



PATIENT INFORMATION

Permanent Pacemaker Implant (PPM)



It has been recommended that you have a permanent pacemaker implanted.

Your heart has its own natural pacemaker. This is called the sinus node; it usually produces between 60 and 100 electrical pulses a minute. If your heart tends to beat too slowly then you may have been advised to have a pacemaker fitted. The problems could include.

- The electrical connections between the upper and lower chambers of your heart are faulty (this is sometimes called heart block).
- Your natural pacemaker is firing too slowly.

A pacemaker system has a generator and one, two (or sometime three) leads that connect it to the heart. The generator has two parts – the power supply (the battery) and the electronic circuit. It is sealed in metal to stop body fluids leaking in. The whole pacemaker system weighs about 30 grams and is smaller than a matchbox. Pacemaker batteries usually last between six and ten years before the pacemaker has to be replaced.

The electronic circuit in the pacemaker draws energy from the battery and turns it into electrical impulses. These are conducted down the leads to your heart. Each electrical impulse sent by the pacemaker makes the heart contract and produce a heartbeat.

Pacemakers work ‘on demand’, meaning that if the pacemaker senses your heart’s own beat it will wait, but if your heart misses a beat, or if it is beating too slowly, the pacemaker will send out impulses to keep your heart beat at the correct rate. Most pacemakers also sense activity and increase your heart rate during exercise if your heart does not speed up naturally.

This leaflet explains some of the benefits and risks of the procedure. We want you to have an informed choice so that you can make the decision that is right for you. Please ask the cardiology team about anything you do not fully understand or want explained in more detail.

We recommend you read this leaflet carefully. You and a member of the cardiology team will need to record your agreement to the procedure by signing a consent form, which you will be given.

Intended benefits of the procedure

The aim of the procedure is to insert a pacemaker to prevent your heart from beating too slowly or stopping. If you are having your pacemaker inserted for “heart block” the benefits will include a reduced risk of blackouts and dizzy spells and a reduced risk of sudden death. If you are having your pacemaker inserted for slowing

of the heart's natural pacemaker (called sino-atrial disease, sinus node disease or sick sinus syndrome) or for a severe form of fainting (neurally mediated syncope) the main benefit for most people will be reduction of any tendency to suffer dizzy spells and blackouts.

Limitations of having a pacemaker

The main purpose of pacemaker insertion in most people is to allow them to lead normal active lives, without any major restrictions. However, there are some restrictions that apply. Airport screening systems rarely cause problems with pacemakers. Carry your pacemaker identification card with you to show the security staff. They may do a hand search or check you with a hand-held metal detector. Make sure the metal detector isn't placed directly over your pacemaker. Some countries still insist that you go through the security system. If so, it is unlikely that your pacemaker will be affected. Just walk through without lingering.

Most scans are safe, including X-ray, MRI scans and CT scans. In the past, MRI scans were not used on people with pacemakers, however, new models can now withstand MRI scanning. Ask at your pacemaker clinic if your device is suitable. If so, this may be shown on your pacemaker ID card and some adjustment may be made to your pacemaker settings before you have your MRI scan.

Some types of machine used by physiotherapists and the diathermy machines that are sometimes used to control bleeding during operations can affect pacemakers. So, if you require physiotherapy or an operation or any other treatment it is important to tell the doctor or therapist involved that you have a pacemaker. If you use a mobile telephone, we recommend that you use it on the opposite side to your pacemaker and do not put your phone in a shirt pocket over your pacemaker.

The cardiac physiologist will provide you with further information and explanation before you leave hospital after your pacemaker insertion, but if you have any questions or concerns about what you can and cannot do when you have a pacemaker in place please be sure to ask.

Serious or frequent risks

Everything we do in life has risks. A pacemaker insertion is considered to be a safe procedure. Occasionally complications can arise. These include:

- **Bleeding and bruising**
 - Bleeding from the incision can occur occasionally. This bleeding will usually stop on its own. If it continues after the first few hours, it is very occasionally necessary to perform further minor surgery to stop the bleeding.

