

York MRI Facility

Standard Operating Procedure #30-02
Last Updated: 16 Dec 2015

Safety Training Procedures

1. Introduction

- 1.1. The 3T MRI scanner at the York MRI Facility is used primarily for in-vivo studies of human and animal structure and function. These studies include assessment of cognitive function and vascular dynamics, metabolism and physiology in normal and research patient populations. The facility resources are available to R & D phase medical device development and academic research, with appropriate Review Ethics Board protocols in place, see SOP #20-01 "New Protocols and Ethics Procedures".
- 1.2. Research involving Magnetic Resonance Imaging (MRI) at high magnetic field strengths present unique hazards to both research subjects and individuals working within and around the MRI system. Consequently, the potential for serious personal injury is present due to the sheer size and strength of the static magnetic field along with the flexibility of the research system and associated peripheral hardware.
- 1.3. The static magnetic field in the York MRI Facility is always present. It is important that all those entering the facility be aware of the presence of the field, as it cannot be detected in any way, i.e. magnetic fields cannot be felt, seen or smelled. Ferromagnetic objects brought into the magnet room could quickly become dangerous projectiles, and the magnetic field can also interfere with the operation of certain medical implants.

2. Level 1 Safety Training

- 2.1. All individuals wishing to complete Level 1 Safety Training, must complete an MRI Safety Screening Form and have it reviewed by the MRI Technologist or MRI Safety Officer. If the MRI Technologist or the MRI Safety Officer have found that the individual is not safe to enter the magnet room, the individual may still attend the Level 1 Safety Training, but may not enter the magnet room during the training.
- 2.2. Level 1 Safety Training consists of the following:
 - 2.2.1. Read the Standard Operating Procedures and sign the signature sheet indicating that you understand and will follow them.
 - 2.2.2. Read "Part B: MR System components" of the Operator Manual (skip section B.3 "In-Room syngo Acquisition Workplace").
 - 2.2.3. Attend a Safety Instruction Session with the MRI Safety Officer. This session will include:
 - 2.2.3.1. Watching the first 12 minutes of the Siemens MRI Safety Video.
 - 2.2.3.2. Overview of general safety procedures in the MRI environment.
 - 2.2.3.3. Overview of all Emergency Procedures and locations of Table Stop, Electrical Stop and Quench buttons.
 - 2.2.3.4. Thorough review of how to make oneself safe to enter the magnet room.
 - 2.2.4. Complete the Level 1 Safety Training test. A grade of 70% must be obtained to pass the test.

2.3. After completion of Level 1 Safety Training the participant will:

- 2.3.1. Know how to make him- or herself safe to enter the MR environment.
- 2.3.2. Understand the dangers of a static magnetic field.
- 2.3.3. Be familiar with the Standard Operating Procedures.
- 2.3.4. Know all emergency procedures including the operation of the table/sequence stop, electrical stop and quench buttons.
- 2.3.5. Pass the Level 1 training test.

2.4. Restrictions of Level 1 Safety training include:

- 2.4.1. The individual may not screen others to enter the MR environment.
- 2.4.2. The individual may not operate the MR scanner on human or animal subjects; they may only operate the MR scanner on phantoms.

2.5. The individual must then be certified by either the Facility Director or the MRI Safety Officer.

2.6. Card access to Zone III (the Control Room, Sherman 1009A) will be granted after successful completion of Level 1 Safety Training.

3. Level 2 Safety Training

3.1. The prerequisite to Level 2 Safety Training is successful completion of Level 1 Safety Training.

3.2. Level 2 Safety Training consists of the following:

- 3.2.1. Watch the Siemens Safety Video focusing on the last 11 minutes of the video (Patient Preparation and Examination etc).
- 3.2.2. Read "Part A: Safety" of the Operator Manual.
- 3.2.3. Complete the Level 2 Safety Training Test.
- 3.2.4. Shadow and receive supervision from a Certified Scanner Operator for approximately 10 scanning sessions (adjusted based on past education and experience). This time must include the following tasks:
 - 3.2.4.1. Thorough review of how to screen others to be sure they are safe to go into the magnet room.
 - 3.2.4.2. Assisting in MR system preparation.
 - 3.2.4.3. Supervised execution of scanning procedures.
 - 3.2.4.4. Research participant registration.
 - 3.2.4.5. Starting and Stopping measurements.
 - 3.2.4.6. Communicating with participant during scan session.
 - 3.2.4.7. Review of images for quality control.
 - 3.2.4.8. Transfer of data to server.

3.3. After completion of Level 2 Safety Training the participant will:

- 3.3.1. Know how to administer the safety screening form.
- 3.3.2. Know the dangers of rapidly changing (dynamic) magnetic fields.
- 3.3.3. Be able to explain the MRI-specific language on the experimental consent forms and the non-research waiver.
- 3.3.4. Know how to look up medical implants to determine whether they are safe.
- 3.3.5. Know how to screen subjects for foreign objects.
- 3.3.6. Be familiar with procedures for incidental findings.
- 3.3.7. Pass the Level 2 training test.

3.4. The individual must then be certified by the Facility Director.

4. Safety Awareness Training

4.1. All staff and contractors working within the York MRI facility, must be trained on the safety concerns of the MRI environment. This training includes:

4.1.1. Attending an MRI Safety Awareness training session lead by either the Facility Director or the MRI Safety Officer.

4.1.2. Completing an MRI Safety Screening form and having it approved by the MRI Technologist. If the screening form is not approved by the MRI Technologist due to medical reasons, the individual may not cross the 5 Gauss line (indicated by permanent red lines on the floor of the facility and by signs).