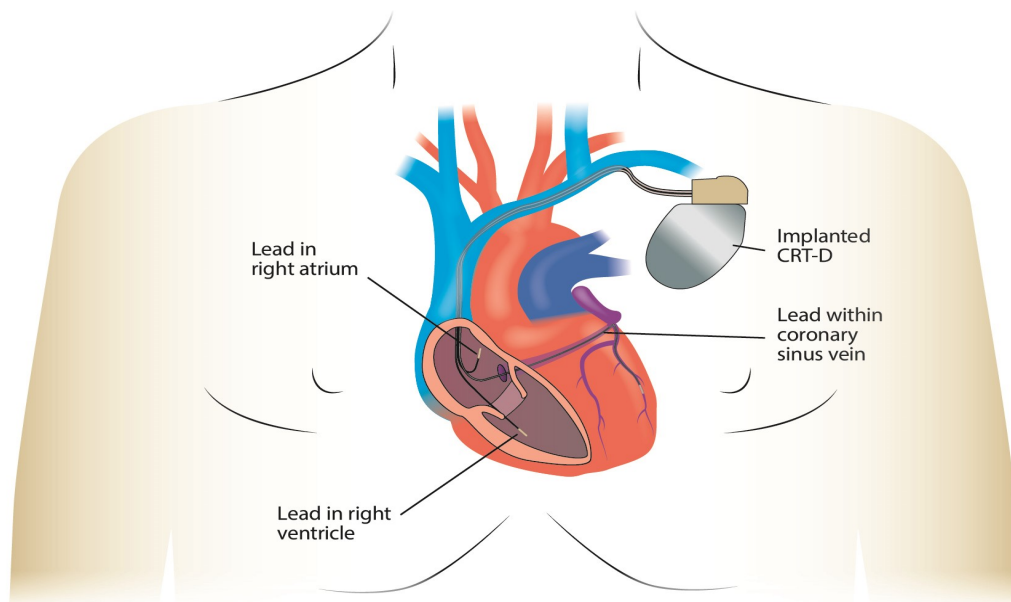
## What is an CRT-D?

A CRT-D, often called a CRT ICD, is made up of an electronic device containing a battery and electronic circuitry. It is connected to 2 or 3 wires (called leads).

A CRT-D is a combined device specifically for people who have had

- a fast, abnormal heart rhythm (or are at risk of developing one)
- **and** need a special pacemaker to help their heart pump better.

It works in much the same way as a standard defibrillator (ICD) but also has the advantage of improving heart failure symptoms, similar to a CRT- pacemaker.



## Why might I need an CRT-D?

You might need a CRT-D if:

- You have had a very fast, abnormal heart rhythm (called ventricular tachycardia or ventricular fibrillation) before. Or if you are thought to be at risk of these due to your type of heart failure, or an inherited heart condition. This includes conditions like LQT Syndrome, Brugada Syndrome, or similar genetic disorders that cause an irregular heart rate. You may even have a CRT-D fitted if you have had a Sudden Cardiac Arrest (SCA).
- You have had a heart attack or have a disease of the heart muscle called cardiomyopathy. These conditions can cause damage to the pumping action of the lower left chamber. They can also cause problems with the electrical pathways in the heart.
- The two sides of your heart are not pumping in a coordinated way, making them less efficient at moving blood. This lack of coordination can lead to symptoms such as breathlessness, dizziness, and feeling tired.

Your cardiologist will advise you on what is best for you.

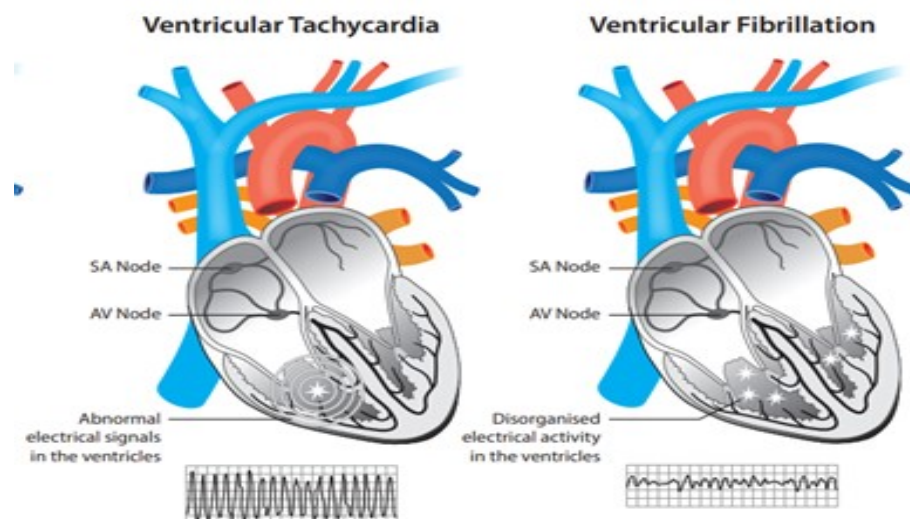
## What is a fast, abnormal heart rhythm?