- Some bruising around or below the site of the pacemaker is not uncommon but is not usually painful and does not usually require any treatment. Sometimes the bruising may be more extensive, but usually fades after a few weeks. Very occasionally there may be bleeding (haematoma) in the “pocket” around the pacemaker, causing a tender swelling around and over the pacemaker. If this is very troublesome it may require a further small operation within a few days to remove the blood that is causing the swelling.
- Rarely (1 in 200 cases) bleeding around the heart can occur and require a small drain to be inserted to remove the blood that has accumulated.
- **Infection**
 - There is a small risk of infection at the site where the pacemaker is fitted. We take careful precautions to keep this risk to a minimum. If this occurs, it must be treated and may require removal of the pacemaker system as well as antibiotic treatment. **If there is any suspicion of infection at any stage after your pacemaker insertion you should contact the hospital urgently so that your cardiology team can assess it and ensure that you receive prompt treatment.**
- **Lead movement after the procedure**
 - There is a small risk that one of the pacemaker leads will move out of position. You will be given advice about precautions that you can take to reduce the risk of this happening. If this does happen it is usually necessary to perform further surgery to reposition the lead.
- **Air leaking from the lungs (pneumothorax)**
 - There is a small risk of air leaking from the lung into the chest cavity on the side of your pacemaker. If this happens it may be necessary to insert a small tube between the ribs to drain off the air, and this would delay your discharge from hospital.
- **Changes in heart rhythm**
 - There is a small risk of developing an abnormal heart rhythm during the procedure. Most of these are harmless and settle on their own within a few seconds. Very occasionally it is necessary for us to give a drug by injection or an electric shock to correct a persistent or dangerous change in the heart rhythm.

You will be cared for by a skilled team of doctors, nurses and other professionals. If problems arise, we will be able to assess them and deal with them appropriately.

Other procedures that are available

There are no alternative procedures available.

Before you come into hospital

Instructions for eating and drinking

It is important that you follow the instructions we give you about eating and drinking. On the morning of your procedure you may drink as normal but you should have nothing to eat until after your pacemaker insertion.

Your usual medicine

We will usually ask you to continue with your usual medication (except as instructed below), so please bring them with you.

Clopidogrel / Prasugrel / Ticagrelor / Dipyridamole (antiplatelet drugs)

If you are taking these types of blood thinners, we **may** ask you to stop taking them a few days before the procedure. However, it is very important that you ask the doctor performing the procedure about this as the decision will depend on why you are taking the drug. **Please do not stop taking any of these medications unless specifically instructed to.**

Warfarin / Dabigatran / Rivaroxaban / Apixaban / Edoxaban Dabigatran (anticoagulants)

If you are taking any of these drugs and **do not** have an artificial heart valve, we will usually ask you to stop taking them a few days before the procedure but you will be given clear instructions by the team. If you are in any doubt, please ask.

If you have an **artificial heart valve** we will usually perform the procedure without stopping these drugs. Again, you will be given instructions regarding this but if in doubt please ask.

Diabetes

If you are **diabetic**, you should follow the appropriate instructions below.

Diabetes treated with a special diet:

- You do not need to follow any specific instructions other than the above.

Diabetes treated with tablets:

- Take all your diabetic tablets as normal. We will usually arrange your pacemaker procedure early in the morning so that you can have some food soon afterwards.

Diabetes treated with insulin:

- If you take insulin you should not take your usual dose on the morning of your pacemaker procedure. The nurses will do regular checks on your blood sugar levels. You will be able to have some food and drink after your pacemaker

procedure. Please bring your insulin with you so that you can have your usual dose at this time.

If you have any questions or concerns about your diabetic treatment, please contact whoever normally advises you about your diabetes.

