CPSO

INDEPENDENT HEALTH FACILITIES

Clinical Practice Parameters and Facility Standards

Magnetic Resonance Imaging and Computed Tomography – September 2020

College of Physicians and Surgeons of Ontario Mandate

The College of Physicians and Surgeons of Ontario (CPSO) regulates the practice of medicine in Ontario. Physicians are required to be members to practice medicine in Ontario. The role of the CPSO and its authority and powers are set out in the *Regulated Health Professions Act* (*RHPA*), the *Health Professions Procedural Code* under the *RHPA* and the *Medicine Act*.

What we do:

Registration – Physicians are required to be members of the College to practise medicine in Ontario. The College's Registration Department handles all inquiries regarding the registration process.

Quality - CPSO has a legislated mandate to continuously improve the quality of care provided by physicians. We monitor and maintain standards of practice through peer assessment and remediation

Investigations & Discipline - A central responsibility of the CPSO is to respond to concerns and to investigate complaints from members of the public about doctors in Ontario. If necessary, cases are referred to the Discipline Committee .

Guiding Professional Conduct - Develop policies to provide guidance to physicians about legislative/regulatory requirements and the expectations of the medical profession.

Our Mission

Serving the people of Ontario through effective regulation of medical doctors

Our Regulatory Principles

We commit to being accountable, respectful and responsive.

We will demonstrate professionalism and excellence.

We will value communication and compassion.

Independent Health Facilities

Clinical Practice Parameters and Facility Standards

Magnetic Resonance Imaging & Computed Tomography

September 2020

Members of the MRI & CT Task Force:

Dr. Raj Grover	Barrie
Dr. Martin O'Malley	Toronto
Ms Elizabeth Staten	St. Catharines
Dr. Brian Yemen	Hamilton
Dr. Brian Yeung	Richmond Hill

Published and distributed by the College of Physicians and Surgeons of Ontario. For more information about the Independent Health Facilities Program, please email us at ihf@cpso.on.ca. You can also contact us as follows:

By Mail:
Independent Health Facilities Program
The College of Physicians and Surgeons of Ontario
80 College Street, Toronto, ON M5G 2E2

By Telephone (toll free): 1-800-268-7096

Contents

Preface

The Independent Health Facilities Act (IHFA), proclaimed in April 1990, and amended in 1996 and 1998, gives the College of Physicians and Surgeons of Ontario the primary responsibility for carrying out quality assessments in Independent Health Facilities. These non-hospital facilities may provide some of the following insured services:

- in diagnostic facilities: radiology, ultrasound, magnetic resonance imaging, computed tomography, positron emission tomography (PET), nuclear medicine, pulmonary function, and sleep studies
- in treatment or surgical facilities: one or more of a variety of procedures in peripheral vascular disease, plastic surgery, obstetrics and gynaecology, dermatology, nephrology, ophthalmology, and their related anaesthetic services and perhaps other specialties.

The College of Physicians and Surgeons of Ontario has a legislative mandate under the Act to perform quality assessment and inspection functions. This responsibility, and others set out by agreement with the Ministry of Health, contribute to the College achieving its goals as stated in the College's Mission Statement. An important goal of the College is to promote activities which will improve the level of quality of care by the majority of physicians. The Independent Health Facilities program helps reach this goal by developing and implementing explicit clinical practice parameters and facility standards for the delivery of medical services in Ontario, assessing the quality of care provided to patients, and as a result, promotes continuous quality improvement.

Purpose of Clinical Practice Parameters

The Independent Health Facilities clinical practice parameters and facility standards are designed to assist physicians in their clinical decision-making by providing a framework for assessing and treating clinical conditions commonly cared for by a variety of specialties. The primary purpose of this document is to assist physicians in developing their own quality management program and act as a guide for assessing the quality of patient care provided in the facilities.

Note: The parameters and standards are not intended to either replace a physician's clinical judgment or to establish a protocol for all patients with a particular condition. It is understood that some patients will not fit the clinical conditions contemplated by certain parameters and that a particular parameter will rarely be the only appropriate approach to a patient's condition.

In developing these clinical practice parameters, the objective is to create a range of appropriate options for given clinical situations, based on the available research data and the best professional consensus. The product, therefore, should not be thought of as being "cast in stone", but rather subject to individual, clinically significant patient differences.

Role of the College of Physicians and Surgeons

The College adopted the role of a facilitator for the development of Clinical Practice Parameters and Facility standards. Individuals with acknowledged skill, experience and expertise form specialty-specific Task Forces to develop and update these Standards.

Where appropriate, the CPSO consults with other external organizations/experts prior to the finalization of Clinical Practice Parameters and Facility Standards.

Task Force members ensure that:

- clinical practice parameters must be based on the appropriate mix of current, scientifically-reliable information from research literature, clinical experience and professional consensus.

- any parameter-setting exercise must be done exclusively from the quality perspective. That may well mean that some of the conclusions reached could add to medical care costs.
- parameters have to be flexible enough to allow for a range of appropriate options and need to take into account the variations in practice realities from urban to rural areas.
- parameters need to be developed by consensus and consultation with the profession at large.
- parameters should provide support and assistance to physicians without boxing them in with "cookbook formulas."
- parameters will need to be regularly updated based on appropriate research studies.
- parameters should reduce uncertainty for physicians and improve their clinical decision-making.
- information on practice parameters must be widely distributed to ensure that all physicians benefit from this knowledge.

Responsibilities of the College

Responsibilities of the College include:

- assessing the quality of care when requested by the Ministry. The College will maintain a roster of physicians, nurses, technologists and others to serve as inspectors and assessors as required.
- inspecting the illegal charging of facility fees by unlicensed facilities when requested by the Ministry.
- monitoring service results in facilities. The College's information system will monitor individual and facility outcome performance. This is a unique feature of the legislation, which for the first time in North America, requires facility operators to establish and maintain a system to ensure the monitoring of the results of the service or services provided in a facility.
- providing education and assisting facilities so that they may continually improve the services they provide to patients. The College will work with and assist physicians in these facilities so that they can develop their own quality management programs based on the parameters and standards, monitor facility performance by conducting quality assessments, work with facilities to continually improve patient services, assist in resolving issues and conducting reassessments as necessary.

Updating this Document

These parameters and standards are subject to periodic review, and amendments may be issued from time to time. Notifications of such updates will be mailed automatically to all relevant Independent Health Facilities. A comprehensive review and update of the parameters and standards will be undertaken at intervals not greater than five years.

Note: Facilities must remain up to date with all information contained in this document, including externally sourced material, such as content from outside organizations, as well as information made available via hyperlinks. In addition, while the CPSO reviews and updates externally sourced materials and hyperlinks in this document at regular intervals, it is possible that links may become broken or invalid over time. If that occurs, facilities are encouraged to source the updated links on their own.

Radiology Guiding Principles

Extracted from the first edition (February 1995) of Clinical Practice Parameters and Facility Standards for Diagnostic Imaging,

A diagnostic imaging practice is a consultative physician service rendered by qualified specialists who have completed an accredited residency program in diagnostic radiology which includes using all modalities in the imaging portrayal of human morphology and physiological principles in medical diagnosis.

The elements of radiologic consultation include:

- pre-examination evaluation by a referring physician.
- a request for radiologic consultation. The requisition includes pertinent clinical findings, a working diagnosis, and signature of referring physician or other qualified professional.
- a safe patient environment in which the radiologist supervises a qualified staff whose efforts are directed at producing a radiologic examination yielding maximum diagnostic information and consistent with the least possible exposure to radiation.

Diagnostic imaging is a patient care specialty and it is an important function of the radiologist to advise referring physicians about the best sequence of examinations for resolving a clinical problem expeditiously and with the least risk and cost.

It is not possible to establish a “minimum” or “optimum” standard of care. Guiding principles and attributes for appropriate care in diagnostic imaging can be summarized as follows:

- examinations and procedures are performed with the greatest benefit and least risk to the patient.
- examinations and procedures are interpreted with the highest degree of competence using all available information including comparison with previous examinations and procedures.
- examination/procedure findings and conclusions are communicated promptly and expeditiously to the referring physician.
- referring physicians are consulted in order to select and perform only the most useful examinations/procedures.
- flow of data including storage, retrieval, and general handling of images, diagnostic data, and reports are managed efficiently.
- patient services provided are considerate of the human side of care as well as the purely technical component of care.
- patient services are managed so that productivity is maintained and optimal use of available resources is assured.

These principles should constitute the basis for the evaluation of desirable and undesirable practice patterns.

Independent Health Facilities Clinical Practice Parameters and Facility Standards:

Magnetic Resonance Imaging & Computed Tomography

VOLUME 1 FACILITY STANDARDS

Chapter 1 Staffing a Facility

1.1 Overview

Each licensee in consultation with the Quality Advisor (QA) ensures:

- There is a current written plan describing the organization of the facility and its services.
- There are sufficient numbers of qualified physicians, medical radiation technologists (MRTs), and clerical personnel available to meet the stated goals and objectives.
- Quality Advisors, Physicians, Technologists and Licensees review their legal obligations and may consider obtaining professional liability insurance as there is potential for liability issues in IHFs.
- Facility staff (i.e. regulated health professionals (RHPs)) have the appropriate education and experience including any certifications, examinations, courses and/or other training to perform their specific services and procedures. This includes an annual review of each RHP's continuing professional development (CPD) to ensure each RHP's CPD meets their regulatory body's CPD requirements. Documentation that confirms the aforementioned must be kept up-to-date and onsite.
- Physicians must be licensed to practice in Ontario by the CPSO in order to refer to themselves as physicians or doctors in any setting, including an IHF. Similarly, in order to practise in Ontario, MRTs and must be registered with the College of Medical Radiation and Imaging Technologists of Ontario (CMRITO).
- The duties and responsibilities of all diagnostic imaging service staff are specified in job descriptions. They are kept up to date and on site.
- Quality Advisors, physicians, MRTs, and licensees review their legal obligations to obtain professional liability insurance, and if it is legally required, it must be documented and maintained on site. If it is not a legal requirement, obtaining professional liability insurance may be considered, as there is potential for liability issues in IHFs.
- All non-RHP staff must comply with all requirements of their licensing or governing body, if one exists, and in any event all non-RHP staff must comply with requirements established by the CPSO, such as the Delegation of Controlled Acts policy.
- The Licensee, Quality Advisor and staff working in the IHF are up-to-date on the standards for infection prevention and control and have an ongoing process to ensure current infection and prevention control practices are reflected in staff orientation/training, infection prevention and control policies and procedures, as well quality management. To meet this requirement, facilities must, at a minimum, review the following:
    - Public Health Ontario's newsletter, which informs subscribers about updates to Provincial Infectious Diseases Advisory Committee (PIDAC) documents. To sign up for newsletters, use the following link: https://www.publichealthontario.ca/en/EUM/Pages/Register.aspx
    - Public Health Ontario's Infection Prevention and Control (IPAC) Core Competencies course. Certificates of completion must be maintained onsite as part of employment records.
- Staff involved in reprocessing medical equipment (which includes cleaning, disinfecting, and/or sterilizing) must have up-to-date and appropriate reprocessing training. Facilities are strongly

encouraged to review Public Health Ontario's "Recommendations for Education, Training and Certification for Reprocessing in Clinical Office Settings" document for guidance. Reprocessing training must include:

  - manufacturer's reprocessing training (which includes following the specific Manufacturer Instructions for Use (MIFU) for reprocessing of medical equipment, including the appropriate cleaning solution or detergent that can be used). **AND**
  - Public Health Ontario's Infection Prevention and Control (IPAC) online course Reprocessing in Community Health Care Settings Course**.** Certificates of completion must be maintained onsite as part of employment records.

- Staff obtains education/training (which is documented and maintained on site) in areas mandated by the Ontario Government, such as the following:
  - Workplace Hazardous Materials Information System 2015 (WHMIS 2015);
  - Health and safety awareness;
  - Workplace violence and sexual harassment, and;
  - Accessibility for Ontarians with Disabilities
- There is a Joint Health and Safety Committee (based on number of workers). Refer to Guide for Health and Safety Committees and Representatives.
- Staff must be familiar with and understand radiation safety, privacy and confidentiality legislation and applicable site policies.
- A radiologist or designated physician with current Advanced Cardiac Life Support (ACLS) certification is personally and immediately available if and when an IV contrast material is being injected. Documentation regarding ACLS certification is maintained on site.

1.2 Qualifications of Physicians MRI & CT

Physicians performing or interpreting Magnetic Resonance Imaging (MRI) and Computed Tomography examinations are licensed to practice by the CPSO and are:

- Certified by the Royal College of Physicians and Surgeons of Canada in Diagnostic Radiology in or after 2014.

OR

- Certified by the Royal College of Physicians and Surgeons of Canada in Diagnostic Radiology prior to 2014 and have a reference letter confirming the physician's hospital-based experience (knowledge, skills and judgement) in performing MRI and CT within the last 2 years from the Chief of Radiology of a hospital (this letter must be kept on file at facility).

OR

- Approved by the Registration Committee of the College of Physicians and Surgeons of Ontario to practice independently in Diagnostic Radiology, including MRI and CT.

1.3 MRI/CT Director

Each licensed facility has an MRI/CT Radiologist who is appointed as the MRI/CT Director (note: This position can be individual physicians or a dual role). The MRI/CT Director shall have demonstrated competence (one year of MRI/CT training), and an ongoing interest and commitment to MRI/CT quality improvement (including, but not limited to dose reduction techniques, evidence-based protocol optimization, etc.) and is qualified to provide additional on-site training to the other MRI/CT radiologists in the licensed facility.

