




**Medtronic**

# Answers to questions about implantable cardiac devices

Electromagnetic  
compatibility guide

Together,  
helping  
you lead a  
fuller life.





This brochure is designed to provide answers to questions you may have related to living with an implanted heart device. If you have specific questions regarding dental or medical procedures, please ask your doctor or nurse.

You can also call Medtronic Patient Services toll-free at  
1-800-551-5544  
(7:00 a.m. to 6:00 p.m.,  
Monday-Friday, Central Time)  
with nonmedical questions.



## What you should know about electromagnetic compatibility (EMC)

Medtronic heart devices are built with protective shields, so the majority of items that you use or come into contact with will not affect the normal operation of your implanted heart device. However, items that generate or use electricity, or transmit wireless signals – such as a portable generator, power drill, or cell phone – have electromagnetic fields around them. Some of these fields may affect the normal operation of your heart device. Electromagnetic compatibility is the relationship between these electromagnetic fields and your heart device.

## How items may affect your heart device

If the electromagnetic fields surrounding an item are too close to your implanted heart device – and your heart device happens to detect these fields – this may temporarily affect the normal function of your heart device. This same effect may also occur if the item being touched is not in good working order or properly wired, causing electrical current to flow into your body.

In either situation, this may temporarily cause your heart device to deliver a therapy that is not needed or withhold a therapy that is needed. In addition, maintain a minimum distance between certain items and your implanted heart device. This will help to avoid any temporary effect on your heart device.

## What to do if you think an item is affecting your heart device

If you feel dizzy, lightheaded, a change in heart rate, or receive a shock while using an item, simply release whatever you're touching or move away from it. Any temporary effect is unlikely to cause reprogramming or damage to your heart device. Your heart device is designed to return to normal operation. Of course, if your symptoms continue or do not improve, contact your doctor as soon as possible.

## Answers to the most commonly asked questions

This guide is divided into four main categories:

- ① Household and hobby items
- ② Tools and industrial equipment
- ③ Communications and office equipment
- ④ Medical and dental procedures

Each category is broken into sections that provide a recommended precaution or minimum distance you should keep from the items or products listed. If the item you're looking for isn't on the list or you have a specific question about an item, contact Medtronic Patient Services at 1-800-551-5544.

# 1 Household and hobby items

Most household and hobby items are unlikely to affect your heart device when the items are in good working condition, used as intended, and the recommended distances are maintained. For items that transmit power through an antenna, follow the noted distances between the antenna and your implanted heart device. All items, regardless of distance restrictions, must be in good working condition and used as intended.

## ● Items with no distance restrictions

While there are no distance restrictions for the following, all items should be in good working condition and used as intended:

- Electric/gas stove
- Electric toothbrush
- Hair shaver/trimmer, battery powered
- Heating pad
- Hot tub/swimming pool
- Microwave oven
- Refrigerator

For full list of items,  
scan QR code.



## ● Items with distance restrictions

Maintain at least the distance indicated between the item and your heart device:

### 6-inch distance

- CPAP mask with magnetic clips
- Magnets
- Earbuds/headphones, wireless/wired (these items contain tiny magnets to generate sound)
- Handheld hairdryer
- Handheld appliances

### 12-inch distance

- Car/motorcycle – from components of ignition system

### 24-inch distance

- Induction cooktop stove

## ● Not recommended

Use of these products is not recommended:

- Electronic body fat scale
- Magnetic mattress pad/pillow
- PEMF (pulsed electro-magnetic field) therapy products

# 2 Tools and industrial equipment

Your power tools and/or equipment should be in good working order and properly wired (three-prong plug, if applicable) and used as intended by the manufacturer of the product. Corded electrical items should be plugged into a safety outlet device called a ground fault circuit interrupter (GFCI or GFI). All items, regardless of distance restrictions, must be in good working condition and used as intended.

