Electromagnetic Interference (EMI) in the Home or Medical Environment

It is important to be aware of medical procedures and common items that may create electromagnetic interference (EMI) with your device.

Items that give off electromagnetic signals may cause your device to mistake those impulses for the signals coming from your heart. A pacemaker may respond by delaying its pacing. An ICD may respond by delivering a shock that you don't need or not providing a shock that is needed.

EMI is generally temporary and dependent on how close you are to the item giving off the signals.

Refer to this list for general items to avoid. Contact your doctor if you have any questions about how a specific type of equipment will interact with your device.

MEDICAL PROCEDURES

Not Recommended:

- MRI/MRA scans*
- Microwave diathermy

Check with your doctor before undergoing the following procedures:

- Acupuncture with electrical stimulus
- Cardioversion
- Electrocautery
- Electroconvulsive therapy
- Electrolysis
- Endoscopic procedures: colonoscopy/gastroscopy
- Hyperbaric therapy
- Iontophoresis
- Interferential current therapy
- Laser/Lasik eye surgery
- Lithotripsy
- Radiation therapy
- Radio frequency ablation
- Therapeutic ultrasound
- Transcutaneous Electrical Nerve Stimulation (TENS)
- Transurethral prostate therapy

No Known Risk:

- Acupuncture with no electrical stimulus
- Bone density scan
- CT Scan
- Dental drills and ultrasonic scalers
- Diagnostic X-ray
- Electrocardiogram

SECURITY/ANTITHEFT SYSTEMS (Airports, Retail Stores)

No Known Risk, but follow precautions as noted:

- Inform airport security personnel you have an implanted device and show Medical Device ID card.
- Metal detectors and Electronic Article Surveillance systems are generally safe, but do not linger when you pass through them.
- If the alarm sounds (it may not), it only means that the system detected the metal in your device.
- Security personnel may use a handheld wand. If so, it is important that you ask them to perform the search quickly and to avoid holding the wand over your implanted device for a prolonged period of time.

* Some newer pacemakers are called MRI (or MR) conditional. This means that they are designed to allow you to safely undergo an MRI scan under set conditions, due to safeguards in the system's design that protect it from the risks a non-MRI conditional system might face. You should have been advised and given a special identification card if you have an MRI conditional pacemaker system.

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PERSONAL AND OFFICE TECHNOLOGY

Not Recommended:

- Magnetic mattresses or chairs
- Electrical equipment that is in poor condition or improperly grounded

No Known Risk, but follow precautions as noted:

- AM/FM radios
- Bingo game magnetic wands
- CB and ham radios
- CD/DVD players
- Cell phones*
- Copy machines
- Cordless phones*
- Handheld massagers*
- Hearing aids
- Electric blankets
- Electric toothbrushes
- Electric razors*
- Electric invisible fences
- Fax machines
- Global positioning systems (GPS)
- Hair dryers*
- Heart rate monitors
- Heating pads
- iPods and MP3 players
- Laser tag games
- Pagers
- Patient alert devices
- Laptop/desktop computers
- Personal digital assistants
- Printers
- Remote controls: TV, garage door, stereo, camera/video equipment
- Scuba diving (up to 200 feet)
- Slot machines
- Stereo speakers*
- Tanning beds
- TVs and VCRs
- Video games

* Do not place directly over device

HOUSEHOLD ITEMS

Not Recommended:

- Electrical appliances that are in poor condition or improperly grounded

No Known Risk, but follow precautions as noted:

- Air purifiers
- Battery-powered cordless power tools
- Blenders
- Clothes dryers
- Convection ovens
- Corded drills and power tools*
- Electric can openers
- Electric knives
- Electric ovens and stoves
- Food processors
- Gas ovens and stoves
- Gas-powered tools*
- Hot tubs/whirlpool baths
- Lawn mowers*
- Laser level
- Leaf blowers
- Microwave ovens
- Portable space heaters
- Snow blowers
- Soldering irons
- Stud finders
- Vacuum cleaners
- Washing machines

* Keep 12 inches from device

INDUSTRIAL EQUIPMENT

A variety of industrial equipment produce EMI of sufficient field strength and modulation characteristics to interfere with proper operation of the pulse generator. These include, but are not limited to: arc welders; induction furnaces; very large or defective electric motors; and internal combustion engines with poorly shielded ignition systems.

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