



Information for patients, parents or carers

Living with a pacemaker

Introduction

This information sheet describes the pacemakers we use at the Freeman Hospital and why you might need one. It also explains how one is inserted, and the effect it will have on your life afterwards.

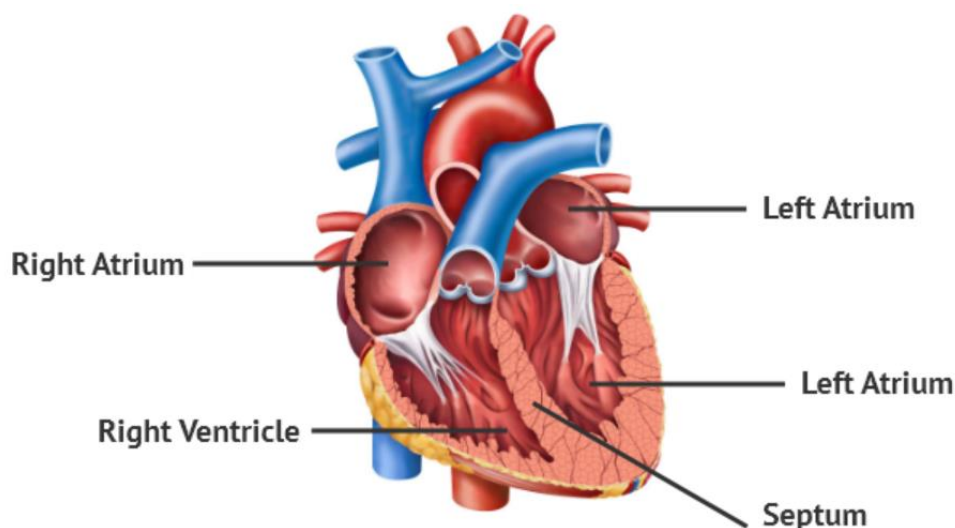
What is a pacemaker

A pacemaker is a small, implanted device that sends electrical pulses to your heart to keep it beating regularly and preventing abnormal rhythms. A pacemaker is implanted under the skin on your chest or abdomen.

Pacemakers are usually 5 by 4 centimetres (smaller than a matchbox) and weigh about 20 to 50 grams. It is made up of a pulse generator (pacemaker box) and can be connected to up to three 'leads'. These are used to deliver electrical pulses to the heart. The pacemaker box is powered by a battery. It contains special software to monitor and record your heart rate.

There are three types of pacemakers – your clinical team will explain which type you need:

- Single chamber – this contains a single wire that is fed into either the right ventricle or right atrium of the heart.
- Dual chamber – this contains two leads (wires), fed into the right ventricle and the right atrium.
- Biventricular – this contains three leads, fed into the right ventricle, right atrium and left ventricle of the heart.



The pacemaker will be programmed to suit you. It can automatically sense how fast your heart is beating naturally and will send out impulses to keep your heart beating regularly. Pacemakers do not

give your heart an electrical shock. Your cardiologist will decide whether your pacemaker leads are placed inside your heart (endocardial or transvenous), or outside on the surface of your heart (epicardial).

Why do I need a pacemaker?

Sometimes the electrical system in the heart does not follow a regular rhythm so a pacemaker is used to correct any abnormal heart rhythms, by sending out electrical impulses to keep your heart beating at a normal rhythm. Pacemakers can also be used to improve the coordination of the pumping chambers of the heart.

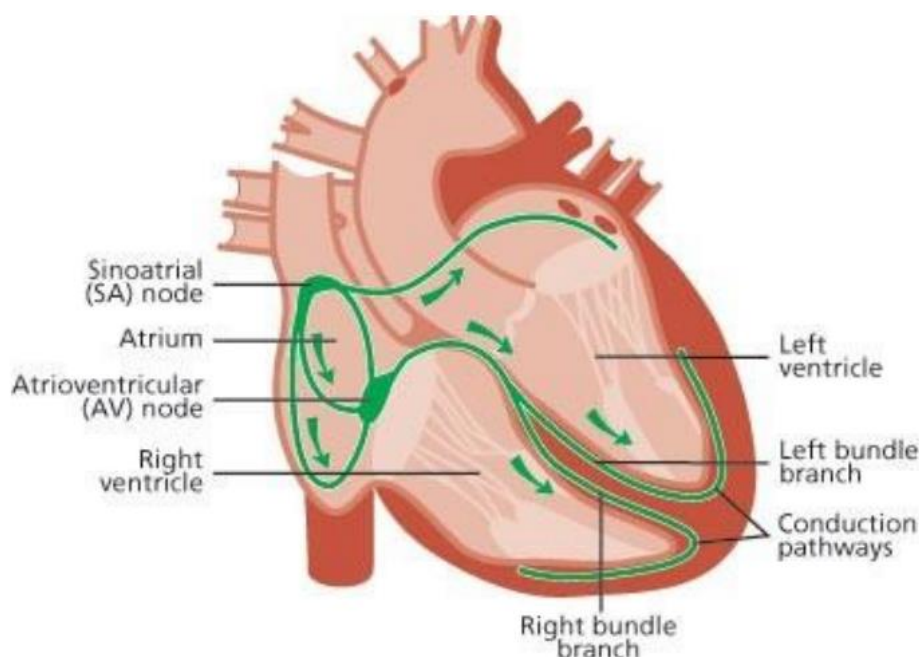
Your cardiologist may suggest one due to the following reasons;