Every MRI/CT Director must fulfill the following responsibilities:

- Be physically present at the IHF on a regular weekly basis, and no less than 8 hours per week. The MRI/CT Director or a designated MRI/CT Radiologist should be available by phone for consultation at any time when services are provided and documented.
- Ensure that safe MRI/CT practice guidelines and IPAC are established and maintained as current and appropriate for the facility.
- Implements, evaluates, and maintains the facility's MR Safety Program.
- Consult with the facility staff within the business day after any serious MRI/CT safety incidents and, as a minimum, update the MRI/CT safety guidelines on a yearly basis.
- Approve and review all MRI protocols performed by the licensed facility at least annually, or as often as may be deemed necessary by the MRI Director. All requisitions will be assigned a specific protocol by an MRI radiologist associated with the facility prior to the study being performed. Changes to the assigned protocol can only be modified by the MRI Director or another designated MRI Radiologist.
- Approve and annually review all CT imaging protocols performed by the licensed facility including use of contrast, CT safety and radiation exposure as outlined in the Report of the Diagnostic Imaging Safety Committee for Computed Tomography (CT) – February 2007 by the Ministry of Health (see Appendix III). All requisitions will be assigned a specific protocol and priority by a CT radiologist associated with the facility prior to the study being performed. Changes to the assigned protocol can only be modified by the CT Director or another designated CT Radiologist.

Note: MRI/CT Director can also be the Quality Advisor.

1.4 Quality Advisor

The Quality Advisor (QA) must be a physician licensed to practice in Ontario by the College of Physicians and Surgeons of Ontario and must be:

- certified by the Royal College of Physicians and Surgeons of Canada (FRCPC) in Diagnostic Radiology in or after 2014 OR
- certified by the Royal College of Physicians and Surgeons of Canada (FRCPC) in Diagnostic Radiology prior to 2014, and have a reference letter confirmed that physician's hospital-based experience (knowledge, skills, and judgement) in performing MRI and CT within the last 2 years from the hospital's Chief of Radiology (this letter must be kept on file at the facility).

The Quality Advisor must submit the Notice of Appointment of Quality Advisor and Quality Advisor Acknowledgement forms to the Director, IHF. These forms are available at http://www.health.gov.on.ca/en/public/programs/ihf/forms.aspx

NOTE: In instances where a facility provides more than one type of service and the Quality Advisor does not possess the appropriate specialty background associated with a particular service, then he or she must appoint a Medical Lead for each additional service (refer to 1.5) .

1.4.1 Role of the Quality Advisor

The role of the Quality Advisor is an important one. Quality Advisors play a vital role in the overall operation of the IHF to ensure that the services provided to patients are being conducted appropriately and safely.

Each IHF licensee is responsible for operating the facility and providing services in accordance with the requirements of the IHFA. Pursuant to O. Reg. 57/92 under the Independent Health Facilities Act (see Appendix VII), "every licensee is required to appoint a Quality Advisor to advise the licensee with respect to the quality and standards of services provided in the IHF. The Quality Advisor must be a physician who ordinarily provides insured services in or in connection with the facility and whose training enables him or her to advise the licensee with respect to the quality and standards of services provided in the facility."

1.4.2 Duties and Responsibilities of the Quality Advisor

The Quality Advisor is responsible for advising the licensee with respect to the quality and standards of services provided. In order to fulfill this duty, the Quality Advisor:

- Shall personally attend the facility at least twice each year, and may attend more frequently, where in the opinion of the Quality Advisor it is necessary based on the volume and types of services provided in the facility. The visits may be coordinated as part of the Quality Advisory Committee (QA Committee) meetings.
- Shall document all visits to the facility made in connection with the Quality Advisor's role.
- Shall ensure that a qualified physician be available for consultation during the facility's hours of operation.
- Shall seek advice from other health professionals where in the opinion of the Quality Advisor it is necessary to ensure that all aspects of the services provided in the facility are provided in accordance with generally accepted professional standards and provide such advice to the licensee.
- Shall chair the QA Committee. The QA Committee shall meet at least twice a year, or more often, as needed. Regular agenda items should include infection prevention and control; review of cases; policies and procedures; quality control matters on equipment; incidents; medical and technical issues.
- Shall ensure all QA Committee meetings are documented.
- Obtain copies of assessment reports from the licensee/owner/operator. If deficiencies were identified in the assessment, the Quality Advisor shall review same with the QA Committee and document such review. The Quality Advisor's signature is required on any written plan submitted by the licensee to the College.

The Quality Advisor shall advise the licensee on the implementation of an ongoing Quality Management (QM) Program, which should include but not be limited to, the following:

- Ensuring ongoing and preventive equipment maintenance

- Follow-up of interesting cases
- Follow-up patient and/or medical and technical staff incidents
- Continuing education for medical and technical staff
- Ensuring certificates of registration, BLS, etc. are current
- Regular medical and technical staff performance appraisals
- Patient and referring physician satisfaction surveys.

The Quality Advisor will advise the licensee, and document the provision of such advice, in connection with the following:

- **Health professional staff hiring decisions**, in order to ensure that potential candidates have the appropriate knowledge, skill and competency required to provide the types of services provided in the facility.
- **Continuing education** for all health professional staff members employed in the facility, as may be required by their respective regulatory Colleges or associations.
- **Appropriate certification** for all health professional staff members employed in the facility with the respective regulatory College or associations.
- **Leadership**, as may be required to address and resolve any care-related disputes that may arise between patients and health professional staff.
- **Appropriate resources** for health professional staff members employed in the facility.
- **Formal performance appraisals** for all health professional staff.
- **Technology** used in the facility, in order to ensure it meets the current standard(s) and is maintained through a service program to deliver optimal performance.
- **Establishment and/or updating of medical policies and procedures** for the facility, e.g. consultation requests, performance protocols, infection control, and standardized reports, and other issues as may be appropriate.
- **Equipment and other purchases** as may be related to patient care.
- **Issues or concerns identified by any staff member**, if related to conditions within the facility that may affect the quality of any aspect of patient care.
- **Establishing and/or updating system(s) for monitoring the results of the service(s)** provided in the facility.

If the Quality Advisor has reasonable grounds to believe the licensee is not complying with the licensee's obligation to ensure that services are being provided in accordance with the generally accepted standards and to ensure that the persons who provide services in the facility are qualified to provide those services, the Quality Advisor must inform the Director of Independent Health Facilities forthwith in accordance with the provisions and Regulations under the IHFA.

The Quality Advisor should acknowledge, in writing, his/her role in connection with Quality Assurance.

Infection Prevention and Control: In order to determine appropriate infection prevention and control training of staff, the Quality Advisor must annually complete the Checklist for Infection Prevention and Control (IPAC) Core Elements in Clinical Office Practice, and, if applicable, also complete annually the Checklist for Reprocessing of Medical Equipment/Devices in Clinical Office Practice and must verify

completion of relevant training by all staff. Evidence of completion of the Checklists must be maintained on file at the facility.

1.5 Medical Lead(s) for IHFs licensed by the MOH for more than one service

According to the *Independent Health Facilities Act*, facilities are required to have one Quality Advisor noted on the IHF license. For IHFs that have been licensed for more than one service such as MRI and CT/ Pulmonary Function Studies/Nuclear Medicine/Sleep Medicine, where the Quality Advisor is not a specialist in the field associated with the particular service(s), then they must appoint Medical Lead(s) for each additional applicable service. The Medical Lead must be a physician and either be certified by the Royal College of Physicians of Canada (FRCPC) in the specialty associated with the service, or be approved by the Registration Committee of the College of Physicians and Surgeons of Ontario to practice independently in that specialty.

The Medical Lead's role is to **assist** with IHF staff compliance with policies and procedures set out by the Quality Advisor, especially as it relates to monitoring and reporting on the quality of services.

1.6 Radiation Protection Officer (RPO) for CT

According to the HARP Act, a Radiation Protection Officer (RPO) must be designated for the facility. This role may be assumed or designated by the Quality Advisor.

RPO (CT) Responsibilities – The Radiation Protection Officer fulfill his/her roles and responsibilities as indicated in section 8 of O. Reg. 543 the X-ray Safety Code under the *Healing Arts Radiation Protection Act* (HARP Act) under the Healing Arts Radiation Protection Act (HARP Act) including but not limited to:

- ensuring that every person who operates an CT scanner in the facility is qualified to operate the machine;
- establishing and maintaining procedures and tests for the CT scanner to ensure compliance with the Regulation;
- ensuring that protective accessories of prescribed parameters are available for use by persons who may be exposed to x-rays where applicable;
- providing the Director of X-ray Safety with written results of certain tests conducted on the CT scanner and maintaining records of such tests; (this applies to new and used equipment with written results of tests to verify compliance with the provision of the Act and Regulation)
- ensuring that certain procedures and tests as prescribed in the Regulation are conducted on a periodic basis; and
- ensuring that the entrance exposure of certain parts of the patient do not exceed the prescribed exposure limits set out in Table 6 of Reg 543; and
- notifying the Director of X-Ray Safety, the occurrence of an accident involving an CT scanner or an overexposure to radiation involving one or more patients.

Specific to the duties outlined above, the RPO, if separate from the QA, provides input regarding policies and procedures and/or deficiencies specific to radiation protection as needed.

1.7 Medical Radiation Technologists

In Ontario, Medical Radiation Technologists (MRTs) are self-regulated registered professionals The practice of medical radiation technology is the use of ionizing radiation, electromagnetism and other prescribed forms of energy for the purposes of diagnostic and therapeutic procedures, the evaluation of images and data related to the procedures and the assessment of the condition of the patient before, during and after the procedure.

MRTs must have a current and valid certificate of registration with the College of Medical Radiation and Imaging Technologists of Ontario (CMRITO) and should only perform the services and procedures for which they have the necessary knowledge, skills and judgement. This means that MRTs must not perform any procedure unless they are competent to do so, and they must maintain their competence in their practice area.

1.7.1 Medical Radiation Technologists (MR)

Medical Radiation Technologists must have a current and valid certificate of registration with the College of Medical Radiation and Imaging Technologists of Ontario in the specialty of magnetic resonance imaging. Certification in MRI must be documented and be of the designation MRT(MR).

All MRTs must maintain and document current Basic Life Support (BLS) certification. Certificates must include both theory and hands-on components and be available onsite. To identify training courses, contact the Heart and Stroke Foundation of Ontario and/or St. John Ambulance.

1.7.1.1 Charge Technologist (MR)

The designation of a Charge Technologist is mandatory. Their qualifications must include:

- Current and valid certificate of registration with the College of Medical Radiation and Imaging Technologists of Ontario (CMRITO) in the specialty of magnetic resonance imaging.
- Completion of venipuncture/injection course from an accredited program.
- Should have 4 years full-time MRI experience or equivalent.
- Current BLS with certification. Certificate must include both theory and hands-on components and be available onsite.

Charge Technologist (MR) Responsibilities

Charge Technologists fulfill their roles and responsibilities for the day-to-day operation of the MRI suite, including:

- Training of all technologists to include Quality Control, IPAC, MRI safety, injections, policies and procedures
- Reporting to/advising the MRI Director/Quality Advisor
- Advising the Quality Advisor that all technologists are current with all qualifications
- Ensuring that all support staff receive and implement MRI safety guidelines
- Inputting site-specific protocols into the MRI unit
- Writing and updating MRI policy and procedure manual on at least an annual basis
- Ensuring implementation of policies and procedures
- Maintaining records of equipment calibration, maintenance, and repair procedures
- Maintaining copies of test observations and reports
- Ensuring that safety policies and the equipment and facilities necessary for their implementation are in place and in working order
- Implementing infection control measures
- Maintaining all necessary facility supplies

- Performing and documenting Quality Control procedures
- Responsible for supervising the technologists who have completed their venipuncture/injection certification course from an accredited program and until the MRI/CT Director, or Quality Advisor approves the technologist.

1.7.2 Medical Radiation Technologists (CT)

MRTs have completed cross sectional anatomy of the brain, neck and body similar to the CT Certification Course at Michener or equivalent.

All technologists must maintain and document current Basic Life Support (BLS) certification. Certificates must include both theory and hands-on components and be available onsite.

1.7.2.1 Charge Technologist (CT)

The designation of a Charge Technologist is mandatory. Their qualifications must include:

- Current and valid certificate of registration with the College of Medical Radiation and Imaging Technologists of Ontario (CMRITO).
- Completion of venipuncture/injection certification course from an accredited program
- Should have 4 years full-time CT experience or equivalent
- Certificate in BLS with recertification yearly.

Charge Technologist (CT) Responsibilities

Charge Technologists must fulfill their roles and responsibilities for the day-to-day operation of the CT suite, including:

- Training of all technologists to include Quality Control, IPAC, radiation safety, injections, policies and procedures
- Reporting to/advising the CT Director/Quality Advisor
- Advising the Quality Advisor that all technologists are current with all qualifications
- Ensuring that all support staff receive and implement CT safety guidelines
- Inputting site-specific protocols into the CT unit
- Writing and updating CT policy and procedure manual on at least an annual basis
- Ensuring implementation of policies and procedures
- Maintaining records of equipment calibration, maintenance, and repair procedures
- Maintaining copies of test observations and reports
- Ensuring that safety policies and the equipment and facilities necessary for their implementation are in place and in working order
- Implementing infection control measures
- Maintaining all necessary facility supplies
- Performing and documenting Quality Control procedures
- Responsible for supervising the technologists for injection certification who have completed the venipuncture/injection certification course from an accredited program until the MRI/CT Director or Quality Advisor approves the technologist.