- **Ventricular tachycardia or VT** happens when cells in the bottom chambers of the heart (ventricles) produce electrical signals which take over the normal heart rhythm. They make the heart beat much faster than it should.

This fast heart rhythm greatly affects how the heart pumps. You may feel your heart beating very fast, feel short of breath, dizzy, have chest pains, feel sick or collapse

Ventricular tachycardia if not treated can worsen into ventricular fibrillation.

- **Ventricular fibrillation or VF** happens when impulses from the ventricles overwhelm the normal heart rhythm. The heart rhythm is so chaotic that the heart quivers (fibrillates) instead of pumping.
- This is cardiac arrest. It is fatal unless an electrical shock (defibrillation) is given to restore the heart rhythm.



## What treatments can a CRT-D deliver?

Most modern CRT-Ds have several main functions. Your cardiologist and cardiac physiologist will select the settings that are best for you.

- **Cardiac Resynchronisation Therapy (CRT)**

This part of your device aims to improve your heart's function by restoring the coordinated contraction of its chambers. This can help reduce symptoms of heart failure like fatigue and shortness of breath.

You generally will not feel this pacing therapy.

Around 2 out of 3 people will see their symptoms improve.

- **Anti-Tachycardia Pacing (A.T.P)**

If your heart beats too fast, the device can send out faster pacing impulses. This can be done so quickly by the CRT-D that many people do not know it has even happened, but sometimes it can make you aware of having palpitations or feeling dizzy.

This therapy aims to gently correct the heart rhythm. It is usually painless.

- **Electric shock (Defibrillation)**

If the gentle treatment (ATP) does not correct your heartbeat, or if your device detects a very fast and dangerous rhythm called ventricular fibrillation, it can give one or more strong shocks to reset your heart. This is called defibrillation.

It may feel like a sudden hard kick or punch in your chest. It can be painful, but only for a few seconds.

If your heart is beating so fast that you pass out, you probably will not feel anything.

Your CRT-D is important because it helps prevent sudden cardiac arrest. It can save your life if dangerous rhythms occur.

- **Pacing for slow heart rates (Bradycardia pacing)**

If your heart rhythm is too slow, the device can send small impulses through the heart which generate extra heart beats when needed.

As these impulses are very small, they are not painful and are not noticed.

Sometimes the heart can beat slowly for a few seconds after treatment for a fast heart rhythm. The device can tell when extra beats are needed and give them as needed.

You may not need this function; your cardiologist and cardiac physiologist will decide this.

## **Deciding whether or not to have an CRT-D**

A CRT-D can be lifesaving, but like any invasive procedure, there are some risks linked to it.

The major benefit of a CRT-D is that it will constantly sense your heart's rhythm, and treat any life threatening rhythm disturbance.

A CRT-D can give some patients more "peace of mind". They feel safer because, along with their medication, the CRT-D can help treat any fast rhythms that their heart may go into.

Your CRT-D can also treat and/or prevent a slow heart rhythm, working as a standard pacemaker.

The reason a CRT-D has been suggested is to prolong life and prevent "sudden cardiac death", rather than to improve exercise capacity or quality of life.

Having a CRT-D implanted is a big commitment. It is important you have read and talked about all the information before you decide to go ahead.

## Are there any risks?

Around 1 in every 10 patients will have some kind of complication from the procedure. These range from common conditions which are irritating but rarely dangerous to rare events which may be serious

- **Infection:** Any procedure has a risk of infection.
  - We will give you antibiotics to reduce these
  - The doctor will wear a sterile gown and gloves
  - We will clean your skin will be thoroughly, but it is impossible to sterilise skin entirely.