What to do if you feel unwell before attending for your procedure

If you don't feel well and have a cough, a cold or any other illness when you are due to come into hospital for your pacemaker procedure, we need to know. Depending on your illness and how urgent your pacemaker is, we will advise you whether or not your procedure should be delayed.

On the day of the procedure

You will usually be admitted to the day case unit on the day of your procedure so that we can prepare for your pacemaker procedure. We will welcome you to the ward and check your details. We will fasten an armband containing your name and hospital information to your wrist. We will ask you to change into a gown ready for your pacemaker procedure.

Before your procedure you will be seen by a member of the cardiology team who will check that everything has been arranged correctly for you to have your treatment. A cannula (fine plastic tube) will be inserted into a vein in your arm so that we can give you an antibiotic injection immediately before the procedure. Please let us know in advance if you are allergic to any antibiotics or other drugs.

During the pacemaker procedure

The exact procedure needed in your case will have been explained to you by your Cardiologist beforehand.

After your pacemaker procedure

You will return to the day case unit or ward after your pacemaker has been fitted, the nurses will check your blood pressure and heart rhythm, and also check your wound for any bleeding or swelling. You will need to stay in bed for a little while after the procedure. Once the sedation has worn off, you will be allowed to eat and drink.

The nurses will advise you on the best way to sit up and when you can walk around. You will usually be able to get out of bed quite soon and this will help to build your confidence for when you go home. At some stage, the cardiac physiologists will check your pacemaker, provide you with further advice and inform about your appointment for your next pacemaker check. Some people may also have a chest X-ray after pacemaker insertion. You will be provided with some information about your wound care and what to do if you have any concerns.

Leaving hospital:

Length of stay

Most patients having this procedure will be in hospital most of the day, but will not need to stay overnight.

Medication when you leave hospital

Before you leave hospital, we will provide you with any extra medication if you need it when you are at home and can advise you about what to do about your regular medications.

Convalescence

How long it takes for you to fully recover from your pacemaker insertion varies from person to person. Once home, it is important to rest quietly for the remainder of the day. You may feel some pain or discomfort at the site where the pacemaker was inserted but this will usually improve in time. You can take a simple pain killer such as paracetamol. You may also bruise around the area where the pacemaker was fitted, which also can be normal.

We recommend that you are not alone at home the night after your procedure.

Incision (cut)

If you experience any obvious bleeding from the incision or any swelling or troublesome pain over the pacemaker site, you should seek further help and advice (see below).

In most cases we will use sutures (stitches) beneath the skin that will dissolve and will not need to be removed. In addition, many people have an adhesive plastic film applied to hold the skin edges together. This should be left in place for 5-7 days and may then be peeled off. Some people may have a different type of dressing and we will give you instructions on when to remove it.

Infection

There is always a small risk of infection at the place where the pacemaker has been implanted. If, after you get home or at any time in the future, your wound or the area around your pacemaker becomes redder or more swollen, or you get some pus from the wound or you develop a high temperature, contact your pacemaker clinic (Clinical Investigations) immediately.

Personal hygiene

You may be advised not to take a bath or shower for 7 days after your pacemaker insertion. This will depend on the type of dressing used and before you leave we will advise you whether this applies to you. When you do wash the area, do not rub

vigorously over the incision or allow it to remain wet for more than a few moments. Dab it gently dry it afterwards.

Exercise

For the first 48 hours after the procedure you should limit the movement of the arm on the side of the implant to a minimum.

For the following 6 weeks, you can move the arm on the side of the implant normally but please avoid lifting it above your shoulder height. From time to time, gently rotate your shoulder and move your head from side to side to avoid stiffness in your neck, shoulder and arm. You should not participate in strenuous exercise for 4-6 weeks after your pacemaker insertion. You should avoid heavy lifting and carrying heavy shopping. Ordinary walking, for example round the house, garden or place of work should not be a problem. If you usually play sport such as golf, tennis or badminton, or if you go swimming, do not do so for at least one month after pacemaker.

