



Victorian Heart Centre

PERMANENT PACEMAKER

A guide for patients



The heart has its own natural pacemaker called the sino-atrial (SA) node that maintains a normal heart rhythm and pulse rate.

As shown in the illustration, the SA node sends an electrical signal from the right atrium toward the left atrium and the two main pumping chambers, the right and left ventricles. This signal is coordinated by other groups of specialised muscle fibres called the AV node and the bundle of His. The normal heart rate typically varies from 60 to 80 beats per minute.

As people age, the SA node, AV node and bundle of His may start to wear out and not provide the regular signals that produce a steady heart rate and coordinated heart rhythm. The electrical signals can also be interrupted or disorganised by heart attack or heart disease. These events can cause the heart to:

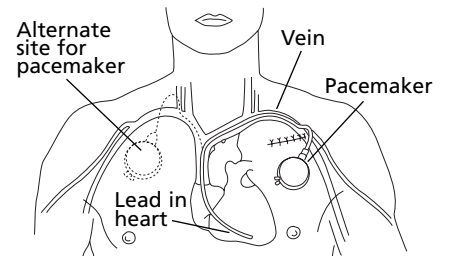
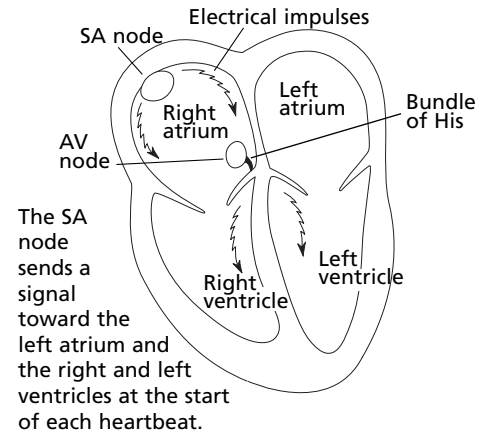
- beat too slowly all of the time

- beat too slowly some of the time
- beat too quickly or too slowly, at unpredictable times.

Consequently, the person may become tired, weak, dizzy or short of breath. Some people may have repeated fainting spells.

Although medication can often help, your cardiologist may recommend the permanent implantation of a device called a pacemaker. The pacemaker generates a precisely timed and strong electrical impulse for each heartbeat, taking over the roles of the SA node, AV node and bundle of His.

Pacemakers have become an increasingly common treatment option. Some pacemakers are “rate modulated”, that is, they can increase or decrease the heart rate depending on need. Modern pacemakers are reliable, small, and long lasting.



The device consists of the pulse generator (pacemaker) imbedded under the skin, and the lead implanted in the heart.

Implantation of a Permanent Pacemaker

The procedure is performed under local anaesthetic in the Cardiac Catheter Lab by a cardiologist and a specialised team of nurses and technicians. You may be given medication through an intravenous drip to help you relax.

A three-centimetre cut is made on the left-hand or right-hand side of the chest, beneath the collarbone. Under X-ray imaging, a wire is passed along a shoulder vein and guided to the heart. The wire is tested to make sure it is in the right place and is then connected to the pacemaker. In some cases, two wires are used (one in the right atrium and the other in the right ventricle).

The pacemaker is placed between the muscle and fat layers just under the skin, and the incision is closed with dissolvable stitches that do not need to be removed. The procedure takes about an hour. The pacemaker can be felt under the skin, and in thin patients a small lump is visible.

Recovery

After the procedure, you are moved to a recovery area for observation

and then to the ward. Stay in bed for at least four hours. Remain sitting up until you want to sleep. You can eat and drink immediately. Painkillers are given to relieve discomfort and pain after the local anaesthetic wears off.

Maintain normal use of your arm, but for the first week, avoid sudden or stretching movements, especially over the head. An X-ray examination may be needed to check the pacemaker's position. Most patients go home the day after the pacemaker implantation. Your cardiologist will advise you about any changes to your medications. Resume normal activities when comfortable.

Possible Complications

As with all procedures, implanting a permanent pacemaker does have risks, despite the highest standards of practice and care. Most people do not have complications. If a complication occurs, it is usually temporary. However, some complications may require another operation or the removal of the pacemaker.

- Bleeding or bruising at the pacemaker site. This is more common if you are on a drug to stop blood clotting.
- Rarely, infection of the pacemaker site.

- The pacemaker wires may move from their original position. This occurs in about one patient in every 100 and is usually detected by the ECG monitor in the first hours after the procedure. Another operation to reposition the wires is necessary. Sometimes, the leads may need to be repositioned weeks or months later.

- Uncommonly, a lung may partly collapse during the insertion of the pacemaker wires. A small tube is inserted into the chest to re-inflate the lung.

TALK TO YOUR DOCTOR OR NURSE

This leaflet is intended to provide you with information and is not a substitute for professional advice. It does not contain all of the known facts about a permanent pacemaker. There may be other side effects that are not listed in this leaflet.

If you are not certain about the benefits, risks and limitations of treatment, be sure to ask your doctor or nurse.

It is important that you have enough information about benefits and risks so you can make an informed decision about having treatment.