Fortunately, device infections are rare (about 3 in 100), but they can be very problematic. Sometimes, the device and all wires have to be removed and the whole process started again.

- **Bruising/bleeding/discomfort:** Some bleeding and bruising are normal. There is a small risk (1 in 100) of major bleeding that might need an operation to stop it. If extra bleeding occurs (sometimes called a haematoma), we will apply pressure. This might lead to more bruising lasting several weeks. Discomfort for several days after the procedure is common. Pain relief will be available on the ward. You should carry on taking it as needed when you get home.
- **Not able to place the 3rd wire:** Sometimes, we cannot place the 3rd wire on the left side of the heart (1 in 10 cases).
- **Wire moves:** There's a small chance (6 in 100) that 1 or more of the device wires might shift out of place. This will be found during Pacing Clinic checks. We may need reposition the wire.
- **Air leak from the lung (pneumothorax):** There's a small risk (1 in 100) of air leaking from the lung into the chest during the procedure. This may need a drain and a longer hospital stay. We will do a chest X-ray before discharge to check for this.
- **Bleeding around the heart (pericardial effusion/tamponade):** This is a very small risk (1 in 200). This is a serious complication, and rarely, it can be fatal.
- **Inappropriate shocks:** The device can be confused by other fast heart rhythms that are not dangerous. Each year, around 3 to 4 people in every 100 with CRT-Ds / ICDs will get a shock they did not need. This can be distressing for the person involved but also for their family and loved ones.
- **No Improvement from CRT:** While you've been carefully chosen as someone likely to benefit from the device, about 70 to 80% of people find that some of their symptoms improve, but it can take a few months for the benefits to show. Not everyone is helped by CRT. If you are among the 20 to 30% whose symptoms stay the same, your medical team will assess why and may adjust your device or medication.
- **Radiation risk:** Ionising radiation can cause cancer which happens after many years. The risk of developing cancer as a result of this procedure is less than 0.01%, which is very low. For comparison, the natural lifetime cancer incidence in the general population is about 50%.  
Depending on the complexity of the procedure there is a small chance of radiation induced erythema (skin reddening). We will tell you if you are at greater risk of this after the procedure is finished.

Your cardiologist will have explained to you why you need to have a CRT-D and the benefits of having one fitted.

We will explain all the risks and benefits to you. If you agree to go ahead, we will ask you to sign an electronic consent form before it is implanted.

## Pre-admission and preparing yourself

All patients having a CRT-D fitted will be seen in the Cardiac Rhythm pre-admission clinic so that you will know what to expect on the day of your procedure.

At your preadmission appointment we will give you specific information about the procedure, your medication and when to stop eating and drinking.

### **Please remember to bring the following to your preadmission appointment:**

- Your current medication or recent prescription
- Your record of INR blood tests if you take warfarin

**If you have been given a preadmission date which is less than 7 days before your procedure please contact the Cardiac Rhythm Team on 0116 258 3848 for advice on your medication.**

At your pre-admission appointment we will give you antimicrobial wash and nasal cream. Please use these as instructed for the 3 days before and on the day of your procedure.

## Eating and drinking (fasting)

**If your admission time is 8 am:** Do not eat anything from midnight the night before. You can have water only until the time of the procedure.

**If your admission time is 1 pm:** Do not eat anything from 9am on the day of the procedure. You can have water only until the time of the procedure.

**If you are having a general anaesthetic, and your admission time is 8 am:** Do not eat anything from midnight the night before. You can have water only up to 2 hours before your procedure.

**If you are having a general anaesthetic, and your admission time is 1 pm:** Do not eat anything from 8am. You can have water only up to 2 hours before your procedure.

You will be admitted to ward 32. Please bring a small overnight bag with you and all of your medication. If you are on warfarin, please bring your anticoagulation booklet and readings.

## What does the procedure involve?

The procedure usually happens under a local anaesthetic. You may also be given some sedation to help you feel relaxed.

