Nova Scotia College of MIRTP

MAGNETIC RESONANCE IMAGING

PRECEPTOR GUIDE

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PROGRAM OVERVIEW

Preceptor Guide

The preceptor guide is intended for both the candidate and preceptor to gain a full understanding of the roles and responsibilities in supervision and evaluation.

Introduction

The NSCMIRTP Refresher Program in Magnetic Resonance Imaging (MRI) provides MRI technologists who have not practised for a five-year period or more the opportunity to re-attain professional competence and currency to practice. The refresher program includes an academic and clinical component. Both components must be completed within 18 months.

Program Goals

- Attain/demonstrate current knowledge in MRI procedures, imaging equipment, MRI safety and protection practices, and patient care/ethics.
- Re-orient to the healthcare environment and the role of the MRI technologist in the healthcare team.
- Practice competently within the profession which includes meeting competencies as specified in the CAMRT MRI Competency Profile.
- Value the importance of continuing professional development.

Pre-requisites

Candidates for the refresher program must have previously:

- Passed the CAMRT certification exam; and
- Been a registrant of a professional licensing body where regulated, or a member of an association where unregulated, within Canada in the practice area of MRI;
- OR been approved by a regulatory body in your jurisdiction to take the program.

Academic Component

The academic portion of the refresher program is self-directed. Individuals are directed to the Required Materials and Objectives for each unit. Candidates are provided with learning activities and questions to complete to assess their theoretical competence. The topics covered and examined mirror the CAMRT competency profile.

Appendix A includes a comprehensive list of objectives and procedures covered in the academic portion of the program.

When all units are completed, candidates must write a supervised final exam. The exam is 150 multiple choice questions and includes all material from the academic portion of the refresher program. Candidates must attain a mark of 65% to proceed to the clinical portion of the program.

Topics covered and refresher exam weighting in the Academic Component are outlined in the tables below.

Primary Weightings

Competency Category	Minimum	Maximum	# Of Questions (Range)
Professional	5%	10%	8-15
Communicator			
Collaborator			
Care Provider	10%	20%	15-30
Leader	0%	0%	0
Scholarly Practitioner	0%	0%	0
Clinical Expert	70%	85%	105-128
Integrate safe work principles and procedures into practice	3%	8%	5-12
Integrate safe screening principles and procedures into practice	8%	13%	12-20
Recognize and respond to MR safety hazards			
Manage a variety of imaging systems	7%	12%	11-18
Integrate clinical principles into practice	35%	40%	53-60
Perform diagnostic procedures			
Administer substances required for clinical procedures			
Analyze image and data quality and respond	12%	17%	18-26

Secondary Weightings

Category	Weighting
Head	High
MSK	High
Spine	High
Abdomen	Medium
General	Medium
Pelvis (male/female)	Medium
Chest & Mediastinum	Low
Neck	Low

Clinical Component

Candidates are required to secure their own clinical placements, which must be approved by the NSCMIRTP refresher program supervisor. Candidates and potential clinical sites are encouraged to reach out to the refresher program superior with any questions related to clinical site requirements.

A minimum of 420 clinical hours must be completed within a 6-month period. A designated preceptor will track clinical proficiency via the clinical summary to record successful attainment of required clinical competencies. If a clinical site is unable to deliver all required procedures candidates may be required to arrange further clinical experiences at an alternate clinical site.

If a candidate is unsuccessful in meeting the clinical requirements in the allotted 420 hours, a one-time extension to a maximum of 210-hours of clinical time may be requested from the refresher program coordinator.

CLINICAL COMPONENT

Pre-Requisites

Prior to commencing the clinical component candidates must meet the following criteria:

- Successful completion of the academic component
- Proof of current CPR Basic Life Support for Healthcare Providers
- Proof of Professional Liability Insurance
- Additional requirements of the clinical site
- Additional requirements of applicable provincial regulatory body

Site Criteria

It is important when selecting a clinical site to ensure the required procedures are attainable. The process of site approval requires that the candidate submit a clinical site proposal to the refresher program coordinator. Once a clinical site is approved a clinical site agreement must be signed. The required documentation is in **Appendix C** and must be completed prior to commencing the clinical component.

Sites must meet the following criteria to be considered appropriate:

- There must be a variety of imaging procedures performed.
- There must be MRI equipment capable of performing the required entry-to-practice exams.
- Clinical preceptor(s) must be available and willing to assist in meeting the learning needs of the candidate.
- In regulated jurisdictions, clinical preceptor(s) must be a registrant in good standing with their regulatory body. In non-regulated jurisdictions, clinical preceptors must be a practising member with CAMRT.
- A quality assurance program to monitor equipment performance must be in place.
- A radiologist must be available on-site a minimum of 50% of the time.

