

Changes to ACR Manual on MR Safety 2024 Effective February 2026

Chapter 3: MR Safety Zones

- Page 27: Zone III. Expanded the description of Zone III in response to concerns that the existing description did not clearly define the region.
- Page 23: Zone IV. Edited original statement to “Periodic inspection and maintenance of the Zone IV door and associated locks, handles, articulating arms, etc., as well as any equipment in Zone IV (e.g. emergency call button, emergency switches, physiologic monitoring, power injector, etc.) is recommended to ensure their function in accordance with site guidelines and manufacturer instructions.”

Chapter 4: MR Personnel

- Page 35: Table 1 was reformatted to clarify which topics applied to Level 1 MR Personnel, Level 2 MR Personnel or both.
- Page 47: Key Points- Updated 2nd bullet under MR Personnel to reflect peripheral nerve stimulation instead of direct neuromuscular excitation.

Chapter 8: MRI Fields and Safety Concerns

- Page 68- Updated Lenz effect scenario example in 2nd paragraph to reflect that the force that arises from the Lenz effect can be sufficiently strong to impede instead of stop forward progress of the device.
- Page 69- Clarified that Lenz effects may be substantially higher at 7 T than both 1.5T or 3T.
- Page 72: Figure 12- Added a statement to the caption to indicate that it is important to note that the region undergoing direct electromagnetic RF irradiations is often larger than the anatomic area of interest (i.e., head), particularly when using the body RF coil. Therefore, a device or foreign body outside of the field of view may experience RF direct electromagnetic irradiation.
- Page 72-74- Updated whole-body heating: Quantitative consideration section to clarify SAR estimation methods and added references.
- Page 75-76- Updated electronically conductive wires/leads to clarify disconnected, unused, unnecessary electrically conductive devices external to the patient, such as unplugged surface RF coils or ECG leads and electrodes, should never be allowed in the MR scanner with the patient during imaging.
- Page 76- Updated internal thermal safety risks to identify differences in RF heating concerns and added references.

- Page 78-79- Updated the patients with tattoos within range of RF transmission section with references and a statement that at this time, reports of smearing or smudging of tattoos or eyeliner are lacking.
- Page 80- Updated Time-varying RF magnetic fields key points by adding the 6 bullet to never operate the MRI scanner with unconnected coils, open coils interfaces, or other electrically conductive devices.
- Page 82: Auditory considerations- Removed (A) from the statement hearing protection frequently needs to be in excess of 28 to 30 dB given the loudness of some contemporary magnets and sequences. Added the caution statement that hearing protection muffs may be displaced during the exam offering inadequate protection. The use of both ear plugs and earmuffs is recommended whenever possible.
- Page 83- Induced voltages- Added the statement “These interactions are rare when performing MRI following the manufacturers’ conditions for the device. However, these can present a higher risk if these conditions are not followed or when performing off-label imaging due to medical necessity.

Chapter 10: Classification of Objects and Medical Implants and Devices in the MR Environment

- Page 94- Key Points- Added bullet “Ensure no change in attraction forces for MR conditional devices after repair or maintenance.”

Chapter 12: Managing Patients and Research Subjects with Medical Implants and Devices in the MR Environment

- Page 111- Figure 28: Updated image D. and caption.

Appendix 2: Updated the Cryogen Safety section by adding a recommendation to appropriately mark the passive pressure relief mechanisms with surface warnings/signage.

Appendix 6: This is a new MR Pre-Appointment Guide Appendix