- you have a particularly slow heart rate (bradycardia) or type of heart block.
- your heart is beating too fast (a type of arrhythmia) and is not controlled by medication.
- or heart failure.

Your cardiologist will explain specifically with you about why they think a pacemaker will help you.

How does the heart beat normally?

The heart is a special kind of muscle which acts as a pump to keep blood moving. The pumping action of the heart muscle is triggered by electrical messages which travel through the walls of the heart, causing them to squeeze the blood out and around the body. Each electrical message starts at the sinoatrial (SA) node in the heart (follow the green arrow as it shows you the way in which electricity flows through the heart). It travels through the walls of the top sections of the heart (the left and right atria), causing them to squeeze blood downwards into the bottom sections of the heart (the left and right ventricles). As the message travels through the bottom sections, it causes them to squeeze and pump blood out of the heart.



<https://heartrhythmalliance.org/aa/uk/bradycardia>

Epicardial pacing

A small incision is made to make a pocket in the abdomen to insert the pacing box then the leads are guided onto the outside of heart through a second incision on the chest. The incision sites need to be larger for this pacemaker. Sometimes a small wound drain is needed for a day or two and recovery can take a little longer. Epicardial pacemakers are generally used for smaller children.

Endocardial/Transvenous pacing

A small incision is made in the chest to make a pocket to insert the generator then the leads are guided into the heart through the veins. There is an increased risk of endocarditis (infection inside the heart) due to the wires inside the heart. Usually, patients spend a night in hospital to recover and go home the following day.

What happens when I have a pacemaker fitted

- The day of the procedure the doctor will explain the procedure again and ask you and your parents for permission to carry out the procedure – this is called consent.
- An anaesthetist (specialist doctor) will also visit you to explain about the anaesthetic.
- Your nurse will check that you are ready for the procedure and help you into a hospital gown before taking you to the anaesthetic room.
- The anaesthetist will give you anaesthetic medicine, so you are not aware of anything or feel anything with either a mask or a small needle in the back of your hand.
- While you're under the anaesthetic, the doctor will put the pacemaker under your skin near your collarbone or abdomen.
- The lead(s) are threaded through the veins into the heart or guided onto the outside of the heart.
- You will have an x-ray during the operation to check that the lead(s) are in the correct position.
- The doctor will then program the generator to suit your heart rhythm

Follow up

Following your discharge from hospital, you will be seen by the pacing department approximately six weeks later for a wound assessment and device check.

You will then attend a follow-up appointment with your consultant approximately three months after the device implantation for a clinical review.

Thereafter, you will be reviewed every six months for ongoing device checks and consultant follow-up.

Aftercare

Caring for your child's wound

The dressing covering your child's wound should be changed the day after the procedure, before they leave hospital, we recommend taking a photograph of the wound to use as a baseline. If you have any concerns about how the wound is healing, you can email this photograph to the Cardiac Nurse Specialist, along with a current photograph, to help compare any changes.

It is normal for the operation site to be swollen, slightly red and bruised after the procedure. This should gradually improve over the following few weeks. Once the swelling has settled, you may be able to see or feel the outline of the pacemaker beneath the skin. This is normal. The scar will also become less red over the next few months and will gradually fade to a pale line.

We recommend keeping the dressing in place for the first seven days. During this time, you should check the wound regularly to monitor how it is healing. Look out for signs of infection, such as:

- Increasing redness around the wound
- Swelling or warmth
- The wound looking inflamed
- Any discharge or oozing
- Increasing pain or tenderness

If you have any concerns that the wound may be infected, please contact the Cardiac Nurse Specialist. Outside of normal working hours, please contact Ward 23 using the telephone number provided at the end of this leaflet.