### On ward 32:

- When you arrive on ward 32 you will meet the nurse who will be caring for you. They will show you to your bed.
- The nurse will ask you some questions. They will take your blood pressure, pulse, temperature. They will put a small plastic tube (cannula) into the back of your hand.
- You will be given an antibiotic through the cannula. The antibiotics are given to reduce the risk of developing an infection at the CRT-D site. **Please tell the nurse if you have had any allergic reactions to antibiotics.**
- You will change into a hospital gown and paper pants
- If you have hairs on your chest the nurse will need to remove these with clippers, to keep infection risk low.
- A member of staff from the procedure room will come and introduce themselves. They will take you to the room in a wheelchair or on your bed.

### In the procedure room also called Cath Lab:

- The CRT-D implant happens in a special procedure room often called the Cath Lab. It is separate from the ward. This room has X-ray and monitoring equipment.
- The staff in the procedure room will be wearing special gowns, masks, and hats to help protect against infection, as this is a very clean procedure.
- You will be moved from your bed onto the X-ray table, which is narrow and quite firm. Wires for a heart monitor will be attached to your arms and legs, along with other necessary equipment.
- Your upper chest area will be cleaned with an antiseptic solution. Sterile towels will be used to cover the surrounding area. The doctor will inject local anaesthetic into the skin below your collarbone (usually on the left side). This may sting a little. It will numb the area before a small cut (incision) is made.
- A small space (pocket) is then created under your skin that is on top of your chest muscle for the CRT-D device to fit into.
- X-rays are used to help the doctor guide the wires under your skin and along one of your veins into your heart. Wires are typically placed into the right side of your heart. 1 in the top chamber and 1 in the bottom chamber. The 3<sup>rd</sup> wire is placed in the left side of your heart in a vein. This 3<sup>rd</sup> wire can sometimes be difficult to position. Sometimes it may not be possible to place it there (about 1 in 10 cases).
- Before connecting the wires to the CRT-D device box, they are carefully checked to make sure they can sense electrical signals from your heart and work correctly. The device settings are then adjusted to suit your specific needs.
- Once all the wires are in place and checked, they are connected to the CRT-D device box. The box is then carefully fitted into the space that was made earlier in the procedure.
- The whole procedure usually lasts between 1 and 2 hours.

- You may have some discomfort and feel pushing or pulling around your chest, but you should not feel pain.
- The cut will be closed with waterproof surgical glue or dissolvable stitches. It may be covered with a protective dressing.
- Your CRT-D will be checked by a member of the Pacing Clinic before you leave the Cath Lab.
- You will also get an appointment card for your first device check, which will be in 4 to 6 weeks at Pacing Clinic.

## **After the procedure**

- After the procedure, you will be taken back to the ward on your bed. You will need to stay on bed rest for 2 hours.
- If you had sedation, you might be a little sleepy, but once awake, you will be able to eat and drink normally.
- The area where your device has been implanted may be slightly bruised and swollen. It is normal to feel some discomfort as the local anaesthetic wears off. Please tell the nursing staff, and they will give you pain relief.
- The nursing staff will then encourage you to get up and start moving around.
- Before you go home, you will have a chest X-ray.
- Any changes to medications will be made before you leave and explained to you.
- We will tell you if any stitches need to be removed by your GP / Practice nurse. This does not need to be needed.

## **Living with your CRT-D**

- Most people quickly adjust to having an CRT-D. You may be aware of it at first.
- It's normal to feel some discomfort when lying in certain positions or wearing certain clothes, but this will not damage the device.
- You will not feel the pacemaker actively working.
- Regular follow-up checks at your device clinic help staff detect any potential issues.
- You may notice an improvement in previous symptoms like light-headedness, dizziness, and fainting after returning home. Some people also report having more energy.
- Improvement in heart failure symptoms such as fatigue or shortness of breath can take up to 3 months and does not happen for everyone.
- If your symptoms remain unchanged after the implant, your medical team will assess why. They may adjust your device settings or give you medication to help.

## Limiting arm movements

- You will be advised to limit arm movements on the side where your device was implanted for 4 weeks.
- Do not lift that arm above shoulder height. Be careful not to put too much pressure on it.
- This restriction helps the wires to settle securely into your heart tissue.
- Avoid heavy lifting e.g., carrying shopping bags, moving heavy objects
- You can do some gentle shoulder movements to prevent stiffness.