## ● Items with no distance restrictions

While there are no distance restrictions for the following, all items should be in good working condition and used as intended:

- Diesel engine
- Kiln, 115-120 V AC or 220-240 V AC
- Soldering iron

## ● Items with distance restrictions

Maintain at least the distance indicated between handheld tools, battery-powered or electric, and your heart device:

### 6-inch distance

- Battery and electric powered tools

### 12-inch distance

- Gasoline-powered tools – from components of ignition system (lawn mower, backpack leaf blower, snowblower, weed whacker, chainsaw)
- Gasoline ignition systems – from components of ignition system (ATV, automobile, boat motor, forklift, jet ski, motorcycle, snowmobile, truck)
- Generators, electric, portable AC/DC, up to 20 kW

### 24-inch distance

- Bench-mounted/freestanding tools – for motors 400 horsepower or less (air compressor, drill presses, grinder, pressure washer, table saw)
- Jumper cables
- Welding equipment (with currents under 160 amps)



## ● Not recommended

Use of these products is not recommended:

- Welding equipment (with currents over 160 amps)

For full list of items,  
scan QR code.



# 3 Communications and office equipment

Guidelines for safe operation of communications and office equipment include such factors as transmitting power, frequency, and antenna type. For items that transmit wireless signals through an antenna, follow the noted distances between the antenna and your implanted heart device. All items, regardless of distance restrictions, must be in good working condition and used as intended.

## ● Items with no distance restrictions

While there are no distance restrictions for the following, all items should be in good working condition and used as intended:

- Activity bands (FitBit™\*) with no magnets
- Bluetooth®\* technology (Bluetooth-enabled items may have additional restrictions)
- Heart rate monitor, chest band

## ● Items with distance restrictions

Maintain at least the distance indicated between the item and your heart device:

### 6-inch distance

- Cellphone
- Ham radio, walkie talkie – 3 watts or less
- Items using Wi-Fi
- Keyfob
- Medic alert pendant
- Smart watch – contains magnets

### Mobile telephones

Keep mobile telephones, cellular telephones, or smartphones at least 6 inches from an implanted pacemaker or ICD.

Keep magnetic accessories for mobile telephones at least 6 inches from an implanted pacemaker or ICD. Accessories with magnets can include wireless earbuds, plug-in earbuds, or cases with magnetic clasps.

Do not carry a wireless device in a pocket or in a shoulder bag within 6 inches of a pacemaker or an ICD.

## ● Items with distance restrictions

- Static electricity generator, “plasma ball” – do not touch
- Telephone headset, cordless
- Wireless communication devices (computers, headsets, modems, routers, smartphones)
- Wireless controllers (video game consoles, Xbox™\*, PlayStation™\*, Nintendo™\*)
- Wireless earbuds

### 12-inch distance

- Citizens band (CB) radio – 5 watts or less – from antenna
- Uninterrupted power source (UPS)

### 24-inch distance

- Amateur radio, ham radio, marine radio, walkie-talkie – between 15-30 watts – from antenna
- Residential satellite dish, two-way

For full list of items,  
scan QR code.



# 4 Medical and dental procedures

Many medical procedures will not affect your heart device; however, certain medical procedures can result in serious injury, damage to your heart device, or device malfunction. Before undergoing any medical procedure, advise your treating doctor or dentist that you have an implanted heart device and consult with your heart doctor to evaluate any possible associated risk. All items, regardless of distance restrictions, must be in good working condition and used as intended.

## ● Acceptable

While there are no distance restrictions for the following, all items should be in good working condition and used as intended:

- Colonoscopy – diagnostic only
- Dental equipment – ultrasonic scaler, drills, X-ray
- Diagnostic ultrasound
- EKG
- HR monitor
- Laser surgery

## ● Acceptable with precautions

Inform your treating physician that you have a heart device implanted and/or consult with your heart doctor/clinic. Medical procedures that require some precautions:

- Automatic External Defibrillator (AED)
- Ablation
- EMG electromyography – automated sequence
- EMG electromyography – single stimulus
- Radiation therapy (external X-ray, Gamma Knife®\* or radiosurgery)
- Therapeutic ultrasound

## ● Not recommended

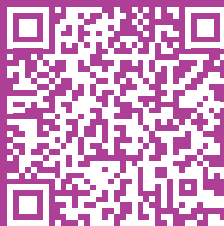
- Diathermy (high frequency, short wave, and microwave)
- PEMF (pulsed electromagnetic field therapy)
- Transcutaneous electrical nerve stimulation (TENS) (including neuromuscular electrical stimulation (NMES))

## MRI compatibility

Medtronic has CRT, ICD, and pacing systems which are FDA approved for use in the MRI environment. These systems have a unique design, developed so that under specific conditions, patients may undergo MRI scans.