While the wound is healing, your child may have a shallow bath, ensuring that the water level remains below the wound. Avoid using highly perfumed soaps or bath products, as these may irritate the area. Until the wound has fully healed, we recommend that your child wears clean clothing each day and clean pyjamas each night. Once the dressing has been removed and the wound has healed completely, the operation site can be washed gently with water as part of normal bathing. Always pat the area dry rather than rubbing it.

When can I return to normal activities?

Your child can usually return to school or nursery about one week after their pacemaker procedure, provided they feel well enough.

They can take part in their usual classroom activities but should not participate in PE, swimming or any other sporting activities for six weeks. This allows time for the tissues around the pacemaker to heal properly.

Gentle movement of the arm on the side of the pacemaker is encouraged, as keeping it completely still can lead to stiffness and discomfort. However, your child should avoid strenuous arm movements and should not lift or carry anything heavy, such as a school bag filled with books.

Your child's Consultant or Cardiac Nurse Specialist will advise you when it is safe for them to return to all normal activities.

Risks and benefits of a pacemaker

A pacemaker is recommended when the benefits of treatment outweigh the risks of the procedure. Your child's cardiology team will discuss the reasons why a pacemaker is needed and answer any questions you may have before asking for your consent.

Benefits

A pacemaker helps to treat slow or abnormal heart rhythms by ensuring that the heart beats at an appropriate rate. Depending on your child's condition, the benefits may include:

- Improving symptoms such as tiredness, dizziness, fainting or poor exercise tolerance
- Helping your child to be more active and participate in everyday activities
- Reducing the risk of symptoms caused by a slow heart rate
- Improving your child's quality of life
- Supporting normal growth and development by maintaining an appropriate heart rate
- Providing reliable long-term treatment for certain heart rhythm conditions

Many children with pacemakers can lead full and active lives.

Risks

Pacemaker implantation is a common and generally safe procedure, but as with any operation there are some risks. These include:

- Bleeding or bruising around the wound or pacemaker site.
- Wound infection, which may require antibiotics or, rarely, removal of the pacemaker system.
- Damage to a blood vessel or surrounding structures during the procedure.
- Movement (displacement) of the pacing lead, which may require another procedure to reposition it or replace it.

- A collapsed lung (pneumothorax), which is uncommon and usually recognised and treated while your child is in hospital.
- Pain or discomfort at the pacemaker site while the wound heals.
- The need for future procedures to replace the pacemaker battery or leads as your child grows or the device reaches the end of its battery life.

Very rarely, more serious complications can occur. Your child's Cardiologist will discuss any specific risks that apply to your child based on their heart condition, age and the type of pacemaker being implanted.

If you have any concerns before or after the procedure, please speak to your child's Consultant or Cardiac Nurse Specialist.

Contact details

Paediatric Rhythm and ICC Nurse Specialist: 0191 213 9633

Children's Cardiac Nurse Specialist: 0191 213 7344 Email address: nuth.ccns@nhs.net

The cardiac nurse specialists are around 09.00am to 5.00pm Monday to Friday. If there is no answer please leave a voicemail, and they will endeavour to return your call within 24 hours. If urgent, please contact ward 23 for advice.

Cardiac Rhythm management at the Freeman Hospital: **0191 213 8048**. The Rhythm management team are round 09.00am to 5.00pm Monday to Friday.

Ward 23: 0191 2137023 (24 hours)

PALS (Patient Advice and Liaison Service) for help, advice and information about NHS services. You can contact them on freephone 0800 032 02 02, email pals@nhct.nhs.uk.

<https://www.northumbria.nhs.uk/patients-and-visitors/share-your-feedback/patient-and-advice-liaison-service-pals#9882d87e>

Useful websites

The British Heart Foundation provides information, advice and support to anyone affected by heart disease can call their helpline on 0300 330 3311 or visit their website at www.bhf.org.uk

Arrhythmia Alliance provides information, advice and support to anyone affected by abnormal rhythms call their helpline on 01789 867 501 or visit their website at www.hearhythmalliance.org/aa/uk

If you would like further information about health conditions and treatment options, you may wish to have a look at the NHS website at www.nhs.uk

If you would like to find accessibility information for our hospitals, please visit www.accessable.co.uk

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