1.7.3 IV Contrast Injections/Contrast Enhanced Studies

For IV contrast injections/contrast enhanced studies at an MRI/CT facility, the licensee in consultation with the Quality Advisor ensures the following:

- A physician who is trained and experienced in the recognition and management of adverse events of these agents and other life-threatening events be present for the performance of contrast-enhanced studies. If this physician is not the MRI/CT Director, then the physician must have appropriate training and experience in MRI/CT safety
- All technologists have completed the venipuncture/injection certification course from an accredited program (certificates must be on file at the facility), which include but are not limited to the following:

  http://michener.ca/ce_course/venipuncture-techniques

  https://www.humber.ca

  http://www.cvaa.info/

- Following technologists' completion of IV injection training course, the Charge Technologist supervises the Technologist(s) until such time that the MRI/CT Director or QA approves the technologists to perform these injections independently.
- The MRI/CT Director or Quality Advisor is responsible for approving the technologists to perform injections independently provided that there is documentation attesting to the technologists' competence, i.e. documented observations and feedback by the Charge Technologist. Approvals must be maintained as part of employee records.
- The MRI/CT Director reviews all policies with the MRI/CT technologist regarding contrast injection (patient consent, contraindication, contrast reaction, premedication, sterile techniques and needle disposal and facility standards).
- The MRI/CT Director makes recommendations regarding annual refresher for IV contrast injections for staff.

Chapter 2 Facilities, Equipment and Supplies

2.1 Overview

The facility has adequate space, equipment and supplies for the safe and efficient performance of diagnostic imaging services.

2.2 Facilities, Equipment and Supplies

Facilities have sufficient space to meet workload requirements and ensure the effective care and privacy of patients.

Appropriate safety precautions are maintained and documented against electrical, mechanical and radiation hazards as well as against fire and explosion, so that personnel and patients are not endangered.

Thermoluminescent Dosimeter (TLD) monitoring devices must be worn by the CT technologist staff, including any other staff who work in the control booth/area or inside the CT room. The TLD monitoring service of the National Dosimetry Services of Health Canada must be used and radiation doses must be documented to ensure the safety of personnel. Records must be maintained for a minimum of 3 years and be posted in the facility for staff information.

For CT, pregnancy warning signs are posted in the waiting area, change rooms and examination rooms.

Basic supplies for infection prevention and control is on site and used appropriately as per current provincial guidelines/policies. Resources are available through the Provincial Infectious Diseases Advisory Committee of Public Health Ontario at http://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/PIDAC/Pages/Infection-Prevention-and-Control-for-Clinical-Office-Practice.aspx

If headphones are available to MRI patients, they must be disinfected after each use, otherwise disposable ear plugs need to be offered.

An area must be provided for patients' valuables/personal belongings to be secured/locked during procedures.

Facility monitoring equipment and procedures are appropriate to the documented patient mix and procedures.

2.3 Imaging Equipment for CT/MRI

2.3.1 Computed Tomography

For patient imaging, the CT scanner meets or exceeds the following specifications:

- New when installed in the facility and manufactured within 6 months prior to installation and has at least a 64-row detector array
- Use of software and hardware to manage patient doses, in line with the ALARA principle, including, but not limited to automatic tube current modulation
- Power injector: the injector shall be pressure limited and have adjustable rate and volume

- Must pass all quality control tests at the time of installation as outlined by organizations such as the American Association of Physicists in Medicine (AAPM), the American College of Radiology (ACR), or Health Canada Safety Code 35.
- Additional software upgrades are in accordance with the scope of practice being provided within the facility.
- A clear upgrade pathway, defined to keep the software and hardware technology current, will be implemented by the facility.

A vendor approved Original Equipment Manufacturer (OEM) service contract which includes hardware and software will exist for its lifespan.

Note: The Ministry of Health must give approval to install and operate a CT scanner under the Healing Arts Radiation Protection Act (HARP Act) R.S.O. 1990, c.H.2 clauses 23(2)(a) and (b). Under section 3 of the HARP Act, the written approval of the Director of X-ray Safety is required for CT equipment to be installed.

Aging Equipment – Computed Tomography

CT equipment must conform to the CAR Lifecycle Guidance for Medical Imaging Equipment in Canada (see CAR chart on next page) which provides a range for **high-mid-low** utilization for each type of equipment. (Maximum life expectancy and clinical relevance should be no longer than 15 years for any technology).

Note: Refurbishing equipment does not change the age of equipment. Age of the equipment is based on the date of manufacture.

If a facility chooses to extend the lifecycle of their CT machines past the CAR guidelines (i.e. 12 years for low utilization timeframe), then the facility must obtain the services of a Qualified Medical Physicist (QMP) to evaluate and determine if the units are still appropriate for routine clinical use. Evaluations must be done once every three (3) years by a Qualified Medical Physicist. The Qualified Medical Physicist may choose to delegate this work, but the final report must be signed off by the Qualified Medical Physicist.

A Qualified Medical Physicist is an individual who is:

- Board certified in Diagnostic Radiology by the Canadian College of Physicists in Medicine (for CT or MRI testing); or
- Board certified in Magnetic Resonance Imaging by the Canadian College of Physicists in Medicine (for MRI testing only); or
- Board certified in Diagnostic Medical Physics by the American Board of Radiology; or
- Board certified in Magnetic Resonance Imaging by the American Board of Medical Physics; or
- If the medical physicist does not have board certification, the following qualifications must be met:
    - Graduate degree in medical physics, radiologic physics, physics, or other relevant physical science or engineering discipline from an accredited institution
    - Formal coursework in the biological sciences with at least one course in biology/radiation biology, one course in anatomy and physiology, and three years of documented clinical experience in a CT and/or MR environment

Qualified Medical Physicists meeting this definition may be found by using the National QMP Registry on the CRCPD (Conference of Radiation Control Program Directors) website.

TABLE I: MI EQUIPMENT LIFE EXPECTANCY GUIDANCE (UTILIZATION AND AGE RELATED)

Device type (analogue or digital)	Device life expectancy based on utilization: HIGH – MID – LOW (see columns to the right)	Utilization based on exams / year		
		HIGH, e.g., 24 hours 5 days / week or 750 8-hour shifts/ year	MID, e.g., 16 hours 5 days / week or 500 8-hour shifts/ year	LOW, e.g., 8 hours 5 days / week or 250 8-hour shifts/ year
Radiography, general	10 – 12 – 14	> 20,000	10,000 – 20,000	< 10,000
Radiography, mobile	10 – 12 – 14	> 6,000	3,000 – 6,000	< 3,000
R/F fluoroscopy (conventional/remote)	8 – 10 – 12	> 4,000	2,000 – 4,000	< 2,000
R/F interventional integrated c-arm	8 – 10 – 12	> 4,000	2,000 – 4,000	< 2,000
R/F urology	8 – 10 – 12	> 1,500	750 – 1,500	< 750
Mobile C-arm (all types including O-Arms)	8 – 10 – 12	> 2,000	1,000 – 2,000	< 1,000
Angiography (1/2 plane)/ interventional	8 – 10 – 12	> 4,000	2,000 – 4,000	< 2,000
Cardiac suite (single/biplane)	8 – 10 – 12	> 3,000	1,500 – 3,000	< 1,500
CT scanner	8 – 10 – 12	> 15,000	7,500 – 15,000	< 7,500
MRI scanner	8 – 10 – 12	> 8,000	4,000 – 8,000	< 4,000
Ultrasound	7 – 8 – 9[10]	> 4,000	2,000 – 4,000	< 2,000
SPECT/gamma	8 – 10 – 12	> 6,000	3,000 – 6,000	< 3,000
SPECT/CT	8 – 10 – 12	> 4,000	2,000 – 4,000	< 2,000
PET (likely replace with a different technology such as PET/CT)	8 – 10 – 12	> 6,000	3,000 – 6,000	< 3,000
PET/CT	8 – 10 – 12	> 4,000	2,000 – 4,000	< 2,000
Bone densitometry	8 – 10 – 12	> 10,000	5,000 – 10,000	< 5,000
Mammography	8 – 9 – 10[11]	> 7,000	3,500 – 7,000	< 3,500
Lithotripter	8 – 10 – 12	> 3,000	2,000 – 3,000	< 2,000

NOTES:
- Maximum life expectancy and clinical relevance should be no longer than 15 years for any technology
- New and emerging technologies should be integrated into equipment and financial plans within the organization.

CT Layout

When seated at the console, CT technologist should have a direct view of the patient, or a closed television camera/monitor is installed to provide this view of the patient.

2.3.1.1 Quality Control for CT

All safety measures are in compliance with federal and provincial laws/regulations (HARP Act or equivalent). All equipment is properly maintained and calibrated during scheduled preventive maintenance sessions in accordance with manufacturer specifications. Written records of preventive maintenance, repairs, and unscheduled down time are maintained. The following Quality Control schedule is recommended:

Daily: The facility is asked to perform the following tests which follow the ACR CT Accreditation program requirements

a) Water CT Number and Standard Deviation
b) Artifact Evaluation

Monthly: The facility is asked to perform the following tests which follow the ACR CT Accreditation program requirements

a) Visual Checklist
b) Hard Copy Image Quality Control of Dry Laser Printers
c) Gray Level Performance of CT Scanner Acquisition Display Monitors

Annually: The facility is asked to perform the following tests which follow the ACR CT Accreditation program requirements

a) Review of Clinical Protocols
b) Scout Prescription and Alignment Light Accuracy
c) Table Travel Accuracy
d) Radiation Beam Width
e) Low-Contrast Performance
f) Spatial Resolution
g) CT Number Accuracy
h) Artifact Evaluation
i) CT Number Uniformity
j) Dosimetry
k) CT Scanner Display Calibration

A CT "protocol" refers to the settings and parameters that are used to acquire images for a specific examination (e.g. Abdominal/Pelvic CT) based on the clinical information provided. The CT protocols will determine image quality and dose. Each IHF must maintain a copy of CT protocols based on common clinical indications. Guidance on the development of CT scan protocols should be provided by the vendor, the CT Director and a medical physicist, as appropriate. Suggested CT scan protocols have been published by the AAPM (American Association of Physicists in Medicine).

Reference: American Association of Physicists in Medicine; CT Protocols (http://www.aapm.org)

In the event of major hardware upgrades or service repairs being performed (e.g. tube replacement or detector module replacement), it is not required, but it is recommended to have the medical physicist repeat the acceptance tests.

2.3.2 Magnetic Resonance Imaging

The MRI system must produce diagnostic quality images with a minimum magnet strength of 1.5 Tesla. The MRI system should be equipped with the appropriate gradient hardware, radio frequency hardware (receiver channels), phased array coils, and software packages for the case mix. A power injector is required.

For patient imaging, the MRI system must meet or exceed the following specifications:

- New when installed in the facility and manufactured within 12 months prior to installation with current technology.
- A clear upgrade pathway, defined to keep the technology current, must be implemented by the facility.
- The MRI scanner must pass all quality assurance tests at the time of installation as outlined by organizations such as the American Association of Physicists in Medicine (AAPM) or the American College of Radiology (ACR).

A vendor approved OEM service contract which includes hardware and software must exist for its lifespan.

In recognition of changing technology standards, machines must be upgradeable to future state-of-the-art requirements.

Aging Equipment - Magnetic Resonance Imaging

MRI equipment must conform to the CAR Lifecycle Guidance for Medical Imaging Equipment in Canada (see CAR chart on previous page) which provides a range for high-mid-low utilization for each type of equipment. (Maximum life expectancy and clinical relevance should be no longer than 15 years for any technology).

Note: Refurbishing equipment does not change the age of equipment. Age of the equipment is based on the date of manufacture.

If a facility chooses to extend the lifecycle of their machines past the CAR guidelines (i.e. 12 years for low utilization timeframe), then the facility must obtain the services of a Qualified Medical Physicist (QMP) to evaluate and determine if the units are still appropriate for routine clinical use. Evaluations must be done once every three (3) years by a Qualified Medical Physicist. The Qualified Medical Physicist may choose to delegate this work, but the final report must be signed off by the Qualified Medical Physicist.

A Qualified Medical Physicist is an individual who is:

- Board certified in Diagnostic Radiology by the Canadian College of Physicists in Medicine (for CT or MRI testing); or
- Board certified in Magnetic Resonance Imaging by the Canadian College of Physicists in Medicine (for MRI testing only); or
- Board certified in Diagnostic Medical Physics by the American Board of Radiology; or
- Board certified in Magnetic Resonance Imaging by the American Board of Medical Physics; or
- If the medical physicist does not have board certification, the following qualifications must be met:
    - Graduate degree in medical physics, radiologic physics, physics, or other relevant physical science or engineering discipline from an accredited institution
    - Formal coursework in the biological sciences with at least one course in biology/radiation biology, one course in anatomy and physiology, and three years of documented clinical experience in a CT and/or MR environment

Qualified Medical Physicists meeting this definition may be found by using the *National QMP Registry on the CRCPD (Conference of Radiation Control Program Directors) website*.

2.3.2.1 Quality Control for MRI

All equipment is properly maintained and calibrated during scheduled preventive maintenance sessions in accordance with manufacturer specifications. Written records of preventive maintenance, repairs, and unscheduled down time must be maintained. A daily record of both the MRI magnet room and equipment room temperature, humidity, primary chilled water temperature, secondary water temperature, and the magnet helium level (where appropriate) are documented.