## Battery

- The battery life of your device is typically 4 to 7 years. It is checked at every pacing clinic visit.
- When the battery needs replacing, the entire device box is replaced with a new unit, usually leaving the original wires in place.

## What do I do if the CRT-D gives me a shock?

- You may have some warning that your CRT-D is about to deliver a shock, such as feeling palpitations, or feeling light-headed or dizzy, and be able to ask for help if possible and sit or lie down on the ground. However, this may happen so quickly that you have no warning at all.
- Afterwards, you should recover quite quickly.
- Even if you feel well after the shock, you should still contact the Pacemaker Clinic via their phone number (see last page) as soon as you can to arrange a device check.
- If you feel unwell or if your device has given you several shocks in any 24 hour period, dial 999 for an ambulance.
- Your CRT-D will be checked to find out why the shock was given.
- After a while, we might not need to check the device after each shock, unless you feel unwell. Your clinic will tell you if this is the case.
- It is very important to keep your CRT-D card with you at all times so that the make, model, and settings of the device are known straight away.
- If someone is with you when you have the shock, they will probably notice you jolt. No harm will come to anyone who is touching you. Indeed, it can be very comforting and reassuring to have someone put their arm around you as you have a shock.
- There are typically restrictions to driving after a shock or ATP.
- The restrictions are dependent on whether the treatment was appropriate or not and if alterations to treatment or programming can reduce the likelihood of the shock happening again.
- The pacemaker clinic will be able to give you more information, as will the DVLA website [www.gov.uk/health-conditions-and-driving](http://www.gov.uk/health-conditions-and-driving).

## CRT-D Clinic Visits

- Your CRT-D should be checked regularly. You may need more visits more often just after it is fitted.
- During each clinic visit, the physiologist will examine your CRT-D using a special programmer.
- This machine lets them examine the settings and the battery life of your device.
- All the information is saved on a computer. It is stored confidentially in your records.
- Your wound will be checked. You may have other tests done, such as an ECG.
- Please also take this chance to ask any questions or let the team know if you have any problems or worries.
- You may also see the cardiologist or their registrar at your clinic visit.

## Remote monitoring

- Many centers can set you up for 'remote' monitoring. This means monitoring your heart and implanted device while you are at home – remote from the hospital.
- You need a special transmitter, and using an integrated aerial, the device automatically sends medical and technical information from your heart to your doctor and the cardiac physiologists that are treating you.
- Some newer CRT-Ds can connect to your smartphone instead.
- This lets your doctor monitor your condition based on accurate, up-to-date clinical information at any time. This means that should you get a shock and you are feeling well, the care team will be able to check your device and the cause of the shock while you stay at home.
- Remote monitoring can also replace some routine clinic visits, saving you time.

**For further information, please see the Arrhythmia Alliance patient information booklet on Remote Monitoring**

## Pain relief

- You may have some pain and discomfort after the procedure.
- Take regular painkillers for a few days as needed. Seek advice from your GP or pharmacist if pain lasts more than a few days.

## Wound care

- If your wound has stitches and a dressing, remove the dressing 48 hours after your procedure.
- Do not replace it if the wound is dry.
- You can shower the wound site but avoid soaps or perfumed products for the first 2 weeks. They may irritate the wound.
- If surgical glue was used, you will not have a dressing. It is waterproof after 24 hours. Again, avoid soap or perfumed products for the first 2 weeks.

- Look for signs of infection:
  - redness
  - on-going soreness or swelling
  - oozing
  - surrounding skin becoming hot, or developing a higher than normal temperature or feeling unwell.
- If you notice any of these signs, contact your GP immediately, as infection could spread to the device, potentially requiring replacement.

### **Driving and insurance**

- The Driving and Vehicle Licensing Agency (DVLA) has strict guidelines about patients who need an ICRT-D / CD and if they are safe to drive or not. There will be some restrictions, but these will vary depending on why you have had your CRT-D fitted.
- It is very important that you discuss this with your nurse, physiologist, or doctor at your CRT-D centre. They will explain this in more detail. You can access the guidelines on the DVLA website.
- You will also need to tell your car insurance company to let them know that you have had an CRT-D fitted.
- If you hold a Group 2 (lorry/bus) licence, having a defibrillator would disqualify you from holding such a licence.

