

Pacemaker

The following information should be read by patients prior to a Pacemaker Implantation.

The following questions will be answered:

1. How does the heart's electrical system work?
2. Why do people need pacemakers?
3. What types of pacemakers are there?
4. What is involved in the pacemaker insertion operation?
5. How long will my pacemaker last?
6. Will having a pacemaker affect my lifestyle?

Normal Heart Function

The heart pumps blood around the body. It has four chambers. The two upper chambers are called the atria. They receive blood from the lungs and body and contract to move the blood to the lower chambers called the ventricles. The ventricles contract to pump blood back to the lungs and to the rest of the body. Contraction of these chambers is controlled by the heart's electrical system.

The Electrical System of the Heart

The heart sends electrical signals along special pathways through the heart to enable the heart to beat correctly.

SA (Sinoatrial) or sinus node

The sinus node is the heart's natural pacemaker. It is a collection of special cells, which send an electrical signal through both atria, causing them to contract. The contraction of the atria pumps blood into the ventricles.

AV (atrioventricular) node

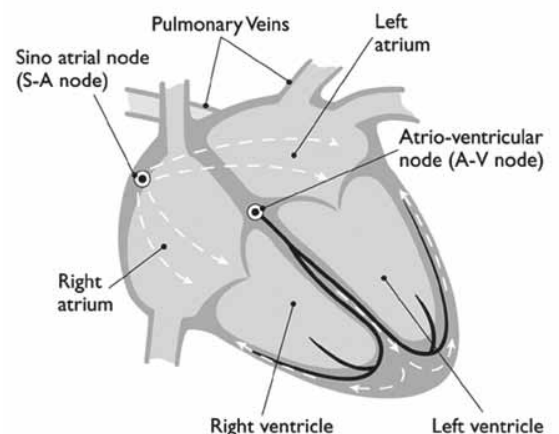
The AV node passes the electrical signal from the atrium to the ventricles.

Conduction Pathways

These pathways conduct the electrical signal from the AV Node to the ventricles. This causes the ventricles to contract pumping blood to the rest of the body.

After the Procedure

- When the angiogram is completed the introducer sheath will be removed.
- Pressure will be applied to the puncture site using a clamp for approximately 20 minutes, or your cardiologist may choose to use a Perclose stitch or Angioseal. When the bleeding stops, a plastic dressing or Bandaid will be applied.
- Your blood pressure, pulse, foot pulses and puncture site will be checked frequently.



Why do People Need Pacemakers?

Disorders of the heart's electrical system result in rhythm disturbance or 'arrhythmia'.

Arrhythmias prevent the heart from beating efficiently. When this occurs, the heart may be unable to pump a sufficient supply of blood to meet the body's needs.

Common symptoms of arrhythmia include:

- dizziness
- blackouts and fainting
- extreme fatigue
- chest discomfort
- weakness
- shortness of breath
- palpitations

Arrhythmias include the heart beating:

- too fast (tachycardia)
- too slow (bradycardia)
- chaotically (fibrillation)

A pacemaker is usually used to prevent bradycardia but some pacemakers can assist in the management of tachycardia or fibrillation, helping to alleviate the symptoms.

Types of Pacemakers

Your cardiologist will determine what type of pacemaker you need.

The different types include:

- Single Chamber Pacemaker which has one lead that is positioned in either the right atrium or right ventricle.
- Dual Chamber Pacemaker which has two leads, one is positioned in the right atrium and the other in the right ventricle.
- Biventricular Pacemaker which has two pacing leads to activate both the right and left ventricles and may also have a lead in the atrium. This type of pacemaker is used to treat chronic heart failure as it ensures both ventricles contract together.
- Antitachycardia Pacemaker which means that the pacemaker is able to treat tachycardia with rapid pacing and can be a feature in any of the above.
- Implantable Cardioverter Defibrillator is a pacemaker-type device that also has a specific function to deliver an electrical shock if the heart goes into a fast ventricular rhythm.

Pacemakers can have a number of other features including the ability to detect and record any arrhythmia. Rate responsive pacing is a feature of most devices and allows for the adjustment of the pacing rate according to the needs of the body (eg. level of physical activity).