Documentation by the technologist of the facility's Quality Control program, including schedule is required, which follows the ACR MRI Quality Control Manual:

Weekly: The site must perform the following tests:

a) Table positioning, setup and scanning, laser alignment
b) Centre frequency
c) Transmitter gain or attenuation
d) Geometric accuracy
e) High contrast spatial resolution
f) Low contrast detectability
g) Artifact evaluation
h) Visual checklist

Annually: The facility must perform the complete system acceptance test with the ACR Test Phantom (or equivalent). The required tests are:

a) Table positioning, setup and scanning, laser alignment
b) Centre frequency
c) Transmitter gain or attenuation
d) Geometric accuracy
e) High contrast spatial resolution
f) Low contrast detectability
g) Artifact evaluation
h) Visual checklist
i) Magnetic field homogeneity
j) Slice position accuracy
k) Slice thickness accuracy
l) RF coil checks
    i. SNR
    ii. Percent signal ghosting (PSG)
    iii. Image intensity uniformity (PIU)
m) Soft copy (monitor) QC
n) MR Safety Program Assessment

After any service work/repairs, the service engineer runs the calibrations/ service tests as appropriate for the specific hardware serviced. It is also recommended, but not required, to have a medical physicist repeat the acceptance tests after any major service work/repairs.

2.4 Safety Concerns and Resuscitation Equipment

The licensee shall reference the ACR Guidance Documents on MR Safe Practices (see Appendix I) and ACR Manual on Contrast Media, Version 10.3 (Appendix VI).

Patient monitoring equipment and facilities for cardiopulmonary resuscitation including vital signs monitoring, support equipment and an emergency crash cart are immediately available. Radiologists, technologists, and staff members are able to assist with procedures, patient monitoring and support. A written policy is in place for dealing with emergency procedures such as cardiopulmonary arrest.

The facility has alternate materials available for patients with known or suspected latex allergies.

Contrast-enhanced studies require the presence of a physician who is trained and experienced in the recognition and management of adverse effects of these agents and other life-threatening events. If this physician is not the MRI/CT Radiologist, then he/she must also have appropriate training and experience in MRI/CT safety. Technologists are trained in resuscitation (BLS). IHFs must have an emergency protocol in place to deal with these types of emergencies.

As pediatric patients receive contrast, specific pediatric doses/drugs and pediatric resuscitation

equipment are clearly labeled and colour coded for age groups.

Facilities provide a means of moving patients in difficulty to an adjacent area, which is equipped to handle any adverse reactions up to and including respiratory and cardiac arrest.

2.4.1 MRI Layout

The MRI facility layout must give the MRI technologist an unimpeded view of the magnet room entrance door when seated at the operating console. Access is restricted to all areas within the 5-gauss magnetic field line of the MRI magnet. The magnet room itself usually encompasses this area.

The MRI technologist must have a direct view of the patient down the bore of the magnet when seated at the operating console. If this is not the case, then a closed television camera/monitor must be installed to provide this view of the patient to the MRI technologist.

2.4.1.1 MRI Safety Zones

All MRI facility layouts must comply with and incorporate the four (4) recognized MRI Safety Zones.

The purpose of establishing MRI Safety Zones is to minimize potential risks to patients and staff within the MRI environment. There are four zones in total and each one is defined as follows:

a) Zone I: areas freely accessible to the general public; typically, is outside the MRI environment and is the area where individuals can access the MRI environment.
b) Zone II: area where patients are greeted/screened and not allowed to move freely (only under MRI personnel supervision).
c) Zone III: access is strictly restricted and regions within it (e.g. Zone IV) are controlled/supervised by MR personnel.
d) Zone IV: the MRI scanner room (within Zone III) and the magnet's associated magnetic fringe fields.

All zones must be labelled in the facility.

The MRI Director should designate individuals in the MRI environment as either MRI personnel or non-MR personnel.

- MR personnel are broken down into Level 1 and Level 2 personnel.
- Level 1 personnel are individuals who have passed minimal safety educational efforts to ensure their own safety within Zone III.
- Level 2 personnel are individuals who have received more extensive training in MR safety (e.g. issues in thermal burns).
- Non-MRI personnel constitute everyone else in the MRI environment.

Non-MRI personnel must be screened prior to entering Zone III.

It is recommended to use ferromagnetic detection systems as a supplement to the screening of persons and devices approaching Zone IV.

Patients must remove all readily removable metallic personal belongings and devices as well as fill out a safety screening questionnaire.

If patients/non-MRI personnel have a history of potential ferromagnetic foreign object penetration, they must undergo further investigation (e.g. CT, radiograph).

All ferrous objects should be Zone III restricted (whenever practical). A handheld magnet can help to determine if there is significant ferromagnetism in objects. All objects/devices to be taken into Zone IV are either MR Safe or not MR Safe. MR Safe is defined as objects which present no attractive forces present and its composition is known to be non-magnetic. Non-MR safe objects present grossly detectable attractive forces. They may be taken into Zone III if they are deemed necessary and appropriate for patient care (under MR personnel supervision).

Protocols for the contact of Emergency Medical Services (EMS) and patient transfer to hospital must be clearly published, posted and regularly reviewed.

2.5 Administration of Medications in Imaging Department

- It is reasonable to assume some medications may be given to maximize the information obtained from CT and MR images (e.g. anxiolytics, beta blockers, nitroglycerin, antiperistaltic agents). In order to safely administer drugs in an IHF, there must be medical directives in place which include, but are not limited to drug dosage, route of administration, and management of adverse events related to the various medications.
- Patients under the age of 18 requiring sedation are not to be examined in an IHF

2.5.1 Resuscitative and Monitoring Equipment – CT and MRI

Appropriate emergency equipment and medications must be immediately available to treat adverse reactions associated with the administration of contrast media. It is recommended that for each site a plan of action and formulary be developed in consultation with local anaesthetists and internal medicine specialists responsible for their hospital arrest teams. Appropriate emergency equipment and medications, as noted below, must be immediately available to treat adverse reactions associated with the administration of contrast media.

Emergency equipment and Formulary as per ACLS standards, includes but is not limited to:

- ECG monitor
- Defibrillator
- Oxygen source with mask and suction
- Oxygen saturation monitor
- Resuscitation drugs
- Stethoscope
- Sphygmomanometer
- IV pole
- Wheelchair
- Stretcher
- Laryngoscope and endotracheal tubes (sized for adults and children)
- Oropharyngeal airways (sized for adults and children)
- Ambu bag or equivalent (sized for adults and children)

The contents of the resuscitation tray are checked monthly for expiry dates on all drugs and sterile equipment. These activities are documented and kept with the resuscitation equipment.

2.5.1.1 MRI Safe Equipment

MRI facilities must also have the following MRI safe equipment available for the scanning room:

- Stretcher (if scanner table is not detachable)
- Wheelchair

- IV poles
- Laundry hamper
- Step stool
- All oxygen tanks *must* be MRI safe

If a parent is expected to accompany and stay inside the magnet room with their child, then a MR safe chair is provided for inside the magnet room.

All facility fire extinguishers that may be brought into the magnet room during a fire emergency are MR safe. The fire alarm must be audible inside the magnet room.

There should be a small, portable, strong (usually rare earth) magnet available to the MRI technologist to test whether objects are ferromagnetic.

A MR safe step ladder (usually aluminum) should be provided for changing light bulbs inside the MRI magnet room. This task should be performed by an individual trained in MR safety.

2.6 Emergency Procedures

All resuscitations are performed outside the scanner room.

For MRI the biggest danger is the introduction of ferromagnetic objects into the magnet room by the responding staff and the resulting projectile motion of the ferromagnetic objects toward the centre of the magnet causing injury/death to anyone intersecting the projectile trajectory.

Although it is possible to set up a complete emergency response trolley and equipment which is MR safe, it is almost impossible to ensure that all staff who may respond to the emergency will not carry any ferromagnetic objects into the magnet room.

Ambulance, fire or police crews who respond to an emergency call will be carrying ferromagnetic objects. For these reasons, it is imperative that the first response to a patient emergency inside the magnet is for the MRI technologist(s) to remove the patient from the magnet room and lock the door to the so no unauthorized personnel enter.

CT/MRI Facilities provide a means of moving patients in difficulty outside the magnet room to an area equipped to handle any adverse reactions up to and including respiratory and cardiac arrest.

Any interventions and resuscitative procedures MUST take place outside the magnet room. No additional personnel or equipment will enter the magnet room.

Chapter 3 Developing Policies and Procedures

3.1 Overview

Current written policies and procedures are required to provide staff with clear direction on the scope and limitations of their functions and responsibilities to patient care.

3.2 Radiation Safety and Dose Reduction (ALARA Principles)

The ALARA principle (As Low As Reasonably Achievable) must be considered for all examinations using ionizing radiation to minimize radiation exposure to the patient and staff.

Pre-programmed protocols should be available for pediatric patients (defined as 18 years old or less) that consider maturity, size and weight of the patient, and also organ specific.

Low dose CT protocols should be designed to minimize the dose based on the clinical indication (e.g. low dose CT protocol for renal colic), without sacrificing the image quality necessary to make a diagnosis.

There should be a log of dose reduction techniques implemented for each protocol.

Note: Refer to the Report of the Diagnostic Imaging Safety Committee for Computed Tomography (CT) – February 2007 by the Ministry of Health (see Appendix III).

3.3 Developing Policies and Procedures

The policies and procedure manual must be available for consultation by all facility staff. The manual must be reviewed and signed off by all staff, Licensee and Quality Advisor annually, revised as necessary, and dated to indicate the time of the last review or revision.

There must be documentation to indicate who makes the policies, sets the standards, and who supervises physicians, technologists, and other staff. In addition, it should also include a copy of the MOH form outlining the name of the Quality Advisor.

3.3.1 Facility

Policies and procedures in the manual must include, but are not limited to, the following:

- A description of the scope and limitations of diagnostic imaging services provided by the facility.
- Patient-booking systems.
- Documentation of and method for receiving written and telephone referrals for consultation.
- Patient requests for a chaperone for examinations, or any other common patient requests related to examinations/procedures; facilities must provide options where possible;
    - procedures must include specific chaperone signage posted in the facility; for example:
        - Chaperone Policy: Are you being examined? If you wish, we can provide another member of staff to be present; or a friend or family member can accompany you. PLEASE ASK THE DOCTOR OR NURSE. In the event that we are unable to provide you with a chaperone, you will be given the option of rebooking for a new date.
- Timing and permission of family/friend presence during the performance of any examination

3.3.2 Facility Staff

Policies and procedures in the manual must include, but are not limited to, the following:

- Staff Orientation/Training – There must be a process and checklist for training of new staff and refresher training for existing staff, including, but not limited to:
    - Infection Prevention and Control (IPAC)
    - Procedure/service/modality-specific protocols
    - Ontario Government Mandated Training (WHMIS, Health and Safety, Workplace Violence and Sexual Harassment), and AODA)
    - Safety training for medical and non-medical staff (e.g. fire, power failure, other emergency evaluation), including process to ensure completion of training by staff, and their roles/responsibilities.
    - Administration of contrast injections – including training, supervision and certification/approval process.
    - Patient privacy, consent, medical records and communication

  Employees must sign off on completion of above training, including acknowledgement of individual roles and responsibilities regarding the above

- Staff Job Descriptions/Credentials/Approvals- There must be a process and checklist for maintaining staff requirements including, but not limited to:
    - Job descriptions (scope and limitations of functions and responsibilities for patient care)
    - Regulated health professionals (RHP) certifications, exams, courses, and/or other training to ensure RHPS have the necessary knowledge, skills, and judgement to perform their specific services or procedures.
    - Staff performance evaluations
    - Professional/practice guidelines for Regulated Health Professionals
- Supervision – There must be a process describing how staff undergoing training are being monitored until they are deemed to safe to work independently, i.e. through completion of certification, examination, and/or course, if applicable, or sign-off by appropriate facility staff members. Staff records are updated accordingly.
- Delegated acts and medical directives.

3.3.3 Records and Communication/Reporting & Privacy Principles

Policies and procedures must include but are not limited to the following:

- Privacy and release of health record information, including Bill 31 the Personal Health Information Protection Act 2004 (PHIPA).
- Patient consent (written or verbal) based on the scope of practice in the facility and in accordance with the Health Care Consent Act.
- There must be a policy for verbal and telemedicine communications for urgent patient reporting that requires a direct discussion with the on-call radiologist prior to releasing findings. This policy also must indicate:
    - MRTs must not provide preliminary findings to patients and/or the ordering physician without first consulting the radiologist and then deciding who will convey the information to the ordering physician.
    - Interactions must be documented, including the designation of who will convey the verbal report to the ordering physician.
- Maintenance of requisitions, imaging media and interpretation reports *(See Appendix VII, Independent Health Facilities Act-Ontario Regulation 57/92 -Amended to O.Reg. 14/95), and in*

connection with telemedicine standards

3.3.4 Diagnostic Services

Policies and procedures must include but are not limited to the following:

- Instructions regarding routine preparation of patients.
- Imaging protocols detailing the sequences involved in examining a target organ for both adult and pediatric patients. For CT these include but are not limited to:
    - Oral contrast –volume and type
    - IV contrast –volume and rate and type of administration
    - Scanning region and length
    - Patient Position
    - Detector Configuration
    - Reconstructed Slice thickness
    - Reconstruction Algorithm
    - Scan type
    - Rotation time
    - mAs and kVp
    - Pitch
    - Displayed $CTDI_{vol}$
    - Pediatric/small adult protocols preprogrammed in scanner with reduced specific organ patient dose.
    - Contraindications for performing tests.
    - Screening just prior to patient entering the magnet room (for MRI)
    - Adult sedation.
    - Use of protective devices.
    - Pre-medication for known contrast allergy.
    - Assessment of renal function where appropriate prior to contrast injection.
- Criteria for mandatory contact of the supervising radiologist
- Imaging protocols that subscribe to the ALARA principles, which should be developed under the direction of the radiation protection officer (RPO) to ensure compliance with the HARP Act and other applicable legislation.
- Performance of additional views and examinations- any additional views or examinations are identified in the imaging report with reasons.
- Integrity of reportable results to ensure the accuracy of patient data and testing information from input of patient data to delivery of procedure, e.g. MRTs must place a check mark on the label confirming accuracy of patient name, date of birth, exam ordered, and referring physician. This should include a process to deal with errors should they occur.

