



MCW MRI Safety Standard Operating Procedures

General Scanner Usage

Category: Magnetic Resonance Imaging (MRI) Safety

Procedure #: MR.SOP. 012

Applies to: Investigators, study personnel, Medical College of Wisconsin (MCW) staff

PURPOSE:

The purpose of the general scanner usage procedures is to inform Principal Investigators and others that there is an established procedure for access to Medical College of Wisconsin MRI scanners.

DEFINITIONS:

Accompanying parents, spouses, or others: Individuals who, after thorough safety screening would be allowed to enter the magnetic environment to provide company and or comfort for the research subject.

Equipment: Machines that may be used for MRI studies to monitor physiological processes or provide the stimulus or physical task for the study.

Magnetic Environment: The area where the magnetic field is greater than 5 gauss resulting in the potential for objects to become missiles or projectiles as they are attracted into the magnetic field of the scanner. Individuals who may have cardiac pacemakers or other implants and devices may be at risk to enter the magnetic environment. The magnetic field is always present and is three dimensional around the scanner.

MRI: Magnetic Resonance Imaging which uses a strong static or main magnetic field, radio frequency pulses and time varying magnetic fields or gradients to produce anatomic images, spectroscopy, angiography, and functional data (fMRI).

MRI Safety Training: The required procedure that must be completed prior to working within the magnetic environment.

Materials: Pads, cushions or other objects that are not mechanical in nature but are used with or near the research subject during the MRI procedure.

Principal Investigator:

A Principal Investigator (PI) is the individual who is ultimately responsible for the procedures, study team personnel and research subjects involved in the study. The PI has an IRB or IACUC approved protocol and utilizes one or more of the MRI scanners at MCW for research purposes.

Research Study Personnel:

Study personnel are individuals including a student, staff member or laboratory assistant for whom the PI of the study is responsible, and who are at the MR scanner site during the study or may be recruiting subjects for the study.

PROCEDURES:

- A. Applicants seeking IRB, IACUC, or other approval for research studies utilizing MRI are routed to the MRI Safety Committee for review prior to consideration by the IRB or IACUC for approval.
 1. In addition, to schedule use of an Medical College of Wisconsin MR scanner, the Principal Investigator needs to provide information to the Center for Imaging Research (CIR): <http://www.mcw.edu/CIR.htm>
- B. All personnel working within the magnetic environment are required to complete MRI safety training.
- C. The Principal Investigator of the study is required to complete MRI safety training based on previous experience.
- D. The MRI Safety Committee approves the safe use of Medical College of Wisconsin MR Scanners. Investigators proposing to use MR scanners located at FH, CHW or other sites must obtain approval from those authorities.
- E. The MRI Safety Committee authorizes the Medical College of Wisconsin research scanner operators to prohibit or stop a procedure that they deem exceeds safe practices.
- F. Equipment must be approved by the MRI Safety Committee prior to use for a research study or entry into the magnetic environment. (See *Equipment and Materials*, MR.SOP. 02).
- G. If there is a problem with specific equipment, study personnel must report to the MR scanner operator so that the problem is documented in the daily log, as to what the problem was or what went wrong during the study so that corrections and / or repairs can be made.
- H. Study personnel will ensure that coils, shim files, configuration files, and all computers are returned to standard usage or as directed for each specific system.
- I. All accessories and / or devices are to be turned off properly, cords and cables wound, and returned to their designated storage area.
- J. Study personnel should report to the MR scanner operator if a supply item is becoming low in quantity especially if the last, or near last of an item is used.
- K. Principal Investigators may contact the MRI Safety Committee or the Center for Imaging Research for information about using Medical College MR scanners.
 1. See the following SOPs for more information: *MRI Safety Committee*, MR.SOP.07; *MRI Safety Training*, MR.SOP.08; and *Study Personnel Responsibility* MR.SOP.013.
 2. All equipment used for research MRI studies, including projectors and stimulus producing apparatus, must be tested for MRI safety BEFORE entering the magnetic field.
 - a. All materials and equipment must be tested for ferromagnetic properties with a hand held magnet outside of the fringe field before being brought within the magnetic field inside the scanner room.
 - b. MRI safe equipment is developed for specific magnetic field strengths and MRI system configurations and must be utilized according to the manufacturer directions.
 - c. Equipment that may operate safely within a magnet room is NOT necessarily safe to operate in another magnet room even if the magnets are the same static field strength.
 - d. Routine inspection and maintenance of equipment must be performed by the user(s).
 - e. Broken or malfunctioning equipment must be identified and reported to the MRI scanner operator or manufacturer as appropriate.
- L. Post scanning cleaning should follow the Infection and Allergy Control, MR.SOP.06.
- M. Upon completion of the MRI study the study personnel must ensure that all equipment is restored to normal operation.

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