NHS
University Hospitals of Leicester
NHS Trust

Having a Cardiac Resynchronisation Therapy Pacemaker (CRT-P) for your heart

Cardiac Rhythm Management

Information for Patients

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Introduction

A Cardiac Resynchronisation Therapy Pacemaker (CRT-P) is a special device that aims to help people with heart failure. It can help to make the pumping chambers of the heart beat in time with each other. This booklet aims to help you understand why you may need this device, what to expect when you come in to have it implanted, and what happens when you go home.

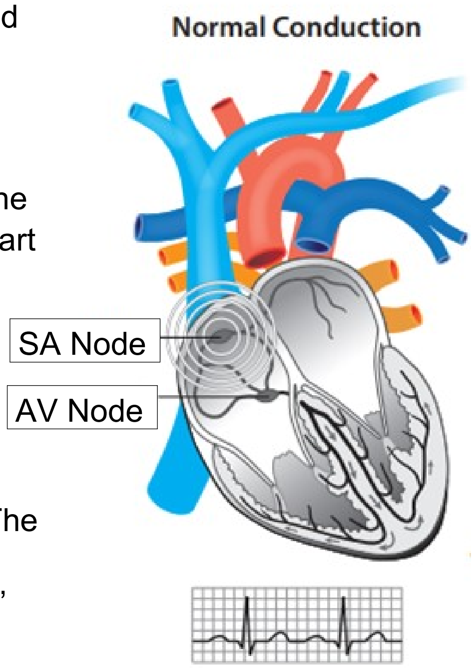
How does the heart beat normally?

The heart is a pump that is responsible for moving the blood around your body and to your brain. It pumps normally in a regular pattern between 60 to 100 times a minute.

The pumping action of the heart is driven by an electrical circuit starting from your hearts natural pacemaker called the ‘sinus node’. This sits in the right upper chamber of the heart called the right atrium.

The electrical signals spread through the top chambers (atria) causing the muscle to contract and squeeze the blood into the bottom of the heart (ventricles).

The signals are then received by the middle junction box in the heart. This is called the Atrio Ventricular or AV node. The signals are slowed down and pass down to the bottom chambers of the heart through some ‘conduction pathways’ called bundle branches.



The bottom chambers then contract and squeeze the blood out around the body and brain from the left side, or to the lungs from the right side.

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What is a CRT-P pacemaker and why do I need one?

A CRT-P device is recommended as a way to treat heart failure when the 2 sides of the heart lose their coordination and do not work as well pumping blood around the body.

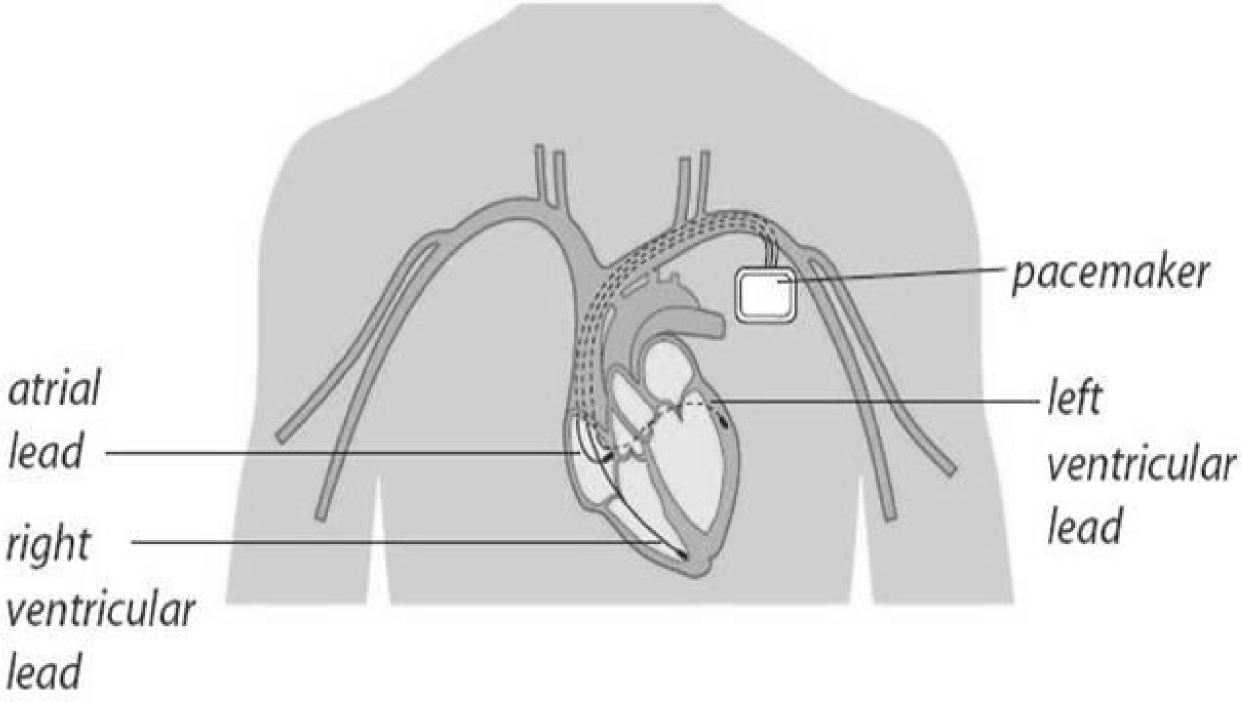
When people have heart failure the left side of the heart may not pump in a coordinated way. The blood is not squeezed out around your body as well. This uncoordinated pumping action of the heart is called dyssynchrony.

