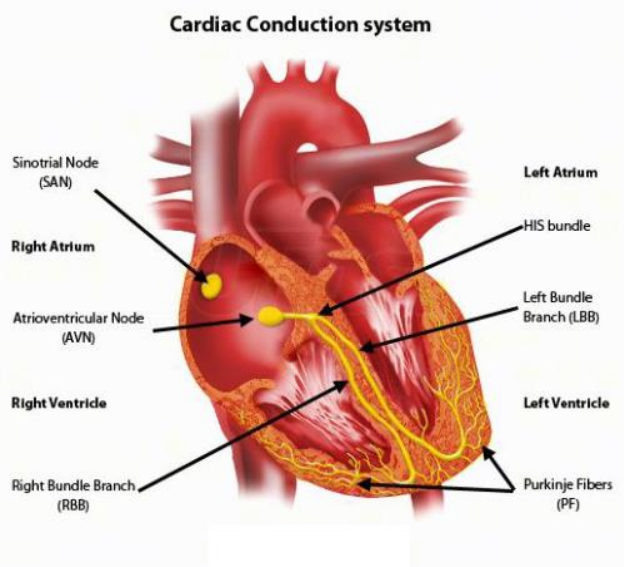
Pacemaker Patient information

Commonly used words that you might hear

Atria	The two upper chambers of the heart
Ventricles	The two lower chambers of the heart, providing most of the pumping force
Arrhythmia	An abnormal heart rhythm
AV node	Part of the electrical pathway between the atria and the ventricles
Bradycardia	A slow heart rate, normally less than 60 beats per minute
ECG	Records the electrical activity within the heart
Heart block	Electrical impulses are slowed or blocked as they travel from the top to the bottom chambers of the heart
Tachycardia	An abnormally fast heart rate over 100 beats per minute

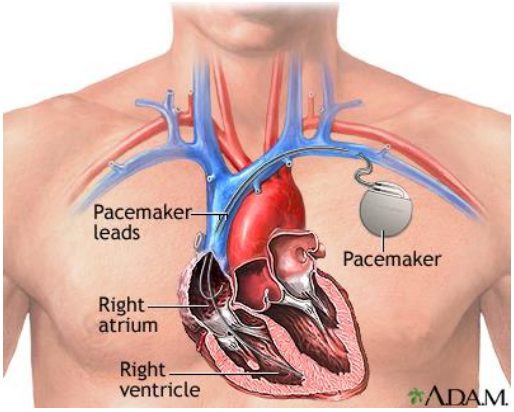
Why do you need a pacemaker



If your doctor has suggested that you have a pacemaker fitted, it is because you have an abnormality in the electrical conduction system of your heart. To help you understand this, it may be useful for you to know how the electrical conduction system in your heart works normally. The heart is a muscle; its function is to pump blood and oxygen around your body to all of your vital organs. A normal healthy heart usually beats in a regular fashion at around 50 to 100 times a minute. It has four chambers, two at the top (the right and left atria) and two at the bottom (the right and left ventricles). The heart also has an electrical system, which sends impulses through the heart causing it to contract and pump blood around the body. Each normal heartbeat begins in the natural pacemaker of the heart (the sino-atrial or SA node), which lies at the top of the right atrium. It then 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

rapidly through a special conducting system through the ventricles causing the heart to contract and pump. Sometimes the electrical system in your heart does not work as well as it should. This can cause the heart to beat too slowly, too quickly or irregularly. A pacemaker can treat some of these abnormal heart rhythms.

What is a pacemaker



A pacemaker is a small device that is placed in the chest to help control abnormal heart rhythms (arrhythmias). It uses a battery and electronic circuits connected to the heart by one or more wires (leads) to prompt the heart to beat at a normal rate. These leads are passed along a blood vessel to your heart and the pacemaker box is usually implanted under the skin in your upper chest. The pacemaker can monitor your heart and produce electrical impulses to treat abnormal heart rhythms. Pacemakers are largely used to treat slow heart rhythms (bradycardia), but are also used to treat some fast heart rhythms that come from the top chambers of the heart (the atria). One type of pacemaker, the biventricular pacemaker or cardiac resynchronisation therapy pacemaker, is increasingly being used to treat patients with heart failure; this is not suitable for all but can be discussed with your doctor. Pacemakers may be single (one lead), dual (two leads) or triple (three leads) and you will be fitted with the device appropriate for your particular condition.

