

# Pacemakers

## What is a pacemaker?

An artificial pacemaker is a device that helps the heart muscle pump, or contract, properly. It is powered by a battery. Some pacemakers are placed permanently under the skin in the chest. Others are temporary and placed on top of the skin. Wires connect the pacemaker to the heart. One set of wires sends information to the pacemaker about the contraction rate of the heart. Another set of wires sends signals to the heart to contract if the rate is too slow or if it is missing beats.

## When is it used?

Sometimes the body's natural pacemaker does not work properly. Special cells in the heart, called pacemaker cells, send electrical signals that cause the heart muscle to contract. When the heart contracts it squeezes blood from the heart out to the body and the lungs. The heart normally contracts (beats) about 50 to 100 times each minute when you are not exercising. The heart may beat as often as 190 times each minute when you exercise.

Sometimes a heart attack, infection, medicine, or disease damages the heart. As a result, the pacemaker cells may not work properly. When they do not send signals correctly, your heart rate may be very slow. When your heart beats too slowly, it may not pump enough blood for your body's needs. You may feel lightheaded, tired, or faint. An artificial pacemaker maintains a normal heartbeat.

## How long will the pacemaker keep working?

The pacemaker battery usually lasts 4 to 12 years. Your healthcare provider will be alerted to the fact that it is time to replace the battery during follow-up exams. He or she will check your pacemaker using a small table-top computer, called a programmer, and a wand. The wand is about the same size as a remote control. Your provider puts the wand on your body, about where the pacemaker is located. This allows your healthcare provider to get information from the pacemaker about how well your heart is working and to check the battery. It is not painful, and it usually takes just a few minutes. You will have plenty of time before the battery is fully used up to plan for replacement.

When a battery needs to be replaced, the whole pacemaker will be replaced. Most often, this procedure is very simple. Your healthcare provider reopens the pocket holding the pacemaker and disconnects the old device from its leads. He or she attaches a new pacemaker to the existing leads, and sews the pocket closed.

## **What are the benefits?**

Your heart may beat in a healthy rhythm, and you may resume a more normal lifestyle.

## **How can I take care of myself when I have a pacemaker?**

Be aware that some devices may interfere with pacemakers:

- Cell phones. Keep your cell phone at least 6 inches away from your pacemaker. When you are talking on your cell phone, hold it on the opposite side of the body from your pacemaker. When your phone is turned on but not in use, do not carry it in your breast pocket.
- Power equipment. Pacemakers may not work properly near power-generating equipment and arc welding equipment.
- Magnetic resonance imaging (MRI). MRI uses a powerful magnet to produce images of internal organs. The magnet can interrupt the pacing of pacemakers.
- Radiation. X-rays generally do not affect pacemakers, but radiation therapy for cancer may damage pacemaker circuits.
- Short-wave or microwave diathermy (deep heat treatment) signals may interfere with or damage the pacemaker.

Devices that generally do not damage pacemakers or change pacing rates include:

- CB radios and ham radios
- electric drills
- electric blankets and heating pads
- electric shavers
- metal detectors (Passing through the metal detector at airports will not damage a pacemaker, but the metal in it may sound the alarm.)
- microwave ovens
- televisions and remote controls.

Lithotripsy to dissolve kidney stones may be done safely with some reprogramming of the pacing. Electroconvulsive (shock) therapy appears to be safe for people who have pacemakers.

Tell all your healthcare providers and dentists that you have a pacemaker. Be sure to carry an ID card with you that says you have a pacemaker.

For more information, contact your local chapter of the American Heart Association or call (800) 242-8721. Their web site is: <http://www.americanheart.org/>

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