3.3.5 Equipment Maintenance

Policies and procedures must include but are not limited to the following:

- inventory/list of equipment to be maintained.
- routine/preventative maintenance, calibration, and evaluation of equipment and medical devices, which should all be completed at a minimum on an annual basis (this includes frequency of testing, staff responsible for follow-up on recommendations, and documentation and maintenance of records for all of the above).
- weekly inspections of emergency equipment for emergency situations.
- Maintenance work inside the magnet room.

3.3.6 Emergency Procedures and Safety Policies

Policies and procedures must include but are not limited to the following:

- Staff protocol to be followed for emergencies, including staff roles and when to summon additional staff assistance urgently within the facility and when to summon help by 911, and coordination of staff with those responders. Examples include electrical, mechanical, fire, evacuation, disaster, violent/behavioural situation, bomb threats, missing patient, hazardous spill, hostage situation.
- Emergency protocol for management of patient transfer to a hospital, e.g. cardiac arrest, shortness of breath, general safety and prevention of adverse effects including administration of supplemental gases, radiation safety (if applicable), responding to latex allergies and anaphylaxis (for facilities that are not latex free).
- Emergency resuscitation for MR only to occur outside the magnet room.
- Emergency Action Plan (EAP) to address adverse reactions associated with administration of contrast media, including transport to hospital.
- Safety Data Sheets (SDS) for all chemicals maintained in the facility, which should follow the Globally Harmonized System (GHS).
- Joint Health and Safety Committee (based on number of workers). See Guide for Health and Safety Committees and Representatives.
- Ensuring patients who have taken oral or sublingual anxiolytics/antihistamines are provided discharge instructions and are accompanied by a person prior to departing the facility.
- Techniques for managing patients with claustrophobia, anxiety and emotional distress.
- Managing patients with possible or definite ferrous/metallic foreign bodies (particularly intracranial and intraocular locations).
- Response to fire alarm and fire within the magnet room.
    - When personnel are present in the facility
    - When personnel are not present in the facility.
    - Inadvertent magnet quenches.
- Pregnancy of patients or facility staff.
- Infection control.
- Criteria for the technologist re: when they should consider contacting the supervising radiologist

3.3.7 Quality Management Program

Policies and procedures must include but are not limited to:

- Monitor the work of the facility to continuously improve all aspects of the procedures/services provided.
- Quality Advisory Committee meetings (identification of staff responsible and process for scheduling meetings, agendas, minutes and follow-up on action items).
- Complaints (staff roles and responsibilities for documenting and follow-up).
- Incident Reporting – a description of the process for monitoring, reviewing and responding to incidents, including follow-up and staff roles/responsibilities.

3.3.8 Infection Prevention and Control

Policies and procedures are up to date with PIDAC documents, and include, but are not limited to, the following:

- Routine Practices and Additional Precautions to prevent infection transmission are in keeping with provincial guidelines. Resources are available through the Provincial Infectious Diseases Advisory Committee's (PIDAC's) Infection Prevention and Control for Clinical Office Practice document
- Hand hygiene – see PIDAC Best Practices for Hand Hygiene in Health Care Setting
- Environmental Cleaning – see PIDAC Best Practices for Environmental Cleaning in Health Care Settings
- Cleaning, Disinfection, Sterilization and Reprocessing of reusable medical devices and equipment – see PIDAC Best Practices for Cleaning, Disinfection and Sterilization in Health Care Settings and PIDAC Infection Prevention and Control for Clinical Practice Settings
- Adequate education and training of staff responsible for the sterilization and reprocessing of medical equipment. Please visit the CPSO website for an approved list of courses specific to reprocessing and sterilization.

Chapter 4 Requesting and Reporting Mechanisms

The content of this chapter is largely derived from the Canadian Association of Radiologists Practice Guidelines for Communication of Diagnostic Imaging Findings (2010).

4.1 Overview

Communication is a critical component of the art and science of medicine and is especially important in Diagnostic Imaging. It is incumbent upon radiologists and the facilities in which they work to ensure that the results of diagnostic studies are communicated promptly and accurately in order to optimize patient care.

The final product of any consultation is the submission of a report on the results of the consultation. In addition, the radiologist and the ordering physician have many opportunities to communicate directly with each other during the course of a patient's case management. Such communication should be encouraged because it leads to more effective and appropriate utilization of Diagnostic Imaging services and it can enhance the diagnostic yield of the study in question. From a utilization standpoint, discussions with the referring team will help to focus attention on such concerns as radiation exposure, appropriate imaging studies, clinical efficacy and cost-effective examinations. The provision of a well-defined clinical question and the overall clinical context can improve interpretation of complete cases and may enable the radiologist to streamline the diagnostic impression into a few likely and relevant differential considerations rather than providing a textbook list of possible differential diagnoses that may be of less utility and of less impact.

These principles apply to all radiology consultations irrespective of the technology used including teleradiology, Picture Archiving & Communication Systems (PACS) or an equivalent electronic workstation with an archival system (refer to Volume #3 Teleradiology (PACS)).

In order to afford optimal care to the patient and enhance the cost-effectiveness of each diagnostic examination, radiological consultations should be provided and images interpreted within a known clinical setting. No screening radiological examination should be performed unless evidence-based or part of an organized population-based screening program.

The Canadian Association of Radiologists (CAR) supports radiologists who insist on clinical data with each consultation request and the IHF Task Force supports this same principle.

All communication should be performed in a manner that respects patient confidentiality. Medical images and reports constitute confidential patient information and must be treated accordingly. It is incumbent upon IHF staff and all imaging personnel including radiologists to ensure patient privacy. This includes institution of appropriate privacy procedures, and appropriate policies and procedures for release of images or reports from medical images to third parties.

Policies and practice must be consistent with privacy legislation: www.ipc.on.ca

4.2 Requesting Procedures

Written requisitions and forms to screen the patient for CT/MRI compatibility must be completed by the referring physician. Where information is missing, the facility must follow up with the referring physician. All CT/MRI requests must be approved and prioritized by a radiologist prior to booking the test.

The technologist rescreens just prior to the patient entering the magnet room (for sample screening forms, see Appendix II).

An appropriate request for all radiological consultations is the responsibility of the referring physician and specifies:

- The basic demographic information of the patient such as name, health number, date of birth, and sex.

  Note: If patient information is entered electronically, clinic staff must ensure that the patient demographic information including the requesting physician noted on the requisition is current and correct. Any changes to update the information must be made prior to the performance of the study.

- Pertinent clinical information including indications, pertinent history, and provisional diagnosis.
- The type of procedure requested for the patient including any special instructions for interpreting or modifying the procedure where applicable.

  Note: This is the responsibility of the ordering physician/healthcare provider. If a patient arrives with a requisition containing incomplete information, the diagnostic imaging physician or designated staff member should attempt to contact the ordering physician/healthcare provider or interview the patient to obtain the necessary information prior to conducting the procedure.

- The name of the ordering physician/healthcare provider and the names of any other physicians who are to receive copies of the report.
- Whether a "stat report" is required.

It is recommended that patients be provided written information about computed tomography/magnetic resonance imaging procedures prior to an appointment.

4.3 Technologist Identification

MRTs must include their full name on any documentation at the time of the examination in order for the interpreting physician to identify the MRT performing the examination.

4.4 The Diagnostic Imaging Final Written Report

The final report is considered to be the definitive means of communicating to the ordering physician or other healthcare professionals the results of an imaging examination or procedure. Additional methods of communication of results are necessary in certain situations.

The final report must be made available within 2 business days to the ordering physician or healthcare professional who is responsible for the clinical follow-up. The ordering physician or other healthcare professional also shares in the responsibility of obtaining the results of imaging studies he or she has ordered.

If there was a significant discrepancy between the preliminary report and the final report, this is documented, and the referring physicians must be notified of the change in cases where the change may alter immediate patient management.

The final report should be proofread carefully to avoid typographical errors, accidentally deleted words, and confusing or conflicting statements, and should be authenticated by the reporting radiologist, whenever possible.

Note: Given the complexity of CT and MRI studies in general, compared to other modalities, it is strongly recommended that the final report should be proofread and verified by the reporting radiologist

---

Electronic and rubber-stamp signature devices, instead of a written signature, are acceptable if access to them is secure. In any case, the name of the dictating radiologist must appear as such on the report.

A copy of the diagnostic image is retained as the permanent record for the appropriate length of time as prescribed by regulations.

Voice recognition systems are widely employed to facilitate timely reporting. These systems are not foolproof and methods should be in place to allow detection and correction of program generated errors.

Final reports may be transmitted by paper, fax, and email, provided appropriate security measures are in place. Facilities should seriously consider instituting "read receipt" mechanisms to identify any report that has not been picked up by the ordering physician/healthcare provider.

A copy of the final report should be archived by the imaging facility as part of the patient's medical record (paper or electronic) and be retrievable for future reference. It is of sufficient quality to record permanent findings, to be used for comparison with subsequent examinations, and enable third party radiologists to confirm the diagnosis.

The IHF must have the ability to retrieve and/or produce a copy of the image(s) stored within one working day of the request as required.

The imaging media and reports are filed using an accepted coding system which allows films and reports to be retrieved by patient identification information.

Unusual and interesting examinations are maintained for educational purposes in accordance with the IHF Regulations.

Previous stored diagnostic images are available for the interpreting physician.

4.4.1 Report Attributes

Reports of the interpretation of imaging procedures include the following:

- Name of the patient and another identifier such as gender, birth date, pertinent identification number
- Office identification number
- The facility or location where the study was conducted
- Name of the ordering physician or health care provider
- Name of most responsible physician/health care provider for patients cared for by multiple clinical services

Rationale: To provide more accurate routing of the report to one or more locations specified by the ordering physician. Each facility has a policy to ensure proper distribution of the written report to the most responsible physician and/or other physicians/healthcare professionals.

- Name or type of examination
- Date of examination
- Date of dictation
- Date transcribed.

4.4.2 Body of the Report

The effective transmission of imaging information from the radiologists to the ordering physician/healthcare provider constitutes the main purpose of the report.

The report should be clear and concise. Normal or unequivocally positive reports can be short and precise. Whenever indicated the report includes:

4.4.2.1 Procedures and Materials

A description of the examinations and/or procedures performed and any contrast media (including agent, concentration, volume and route of administration, where applicable), medications, catheters, or devices not reported elsewhere. Any known significant patient reaction or complication should be recorded.

Rationale: To ensure accurate communication and availability of the information for future reference.

4.4.2.2 Findings

Use precise anatomical, radiological and pathological terminology to describe the findings accurately. Abbreviations should not be used to avoid ambiguity and risk of miscommunication, unless initially spelled out.

4.4.2.3 Limitations

Where appropriate, identify factors that can limit the sensitivity and specificity of the examination. Such factors might include technical factors, patient anatomy (e.g. patient body habitus) and limitations of the technique (e.g. the low sensitivity of a bone scan for strictly lytic lesions).

4.4.2.4 Clinical Issues

The clinical history, indication or clinical question may be inserted at the beginning of the report. While not mandatory this practice is encouraged.

Note: It is strongly recommended that clinical history, indication or clinical question be included in the final report under a separate heading.

The report should address or answer any pertinent clinical issues raised in the request for the imaging examination. If there are factors that prevent answering the clinical question, these should be stated.

For example, to rule out pneumothorax, state "there is no evidence of pneumothorax" or to rule out fracture, state "there is no evidence of fracture". It is not appropriate to use universal disclaimers such as "the mammography examination does not exclude the possibility of cancer" as it is expected that the ordering physician understands that even a well performed diagnostic exam does not necessarily have a

100% sensitivity. Descriptive reporting that offers no opinion, or guidance for resolution of the clinical question should be avoided.

4.4.2.5 Comparative Data

Comparisons with previous examinations and reports, when possible, are part of an imaging consultation and report, and should be included in the body of the report and/or conclusion section when appropriate.

Note: It is strongly recommended that comparative data be included in the final report under a separate heading.

4.4.2.6 Assessment and Recommendations

The report should conclude with an interpretive commentary on the data described. The proper terminology for ending the report may include the following terms: conclusion, impression, interpretation, opinion, diagnosis or reading.

Each examination should contain such an interpretive commentary. Exceptions can be made when the study is being compared with other recent studies and no changes have occurred during the interval or the body of the report is very brief and a separate conclusion would be a redundant repetition of the body of the report.

- Give a precise diagnosis whenever possible.
- Give a differential diagnosis when appropriate.
- Recommend follow-up and/or additional diagnostic imaging studies to clarify to confirm the conclusion, only when appropriate.
- Any significant patient reaction should be reported.

4.5 Standardized Computer-Generated Template Reports

Standardized computer-generated template reports (or other structured report formats) that satisfy the above criteria are considered acceptable. Facilities are encouraged to use standardized reports and terminology amongst their reporting physicians.

4.6 Preliminary Report

A preliminary report may precede the final report in certain circumstances and contains limited information relevant to immediate patient management. It may be time sensitive and should not be expected to contain all the imaging findings. It should be generated when a timely communication is necessary in unexpected elective cases where clinical urgency mandates immediate communication of the results. It is acknowledged that not all serious findings require a preliminary report if they are already known or could have been reasonably expected by the referring physician as long as the final report is generated within 24-48 hours.

A preliminary report may not have the benefit of prior imaging studies and/or reports and may be based upon incomplete information due to evolving clinical circumstances which may compromise its accuracy. Preliminary reports may be communicated verbally, in writing or electronically and this communication should be documented. Preliminary communications should be reproduced into a permanent format as soon as practical and appropriately labeled as a preliminary report, distinct from the final report.