How is a pacemaker inserted

On the day of your procedure, you will be taken to the catheter lab. Once you are in the lab, a nurse will check your details and you will be asked to lie on a trolley or narrow operating table. The procedure is not usually performed under a general anaesthetic, but you may be given sedation, which will make you relaxed and sleepy. Before the procedure starts, the doctor will clean the skin with some antiseptic solution and inject some local anaesthetic under the skin just below your collarbone. This will numb the area and allow the doctor to pass a small lead or electrode through a vein into your heart. You may have one, two or three leads inserted depending on what type of pacemaker you need. The lead(s) are then connected to the pacemaker box. This will usually be placed under the skin on your chest wall. The area will then be closed with dissolvable or non-dissolvable clips. If you have clips they will be removed by your practice nurse or district nurse you will be informed before you leave hospital. The whole procedure should take approximately 60 to 90 minutes

What are the risks of having a pacemaker inserted?

There are some small risks associated with having a pacemaker fitted. Your doctor/specialist nurse will discuss these with you in more detail before you sign your consent form.

The most common risks are:

- Bruising and bleeding. Some discomfort in the shoulder is common and will normally pass quickly with simple analgesia. Bleeding my occur at the time of the procedure
- A small risk of infection.
- A small risk of lead displacement – the pacemaker lead can move and would then need to be repositioned.
- A small risk of perforation of the lung during the procedure (a pneumothorax) – this is often detected on the chest x-ray that is performed following the pacemaker implant and can sometimes rectify itself without treatment. Very occasionally a small drain may need to be inserted through your side into your lung (in the space between your ribs) to allow the punctured lung to re-inflate. This is a simple procedure and the drain will be removed prior to your discharge home.

After the procedure

After the procedure, you will be taken back to the ward. You will be asked to lie in bed for a couple of hours before you can get up, eat and drink. Your heart rhythm may be monitored for a while to make sure that the pacemaker is doing its job, so you may be attached to an ECG monitor. As the wound can feel quite bruised and sore, especially for the first day or two, it is recommended that you take regular painkillers.

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. Report any wound problems to your nurse of GP.

You will probably be allowed to go home the same or the next day provided your pacemaker is checked, there are no complications and your doctor assesses it is safe. Your pacemaker will be checked before you go home by a cardiac physiologist. This check may involve the use of a special programmer that can look at the device settings and make sure the pacemaker is working properly, or a simple magnet check and an ECG will be sufficient. This check takes about 15 minutes and can either be done on the ward or in the pacemaker clinic. You 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 or specialist nurse if you have any questions or worries about the device.

You will be sent in the post a pacemaker identity card which has details of the make and model of your pacemaker. You should always carry this card with you. If you require any further medical treatment in the future it is important that you show this card to the health care professionals treating your the procedure

Arm movements

Extra tissue will grow around the lead(s) in your heart after a few weeks, which will prevent the wire(s) moving out of place. Patients should not interfere with the area of the implant, but follow the instructions given until the first follow up visit. As a general guide, you should not raise the arm on the same side as the pacemaker above shoulder height for the first week. For the next two weeks full, gentle shoulder movement is allowed. After three weeks you can exercise gently. Once you have had your first pacemaker clinic check you will be able to return to normal activity.

Wound site

Your wound site should take about six weeks to fully heal. It will be closed with dissolving stitches or staples. If you have staples they will need to be removed at your GP surgery 7-10 days.

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 or swelling of the area, or any signs of bleeding or oozing from the wound, report this immediately to your implanting centre as these may be a sign of wound infection. You will probably be able to feel the pacemaker box 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 do let someone at the implant centre know if they continue to bother you

Driving after a pacemaker

- No driving for 2 weeks for normal licence holders
- Commercial and class 11 licence holders no commercial driving for one month

Driving after an ICD (defibrillator)

- Normal licence holders – no driving for two weeks after primary prevention (device implanted to prevent a problem that has never happened to date) or six months for secondary prevention (you have had a rhythm problem and that is why we are putting in the device)
- Class 11 commercial licence holders cannot drive with an ICD

Can I exercise after I have my pacemaker fitted?