A CRT-P has a pacemaker (small pulse generator) placed under the skin below the collarbone. This is connected to 2 or 3 leads that are threaded along the veins to the heart.

The 2 leads on the right side help the heart chambers to pump more regularly. The third lead is usually on the left side.

The leads in the bottom chambers work together, they stimulate the heart at the same time to try and help improve efficiency of each beat. This is called cardiac resynchronisation.

A CRT-P may improve heart function and reduce the symptoms of heart failure. It does not cure heart failure however, and is not a replacement for medication and life style changes.



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Before the procedure

Usually patients having a CRT-P device implanted 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 pre-admission appointment we will talk to you about:

- your medical history and current symptoms
- the procedure
- your medication and if there are any medicines you should not take before the procedure
- when to stop eating and drinking
- Recovery
- Driving after having a pacemaker implanted

Please ask any questions that you may have.

Please bring to pre-admission:

- Your current medication or recent prescription
- Your record of INR blood tests if you take Warfarin
- list of allergies (especially antibiotics, other drugs and metals).

Please also phone the Cardiac Rhythm Team on **0116 258 3848** for advice on your medication if you:

- have a procedure date and have not got a pre-admission appointment or it is **less than 7 days** before your procedure.

How do I prepare myself?

At your pre-admission appointment you will have been given anti-microbial wash and nasal cream, please use these as instructed for the **2 days before and on the day of** your procedure.

Eating and drinking (fasting) on the day:

If your admission time is:

8am: Nothing to eat from midnight the night before.
You can have water only until the time of your procedure.

1pm: A light breakfast until 9am then nothing to eat.
You can have water only until the time of your procedure.

You will be admitted to ward 32. Please bring:

- All of your medication in the original boxes and any inhalers or CPAP machine
- If you are on warfarin, your anticoagulation booklet and readings.

This is often a day case procedure however please bring a small overnight bag in case you need to stay overnight

What does the procedure involve?

The procedure is usually performed under a local anesthetic. We may also give you 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.
- The nurse will ask you some questions and take your blood pressure, pulse, temperature. A small plastic tube (cannula) will be placed into the back of your hand.
- The nurse will give you an antibiotic through the cannula. This is to reduce your risk of developing an infection in the device implant site. Please tell the nurse at your preadmission if you have had any allergic reactions to antibiotics.
- You will be asked to put on a hospital gown and paper pants. If you have hairs on your chest the nurse will need to remove these before the procedure to keep infection risk low.

The procedure is done in the procedure room (Cath Lab) away from the ward. It has special X-ray and monitoring equipment

1. The staff in the procedure room will be wearing theatre gowns, masks and hats as this is a clean (sterile) procedure.
2. You will be asked to lie down on the X-ray table which is narrow and firm.
3. We will attach heart monitoring and other monitoring equipment to your arms, legs and chest as needed.
4. We will clean your upper chest area with an antiseptic solution and sterile towels will be used to cover the surrounding area.
5. The doctor will inject local anesthetic into the skin below the collarbone (usually the left side). This allows the area to become numb and a cut (incision) is then made.
6. An X-ray is used to guide the leads under the skin along one of the veins and into your heart. The lead or leads are checked to make sure that they will sense electrical signals coming from the heart, they are then connected to the pacemaker box.
7. The doctor will make a small pocket between the skin and chest muscle. The pacemaker box is then fitted into the pocket.
8. The pacemaker is then checked to make sure it is detecting the electrical signals coming from the heart and is pacing correctly. The settings are adjusted to suit your needs.