### **Travel**

- These devices rarely cause problems with airport security systems.
- When traveling, always carry your 'Device Identification Card'. You will get this before discharge.
- Move quickly through the security arch if asked. If a hand search is needed, ensure the metal detector is not placed directly over your device.
- It is advised to show security staff your identification card and ask to be searched by hand, as hand-held wands can temporarily interfere with your device. Only walk through the metal detector archway if asked to do so, but be aware the metal casing may set off the alarm. The detector will not harm your device if you walk briskly through.
- Make sure your travel insurance company is aware you have an CRT-D. Some need written confirmation from your cardiologist that you are fit to travel. Travel companies may raise premiums. It is suggested to shop around.

### **Mobile phones/portable music players**

- You can use these safely, but keep them at least 15cm (6 inches) away from your device.
- Always use your phone on the ear on the opposite side to your device. Do not put the phone in a shirt pocket over the CRT-D site.

- Some studies show mobile phones and portable music players can affect the device if held within 15cm (6 inches).

## **Magnets**

- Do not carry magnets or place them over your chest. As they can temporarily stop therapies or pacing.
- Avoid carrying stereo or hi-fi speakers. They have strong magnets that can interfere with your device.

## **Electrical equipment**

- Most household electrical items like well-maintained microwave ovens, DVD players, and electric drills are safe if used at least 15cm (6 inches) from your device.
- If your job involves equipment such as welding tools, please seek specific advice as this may not be recommended.
- Avoid leaning over a car alternator with the engine running.

## **Arc welding**

- This should be avoided.

## **Shop doorway security systems**

- There is a very small risk of interference. Walk through these at a normal pace. Do not linger.

## **Medical and dental tests/treatments**

- Always tell medical and dental staff that you have a CRT-D.
- Take your ID card with you to the hospital.
- You can have an MRI scan with a CRT-D but some precautions need to be taken by the pacemaker team and the MRI department.
- X-rays, CT scans, and mammograms are generally safe.
- Some electrical nerve and muscle stimulators (TENS units) may cause interference depending on where they are applied. Talk to the pacing clinic if this treatment is suggested.
- If you need an operation, tell your surgeon and the anaesthetist that you have a CRT-D device. Sometimes, the device's shock function needs to be turned off during the operation to stop it from giving unnecessary shocks. This is usually done with a special programmer or a magnet, especially if equipment used to stop bleeding (diathermy) is used.

## **Physical activity**

- It is generally safe to exercise, but what's best for you depends on your heart condition and the type of exercise.

- Heart rhythm problems during exercise are rare. If they happen, it's usually because of your heart condition, not because of the CRT-D.
- The risk is higher if you have severe heart damage from a heart attack or a heart muscle disease (cardiomyopathy).
- Moderate aerobic exercise is usually no riskier than resting.
- Some exercise habits can increase risk:
  - Starting intense exercise suddenly without warming up.
  - Stopping exercise abruptly without cooling down or active recovery.
- In cardiac rehab programmes, where warm-up and cool-down are included, rhythm problems are very uncommon.
- After your initial recovery (about 4 to 6 weeks), try to slowly increase your activity level if possible.
- You may be offered cardiac rehab or an exercise test to help you regain confidence and return to normal activity.

### **How might exercise affect my CRT-D?**

- Your CRT-D detects abnormal heart rhythms in a number of ways, one of which relates to the speed of the heart during the heart rhythm problem.
- Most rhythms treated with CRT-Ds will be a lot faster than your normal heart rate would reach, even with strenuous exercise.
- Sometimes, however, the CRT-D needs to be programmed to recognise abnormal heart rates that are close to those that can be achieved with exercise. For this reason, it is worthwhile checking how your CRT-D is programmed before doing anything other than recreational exercise or exercise to lose weight. Your cardiologist, arrhythmia nurse, or cardiac physiologist can advise you about how high you can safely raise your heart rate.
- If you are concerned, you may also be referred to an exercise specialist within the Cardiac Rhythm Team if you live in Leicester; Leicestershire or Rutland and to a local Cardiac Rehabilitation Team if you are outside of these areas.
- If you would like to know how your CRT-D has been set up, your cardiac physiologist / nurse can give you this information.