Note: Technologists are not permitted to provide preliminary findings of any examination either directly to the patient and/or the ordering physician without first consulting the radiologist. The radiologist must then decide, based on the preliminary findings who will convey the information to the ordering physician.

4.7 Verbal or Other Direct Communication

Radiologists should attempt to co-ordinate their efforts with those of the ordering physician in order to best serve the patient's well-being. In some circumstances, such co-ordination may require direct communication of unusual, unexpected or urgent findings to the ordering physician in advance of the formal written report. These include:

- The detection of conditions carrying the risk of acute morbidity and/or mortality which may require immediate case management decisions.
- The detection of disease sufficiently serious that it may require prompt notification of the patient, clinical evaluation or initiation of treatment.
- Detection of life or limb threatening abnormalities which might not have been anticipated by the referring physician.
- Any clinically significant discrepancy between an emergency or preliminary report and the final written report should be promptly reconciled by direct communication to the ordering physician or his/her representative.

In these circumstances, the radiologist or his/her representative, should attempt to communicate directly (in person or by telephone) with the ordering physician or his/her representative. Alternative methods including fax, text messaging or email could be used for these purposes if there is a way of verifying receipt of the reports. The timeliness of direct communication should be based upon the immediacy of the clinical situation.

Documentation of the actual or attempted direct communication may be a desirable facility policy.

- It is incumbent upon ordering physicians/healthcare professionals to make available a way of communicating results to an alternative provider in circumstances such as holiday, sickness or restricted office hours.

4.8 Retention of Patient Records

Facilities are required to comply with Ontario Regulation 57/92 s. 11 which specifies duration of retention of patient records.

4.9 MOH Independent Health Facilities Program Information and Fact Sheets related to Patient Charges for Records

When the patient attends an IHF to obtain a copy of their images and reports for their ongoing care/treatment the acceptable turnaround time for requests that are received by the IHF for the images and reports to be made available for courier or pick-up is within three (3) working days of receiving the request. For additional information, refer to the MOH's Independent Health Facilities program information and fact sheets.

4.10 Retrieval of Films from another IHF/Institution

There is a mechanism in place to ensure when previous images and reports are required from another IHF in order to make a comparison, the acceptable turnaround time for requests that are received by the IHF would be for the images and reports to be made available for courier or pick-up within 3 working days of receiving the request.

Chapter 5 Quality Management

5.1 Overview

The Quality Management Program is intended to monitor the work of the facility to continuously improve all aspects of the services provided.

Each facility must have a Quality Management Program supervised by a Quality Advisory Committee (QAC) as set out in the IHFA regulations (see Appendix VII)

The requirements for, and responsibilities of, the Quality Advisor (QA) are as detailed in Chapter 1 Staffing a Facility.

The Quality Advisor must attend and chair, at a minimum, two Quality Advisory Committee meetings per site per year, and document all in person visits to the facility made in connection with this role.

The QA Committee must include: Quality Advisor, Licensee, the PACS administrator, Medical Leads (where appointed), and site-specific health professionals (e.g. physicians, technologists) who provide health services (representing each modality).

The Committee is to supervise creation and maintenance of a quality management program adequate to reach the goals detailed below.

5.2 Quality Management Program Goals

The goals of the program include but are not limited to ensuring that:

- The services planned and provided are consistent with the patient's needs and assure diagnostic reliability and patient safety.
- Services conducted in the facility are safe.
- Services conducted are appropriate to the problem(s) being investigated.
- The facility has a system to deal with incomplete or inappropriate requests for services.
- The performance of diagnostic radiological examinations complies with the most current standards and guidelines available through the Canadian Association Radiologists (CAR) or American College of Radiologists (ACR).

5.3 Providing Quality Care

The performance of CT/ MRI examinations complies with standards accepted by the College of Physicians and Surgeons of Ontario as described in the Clinical Practice Parameters section.

A designated CT/MRI Radiologist is available for consultation with the technologist on a case-by-case basis. For cases requiring monitoring, ideally, the CT/MRI Radiologist is on-site and available to participate in the examination when required.

Although optimally a designated CT/ MRI Radiologist is present for all cases, this is not always possible. For cases that do not require monitoring a designated CT/MRI Radiologist should always be available by phone to consult with the technologist and referring physician.

Whenever contrast is administered, a designated physician must be personally and immediately available. There must be adequate equipment/medications available to treat an adverse reaction.

A CT/MRI-trained radiologist should visit the facility on a regular basis to review imaging procedures and provide technologist supervision. Ideally there should be a CT/MRI radiologist present at the facility

on a daily basis. Even in remote sites, a CT/MRI-trained radiologist should be on site at least one day per week. A daily log of visits to the facility by the radiologist should be maintained.

Diagnostic imaging procedures are carried out in a manner in which patient privacy is respected.

5.4 Components of a Quality Management Program

The facility establishes and maintains a system to monitor the results of the services provided.

The facility establishes a quality management program appropriate for its size, volume and types of services provided. It is recognized that quality management programs will vary depending on the facility size, scope of practice, and geographical considerations.

Quality Management Program activities are documented and maintained on-site.

To ensure that the goals of the Quality Management Program are met the Committee's tasks include but are not limited to:

- Review quality management goals and objectives annually.
- Supervise and document a systematic ongoing review of the facility policy and procedures manual.
- Review safety data on any equipment new to the facility since the last meeting and ensure that all equipment in the facility meets safety standards.
- Review any incident or accident report since the last meeting and document any such actions to prevent similar incidents or accidents. Provide a report of all such proceedings to the facility's Quality Advisor.
- Review and Implement recommendations from other assessing bodies such as the Ministry of Health and Ministry of Labour (e.g. WSIB), and *HARP*.
- Review and implement recommendations from Preventative Maintenance (PM) reports.
- Supervise and document a program of annual performance reviews for all staff who have patient contact, including documentation of action taken to correct any significant deficiencies in performance.
- Ensure registration certificates, BLS certificates, etc. are valid and current for all staff.
- Ensure that the CPD activities of the technical and medical staff meet the relevant regulatory college or society requirements.
- Promote the discussion of interesting/challenging cases seen at the facility and disseminate any teaching points to the staff for educational purposes.
- Review results of regular surveys of patient, referring physician and staff satisfaction, documenting actions to address any suggestions, problems, or issues raised.
- Comply with quality assurance protocols as appropriate.
- Assess the accuracy of interpretations and the appropriateness of procedures process.
- The IHF must have an established a quality review process that evaluates the quality of care provided by all regulated health professionals involved in patient care and one that follows the basic principles of the CAR peer review program toward achieving the following program goals:
    - Enhance the consistency and accuracy of diagnostic imaging services to improve quality of care for patients
    - Support ongoing improvements to diagnostic image interpretation skills through peer to peer learning in a non-punitive environment
    - Enable informed decisions about patient treatment, enhancement of quality programming, physician training and continuing medical education

- Support maintenance of ongoing learning, education and contribution to a culture of quality improvement, transparency and accountability

5.5 Monitoring the Program

The Quality Advisor is responsible for all aspects of the program including any aspect delegated to any other staff member.

All QAC meetings (agenda and minutes) must be maintained and documented in a form that is clear and easily accessible. This includes agendas and minutes for staff meetings as well.

Minutes of each QAC meeting must be circulated to all members of QAC for comment, revision, and sign-off (regardless of whether the member attended the meeting or not).

Recommendations from QAC and minutes must be circulated to all staff once they are finalized.

Records are maintained at the facility with respect to reviews and surveys and any subsequent commentary/suggestions/recommendations/follow-up.

There is evidence that QAC meetings include, at minimum, the following topics:

a) Goals and objectives – new, revised, going forward

i. Staff changes/New staff

ii. Staff under supervision - progress on examinations/courses/accreditation

iii. Expansion/relocation plans

iv. General practice goals

b) Recommendations from Assessment/Accreditation Visit/Ministry of Health X-ray Inspection Services and HARP (if applicable). Such issues are to remain on the agenda until they are clearly finalized.

c) Policies and procedures (including but not limited to):

i. Policy and Procedures Manual – general updates, staff sign-off

ii. Technical – general practice guidelines for facility

iii. Infection Control

iv. Safety Data Sheets

v. Other

d) Review of IPAC requirements and staff orientation/training

e) Equipment – problems, business plan for upgrades/replacements, staff training or facility configuration issues

f) Incidents or complaints, adverse drug reactions, complications

g) Review of the results of the Facility's quality review process

h) Review of current statistics on the time between referral and subsequent diagnostic examinations/treatment

i) Review of difficult or inconclusive cases and how they were dealt with

j) Patient/referring physician survey results

k) Staff performance appraisals & training – when, who, how often

Independent Health Facilities Clinical Practice Parameters and Facility Standards:

Magnetic Resonance Imaging & Computed Tomography

VOLUME 2 CLINICAL PRACTICE PARAMETERS

Chapter 6 Position Statement from the IHF MRI and CT Task Force

It is the position of the IHF MRI & CT Task Force that Radiologists and facilities comply with the most current standards and guidelines available through the Canadian Association of Radiologist (CAR) or American College of Radiology (ACR).

To ensure that radiologists and facilities are in compliance with most current standards and guidelines, the radiologist and facility staff are responsible for, at least annually, reviewing the CAR or ACR websites to ensure that they have obtained and are in compliance with the most current standards of practice for the profession.

Practice Guidelines

Refer to the CAR Practice Guidelines**.**

Note: The radiologist and facility staff should refer to the CAR website first, and where the CAR does not have specific Practice Guidelines available, the American College of Radiology website should then be accessed.

All Clinical Practice Parameters referenced within this document should be read in conjunction with the Facility Standards (Volume 1) developed by the IHF MRI and CT Task Force. A guiding principle should be that diagnostic imaging examinations only be performed for a valid medical reason with the minimum exposure that provides the image quality necessary for an adequate diagnostic examination.

Independent Health Facilities Clinical Practice Parameters and Facility Standards:

Magnetic Resonance Imaging & Computed Tomography

VOLUME 3 TELERADIOLOGY (PACS)

Teleradiology Standards

Facilities must comply with the Ontario Association of Radiologists (OAR) Teleradiology Practice Standard (on next page), as well as the CPSO Telemedicine Policy, which are provided for reference.

CPSO Telemedicine Policy

https://www.cpso.on.ca/Physicians/Policies-Guidance/Policies/Telemedicine

Note: As per the Health Insurance Act, the reporting Radiologist must be physically in Ontario at the time of reviewing and reporting.

For information about technical standards, facilities should also refer to:

ACR–AAPM–SIIM Technical Standard for Electronic Practice of Medical Imaging

https://www.acr.org/-/media/ACR/Files/Practice-Parameters/Elec-Practice-MedImag.pdf

CAR Teleradiology Standards

https://car.ca/patient-care/practice-guidelines/

Ontario Association of Radiologists

May 2015

OAR TELERADIOLOGY PRACTICE STANDARD
Amended May 2013

Originally Approved June 2007 Definition

Teleradiology in Ontario is the electronic transmission of radiographic images from one geographical location to another for the purposes of interpretation and consultation by diagnostic imaging physicians accredited by the Royal College of Physicians and Surgeons of Canada (or recognized equivalent) and licensed by the College of Physicians and Surgeons of Ontario.

These guidelines and standards have been developed to protect patients and ensure their data is kept confidential. *Teleradiology services are to facilitate patient care and are not intended to be a cost-cutting measure, which may jeopardize patient safety and the standards of health care.*

Preface

The transmission of images between centres has been going on for a number of years and has proved to be valuable for centres seeking expert opinions on emergency and problem cases. The most common such connections have been with radiologists who work at a site and are now able to offer image interpretations online from other sites within an institution, from their offices, home or elsewhere. More recently radiological images have been transmitted to main centres from smaller community hospitals in areas of low population density where small radiology departments have proven unsustainable. The vastly improved capacity of the internet and the speed of transmission have permitted a much wider use of teleradiology.

Teleradiology has advantages but it must be done properly to ensure that a high quality of care is provided to patients and to maintain the radiologist interaction with their clinical colleagues. It is also important that those radiologists providing the service are properly trained, are registered with the appropriate authorities, and undergo continuing update through Continuing Medical Education (CME). The services provided must be open to audit and the ability to discuss cases with those reporting the studies must be available. This standard has been developed to provide guidance to radiologists, managers of health care facilities, patient's representatives and governments on

appropriate standards for teleradiology services.

Teleradiology has undergone a number of health-technology assessments in different countries with regard to the context of its use, but a great deal of thought and study is still required. Teleradiology clearly has a number of advantages, but it also has the potential to create considerable difficulties for the delivery of a high-quality radiological service to patients, unless its role and the legal responsibilities involved are clearly defined.