A certain level of exercise is needed to keep your heart healthy. You can take part in most sports but it is advisable to avoid contact sports to minimise the risk of damaging your pacemaker.

Following your initial recovery, it is advised to avoid strenuous activity in the first four to six weeks after pacemaker implantation but then to partake in regular healthy exercise. Please talk to your pacemaker clinic if you have concerns about physical activity.

Pacemaker infections can be serious. If in between pacemaker checks you notice redness, swelling or can see some of the metal it is very important you contact your pacing clinic right away for them to review the pacemaker.

Pacemakers have a safety warning sound programmed into them. This will alert you to the need to be seen earlier than previously planned in a pacemaker clinic. There is a sound similar to a mobile phone every day until you see the clinic. This is a safety net for you if the pacemaker needs a technician to review the settings and battery in between appointments.

Is there any equipment that can affect my pacemaker?

Electromagnetic interference will not damage your pacemaker but may temporarily interfere with its settings whilst you are in contact with it. Most mechanical and electrical devices that you use in your normal daily activities will not affect your pacemaker.

Household equipment such as ordinary radios, fridges, cookers, remote controls, televisions, electric razors, computers and microwaves etc. will not affect your pacemaker as long as they are in good working order.

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 pacemaker.

Shop doorway security systems It is advised that you walk through shop doorway security systems at a normal pace and not to wait around in this area.

Medical equipment / other hospital treatments

Most equipment used by your hospital or GP surgery will not cause any problems to your pacemaker. However it is advised that you let medical and dental staff know that you have a pacemaker. It is safe for you to have x-rays, CT scans and mammograms. If you are booked for an MRI scan you must inform clinical team. Some pacemakers are MRI conditional which means they have been demonstrated to pose no known hazards in a specified MRI environment with specified conditions of use. If you have any concerns, please speak to your pacemaker clinic. Some electrical nerve and muscle stimulators (TENS units) may cause interference with pacemakers but this depends on where they are being applied, and, if any of these treatments are suggested to you then your pacemaker clinic should be contacted for advice.

Travel

You can safely travel abroad with your pacemaker, but you are advised to show the security staff your pacemaker identification card. 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 pacemaker provided you walk briskly through the arch.

Arc welding

Generally, this is simply a NO

Mobile phones

Some studies have shown that some mobile phones can affect the pacemaker if held within six inches of the device. It is therefore recommended that you do not keep a mobile phone in a coat or shirt pocket over the pacemaker. Keep the handset more than six inches away from the pacemaker; ideally hold the phone over the ear on the opposite side to the device.

Pacemaker clinic visits

Your pacemaker should be checked regularly and you will be invited to attend your pacemaker clinic as required. You will be seen at least once a year and may be asked to attend more often if necessary. You may also see the consultant cardiologist or their registrar at your clinic visit.

During each clinic visit, the physiologist or specialist nurse will examine your pacemaker using a special programmer. This machine will allow them to examine the settings and the battery life of your device.

Special measurements are also done to assess the state of the leads that connect the pacemaker to your heart. If your condition has altered, changes may be made to the pacemaker settings using the special programmer. All the information is confidentially stored in your records.

Your wound will also be checked and you may have other tests done. Please also take this opportunity to ask any questions or let the medical team know if you have any problems or worries.

For working people or people for whom it is very difficult to get to hospital, most can now have their pacemaker checks done remotely over the internet via their own home transmitter. The pacemaker activity and your heart rhythm are then analysed by the clinic in exactly the same manner as when you physically attend the clinic.

Changing the pacemaker

Normally a pacemaker battery lasts between six and fifteen 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 pacemaker box and arrange for you to be admitted at a convenient time for you. Don’t worry, it will not be allowed to completely run down.

You will need to be admitted to hospital and the procedure is similar to having your first pacemaker fitted, but it will not usually involve having new leads.

Contacting the pacemaker clinic

If you have concerns about your wound or pacemaker function contact the pacemaker clinic on 03 5393576. If it is urgent and out of hours then call the afterhours GP on 03 546 8881 or attend the emergency department