Talk to your doctor about the pacemaker, ICD, and CRT device options available to you and determine if your current or future cardiac system allows you access to an MRI scan.

For full list of items,  
scan QR code.



# Get Heart Device Answers



If you or a loved one have questions about living with a heart device, please visit [HeartDeviceAnswers.com](https://www.heartdeviceanswers.com) or scan the QR code above. Once on the site, simply type in a word, phrase, or question or explore a list of topics to find the answers you're looking for.

## Additional resources

### Medtronic Patient Services

If you have a Medtronic cardiac device and want to learn more or have questions about living with a heart device, please contact Medtronic Patient Services at 1-800-551-5544.

Our Patient Services Specialists are available to assist you, Monday-Friday from 7 a.m. to 6 p.m. CT.



## Important Safety Information

An implantable pacemaker system relieves symptoms of heart rhythm disturbances. They do this by restoring normal heart rates. A normal heart rate provides your body with the proper amount of blood circulation. The pacemaker system is intended for patients who need rate-adaptive pacing or chronic pacing or for patients who may benefit from synchronizing the pumping of the heart chambers.

An implantable cardioverter defibrillator (ICD) system delivers therapies to treat patients with heart rhythm disorders or who are at significant risk of developing heart rhythm disorders. An ICD is placed inside your body and works automatically.

An implantable CRT pacemaker system relieves symptoms of heart rhythm disturbances. They do this by restoring normal heart rates. A normal heart rate provides your body with the proper amount of blood circulation. The pacemaker system is intended for patients who need rate-adaptive pacing or chronic pacing or for patients who may benefit from synchronizing the pumping of the heart chambers.

A cardiac resynchronization therapy (CRT) implantable cardioverter defibrillator (ICD) system delivers therapies to treat patients who may benefit from synchronizing the pumping of the heart chambers. A CRT ICD also delivers therapies to treat patients with heart rhythm disorders or who are at significant risk of developing heart rhythm disorders.

Risks associated with these implantable device systems include, but are not limited to, infection at the surgical site and/or sensitivity to the device material, failure to deliver therapy when it is needed, or receiving extra therapy when it is not needed. After receiving an implantable device system, you will have limitations with magnetic and electromagnetic radiation, electric or gas-powered appliances and tools with which you are allowed to be in contact.

If you have a complete MRI SureScan™ system, your physician may prescribe an MRI scan for you. The energy fields present during an MRI scan may interact with an implanted heart device, which could create risks for you. However, many Medtronic heart devices are designed to reduce these risks to a very low level so that you can safely undergo MRI scans under specified conditions. If you need an MRI, your doctor will confirm you are eligible based on the requirements provided by Medtronic.

Treatment with these implantable device systems is prescribed by your physician. This treatment or service is not for everyone. Please talk to your doctor to see if it is right for you. Your physician should discuss all potential benefits and risks with you. Although many patients benefit from the use of this treatment or service, results may vary.

*For further information, please call the Medtronic toll-free number at 1-800-551-5544 (7:00 a.m. to 6:00 p.m., Monday-Friday, Central Time) or see the Medtronic website at medtronic.com.*

### Patient Services

Medtronic  
8200 Coral Sea St. NE MVS14  
Mounds View, MN 55112  
Patient toll-free line: 1 (800) 551-5544  
Fax: (763) 367-5809  
7:00 am to 6:00 pm CT Mon.-Fri.

### Medtronic

710 Medtronic Parkway  
Minneapolis, MN 55432-5604  
USA

Toll-free in USA: 800.633.8766  
Worldwide: +1.763.514.4000

[medtronic.com](https://www.medtronic.com)

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