After 4 weeks there are no specific restrictions to activity but please check with the pacemaker clinic if you are planning activity that involve very vigorous movement of the arm on the side of the pacemaker (for example playing tennis or golf).

Driving

You should not drive yourself home or travel home by public transport. The DVLA requires that you do not drive for a week after your pacemaker insertion. In some circumstances you will have to wait longer – if in doubt, ask at the time of implant.

Work

When you return to work will depend on your job. If your job involves heavy manual work you may be advised to take some time off. If your job does not include manual work or lifting you may be able to return to work within a few days of your pacemaker insertion.

Communication

A report of your pacemaker procedure will be sent to your doctor (GP) within a few days.

Further hospital visits

Before you leave you will be advised about attending the cardiopulmonary department for a routine check on your pacemaker about 6-8 weeks after insertion. This is important both to check that your pacemaker is working well as expected, and also so that we can make any necessary adjustments to the settings of your pacemaker to provide you with the correct treatment for your particular condition. Your pacemaker information can often be reviewed remotely using a special programmer which communicates with the pacemaker by magnetic signals. Most people have 2 or 3 pacemaker checks during the first 12 months and after that need attend for a pacemaker check only once each year.

Many people with pacemakers do not need to attend the cardiology clinic as well as the pacemaker clinic. The cardiac physiologist in the pacing clinic will involve the

cardiologists if there is any need to do so. However, some people have other problems with their heart or need to take medication for their heart in addition and if this applies to you we will arrange for you to have an appointment in the cardiology clinic as well as the pacemaker clinic.

Contact details

If you have any specific concerns that you feel have not been answered and need explaining please contact Nursing staff, Cardiac Catheter Suite, Worcestershire Royal Hospital. Monday - Friday 7.30am to 4pm (Phone 01905 733205)

Additional Information:

The following Internet websites contain additional information that you may find useful:

- www.worcestershirehealth.nhs.uk/acute_trust
Worcestershire Acute Hospitals NHS Trust
- www.patient.co.uk
Information fact sheets on health and disease
- www.nhsdirect.nhs.uk
On-line Health Encyclopaedia and Best Treatments website.
- www.bhf.org.uk
British Heart Foundation website.

If your symptoms or condition worsens, or if you are concerned about anything, please call your GP, 111, or 999.

Patient Experience

We know that being admitted to hospital can be a difficult and unsettling time for you and your loved ones. If you have any questions or concerns, please do speak with a member of staff on the ward or in the relevant department who will do their best to answer your questions and reassure you.

Feedback

Feedback is really important and useful to us – it can tell us where we are working well and where improvements can be made. There are lots of ways you can share your experience with us including completing our Friends and Family Test – cards are available and can be posted on all wards, departments and clinics at our hospitals. We value your comments and feedback and thank you for taking the time to share this with us.

Patient Advice and Liaison Service (PALS)

If you have any concerns or questions about your care, we advise you to talk with the nurse in charge or the department manager in the first instance as they are best placed to answer any questions or resolve concerns quickly. If the relevant member of staff is unable to help resolve your concern, you can contact the PALS Team. We offer informal help, advice or support about any aspect of hospital services & experiences.

Our PALS team will liaise with the various departments in our hospitals on your behalf, if you feel unable to do so, to resolve your problems and where appropriate refer to outside help.

If you are still unhappy you can contact the Complaints Department, who can investigate your concerns. You can make a complaint orally, electronically or in writing and we can advise and guide you through the complaints procedure.

How to contact PALS

Telephone Patient Services: 0300 123 1732 or via email at: wah-tr.PET@nhs.net

Opening times:

The PALS telephone lines are open Monday to Thursday from 8.30am to 4.30pm and Friday: 8.30am to 4.00pm. Please be aware that a voicemail service is in use at busy times, but messages will be returned as quickly as possible.

If you are unable to understand this leaflet, please communicate with a member of staff.