When considering a site, the availability of cardiac procedures and breast imaging are considered an asset but are not required.

Time Requirements

Minimum Requirement: **420 hours**, completed within a 6-month period.
Additional: When required, a one-time 210-hour extension may be granted.

Total: Total hours must not exceed **630**.

Preceptor Expectations

Once a clinical site has been secured, the director/manager of the department will assist the candidate in finding a principal preceptor. The principal preceptor should demonstrate a desire to actively participate in the continuing professional development of themselves and others. While the principal preceptor will oversee placement it is expected that multiple technologists will act as clinical preceptors during the placement.

The preceptor(s) is/are responsible for:

- Orienting the candidate to the department.
- Assessing performance level and providing ongoing feedback for continued growth.
- Ensuring proper supervision and support.
- Selecting clinical experiences to assist the candidate achieve the required competencies.
- Facilitating growth by increasing responsibilities and promoting independent decision-making opportunities as the candidate gains competence.
- Assessing the candidate's performance in accordance with specific evaluation guidelines.
- Demonstrating professionalism through modeling of professional practice.
- Guiding the candidate with reflective practice, gap analysis and learning plan throughout the clinical component.
- Providing formal evaluations and constructive feedback, through completion of required evaluation forms and ongoing discussions with the candidate.

Preceptor Resources

It is recommended that preceptors review the suggested resources prior to candidates starting their clinical component. Preceptors must be aware that refresher program candidates are not students beginning their studies in MR technology. Refresher candidates have previously completed entry-to-practice requirements and may have many years of work experience in the field. Although the concepts presented are applicable for both types of learners, the preceptor techniques should be tailored accordingly.

Canadian Association of Medical Radiation Technologists. Effective Preceptorship: A Guide to Best Practice. PreceptorGuidelines.pdf (camrt.ca)

Dalhousie University. Preceptor eLearning Course. Preceptor eLearning Course - School of Communication Sciences and Disorders - Dalhousie University

Orientation

On the first day of the clinical component, it is compulsory that candidates are familiarized with hospital and department policies and procedures. The preceptor should assist the candidate with locating resources and interpreting departmental policies and procedures. An orientation checklist is provided in **Appendix B**.

Direction Levels

For the duration of the candidate's clinical experience, it is essential the preceptor appreciates that the candidate is participating in this program to regain competence after a lapse in practice. While the candidate is progressing through the clinical portion of the program it is required that they be properly supervised. This means even once the candidate has demonstrated competence, they must always have a technologist available to them.

As the candidate progresses through the program the preceptor must determine the required level of supervision. Candidates may perform at a higher level of independence for some procedures while still requiring significant assistance with other procedures.

Candidates are not licensed technologists and should never deem a study complete and ready for reporting or release a patient without first checking with the supervising technologist.

To guide the preceptor and the candidate, three levels and descriptions of direction/supervision are provided.

1) **Guided Decision Making:** The supervising technologist must always be in the room with the candidate. Decisions or procedures/tasks performed must be done through direct supervision.
2) **Supervised Performance:** The candidate can make decisions and perform procedures/tasks accurately with minimal supervision or direction from the supervisor. The supervising technologist must always be present and checks to ensure all components of the procedure are completed accurately.
3) **Independent Performance:** The candidate can make all decisions and perform procedures/tasks independently and efficiently while under indirect supervision. The preceptor is always available to the candidate and checks the final product prior to submission for reporting.

Evaluation

Competency assessments should be completed throughout the clinical component of the program. Following the competency assessment guidelines candidates will be evaluated regularly for level of clinical performance. Procedures are signed off in the summary when the candidate has achieved competency as defined below:

Competence:

- Demonstrated ability to perform a procedure or task of diagnostic quality.
- Proven understanding of MR procedures demonstrating integration of theory to practice.

Candidate must:

- Provide the preceptor guide and all necessary documentation and tracking tools to the principal preceptor.
- Collect all completed documentation and evaluations and return to the refresher program coordinator at the conclusion of clinical.
- Track all clinical hours.
- Fulfill additional requirements specific to the selected clinical site (such as a Criminal Records Check or a Vulnerable Sector Check).

Assessment Procedure

The candidate will indicate to the preceptor when they feel competent to perform a clinical assessment for a specific procedure or examination. The preceptor will select an appropriate examination and the candidate will perform the examination under direct supervision. When a candidate meets the competency expectations the preceptor will complete the proper documentation with date, procedure type and signature.