9. The doctor will close the cut with either surgical glue or dissolvable stitches. They may cover it with a protective dressing.
10. The pacing team will check your pacemaker team at the end of the procedure.
11. The procedure may take up to 2 hours. During this time you will be given sedation if needed and pain relief to make sure you are kept comfortable throughout.

What happens afterwards?

- After the procedure, we will take you back to the ward on your bed/trolley. You will stay on bed rest for at least 2 hours. Please do not get up without checking with your nurse. You can usually eat and drink as normal.
- The area where your pacemaker has been implanted may be slightly bruised and swollen and it is normal to feel some discomfort around that area as the local anaesthetic wears off. Please tell the nursing staff and they will offer you pain relief.
- The nursing staff will encourage you to get up and start moving around after at least 2 hours. They will advise you on restricting your arm movements on the side you have had your pacemaker implanted by not lifting that arm up above shoulder height and to take care not to put too much pressure on the arm nearest the pacemaker site by avoiding heavy lifting. This helps to prevent the leads moving before they settle into the hearts tissue. It is important to keep the arm and shoulder moving within these limits to avoid stiffness and pain.
- Before you are discharged home, you will have a chest X-ray and we will give you an appointment card for your first pacing check in 4 to 6 weeks.

What are the benefits of CRT pacing?

The main benefit of having this type of pacemaker is to improve symptoms of heart failure. The device will also function as a standard pacemaker and prevent slow heart rhythms.

Are there any risks?

- **Infection**

There is always a small risk (3 in 100) of getting an infection at the pacemaker site which may possibly require the pacemaker to be extracted and replaced. We will give you antibiotics before and after the implant and wound care advice when you go home.

- **Bruising/bleeding/discomfort**

As with any procedure that involves having an incision there will be some bleeding and bruising . There is a (1 in 100) risk of bleeding and a small risk this will need an operation to stop it, particularly if you are on blood thinning medication. Once the CRT-P has been implanted If there is extra bleeding (sometimes called a haematoma), pressure will be applied to control it and this may result in more bruising to the chest and/or arm which may last some weeks. This is more common if you are taking blood thinning medication. You will be advised at preadmission if you should continue or stop these medicines .

- **Many people feel some discomfort for several days after the procedure.** Please ask for pain relief on the ward and continue to take as required when you get home**.**

- **Lead displacement**

There is a small risk that one of the pacemaker leads might move out of position (6 in 100). You may not know that this has happened until you come for pacemaker checks in clinic. If this happens the leads will need to be repositioned.

- **Unable to put the 3rd lead in place**

Occasionally it is not possible to place the 3rd lead on the left side of the heart (1 in 10).

- **The CRT does not work**

The CRT device has leads that go to both sides of the heart. This allows both sides of the heart to be stimulated at the same time and may improve the coordination and function of the heart and as a result of this your symptoms.

You will have been carefully selected as someone likely to benefit from the device.

Around 70 to 80% of people find that some of their symptoms improve, however it can take a few months for the benefits of CRT to show. Not everyone is helped by CRT.

If you are one of the 20 to 30% of people whose symptoms stay the same after the device has been implanted, your medical team will carefully assess why you have not improved and may be able to adjust the device or medication to help with your symptoms.

- **Air leak from the lung (pneumothorax)**

During the procedure there is a small risk (1 in 100) of air leaking from the lung into the chest during the procedure. This may need a drain to be inserted and you will need a slightly longer hospital stay. You will have a chest X-ray before you go home to check for a pneumothorax.

- **Bleeding around the heart (pericardial effusion/tamponade)**

The risk of this is a small (1 in 200). If this were to happen. a small tube would need to be inserted as an emergency to drain away the collection of blood. This is a serious complication and rarely tamponade can result in death.

- **Radiation risk**

Ionising radiation can cause cancer which happens after many years. The risk of developing cancer as a consequence 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), if you are at increased risk of this you will be informed after the procedure is completed.

These risks will be discussed again with you at pre-assessment and before signing the consent form.

Going home

- **Pain relief**

You may have some pain and discomfort after the procedure, we advise you take some regular pain killers for a few days as needed. Get advice from your GP or pharmacist if your pain lasts for more than a few days.

- **Wound care**

If your wound has been **stitched and covered with a dressing**, please remove the dressing 48 hours after your procedure. Do not replace the dressing if the wound is dry. You can now shower the wound site but avoid using any soaps or perfumed products for the first 2 weeks, as these may irritate the wound.