### **Is there any exercise I definitely cannot do?**

- If you are anxious about doing exercise, it may be an idea to have someone with you at first, but the aim is for you to be able to exercise independently with confidence.
- Please carry your CRT-D card with you at all times, in case you need to be taken to hospital for any reason.
- You should avoid taking part in any contact sport and/or any competitive high-intensity sports.

- You should always contact your device clinic before starting any sport/activities that you wish to take part in. They will be able to discuss any potential risks with you on a personal basis.
- Although the CRT-D itself is very tough, bruising or breaking the skin over the site where the device is implanted may lead to infection. This can then become very troublesome to treat and resolve.
- You should also recognise that you are unlikely to be able to get insurance for winter sports such as skiing or, indeed any other 'extreme' sports where the effects of a shock may put you or others at risk. This may be possible in some special cases, particularly in those patients who have had an CRT-D implanted for 'just in case' reasons.
- You can swim once your implant wound has healed fully. We suggest you do not swim alone in a private pool. Some CRT-Ds are implanted for heart rhythm problems which may be triggered specifically by swimming (some Long QT Syndromes – check with your cardiologist). Snorkeling is not recommended, and you must not SCUBA dive.
- You should only do water sports if you are with at least one other person at all times. They will need to be able to get you out of the water in case your CRT-D delivers a shock.
- You will not be able to take part in any form of competitive motor sport, as you will not be eligible for an appropriate licence.
- You should also avoid any sport (or indeed any situation) where you might be exposed to strong magnetic or electrical fields, or a powerful radio source. For example, radio-controlled planes, cars, boats, etc. may be a problem.

### **So, what can I do?**

- Your heart condition (the reason you have a CRT-D) affects your ability to exercise more than the device itself. You may feel:
  - Shortness of breath
  - Tiredness (fatigue)
  - Chest pain
- Do not ignore these symptoms. Stop exercising and seek advice if they occur.
- Exercise is good for you. Focus on:
  - Aerobic exercise (walking, cycling)
  - Easy and natural movements
  - Strength and flexibility
- These activities are safe, effective, and help with daily life.

### **How to exercise safely**

- Start slowly and increase activity slowly.
- Use a standard way to monitor effort: Heart rate or how hard it feels (perceived effort).

### **Aim for moderate intensity of your heart rate:**

- About 60 to 75% of your target heart rate (220 minus your age).
- If you take beta-blockers, aim for 30 to 40 beats above your resting heart rate.

### **Or use the effort scale:**

- 0 = sitting, 10 = hardest effort.
- Keep effort below 5 (moderate).
- Avoid getting too breathless – this can strain your heart.

### **Tips for each session**

- Warm-up for 10 minutes.
- Cool-down for 10 minutes.
- Main workout: 25 to 30 minutes of graded aerobic circuit training. Include multi-joint movements with moderate resistance.
- Mix exercises: Arms → trunk → legs.
- Flexibility and coordination after harder exercises.

### **What to avoid**

- Static exercises (holding tight or holding your breath). These are dangerous and have no health benefit.
- Most exercises should be standing.
- Limit lying down or seated arm exercises.

### **Seated arm exercises**

- Lifting weights while seated can put extra strain on your heart and increase the risk of rhythm problems.
- If you do seated exercises:
  - Keep the intensity low.
  - Focus on muscular endurance (lots of repetitions without getting very tired).

Add gentle leg movements (like heel lifts) during seated arm work to reduce heart strain.

### **Keeping fit**

Fitness declines quickly if you stop exercising.

Aim for:

- Moderate physical activity most days.
- Continuous activity for 30 minutes or more is best.
- Or split into 2 to 3 sessions of 10 to 15 minutes in a day.

## Wire safety after implant

- Some patients may have a small risk of CRT-D wire problems.
- If this applies to you, your implant team will tell you right after surgery.
- Normally:
  - Limit exercise for 4 to 6 weeks after implant.
  - After your first clinic follow-up, you can usually return to normal activity.

## Avoid strain on wires

- Vigorous, repetitive shoulder movements (like heavy weightlifting) can stress the wires.
- Safer options:
  - Light to moderate strength exercises.
  - Movements that match everyday activities.