Role of a Diagnostic Radiologist

The role of a radiologist providing medical services in a diagnostic imaging service is considerably wider than simply issuing a diagnostic interpretation and report. It includes:

Evaluating the clinical information produced by referring physician clinicians

Deciding which test is appropriate

Establishing and assuming responsibility for the imaging protocols, quality parameters and a host of other technical factors that are integral to the creation of the diagnostic image and report

Being responsible for the technical staff/standards involved in the diagnostic imaging facility

Optimizing the study and assisting the referring physician colleague

Evaluating the study and relating it to the clinical findings

Having knowledge of the practice of referring physicians

Reviewing previous examinations and their interpretations to compare them with the current study

Identifying further appropriate management including diagnostic investigations essential to obtain a comprehensive diagnosis and treatment, and reviewing those recommendations with referring physicians

Reviewing all *clinical data* in a multi-disciplinary environment

Performing interventional therapeutic and diagnostic procedures

Assuming responsibility for the appropriate management of the patient during the diagnostic imaging procedure

Contributing radiological expertise to the management of the diagnostic imaging service to ensure the highest possible quality assurance and quality control

Being responsible for patient safety by ensuring minimal exposure to radiation dose and other matters that could compromise patient care

Adhering to all provincial and federal regulations, statutes relating to the delivery of medical services generally and diagnostic imaging services provincially; meeting and exceeding the standard of care in the delivery of diagnostic imaging services in the province; maintaining membership in all of the licensing bodies and fulfilling the requirements of that licensure regime

Ensuring the selection and use of appropriate and modern equipment, properly trained staff and other elements in the high-quality delivery of diagnostic imaging

Where relevant, teaching radiology residents and fellows according to national training program requirements

Where relevant, participating in radiology research

Auditing the delivery of radiology services in the sites where the radiologist works

Ensuring timely communication of urgent findings

Maintaining appropriate records/confidentiality as mandated by legislation

In essence, appropriate teleradiology in this era is the same as the whole practice of radiology. The fact that patient data can be moved over a broadband connection does not alter the role or responsibilities of the supervising and interpreting radiologist.

The importance of interaction between the referring clinicians and the radiologist cannot be over-emphasized. There are considerable quality patient care and medical-legal implications when teleradiology services are provided by a radiologist outside the patient's jurisdiction. Regulatory bodies, licensing and credentialing (including the College of Physicians and Surgeons of Ontario, the Royal College of Physicians and Surgeons of Canada, Health Protection Branch, the Ministry of Health's Independent Health Facility branch, OHIP, X-ray Inspection branch, and other provincial and federal bodies), are unable to enforce regulations outside their jurisdiction yet have a responsibility to patients with respect to the enforcement of a wide spectrum of regulations and statutes inter-linked to the high quality delivery of radiologists' services in the province. The requirements of these and other related bodies are constantly subject to change requiring the radiologist to comply with a new and more stringent degree of responsibility with respect to the delivery of patient care.

Key Principles

Diagnostic radiology is an integrated medical service required in every modern health care system.

Referring physicians are dependent upon the local availability of diagnostic imaging physicians to assist them to manage the health of their patients.

Only fully qualified diagnostic radiologists should provide the teleradiology service. They must be properly accredited, registered, and licenced in Ontario. The radiologist should be subject to licensing and quality assurance requirements of the provincial health authority; legislative and professional requirements of the facility providing the service; the provincial College of Physicians and Surgeons, accreditation and be in good standing with the Royal College of Physicians and Surgeons of Canada.

A definitive report is mandatory with the signature of the reporting radiologist. Electronic signatures are acceptable as long as they can be authenticated.

In a public hospital the members of the radiology department must be credentialed and be part of the recognized medical staff.

The department head via the Medical Advisory Committee (MAC) and Board is responsible for the medical service.

In an Independent Health Facility (IHF), the off-site radiologist must be approved by the radiologist Quality Advisor who is legislatively responsible for Quality Control/Quality Assurance (QC/QA) at the IHF.

All radiologists providing teleradiology services must be covered by the Canadian Medical Protective Association (CMPA) for medical liability issues and ensure they are compliant with current CMPA guidelines and policies covering diagnostic imaging physicians to safeguard patient interests.

Ensure that all radiologists and their staff involved in the delivery of teleradiology services are in full compliance with relevant privacy legislation and facility policies to protect patient confidentiality.

Ensure that the information received for a primary read is the full data set and that the reading radiologist should have all of the functionality of the PACS at his/her disposal to do an interpretation.

Key Management Issues

Teleradiology services must be organized between the source radiologists and the off-site radiologist provider to guarantee the proper management of the patient.
This will ensure that:

The clinical evaluation and data are provided with the request for the examination.

The requirements of the Healing Arts Radiation Protection Act (HARP) (including justification, appropriate techniques, optimization, and good procedure) are fulfilled.

The report of the teleradiology service can be reviewed with clinicians and where applicable, in multi-disciplinary meetings and integrated with patients' notes and previous studies.

The reporting radiologist of the teleradiology service is able to communicate directly with the referring radiology department and clinicians in order to discuss the clinical background and unexpected diagnosis, which may be relevant to the timely management of the patient.

Teleradiology services that are developed to meet the needs of rural, remote and small community areas must be linked to the nearest substantive radiology department and the service is managed by that department. The radiologists involved in providing the service must have a close connection and knowledge of referring clinicians, and technologists, and should understand any particular local disease and cultural factors.

Equipment used for teleradiology should provide a similar level of resolution and functionality as is available in the radiology department/facility.

The American College of Radiology's (ACR) Technical Standard for Teleradiology for equipment and other supporting technologies used in the delivery of teleradiology is the acknowledged current technical standard. Radiologists delivering teleradiology standards are expected to comply or exceed the ACR Technical Standard for Teleradiology.

Real and Potential Problems

Clinico-Radiological Communication

If reporting of radiographs is taken away from close proximity with the patient, the clinical contact between the referring clinicians and radiologists is substantially reduced. It is imperative that teleradiology facilities have phone links with the hospitals and/or clinics from which images are obtained and have the ability for direct discussion between a referring clinician and the reporting radiologist on individual cases. Without this, the bond between the patient and the radiologist becomes unclear. If urgent or significant unexpected features are found, the teleradiology service must transmit them directly to the referring clinician. This will be impossible unless there is a clear point of contact for the teleradiology service.

Team Working

The ability to hold multi-disciplinary meetings is much more difficult with teleradiology, even with teleconference links. It is now widely accepted that multi-disciplinary meetings, which are often led by the radiology department, are essential in the management of problematic cases, i.e., cancer care. They maximize the understanding of the clinical problems by radiologists.

External reviews of health care disasters have emphasized the importance of teamwork especially in medicine and the need for enhanced teamwork, involving radiology has been highlighted. Interaction between different members of the hospital team with radiology may be impaired, if radiology is undertaken at the long distance by a teleradiology link.

Communication

It is necessary that there be good communication between referring physicians, radiologists and technologists

Wording of Report and Clinical Impact

Even if radiologists and referring clinicians have a common first language, it has to be recognized that radiological reporting may be subject to regional variation. Radiological reports often rely on verbal expressions of probability and may contain some regionally-used expressions.

Modern imaging commonly demonstrates an abundance of reportable findings, some of which are clinically relevant and some of which are incidental findings/pseudo-disease. Multiple pathologies can exist in the same patient. The clarity and certainty conveyed in the text is particularly important in converting a report that is merely 'diagnostically accurate' into one that has a diagnostic outcome and potentially a therapeutic outcome for the patient. Clinicians are more likely to act on the nuances intended in a report generated by a radiologist with whom they regularly liaise compared with a report generated by a third party teleradiology service from someone they never met. Specific wording of reports for general family doctors may be necessary, which is different from the reports to specialists within their sphere of interest. Familiarity with the referring doctors can make specific reports more appropriate and useful. Health care delivery varies between different jurisdictions. Recommendations for further imaging/specialist referral, which might be appropriate in the locale where a teleradiology service is provided, may be inappropriate in the area where the patient is located.

Access to Previous Examinations/Interpretations

The failure to review previous examinations and interpretations has been shown to be a significant cause of errors in both perception and cognition. It is therefore important that previous studies and reports are available to the reporting radiologist where these are relevant. This should be possible if the teleradiology service has access to the referrer's PACS system. There also has to be access to the hospital information system, so relevant lab data and clinical notes can be reviewed.

Downstream Costs

Teleradiology may generate significant downstream costs. There is potentially increased cost from recommendations by the teleradiology service (which may actually be unnecessary) are required due to the inexperience or insecurity of the reader of the initial study or from clinicians responding to reports describing clinically insignificant radiological findings. There may be variations in the style of practice in different jurisdictions that impact the kind or volume of studies ordered. This problem will be compounded by a potential lack of background clinical knowledge of the case and the clinical expectations of the referring clinician by the teleradiology service. Clinicians who are not confident in a report from a teleradiology service may ask radiologists with whom they work to re-report the images and to advise on case management, thus leading to duplication and poor use of financial resources. For all of these reasons, the importance of close communication between the radiologist and the clinician to minimize inappropriate clinical referrals for imaging cannot be over emphasized.

Quality Control and Quality Assurance

Quality control is paramount with teleradiology in order to prevent errors in radiology. Learning from mistakes through participation in radiological discrepancy/error meetings is established practice. Much informal feedback occurs at clinico-radiological meetings and corridor encounters. Audit is another potent form of radiological quality assurance. All these activities are much more difficult for a teleradiology service which would need a very close link between the radiologists and clinicians at the source hospital/facility. It is difficult for teleradiology services to have a proper feedback of the outcome and undertake satisfactory audit of their reports.

Radiologists providing services may provide advice relating to radiation exposure, image quality, patient positioning, and several other quality assurance and quality control (QA/QC) issues based on images they have received for interpretation. They must communicate directly with technologists, often real time, so as to be able to intervene directly to ensure optimal QA and QC. The Radiation Protection Officer, an

on-site radiologist, remains responsible for the overall QA and QC and ensuring safe operation of a facility.

Legal Issues

There are a number of potential legal issues.

The registration of the reporting doctors must be accredited by the regulatory body of the local jurisdiction of a hospital/facility or the health authority purchasing the service. This is an essential requirement in order to maintain proper standards of practice. The reporting radiologists must demonstrate that they undergo appropriate CME and are properly trained in the tasks to be undertaken.

The providers of the service must abide by the jurisdiction's health and safety legislation.

The use of radiology also creates difficulties in terms of the medico-legal issues and the medico-legal responsibilities of the referring hospital/facility and that of the reporting teleradiology services must be identified. Any radiologist that reviews images has a responsibility. Liability may also reside with the purchasers of the radiology service and/or the employers of the "radiologist". It must be clear who maintains responsibility for the patient. It is clear that the "radiologist" has a direct responsibility for the patients whose study they interpret. Teleradiology providers would have to comply with any statutory duty of candor to inform the hospital/facility and patient(s) when they become aware of a negligent act or omission. At present, the legal status of teleradiology remains to be clearly established.

Consent. It is not clear whether the patients will be required to give explicit consent for their images to be transferred to another country or different provincial jurisdiction for reporting.

Jurisdiction. An individual has the right to sue a company providing electronic services within another country and the suit would be heard in the patient's own country or provincial jurisdiction.

Patient confidentiality. The teleradiology service must ensure patient confidentiality and be of adequate technical specification. It must comply with the data protection legislation in the transmitting and receiving provincial jurisdiction.

There is increasing awareness of the need to reduce the radiation dose that many patients receive, particularly CT scanning. When creating teleradiology contracts, it must be made clear who has responsibility for defining the protocol of an individual

imaging study, e.g. high or low dose depending on clinical indication. Teleradiology providers need to comply with pertinent directives mandated in the provincial jurisdiction.

OHIP Billing Rule Affecting Teleradiology in Ontario

OHIP added the following rule interpretation commentary to the October 2010 Schedule of Benefits (refer to page D1 of the Diagnostic Radiology section of the Schedule) where the additional note was added and remains in effect:

Commentary: ***As described in Regulation 552 of the Health Insurance Act, for a service to be insured, the interpreting physician must physically be present in Ontario when the interpretation service is rendered.***

Legal Interpretation

The specific legal reference is found in Subsection 37.1(1) of R.R.O. 1990, Regulation 552 made under the Health Insurance Act, R.S.O., c. H. 6. Section 37.1(1) of the Regulation provides:

A service ***rendered by a physician in Ontario is an insured service*** *if it is referred to in the schedule of benefits and rendered in such circumstances or under such conditions as may be specified in the Schedule of Benefits.* [emphasis added]

Guidelines for the Development and Appropriate Use of Teleradiology

The principle that the patient is best served by a close liaison between the patient, the clinicians and the clinical radiology department should be paramount.

The radiologist's expected duty of care to the patient must not be compromised, lowered, or altered in any way by the use of teleradiology.

Teleradiology referrals should, be in the majority of cases, organized between clinical radiologists and the teleradiology provider. It is important that the radiologists act as practitioners under the statutes, regulations, directives, policies, bulletins, bylaws issued by provincial and local hospital/clinic authorities in order to ensure that appropriate investigations are performed and to justify any further investigations suggested by the reporting radiologist.

The full agreement of radiologists should be obtained in order for the development of teleradiology services to be implemented.

Teleradiology services developed for rural, remote and/or under-serviced areas should be linked to other facilities in the province of Ontario and the service should be managed by the receiving department/clinic unless there is a radiologist at the originating centre who may elect to assume that responsibility or share it with the receiving centre radiologist. The radiologists involved in providing the service should have close communication with the referring clinicians and patients and should understand any particular local disease and cultural factors.

The radiologists providing the service must be properly accredited and registered within the provincial jurisdiction where the patient receives the service. They should also be registered and subject to quality and revalidation requirements, where applicable.

Under no circumstances should teleradiology reports be made by radiologists in training without supervision and the implementation of teleradiology should not be to the detriment of the training in the originating centre.

The use of subspecialty services should be for the benefit of a second opinion or for the immediate transfer of patients to specialist centres and not for the centralization of subspecialty reporting away from general hospitals/clinics.

The reporting radiologist of the teleradiology service must be able to communicate directly with the referring radiology department and clinicians in order to discuss the clinical background and unexpected diagnosis which may be relevant to the timely management of the patient. The equipment used to undertake the whole process of teleradiology must be of a quality and standard that provides diagnostic quality images at all times.

Proper audit procedures should be in place in order to check the quality of the teleradiology service, the accuracy of the radiological reports and the overall therapeutic and clinical impact of the service. This must include user/clinician feedback.

The teleradiology service must comply with all national and provincial data protection standards. Transfer of images outside the province could pose significant problems of data protection. It is essential that the privacy and the integrity of patient information must be preserved at all times.