Any cause for interruption or intervention by the preceptor during the competency assessment will result in a rating of “needs development.” The candidate must be able to perform the procedure from start to finish unassisted. In the event of a rating of “needs improvement”, the candidate will then be required to perform the assessment at another time.

Preceptors will:

- Assess candidate performance and identify competencies met/not met.
- Provide the candidate with constructive feedback, identifying strengths and areas for development.

Evaluation Tools

The preceptor will give all original paperwork back to the candidate once completed. It is the responsibility of the candidate to ensure all original paperwork is sent to the refresher program coordinator at the completion of the clinical component. There are six evaluation and tracking tools associated with the clinical component of the refresher program (listed below). These tools are provided in the summary of clinical competence package.

- Orientation Checklist
- Tracking of Clinical Hours
- Assessment of Clinical Performance – self, formative, and summative evaluations
- Clinical Competency Assessment Rubric
- Clinical Assessment and Quality Control Tracking Table
- Program Feedback

Orientation Checklist

With the assistance of the preceptor, the candidate must complete an orientation checklist on the first day of the clinical component. This ensures the candidate is aware of all safety procedures and departmental policies and that they always adhere to safe work practices.

Tracking of Clinical Hours

Candidates must complete the tracking table with the dates and hours worked. A total of 420 hours is required. Should the candidate not be successful in fulfilling the clinical requirement a one-time request can be made to the refresher program coordinator for an additional 210-hour extension.

Assessment of Clinical Performance

1) **Self-evaluation** must be completed by the candidate prior to each formative evaluation. The intent is to encourage the candidate to reflect on their strengths, skills, and areas for development. At the performance review, the candidate and preceptor ratings will be compared and discussed.
2) **Formative evaluation** of a candidate's clinical performance must be completed at approximately 150 hours and 300 hours during the practicum. This will provide formal feedback to the candidate on their progress. Assessment will focus on the performance of the candidate since the last clinical evaluation. Preceptors should discuss the evaluation with candidates and provide them an opportunity to add written comments.
3) **Summative evaluation** of the candidate must be completed at the conclusion of the clinical component, which will consider the overall performance of the candidate during the clinical placement and their current ability to re-enter the clinical environment as a working technologist.

Clinical Competency Assessment Rubric

The Clinical Competency Assessment Rubric will be used throughout the clinical component of the program to help supervising technologists in assessing the candidate's competency in performing required procedures.

Clinical Assessment and Quality Control Tracking Table

The Clinical Assessment and Quality Control Tracking Table is a tool to track the progress of a candidate. Each clinical assessment and quality control assessment must be signed as they are successfully completed. All required procedures must be signed off to complete the clinical component of the refresher program.

Program Feedback

Feedback is an essential element of program evaluation and contributes to continuous improvement of the refresher program. Candidates and preceptors can provide feedback at the completion of the clinical component. Completed forms should be forwarded to the refresher program coordinator.

APPENDIX A - ACADEMIC OBJECTIVES

Professional

- Describe the Provincial Regulator (if applicable) and CAMRT code of ethics and relate it to clinical practice.
- Explain the MRI technologist's scope of practice, based on the candidate's jurisdiction, and specifically, based on the candidate's education and skill set.
- Discuss the CAMRT best practice guidelines for MRI technologists.
- Outline Medical Radiation Technologist (MRT) regulation in candidate's practicing province or territory, including Standards of Practice.
- Identify ethical issues and actions appropriate to the practice of medical radiation technology.
- Discuss patient rights and legislation governing privacy of patient information and their implication on practice.
- Describe qualities of professional behaviour.

Communicator

- Discuss the importance of verifying patient identity and obtaining informed consent.
- Examine the components required during an appropriate patient assessment and the factors that contribute to effective communication.
- Understand the use of verbal and non-verbal communication in clinical environments.
- Recognize the language and actions that reflect respect and dignity in practice.
- Examine when to adapt communication strategies based on patient needs.
- Discuss how to identify clinically relevant details and provide accurate updates to the care team.

Collaborator

- Understand the MRI technologist's role in interprofessional healthcare teams.
- Discuss the importance of interprofessional collaboration.
- Understand what to communicate during the transfer of care for patients.
- Discuss conflict management techniques.

Care Provider

- Describe the safety measures for the patient and technologist when transporting and transferring patients.
- Explain the process of conducting relevant patient-centered care assessments.
- Understand patients' different developmental stages with provision of age specific care.
- Describe how to provide compassionate care based on the patient's physiological, cognitive, and psychological needs.
- Discuss correct administration of drugs including rights, routes, handling, and equipment.
- Discuss infection prevention and control standards.
- Explain the use of vital signs including proper assessment, normal values and terms associated with deviations from normal.
- Explain the appropriate procedure to respond to changes in patient condition and medical emergencies.
- Describe the proper procedure and precautions when caring for patients with ancillary equipment.
- Discuss how to provide education and support to patients and their families.

Leader

- Describe how to give guidance and constructive feedback to students and less experienced technologists.
- Understand the importance of professional advocacy.
- Understand the importance of advocating for patient- and family-centered care.
- Discuss quality improvement practices.
- Understand how leadership can be applied to practice.

Scholarly Practitioner

- Appreciate why scholarly practice is an expectation of practice.
- Recognize the importance of reflective practice.
- Appreciate the significance of continual competence and professional learning.
- Identify research activities and relate them to evidence-informed changes in practice.
- Integrate best practices into personal practice.

Clinical Expert

Safety and Screening

- Explain how to adapt safety practices according to equipment type.
- Be able to recognize what constitutes unauthorized access to areas where the high magnetic field may cause injury or death.
- Recognize and explain response to facility emergencies.
- Explain procedure for quench and safety/screening breach.
- Describe appropriate hearing protection and call-bell according to the type of procedure.
- Explain safe practices in radiofrequency coil and equipment cable placement.
- Discuss criteria to determine suitability of implants, devices, and objects for admission into the MR environment.
- Discuss appropriate action when safety concerns are identified during screening.
- Discuss appropriate action when hazards of the static, gradient, and radiofrequency fields are identified.
- Explain the concepts and application of standard precautions and disease transmission.
- Discuss proper body mechanics.

Principles and Equipment

- Apply knowledge of MR physics.
- Understand the components of MR equipment.
- Understand use of parameters and tradeoffs.
- Operate imaging systems.
- Use accessory equipment.
- Perform quality control procedures.

Clinical Procedures

- Discuss knowledge of pathophysiology as it relates to clinical procedures.
- Recognize common pathologies, anomalies, and conditions.
- Identify special considerations for patient condition or population.

Head and Neck

- Understand the common pulse sequences used in head and neck imaging.
- Differentiate between the common pulse sequences through image contrast.
- Understand the type of artifacts commonly found in head and neck imaging.
- Understand the different imaging coils used in head and neck imaging.
- Identify common pathology and conditions found in the head and neck.
- Explain the use of imaging parameters and be able to understand the tradeoffs for image contrast and quality in head and neck imaging.

Spine

- Understand the common pulse sequences used in spine imaging.
- Demonstrate knowledge of the effects of pharmaceutical agents as they relate to procedures of the spine.
- Understand the different imaging coils used in spine imaging.
- Identify common pathology and conditions found in the spine.

Chest and Mediastinum

- Understand the common pulse sequences used in thorax imaging.
- Demonstrate knowledge of the effects of pharmaceutical agents as they relate to procedures of the thorax.
- Understand the different imaging coils used in thorax imaging.
- Identify common pathology and conditions found in the chest and mediastinum.
- Understand the type of artifacts commonly found in the chest and mediastinum.

Abdomen

- Understand the common pulse sequences used in abdominal imaging.
- Demonstrate knowledge of the effects of pharmaceutical agents as they relate to procedures of the abdomen.
- Understand the different imaging coils used in abdominal imaging.
- Identify common pathology and conditions found in the abdomen.
- Understand the type of artifacts commonly found in the abdomen.

Pelvis

- Understand the common pulse sequences used in pelvis imaging.
- Demonstrate knowledge of the effects of pharmaceutical agents as they relate to procedures of the pelvis.
- Understand the different imaging coils used in pelvis imaging.
- Identify common pathology and conditions found in the pelvis.

Musculoskeletal

- Understand the common pulse sequences used in musculoskeletal imaging.
- Demonstrate knowledge of the effects of pharmaceutical agents as they relate to procedures of the knee, shoulder, elbow, foot, and ankle.
- Understand the different imaging coils used in musculoskeletal imaging.
- Identify common pathology and conditions found in the knee, shoulder, elbow, foot, and ankle.

Angiography and Venography

- Understanding the concepts of TOF imaging and contrast enhanced imaging.
- Understand the sequence used for venography and the proper imaging technique required to achieve optimum image quality.
- Recognize common pathological conditions indicated for angiography and venography.

Pharmaceuticals

- Demonstrate knowledge of the effects of pharmaceutical agents.
- Identify the correct dosage of pharmaceutical agents.
- Recognize and respond to adverse reactions.
- Discuss the preparation and administration of pharmaceutical agents.
- Explain working and risks of using a power injector.

Quality Control Procedures

- Discuss the types of routine quality control that must be performed on an MR scanner.
- Discuss the MRI phantom used and the proper care and maintenance to ensure proper biosafety.
- Identify the proper coil selection when performing QC using the MRI phantom.
- Discuss the various acquisition sequences and imaging planes required for ACR images.

APPENDIX B - SAFETY & ORIENTATION CHECKLIST

Candidate Name:

Clinical Site:

The safety and orientation checklist are to be completed by the candidate and the preceptor upon the candidate's arrival in the clinical area. It is essential the candidate is aware of all safety procedures and departmental policies and always adheres to safe work practices. The following checklist is designed to help guide the candidate's orientation to the department. The preceptor will provide a tour of the clinical site and ensure all policies are followed.

The candidate will read the following hospital/departmental documents to apply procedures to practice as appropriate:

- Hospital/department organizational chart
- Magnetic resonance safety policy and procedures
- Disaster planning policies (bomb threat, mass casualty, pandemic, etc)
- Fire policy and procedure
- Emergency codes and cardiac arrest procedure
- WHMIS policy and procedures
- Incident reporting policy and procedures
- Protocol or procedures manual
- MRI Patient Safety Screening Form

Within Diagnostic Imaging, the candidate should locate:

- Crash cart, emergency equipment and exits, fire alarms, and fire extinguishers
- Patient reception and booking, patient changing area and waiting rooms, and patient washrooms
- Imaging areas/units (CT, U/S, etc), image processing area, reporting, other relevant areas

Preceptor Name: _____ Date: _____

Signature: _____

Candidate Name: _____ Date: _____

Signature: _____

APPENDIX C - CLINICAL SITE PROPOSAL

Candidate:

Anticipated Start Date:

Proposed Preceptor:

NOTE: If additional space is required, please attach to this form.

List all scanner equipment available on site:

How many general magnetic resonance exams does the department perform monthly?

How many advanced imaging MRI exams such as cardiac and breast imaging does the department perform monthly?

What type of imaging coils does the department have?

Does the department participate in a quality assurance program?

How many radiologists are on site?

Provide a basic description of the workings of the department:

Preceptor: Having reviewed the required clinical competencies outlined in the clinical guide, do you believe the candidate will have ample opportunity to gain competence during the clinical period? Explain.

Other comments or concerns:

Preceptor Signature: _____ Date: _____

Candidate Signature: _____ Date: _____

Approval NSCMIRTP refresher program coordinator: _____

Date: _____

APPENDIX D - CLINICAL SITE AGREEMENT

(between)

Site	Candidate
Name: Signature: Address:	Name: Signature: Address:

Role and Responsibilities of Clinical Sponsor/Site:

1. Name one individual responsible to act as lead preceptor and be the contact person at the clinical site.
2. Receive verification from the Refresher Program Coordinator of the candidate's successful completion of the *Academic Exam.*
3. Ensure that the physical resources available to the candidate are equal to those normally required in the current practice of the profession.
4. Ensure that precepting staff have been identified and adequately prepared to fulfill this role.
5. Ensure that precepting staff practice in the same area of practice as the candidate.
6. Ensure that precepting staff are physically present and available to assist the candidate in the performance of restricted activities.
7. Forward a verification of the candidate's completion of the clinical component to the Refresher Program Coordinator.
8. Not be obligated to provide any salary, medical benefits or other compensation whatsoever to the candidate.
9. Reserve the right to request a security clearance check from the candidate.
10. Reserve the right to request the removal of any candidate from its supervision by written notification to the Refresher Program Coordinator.

Role and Responsibilities of Upgrading Candidate:

1. Become familiar with, and adhere to, all clinical site policies governing the conduct of staff on-site.
2. Act in accordance with the requirements of any regulation governing the profession.
3. Exhibit initiative to inquire for clarification, to perform tasks, and to seek opportunities to increase knowledge and skills.
4. Perform all duties in an ethical and professional manner.
5. Establish and maintain effective communication channels with preceptors, tutors, and instructors.
6. Pay any clinical site fees, if applicable, prior to commencement of the clinical component of the refresher program.

Clinical Component Projected Timeline:

Start date: _____ Projected end date: _____

Candidate Signature: _____ Date: _____

Preceptor Signature: _____ Date: _____

This signed agreement will be provided to the Refresher Program Supervisor. The candidate will receive a copy, and the clinical practicum site will retain a copy on file.