

3T/7T MRI FACILITY

SOP Number:	260.02
Title	Unassisted Scanning: Policies and Operator Training

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ROBARTS RESEARCH INSTITUTE
CENTRE FOR FUNCTIONAL AND METABOLIC MAPPING:
3T/7T MRI FACILITY

Standard Operating Procedure #260.02

Unassisted Scanning: Policies and Operator Training

1. Introduction

- 1.1 Research involving Magnetic Resonance Imaging (MRI) at high magnetic field strengths presents 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 magnitude and strength of the static magnetic field along with the immense flexibility of the research system and associated peripheral hardware.
- 1.2 Due to the inherent hazards associated with the static magnetic field, access to the 3T/7T MRI Facility is restricted to ensure the safety of all patients, subjects, visitors, and staff. The 3T/7T MRI Facility is conceptually divided into four Zones of increasing level of potential risk and access restriction. See SOP#100a: "MRI Facility Safety Zones", SOP#100b: "MRI Facility Access Approval Policy", and SOP#110: "MRI Facility Visitor Approval Policy".
- 1.3 Due to the potential safety hazards and inherent responsibility of MRI Technologists and Operators, these individuals must complete extensive training and education in all aspects of MRI safety and operation, as outlined in this SOP and SOP#130: "MRI Personnel Training". Authorization of any individual to scan in the 3T/7T MRI Facility is at the discretion of the facility.

2. Background

2.1 MRI Safety Guidelines in Ontario

The Government of Ontario's document: *Report of The Diagnostic Imaging Safety Committee for Magnetic Resonance Imaging (MRI), Feb 2007* (http://www.health.gov.on.ca/en/common/ministry/publications/reports/disc_ct_mri/mri_report.pdf) provides recommendations on the safe operation of MRI facilities in Ontario, and standards and best practice guidelines for Magnetic Resonance Imaging.

This document recommends that the province of Ontario put in place regulations and/or legislation, including:

“MRI facilities in Ontario will be operated, maintained and inspected in a manner that will reduce the risk of safety hazards to MR personnel, other health care workers, patients, and the general public.”

“MR scans of human patients and human research subjects shall be performed only by CMRTO (College of Medical Radiation Technologists of Ontario) registered MR technologists or by medical doctors with specific training in MR. If the latter,

the medical doctor shall have training in MR safety that is at least equal to the MR safety training received by Level 2 MR personnel. MR scans of animals and/or inanimate objects may be performed by CMRTO registered MR technologists or by other appropriate medical, scientific, or service personnel, provided they have been adequately trained in MR safety.”

“Only MR technologists and MRI-trained physicians can perform the final safety screen of patients and of those entering the magnet room.”

While these are currently only recommendations and have not yet become law, the Centre for Functional and Metabolic Mapping (CFMM) supports these safety principles. Facility policies have been established to minimize potential risks and ensure safe operation of the MRI scanners. The CFMM employs a number of registered MRI Technologists and extensively trained MRI Operators to safely and competently operate the facility’s MRI scanners. Human scanning within our facility is strictly restricted to these MRI Technologists and Operators.

2.2 Certified MR Tech Assisted Versus Unassisted Scanning

2.2.1 **Certified MR Tech Assisted or operator-assisted** scanning is defined as studies for which the MRI scanner is operated by a registered MRI Technologist or MRI Operator who:

- Has been adequately trained in MRI physics, scanner operation, equipment handling, patient care, MRI safety, and emergency procedures, either by the completion of an accredited MRI education program OR through a combination of education and experience as deemed acceptable by the facility.
- Has completed all training requirements to obtain Level 2 MRI Personnel status (see SOP#130: “MRI Personnel Training”).
- Has completed all scanner training and facility orientation as required for MRI Operators, and completes all review sessions and training as requested.
- Is employed by the facility to scan.

2.2.2 **Unassisted** scanning is defined as studies for which the MRI scanner is operated by an individual not meeting ALL of the requirements for Certified MR Tech Assisted scanning in section 2.2.1 above.

