COMMON QUESTIONS ABOUT PACING THERAPY FOR BRADYARRHYTHMIAS

What is a pacemaker?

Pacemakers are implantable medical devices that are prescribed for people whose hearts are beating too slowly or irregularly. A pacemaker stimulates the heart muscle with precisely-timed discharges of electricity that cause the heart to beat in a manner quite similar to a naturally occurring heart rhythm.

A pacemaker consists of:

- A pulse generator with battery and circuitry providing electrical energy and timing;
- A pacing lead - an insulated wire that carries electrical impulses to the heart and information about the heart’s natural activity back to the pulse generator; one or two leads are used depending on the type of pacemaker prescribed.

Why might someone need a pacemaker?

The human heart’s own natural pacemaker is called the sinus node. It produces impulses that travel through electrical pathways in the heart and cause the heart muscle to contract and pump blood as it’s needed by the body. Sometimes this natural mechanism becomes diseased so that impulses are irregular - too slow, too weak - or its impulses may be blocked by other disorders. Bradycardia is the name for a group of diseases in which the heart beats too slowly to support the circulatory needs of the body.

If this happens, the person may feel dizzy, weak, or just very tired. An artificial pacemaker may then be used to restore a consistent flow of proper electrical impulses, thus improving blood circulation and restoring a general feeling of well being to the patient.

What are the different types of pacemakers?

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Pacing therapy is diverse because the underlying heart conduction disorders that result in rhythm disturbances are different. Following are brief descriptions of the types of pacemakers available today:

• Single-chamber pacemakers typically use one pacing lead placed either in the right atrium or the right ventricle for atrial or ventricular pacing.

• Dual-chamber pacemakers typically use two pacing leads, one placed in the right atrium and the second placed in the right ventricle; the electrical pulses delivered to the heart are timed so that the atria and ventricles are beating "in sync" with each other.

• Rate responsive pacemakers use a special sensor (or combination of sensors) to recognize body changes and adjust the patient's heart rate to speed up or slow down as needed.

**How are pacemakers implanted?**

The most common implantation method is the endocardial approach, which is relatively simple and can be performed under local anesthesia. For this method, the pacing lead is inserted into the heart via a vein. The pulse generator is typically placed under the skin in the upper chest area near the collar bone.

**How are pacemakers adjusted after implant?**

Much like a small computer, the programmer is used by the physician to externally adjust the pacemaker to meet the patient's needs. It sends signals to, and receives signals from, the pulse generator on radiofrequency waves - without surgery.

**Are pacemakers safe around household appliances?**

Properly maintained electrical household items are unlikely to interfere with pacemaker operation. These include:

• microwave ovens

• televisions, radios, video games, CD players, and stereos

• electric blankets and heating pads

• toasters, blenders, food processors

• hair dryers and shavers
• large appliances such as washers, dryers, electric stoves, vacuum cleaners

• outdoor equipment such as lawn mowers, leaf blowers, and snow blowers

**May patients use cellular phones?**

Cellular phones are unlikely to interfere with pacemaker operation if proper precautions are followed:

• A distance of at least six inches should be maintained between a cellular phone and a pacemaker.
• The cellular phone should be held to the ear opposite the side of the body in which the pacemaker is implanted.
• The cellular phone should not be carried in a pocket on the same side as the implanted pacemaker.

**Are screening devices a concern?**
Airport screening devices are unlikely to affect pacemaker operation, but they may detect the metal housing of the device and set off the security system. To obtain clearance, patients should show their pacemaker identification card to airport personnel, request scanning with a hand-held screening device, or request a hand search.

When encountering anti-theft systems in stores and libraries, patients should walk normally through the detectors and not linger in adjacent areas.

**Is equipment in the work environment safe for pacemakers?**
Office and shop equipment are unlikely to interfere with pacemaker operation if they meet current electrical safety standards. These include:

• computers, electric typewriters

• copying machines, fax machines

• small wood and metal working shop tools

Pacemaker patients who work in a heavy industrial environment should ask their physicians about potential risks.

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