If **surgical glue** has been used, you will not have a dressing and it is waterproof after 24 hours. Do not use soap or perfumed products for the first 2 weeks as these may irritate the wound.

You need to look for signs of infection, these include:

- Redness
- On going soreness or swelling
- Oozing
- Surrounding skin becomes hot
- You develop a higher than normal temperature or feel unwell

If you notice any of these signs or symptoms you must contact the Pacing Clinic or your GP as soon as possible as the infection may spread into the device and you may need to have the CRT-P replaced.

- **Arm restrictions**

You will need to restrict your arm movements on the side the device is implanted for the first 4 weeks. This allows time for the leads to become secure.

Restrictions on the pacemaker side include:

- Avoiding heavy lifting (carrying shopping bags, moving heavy objects).
- Stretching or raising your arm above shoulder height (hanging out washing, mowing the lawn).
- Pressing down or putting pressure through that arm.

You should try some **gentle** shoulder movement to prevent stiffness in the shoulder.

Everyday life with your CRT-P

What will it feel like to have a CRT-P?

Most people are aware of the CRT-P pacemaker being there but get used to it quickly. At first your device may feel uncomfortable when you lie in certain positions or perhaps when wearing certain clothes but it can't be damaged by either of these things.

You will not feel the pacemaker working.

It is unusual for pacemakers to have technical failures. With regular follow up checks at your pacemaker clinic or from home monitoring, staff can detect any problems as they happen.

- **Symptoms**

When you go home you may find that your previous symptoms improve, such as light-headedness, dizziness and fainting. Some people feel they have more energy.

The CRT-P may also help reduce your heart failure symptoms such as fatigue or shortness of breath; however this can take up to 3 months and does not happen for everyone.

- **Battery**

The battery life of your device will be checked by pacemaker clinic with you attending for visits or via home monitoring. Problems with pacemaker are not common, the checks help staff to know if everything is working properly or not.

The battery usually lasts between 4 to 7 years and changing the battery involves replacing the complete pacemaker box with a new unit. The original leads can usually be left in place.

General advice

- **Driving and insurance**

If you have a Group 1 Car/motorcyclist the DVLA guidelines state that you should not drive for **1 week** after your pacemaker has been implanted.

If you have a Group 2 Lorry/Bus license DVLA states you must not drive for **6 weeks** after having your pacemaker implanted.

You must tell the DVLA and your insurance company that you have had a pacemaker implanted. Please fill in a medical survey. You can download this from the website: www.gov.uk/health-conditions-and-driving or call DVLA on 0300 790 6806 for **Group 1 Car / Motorcyclist** or 0300 790 68067 for **Group 2 Lorry / Bus.** (Information as per DVLA Guidelines, January 2024).

- **Travel**

Pacemaker devices do not often cause problems with airport security systems but, when travelling please carry your 'Pacemaker Identification Card'. We will give this to you after your procedure.

Move quickly through the security arch if asked to do so. If you need to have a hand search, make sure that the metal detector is not placed directly over your pacemaker.

- **Mobile phones**

You can safely use your mobile phone but keep it at least 15cm / 6 inches from your pacemaker. Always use the ear on the opposite side to the pacemaker. Do not place the phone in a shirt pocket over the pacemaker site.

- **Electrical equipment**

Electrical equipment that you use in the home such as well maintained microwave ovens, TV/radio device and electric tools will not cause any problems to your pacemaker as long as you use them 15cm / 6 inches away from your device. See advice below for induction hobs.

- **Magnets**

Some magnets may interfere with how the pacemaker works. Equipment like large stereo speakers, hand held massagers and induction hobs should be kept a minimum of 60cm away from the heating zone. We advise you not to sleep on beds with a magnetic mattress or pillow as this may affect the pacemaker. For more advice contact Pacemaker Clinic directly.

- **Medical and dental tests and treatments**

Some hospital equipment may interfere with pacemakers. It is usually safe to have an MRI scan with a leadless pacemaker however you should always check with the pacemaker clinic or your doctor.

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	Tel: 01789 867501

British Heart Foundation

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

اگر آپ کو یہ معلومات کسی اور زبان میں درکار ہیں، تو براہِ کرم مندرجہ ذیل نمبر پر ٹیلی فون کریں۔
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Aby uzyskać informacje w innym języku, proszę zadzwonić pod podany niżej numer telefonu

Previous reference:

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