2.2.3 A registered MRI Technologist is defined as an individual who has successfully completed an MRI education program at an accredited academic institution, has successfully passed the Canadian Association of Medical Radiation Technologists (CAMRT) national certification exam in MRI, and maintains current registration with the College of Medical Radiation Technologists of Ontario (CMRTO). Requirements include:

- First-discipline MRI education programs require 1,000 hours of didactic instruction and 1,500 hours of supervised scanning, second-discipline programs require 300 hours of didactic instruction and 500 hours of supervised scanning.
- Those who have completed an accredited MRI education program are eligible to write the CAMRT national certification exam. Upon successful completion of the certification exam, candidates earn the right to append the appropriate discipline-specific professional designation to their name, i.e. Registered Technologist, Magnetic Resonance (RTMR), and become eligible to register with their provincial college (in Ontario, the CMRTO).

- Annual registration with the CMRTO requires technologists to complete a minimum of 25 hours of continuous learning and professional development activities per year to maintain competency.

3 Unassisted Scanning Policies

- 3.1 Unassisted Scanning is not permitted during regular business hours (i.e. weekdays 9:00 a.m. – 5:00 p.m.), except at the discretion of the Associate Director or MRI Technologist.
- 3.2 Individuals who have been approved by the facility to perform unassisted scanning are only permitted to scan healthy volunteers during off-hours (i.e. evenings, weekends, holidays). Unassisted walk-on scanning is permitted during regular business hours only if the time is available and booked on the same day as the scan.
- 3.3 All **clinical patient** scans MUST be booked as Certified MR Tech Assisted to ensure the safety of all patients and staff.
- 3.4 MRI Operators may only perform unassisted scanning for their designated Principle Investigator and/or study.
- 3.5 MRI Operators approved for unassisted scanning must only operate the MRI scanner(s) on which they have been trained and obtained facility approval to operate.
- 3.6 Principle Investigators must agree to take full responsibility for the actions of their unassisted MRI Operator, including any acts of negligence which may cause damage to equipment or physical injury to the operator or individuals working under their supervision.
- 3.7 MRI Operators are responsible for the quality, transfer, and backup of their own data.

4 Training of New Scanner Operators

- 4.1 The facility may at its discretion permit the training of new MRI Operators for the purpose of unassisted scanning.
- 4.2 Individuals approved for MRI Operator training are required to have a sufficient background understanding of MRI, including MRI physics and safety, and possess the personal characteristics necessary to work in a potentially hazardous patient-care environment.
- 4.3 Training requirements for new MRI Operators:
 - Complete a minimum of 40 hours of supervised scanning, under the instruction and supervision of the facility's MRI Technologists / Operators.
 - The number of supervised scan hours required will be determined on a case-by-case basis and is at the discretion of facility staff. Hours may vary significantly depending on the operator's understanding of and prior experience in MRI.
 - Whenever possible, supervised scanning should be of the study/protocol the operator is training to perform unassisted.
 - Supervised scanning hours are billable at the full operator-assisted rate.
 - Final decision as to new operator competency and approval to scan unassisted is at the discretion of facility staff, and will be made in conjunction with the new operator.

- Obtain Level 2 MRI Personnel status by completing all safety and training requirements as outlined in SOP#130: “MRI Personnel Training”.
- Maintain current certification in CPR and Standard First-Aid/AED.
- Maintain competency by completing all review sessions and ongoing training as requested by the facility.

4.4 Individuals who successfully complete training to scan as unassisted MRI Operators must adhere to all scheduling, billing, screening, operational, and safety policies set in place by the facility as outlined in the 3T/7T MRI Facility SOP’s.

4.5 Unassisted scanning is to be of healthy volunteers only: unassisted MRI Operators may under no circumstances scan clinical patients. Unassisted MRI Operators are trained to perform basic MRI operation only, and are not adequately trained nor meet government standards for safe patient scanning. Patient scans must be booked as Certified MR Tech Assisted and will be scanned by a registered MRI Technologist.