## Having sex

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

## Automated external defibrillators (AEDs)

- It is safe to use an automated external defibrillator (AED) on someone who has an CRT-D.
- Do not place the pads in contact with, or directly over, the device. The pads are usually placed on the upper right of the chest and on the left side of the rib cage, so a device should not get in the way. If someone has an implanted device, you will notice a scar and a bump. Place the pad to the side of the device (about 3cm).
- The shock produced could affect how the CRT-D works, but, the benefits of using the AED to save someone's life outweigh this potential risk.
- If you receive CPR or defibrillation, you should have your device checked afterwards to make sure the settings are still accurate.

**If you have any questions or concerns, please contact your cardiologist, the Cardiac Rhythm Management Team or Pacing Clinic**

## Planning to deactivate CRT-D shocks

- People with heart problems who have had a CRT-D may later be diagnosed with progressive heart disease or other life-limiting illness. It may well come to a stage where cardiopulmonary resuscitation is unlikely to be helpful or you no longer want it.
- In this situation, it is often appropriate to deactivate CRT-D shocks. This is to avoid the situation where a person who is dying for another reason receives shocks which are unpleasant but will not save their life.
- These conversations can be difficult and emotional, but it is important to discuss these issues early. Ideally, these discussions should take place while the you are able to make your own decisions, but in some circumstances, the next-of-kin may need to be involved.
- Switching off shock therapies is straightforward but is not always available out-of-hours. An CRT-D physician or a physiologist has to reprogram the device.

### The following points are important:

- The device will no longer provide shock therapy in the event of fast abnormal heart rhythms.
- Turning off shocks will not in itself cause death.
- Turning off shocks will not be painful, nor will the failure to shock cause pain.
- The decision is not irreversible – shocks can be turned back on if the situation changes.
- The device will continue to provide pacemaker functioning to prevent slow heart rhythms (these are small impulses that are not painful).
- There will be a plan to ensure healthcare professionals are available to answer questions or concerns that may arise.
- A deactivation request form will need to be filled in, with the involvement of the CRT-D physician.
- The palliative care team may be helpful where difficult decisions need to be made.



## Contact details

If you have any questions or concerns about your pacemaker or aftercare, please contact:

- **Pacing Clinic:** Monday to Friday, 9am to 4.30pm, call: **0116 258 3837** (excluding Bank holidays / answer phone available out of hours)
- **Cardiac Rhythm Nurses:** Monday to Friday, 8am to 5.00 pm, call: **0116 258 3848** (excluding Bank holidays / answer phone available out of hours)

**Please note these numbers are not an emergency number. Depending on your symptoms please contact your GP or 111. For medical emergencies call 999.**

## More information

### Heart Rhythm Charity – Arrhythmia Alliance

Email: [info@heartrhythmalliance.org](mailto:info@heartrhythmalliance.org) Tel: 01789 867501

### British Heart Foundation

Website: [bhf.org.uk](http://bhf.org.uk) Tel: 0300 330 3311

### DVLA

Online: [www.gov.uk/health-conditions-and-driving](http://www.gov.uk/health-conditions-and-driving)

Tel: 0300 790 6806 (car drivers/motorcyclists)  
0300 7906807 (lorry/bus drivers)

اگر آپ کو یہ معلومات کسی اور زبان میں درکار ہیں، تو براہ کرم مندرجہ ذیل نمبر پر ٹیلی فون کریں۔  
على هذه المعلومات بلغةٍ أخرى، الرجاء الاتصال على رقم الهاتف الذي يظهر في الأسفل  
જો તમને અન્ય ભાષામાં આ માહિતી જોઈતી હોય, તો નીચે આપેલ નંબર પર કૃપા કરી ટેલિફોન કરો

ਜੇ ਤੁਸੀਂ ਇਹ ਜਾਣਕਾਰੀ ਕਿਸੇ ਹੋਰ ਭਾਸ਼ਾ ਵਿਚ ਚਾਹੁੰਦੇ ਹੋ, ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਹੇਠਾਂ ਦਿੱਤੇ ਗਏ ਨੰਬਰ 'ਤੇ ਟੈਲੀਫੋਨ ਕਰੋ।  
Aby uzyskać informacje w innym języku, proszę zadzwonić pod podany niżej numer telefonu

If you would like this information in another language or format such as EasyRead or Braille, please telephone 0116 250 2959 or email [uhl-tr.equalitymailbox@nhs.net](mailto:uhl-tr.equalitymailbox@nhs.net)