Preparing for the Procedure

- You will be asked to sign a consent form.
- You will be required to fast from food and water for six hours before the procedure.
- You will be given instructions about your anticoagulant medication (eg. warfarin) but take all your other medications.
- Please bring all your medications into hospital with you.
- Your Cardiologist may request an ECG and blood test.
- You will have an intravenous cannula inserted and antibiotics will be given via this immediately before the procedure.
- You will need to shower before the procedure and change into a gown, (which opens at the back).
- You will have the hair removed from the operation site (usually the left or right upper chest region) with electric clippers.



Sample pacemaker actual size

- The area may be washed with Betadine (an iodine solution) one hour prior to the procedure (It is important to tell the medical staff if you have any allergy to iodine).
- It will not be necessary to remove glasses, hearing aids or dentures.
- If you require a sedative, it will be given to you an hour before the procedure. This will help you to relax, but should not make you sleepy. An additional sedative or painkiller can be given during the procedure if needed.
- You should go to the toilet before the procedure.

The Procedure

The insertion of the pacemaker will be performed in the cardiac catheter laboratory under sterile conditions to prevent infection. The procedure is short (usually around one hour), simple and does not usually require a general anaesthetic.

The site will be numbed with local anaesthetic and the cardiologist will make a small incision into the skin on the front of the chest wall just below the collarbone. The pacing leads will be passed through the vein to the correct position in the heart guided by an x-ray machine which sits over your chest. The pacemaker generator will be attached and buried in a "pocket" beneath your skin.

The wound will be closed and sealed with a dressing.

You will then be transferred to the cardiology ward where your heart rate, rhythm, blood pressure and wound site will be checked regularly. You will also have a chest x-ray.

There are some risks associated with having a pacemaker inserted. They include local tissue infection, formation of blood clots, damage to the heart wall or blood vessels and partial collapse of one lung. Very occasionally, one of the pacemaker leads may move and have to be repositioned. These uncommon complications are easily identified and can be treated.

After the Procedure

Prior to discharge:

The pacemaker technician will check the pacemaker function.

You will be given an identification card that states the type of pacemaker. It is important to carry this card at all times.

You will have a pacemaker clinic appointment arranged. The first appointment will be to check the wound healing and the pacemaker settings. Subsequent visits are brief, but are necessary to determine the pacemaker function and to determine and optimise the battery life of the pacemaker.

Information for Home

Wound Care:

Use the arm on the affected side normally, but avoid lifting the arm above your head or heavy objects until the discomfort is gone.

Avoid any activities that may put direct pressure on the pacemaker site.

Follow the wound care instructions given to you by the staff.

Some bruising is common, particularly if you are on aspirin or another blood-thinning drug.

Observe the incision site for signs of infection (eg. redness, heat, swelling, pain or discharge from the site).

Medications:

It is important to continue all medications as directed by your cardiologist.

Activities:

Your cardiologist may restrict some physical activities until the incision is healed; be sure to ask your cardiologist about these.

Interference between electrical equipment and your pacemaker: This is extremely rare.

Electrical arc welders produce a very strong electrical signal which can be misinterpreted by your pacemaker as your heart beating, resulting in no pacing. You should stay at least 2 metres away from these.

Some security equipment (such as theft detectors at shop entrances) can interfere and you should walk past these without stopping. Airport security scanners have been shown to be safe. Some other powerful industrial and medical equipment can interfere and you should ask your Cardiologist about these.

You cannot undergo any type of MRI scanning with a pacemaker.

How long will my pacemaker last?

This depends on many things, including your underlying condition, the electrical contact between your heart and the pacemaker leads and the type of pacemaker you are given. Careful programming of the pacemaker at the initial visits can make a significant difference to battery longevity. Depending on these factors, your pacemaker can last anywhere between five years and 20 years, commonly around 10 years. You will be alerted to the need for pacemaker replacement at your pacemaker clinic visit. The whole device is replaced in a very simple procedure which usually does not require new pacing leads and is thus easier than the initial implantation procedure.

More specific information is available from your cardiologist or pacemaker technician.

IMPORTANT THINGS TO REMEMBER

Do not manipulate the pacemaker under the skin as it may interfere with the pacemaker.

Ring your cardiologist should you experience:

- signs of infection at the incision site ([click here](#) or see above for wound care)
- chest pain
- shortness of breath
- light-headedness, dizziness, or fainting
- persistent weakness/fatigue
- unusual heart rate increase or palpitations.

Please contact Hollywood Private Hospital coronary care unit on **(08) 9346-6021**, if you have any further questions or concerns.