There needs to be clearly defined agreement with the teleradiology service with regard to confidentiality of the images which should allow retention for comparison, proper defense against litigation or other clinically appropriate reason.

The legal arrangements must be clearly defined between the user and the provider so that proper restitution may be made to patients, if errors are made. If the service is less than optimal, patients should not be required to litigate in the foreign country in the event of a complaint unless they have consented formally to the transfer of their rights for local litigation in addition to initial image transfer.

At all times the provision of teleradiology must be primarily developed in the best interest of the patient care and not as a cost cutting measure which may jeopardize patient safety and standards of health care.

Independent Health Facilities Clinical Practice Parameters and Facility Standards

Magnetic Resonance Imaging & Computed Tomography

APPENDICES

Appendix I ACR Guidance Documents on MR Safe Practices

ACR Guidance Document on MR safe practices: 2013

https://onlinelibrary.wiley.com/doi/pdf/10.1002/jmri.24011

ACR Guidance Document on MR Safe Practices: Updates and Critical Information 2019

https://onlinelibrary.wiley.com/doi/full/10.1002/jmri.26880

Appendix II MR Safety – Sample Screening Form

The following is a sample screening form from St. Michael's Hospital. For additional examples of basic screening tools, refer to the ACR Guidance on MR Safe Practices (Appendix I).

St. Michael's
Inspired Care.
Inspiring Science.

6 9 2 4 0

Patient ID

MRI Requisition Form

Is patient able to come in for a midnight appointment?
(Monday - Friday between 11 pm to 6 am) Yes ☐ No ☐

Tel: 416-864-5661 Fax completed form to 416-864-5820

Patient Name: (Please Print)		DOB: (D/M/Y)	MRN:
Address:		☐ Male ☐ Female	Weight: (Kg)
Health Card No: VC:	Home Tel:		Mobile/Work Tel:
Physician Name: (Please Print)		CC Copies To:	
Phys Tel:	Phys Fax:	Phys Billing #:	
Area to be Scanned: (Please be specific)			
Clinical Information:			

The following can interfere with the MR Imaging and/or can be a safety hazard. If the following information changes between now and the appointment notify the MRI Department. **Inaccurate information can result in appointment cancellation the day of exam.**

	Yes	No		Yes	No
1. Has the patient ever had an MRI?			6. Is the patient diabetic?		
2. Has the patient ever had a penetrating eye injury which required a metal fragment/object to be removed by a physician?			7. Does the patient have a history of kidney dysfunction or have a single kidney?		
3a. Has the patient worked with metal (professionally or hobby) as a welder, metal grinder or metal cutter?			8. Is the patient over the age of 70?		
3b. If yes, since the previous MRI? (If applicable)			9. Is the patient claustrophobic? Sedation must be brought with the patient and he/she must have an accompanying escort. MRI will not prescribe nor dispense.		
3c. If yes, was eye protection always worn?			10a. Will the patient require an interpreter? 10b. If yes, for which language? _____		
4. Is the patient pregnant or breastfeeding?					

5. Indicate if the patient has the following:	Yes	No		Yes	No
Cardiac pacemaker or pacing wires (epicardial)			Artificial heart valve		
Implanted defibrillator (ICD)			Breast tissue expander		
Neurostimulator/TENS unit			Penile implant		
Cochlear (middle ear) implant			Shrapnel, bullet, BB pellet foreign body		
Brain aneurysm clip			Drug infusion pump		
Intravascular stent, filter, coil			Other metallic implants?		

List all previous surgeries and implants:

Include date and location of the surgery to ensure compatibility. Implant serial numbers may be requested.

I attest that the contents of this form are verified and the procedure has been explained to the patient including the possibility of the use of contrast agents.
Physician's Signature: _____ **Date:** _____

Incomplete and/or illegible forms will be returned resulting in a delay of appointment booking.

For MRI Dept App't Date: App't Time: Scanner:

Form No. 69240 Dev. 03/16/2011 Rev. 09/13/2012

MRI REQUISITION FORM

Appendix III Report of the Diagnostic Imaging Safety Committee for Computed Tomography (CT) – February 2007

http://www.health.gov.on.ca/en/common/ministry/publications/reports/disc_ct_mri/ct_report.pdf

Appendix IV Sample Emergency Safety Policy

Safety Training for all staff should be carried out. In addition, an emergency safety policy should be included in the policies and procedures manual. This appendix has been provided as a sample of what the policy may look like and include. Each policy must be site specific to the facility and may include but is not limited to the following areas:

Employer Responsibilities *(in all incident cases):*

Provide first aid in accordance with the regulations.
Record first aid attention, adverse effects, incident report.
Assist to provide immediate transportation to the hospital, doctor, worker/patient's home, when/as necessary.

Employee Responsibilities:

Acute Care Transfer

Should a patient, visitor, and/or staff become ill while in the clinic the following is carried out:

1. Immediately, the technologist or clerical staff will alert the attending Radiologist of the problem.
2. In the event that the attending Radiologist is not available, contact a local GP (agreement should be made prior between facility and physician – contact numbers should be available for staff).
3. If the physician is not immediately available, call 911, identify yourself and request transfer to the nearest hospital.

Fire Prevention and Control Plan

1. All staff members employed at the facility is required to know the fire plan. To facilitate this, an annual review of the plan will be carried out and is mandatory for all staff members.
2. The fire plan is site-specific for the facility. Staff members are required to familiarize themselves with the plan for this location.
3. Each employee should have the ability to assess the situation quickly and initiate appropriate measures upon discovering a fire. This may vary from using a fire extinguisher to contain a fire or alerting others, evacuating the building and calling the fire department.

If you discover a fire in your area:

1. Remove patients from rooms and out of danger.
2. Turn off lights, any electrical equipment, gases, and close windows and doors.
3. Pull the alarm located closest to you.
4. Dial 911 and advise the Fire Department of the Emergency. Give them your name, location of the fire and type of fire to the communications operator (electrical, gas, other).
5. If possible (i.e. the fire is contained to a specific area), go back to the room and attempt to put out the fire using a fire extinguisher.

DO NOT ATTEMPT TO USE THE FIRE HOSE. Everyone should be removed from the office. Have a staff member positioned at the main corridor junction to direct fire fighters.

If you hear a fire alarm:

1. Collect all patients, visitors, and staff members in the facility and guide them to the closest exits.
2. DO NOT USE THE ELEVATOR. All staff members along with anyone in the office at the time of the evacuation alarm, must meet at a predetermined assembly point outside of the building.
3. Personnel will be requested to assist with duties such as checking the office before leaving ensuring that everyone is accounted for, turning off lights in the fire area, turning off gases (oxygen), turning off all electrical equipment and closing doors and windows.

The First Aid Box

As a minimum the first aid box should contain:

- A current edition of a first aid manual.
- One card of safety pins.
- Dressings, consisting of:
    - 12 adhesive dressings, individually wrapped
    - 4 sterile gauze pads, 3 inches square
    - 2 rolls of gauze bandages, 2 inches wide

Appendix V Requirement for MRI/CT Priority Protocol

Overview

The levels noted below should be on the requisition for protocol purposes and the CT/MRI facilities should have a list of conditions identified for each Level. See Table 1 below:

Table 1

Service Area	Ontario's targets (in weeks)
MRI/CT Scans	▪ PI: Immediate ▪ PII: 48 hours ▪ PIII: 2 - 10 days ▪ PIV: 4 weeks

Appendix VI ACR Manual on Contrast Media

ACR Manual on Contrast Media v10.3

https://www.acr.org/Clinical-Resources/Contrast-Manual

Version 2020 of the ACR Manual on Contrast Media was published in January 2020 as a web-based product.

Content changes may take place as a result of changes in technology, clinical treatment, or other evidence-based decisions from the contrast committee.

Appendix VII Independent Health Facilities Act - Ontario Regulation 57/92

https://www.ontario.ca/laws/regulation/920057

Appendix VIII Sample Patient Survey: Quality of Care

Please rate the following things about your visit to this clinic in terms of whether they were poor, fair, good, very good, or excellent. Circle the number 1 for poor; 2 for fair; 3 for good; 4 for very good, and 5 if you felt it was excellent. If something doesn't apply to your visit or you don't have an opinion, please circle the number 8.

Please rate each item by circling the number that best describes your opinion	Poor	Fair	Good	Very Good	Excellent	Not Applicable No Opinion
1. Waiting time: how long you had to wait to get an appointment at this clinic	1	2	3	4	5	8
2. Waiting time: how long you had to wait in the clinic waiting room for your appointment	1	2	3	4	5	8
3. Instructions: how well the clinic staff (doctors, receptionists, technologists etc.) told you how to prepare for the test(s) and what to expect both before and/or during the test(s)	1	2	3	4	5	8
4. Ease of getting information: willingness of clinic staff to answer your questions	1	2	3	4	5	8
5. Information you were given: how clear and complete the explanations were about any possible risks and complications of the test(s)	1	2	3	4	5	8
6. Concern and caring by clinic staff: courtesy and respect you were given, friendliness and kindness; how well clinic staff listened to what you had to say; how well the clinic staff understood what you thought was important	1	2	3	4	5	8
7. Safety and security: the provisions for your safety and the security of your belongings	1	2	3	4	5	8
8. Privacy: how well your privacy was considered, for example, type of gowns used, privacy while changing clothes	1	2	3	4	5	8
9. Instructions on leaving: how clearly and completely you were told what to do and what to expect when you left the clinic	1	2	3	4	5	8

Please answer the following questions by circling 1 for Yes or 2 for No .					YES	NO
10. Were you told to leave the clinic before you felt ready to do so?					1	2
11. Did you have to visit a physician, walk-in clinic, emergency room, urgent care centre or hospital in the days following this service because your health got worse as a result of the service(s) received at the clinic?					1	2
12. Would you recommend the clinic to a friend or family member if they needed services that it provides?					1	2
Please rate this item by circling the number that best describes your opinion	Poor	Fair	Good	Very Good	Excellent	Not Applicable No Opinion
13. Overall quality of care: how you evaluate the services you received and the way you were treated	1	2	3	4	5	8

14. If there were some things you could change about this visit to improve it, what would they be?

Thank you for completing this survey. Please double check that you have answered all questions and then place the survey in the envelope provided. Your answers will be kept completely confidential.

Thank you again for your help!

Appendix IX Sample Referring Physician Survey- Independent Health Facilities Program

name of facility

Please answer the following questions regarding your experience with the above facility by filling in the blank or circling the number that best describes your answer.

1. How long have you referred patients to this facility? _____years or _____months

Please base your answers on your contact with the facility in the past 6 months.

2. How satisfied are you with how long it generally takes: *(Please rate each item by circling the number that best describes your opinion)*

	N/A	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
to get an appointment for a patient at this facility?		1	2	3	4	5
to obtain written results (a written consultation) from this facility, once your patient is seen?		1	2	3	4	5
to get an oral report from this facility when it is required because of an urgent or emergency situation, once your patient is seen?		1	2	3	4	5

3. How often do you speak to a physician at the IHF regarding the patient's clinical condition before your patient receives a diagnostic work-up?

Never	Rarely	Occasionally	Sometimes	Often	Almost all the time
1	2	3	4	5	6

4. Approximately how many patients have you referred to this facility in the past 6 months?
_____(number of patients referred)

5. Do you refer your patients to more than one facility of this type?

No *(if you circled No, please skip to Question number 7)*

Yes

6. What are the reasons you refer patients to this particular facility?

(Please circle all that apply.)

1 Nearer Patient's home

2 Has specialized equipment needed for test requested

3 Turnaround time to receive the results is shortest

4 Has staff that speak other languages, and thus can better understand my patients

5 Is able to quickly see patients when feedback is urgently required

6 Has convenient hours of operation

7 Quality of the services provided

8 Other, please describe _____

Please skip to Question number 8.

What are the reasons you refer patients only to this facility? *(Please circle all that apply.)*

1 Only facility of its type in this community

2 Our group has a service contract with this facility

3 Facility is located near this practice and is thus convenient for patients

4 Has staff that speak other languages and thus can better understand my patients

5 Has specialized equipment needed for tests requested

6 Turn-around time to receive results is short

7 Nearest patients' homes

8 Is able to quickly see patients when feedback is urgently required

9 Quality of the services provided

10 Has convenient hours of operation

11 Other, please describe_____

9. Please rate each item by circling the number that best describes your experience with the IHF based on your contacts in the last 6 months.

	Never	Seldom	Sometimes	Frequently	Usually
The waiting period for a test to be done is long.	1	2	3	4	5
Requests for consultation are handled promptly.	1	2	3	4	5
The facility accommodates patients when the test is urgently required	1	2	3	4	5

The interpreting physician is available to you for consultation.	1	2	3	4	5
This facility meets the needs of my patients whose first language is other than English or French	1	2	3	4	5
The recommendations received are useful in-patient management.	1	2	3	4	5
The recommendations are clearly stated.	1	2	3	4	5
The reports received are too wordy.	1	2	3	4	5
Reports of results are sent out in a timely fashion.	1	2	3	4	5
The consulting physician orders tests in addition to those you requested	1	2	3	4	5
When tests are added the resulting recommendations add information important to patient care	1	2	3	4	5
The interpreting physician's findings are generally consistent with your clinical findings	1	2	3	4	5

10. Have you been dissatisfied with a consult you received from this facility in the past six months?

1 No 2 Yes

If 2 (Yes), please explain:

11. Overall, how satisfied are you with the contacts you have had with this facility in the past six months?

Very	Dissatisfied	Neutral	Satisfied	Very Satisfied
1	2	3	4	

Thank you for participating in this survey. Please return the survey in the envelope provided.

Our address is: