Pacemaker

Pacemaker. A pacemaker is a system with a pulse generator and one or more electrode leads for electric impulses to stimulate the heart to contract and produce a heartbeat. A permanent pacemaker is inserted under the patient's skin just above the breast tissue. When the heart needs a signal the pacemaker sends electrical impulses along an electrode lead to stimulate the heart to contract and produce a heartbeat.

Pacemakers were first successfully implanted in the 1950s and since then nearly a million people with disturbed heart rhythm have benefited from them. Pacemakers have enabled them to live normal lives.

In a **normally functioning heart**, each heartbeat begins at the **sino-atrial node** – a small group of specialized cells that form the heart's natural pacemaker. The electrical impulses spread through the heart causing it to contract so that blood is pumped to the lungs and the rest of the body. If there is a malfunction in the conduction system or if the natural pathway of the electrical impulses is blocked, the heart rate may become slow, very fast, or irregular. This may result in dizziness, drowsiness, shortness of breath, and/or fainting.

Implantation of the pacemaker takes about one hour and is usually performed under local anaesthetic without pain or discomfort. The surgeon places the pacemaker in a small pocket formed between the skin and muscle of your upper chest, near your right or left shoulder – depending whether you are left- or right-handed. A wire lead goes into your heart through a vein, and the electrode at the end of the lead delivers impulses to your heart when required.

Today's pacemakers are small, thin and lightweight, and once implanted are usually barely visible from the outside. At first the pacemaker may feel a little heavy, and you may be aware of it, but you will soon become accustomed to it and it will seem like a normal part of your body.

After implantation of the pacemaker you will usually be in hospital for one day. Before leaving hospital your pacemaker will be checked by a cardiac technician. You will be left with a few small stitches in the skin, which are removed after 10 days. Until your wound is fully healed avoid wearing anything that will rub it, such as a bra or braces. You should avoid getting the wound wet until your stitches are removed. Your GP or the nurse will remove the stitches after about 10 days.

You should avoid reaching up high on the side of the operation for 4 weeks – do not lift things off high shelves or hang out washing. It is also important to retain movement in the arm to prevent a frozen shoulder. You will be given or sent a card to carry with you at all times, stating that you have a pacemaker. Four weeks after implantation, your pacemaker will be checked in the clinic. If all is well you will only need to have your pacemaker checked every 6 to 12 months. After four weeks you should have returned to a full normal life. If all is well you may then start to drive but you should inform the DVLC and your insurance company that you have a pacemaker. However, there are some limitations – you should avoid anything that may damage your pacemaker – eg contact sports such as rugby or boxing.

The pacemaker batteries should last perhaps 10 years. When your pacemaker batteries need changing you will only need a day visit to the hospital.

Ordinary household electrical equipment will not affect your pacemaker. This includes microwave ovens as long as they are in good working order. If your job means that you come into contact with strong electrical fields – eg arc welding, diathermy, high power radio or TV transmitters, or direct contact with car ignition systems, then you should take advice from the pacemaker technician before returning to work.

Current pacemakers are extremely sophisticated. Some require two leads and monitor both the left and right sides of the heart. Some automatically adjust the pacing rate to respond to the exertion of the heart.

First published in this form 2002, and updated 2005, 2007, 2008.

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