Standard Letter
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MAGNETIC RESONANCE IMAGING (MRI) AND MEDTRONIC PACEMAKERS OR DEFIBRILLATORS

PACEMAKER (IPG – IMPLANTABLE PULSE GENERATOR)

DEFIBRILLATOR (ICD – IMPLANTABLE CARDIOVERTER DEFIBRILLATOR)

The use of MRI is contraindicated for Medtronic implantable cardioverter defibrillator (ICD) and pacemaker patients because of the potential for damage to the device and/or induction of life threatening arrhythmias. Static magnetic, alternating magnetic, and radio frequency (RF) fields produced by MRI may adversely affect the operation of Medtronic pacemakers and ICDs.

Static magnetic fields are likely to cause asynchronous pacing in pacemakers. Asynchronous pacing may result in a pacing pulse being delivered during the T-wave of an intrinsic depolarization. Such operation, known as competition, may cause arrhythmias in those susceptible patients. In ICDs, static magnetic fields may suspend device detections, thus preventing therapy delivery.

Pulsed RF fields may cause an increase in ventricular pacing beyond the rate limit (ranging from 140-190 ppm for Medtronic devices), or cause temporary cessation of pacing output. These interference effects can occur regardless of device settings because of the high energy coupled into the output circuitry. It is also important to note that not all Medtronic pacemakers or ICDs have been tested for effects with all MRI technologies. As a result, the response of some devices is not entirely predictable.

MRI should be considered only when other imaging methods are inadequate. If MRI is to be used, physicians and staff must prepare well in advance to manage any adverse effects, including life-threatening emergencies that might occur. The device should be evaluated after the procedure with a Medtronic programmer.