



POSTGRADUATE MEDICAL EDUCATION

Division of Vascular Surgery Health and Personal Safety Policy

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Preamble

Resident education must occur in a physically safe environment (Royal College of Physicians and Surgeons of Canada, standard A.2.5; College of Family Physicians of Canada).

The collective agreement between the Professional Association of Residents of Ontario (PARO) and the Council of Academic Hospitals of Ontario (CAHO) states, that residents are postgraduate trainees registered in university programs as well as physicians employed by the hospitals. The agreement states that the residents must have secure and private rooms with secure access between call room facilities and the service area; maximum duty hours are defined; uniforms and protective equipment standards; as well as access to and coverage for Occupational Health services.

McMaster University is committed to provide and maintain healthy and safe working and learning environments for all employees, trainees (including postgraduate trainees), volunteers and visitors. This is achieved by observing best practices which meet or exceed the standards to comply with legislative requirements as contained in the Ontario Occupational Health and Safety Act, Environmental Protection Act, Nuclear Safety and Control Act and other statutes, their regulations, and the policy and procedures established by the University.

Purpose

- To demonstrate the commitment of Postgraduate Medicine, Faculty of Health Sciences', to health, safety and protection of its postgraduate medical trainees.
- To minimize the risk of injury and promote a safe and healthy environment on the university campus and affiliated teaching sites
- To provide a procedure to report hazardous or unsafe training conditions and injury along with a mechanism to take corrective action.

Scope

- All Postgraduate Trainees – Residents and Clinical / Research Fellows
- Personal Health and Safety – may include, violent or harmful behaviour in patient or staff; damage to personal items; secure lockers; safe access routes from call room to service floor; secure call room doors; panic/emergency buttons in patient observation room; transportation home; access to personal vehicle in parking garage.
- Workplace and Environmental Health and Safety – e.g. hazardous material, indoor air quality, chemical spills, radiation safety
- Occupational Health – e.g., immunization policies, blood borne pathogens, respiratory protection
- Training outside of Canada

PERSONAL SAFETY

McMaster University, Faculty of Health Sciences strives for a safe and secure environment for postgraduate trainees to train in its facilities and training sites through maintenance of affiliation agreements. Affiliated hospitals are responsible for ensuring the safety and security of postgraduate trainees training and supervision in their facilities in compliance with their existing employee safety and security policies/procedures as well as the requirements outlined in the PARO-CAHO collective agreement.

It is expected that the Postgraduate Trainee, the Residency Program, the Postgraduate Medical Education Office will work together with the affiliated teaching hospitals and community training sites to ensure the personal safety of all Postgraduate trainees.

Responsibility of the Postgraduate Trainee

It is the responsibility of the trainee to participate in required safety sessions, which include Workplace Hazardous Materials Information and Safety (WHMIS), Fire Safety (as required), etc. and abide by the Safety codes of the designated area where s / he is training. This includes dress codes, particularly as they relate to safety.

The Postgraduate trainee must report any situation where personal safety is threatened (see Faculty Protocol below).

Responsibility of the Residency Program and the Postgraduate Medical Education Office

It is a responsibility of each Residency Program and the Postgraduate Medical Education Office to ensure that appropriate educational safety sessions are available to all Postgraduate Trainees eg., generic WHMIS and safety training. In addition to WHMIS, the Residency Program must ensure that there is an initial, specialty, site-specific orientation available to the Postgraduate trainee.

It is the responsibility of the Residency Program to ensure that individual clinics or practice settings develop a site specific protocol to deal with:

- patient(s) who may represent a safety risk and policies
- working alone
- working in isolated areas or situations e.g., medivac transports (See Ontario Guidelines re: the Role of Residents during Medivac/Ambulance Transports – Appendix 2)
- or any other situation that may be a safety issue to the Postgraduate Trainee.

The protocol must be communicated to the Postgraduate Trainee at the beginning of the rotation.

The Postgraduate Medical Education Office will work, in conjunction with the affiliated Hamilton teaching hospitals to ensure that hospital areas are in compliance with the requirements as outlined in the PARO-CAHO collective agreement.

Site Specific Protocol

The protocol should include the following:

- identify potential risks to the Postgraduate Trainee
- include how the Postgraduate Trainee would alert the supervisor if they felt at risk during an encounter, identification of potentially problematic patients at the beginning of the encounter, so they could be monitored, etc.
- A supervisor* or co-worker must be present:
 - (a) while the Postgraduate Trainee is seeing a patient after hours in clinic. This would not apply if the patient is being seen in an emergency room / hospital based urgent care clinic, nursing home and hospice.
 - (b) When the Postgraduate Trainee does home visits.
 - (c) At the end of office hours if the Postgraduate Trainee is still with patients.

* The supervisor as defined by the Occupational Health and Safety Act – “a person who has charge of a workplace or authority over any worker.” It can be a physician (including another Postgraduate Trainee), midwife, nurse practitioner or social worker depending on the encounter.

Faculty Protocol

Postgraduate Trainees identifying a personal safety or security breach:

1. If a Postgraduate Trainee identifies a personal safety or security breach, it must be reported to their immediate supervisor and/or Program Director to allow resolution of the issue at the local level.
2. If a Postgraduate Trainee feels that his / her own personal safety is threatened, s/he should seek immediate assistance and remove themselves from the situation in a professional manner. The Postgraduate Trainee should ensure that their immediate supervisor has been notified and/or Program Director, as appropriate.
3. The Postgraduate Medical Education Office (905-525-9140, extension 22118) is available for consultation during regular work hours, particularly if the Program Director is not available. If an issue arises after regular office hours, where the clinical supervisor and/or Program Director may not be available, contact Security of the institution where the Postgraduate trainee is based.

Travel

If, in the residents' estimation, it would not be safe to travel because of weather, the resident may elect not to attend their academic half day, clinic, etc., but must inform the appropriate people as soon as possible in a professional manner.

If travel between sites, in remote areas, is more than 300 km., the Resident may be provided with one day of travel time (post call day not included) between sites.

Training Outside North America

Postgraduate Trainees must complete the Field Trips and Electives Planning and Approval process when planning to do an elective outside of North America to ensure compliance with standards and best practices for the safety of all Postgraduate Trainees.

Travel to and from Work

1. Driving Post-Call

- Residents should be guaranteed safety coming from and returning to all hospital sites (MUMC, HGH, HJCC, SJH, and community placements)
- This clause includes post-call travel and travel that occurs after hours during home call Shifts

2. Call Room Availability

- If required, call rooms at all hospital sites requiring call (HGH, SJH, MUMC) should be made available from 1700 on call days until 1200 on post call days, to allow residents to rest prior to travelling home post call)

3. Taxi Chits/Reimbursement

- Cost should not deter from the use of taxis or public transit, if the resident is too tired to safely travel home from a hospital site after hours or post call
- Residents are responsible for the submission of documentation of expenses for reimbursement to the Division of Vascular Surgery Program Coordinator (Andrea Howe)

4. Travel Between Hospital Sites

When travelling for clinical/academic duties in private vehicles, residents are expected to:

- Maintain their vehicle adequately
- Travel with appropriate supplies and safety equipment
- Provide appropriate emergency contact information and an itinerary to the Vascular Surgery Program Coordinator (Andrea Howe)

Residents are not to be on call the day before driving a long distance for clinical/academic assignments. Instead, residents should:

- Request to be off call on the day prior to travel, up to four weeks in advance
- If it is not possible to be off call the day before travel (>300 km), then a guaranteed travel day should be provided before starting any clinical duties.

5. Security Related to Hospital Parking

Residents should not walk alone for large or unsafe distances at night or after hours, including in parking facilities and on hospital premises:

- Residents are expected to request security escorts in such circumstances and Security Services should be readily available and accessible for such instances
- Residents should familiarize themselves with the locations of the emergency stations in the major hospital sites and parking lots

Needlestick Injuries

- Refer to “Summary of the Procedures for the Prevention of the Transmission of Blood Borne Pathogens including Hepatitis B, Hepatitis C, and HIV and the Management of Parenteral Injuries”: <http://postgrad.medportal.ca/documents/PreventionofTransmission.pdf>
- For additional information, please refer to the following documents on the HHS Intranet under “Infection Control”:
- Standard (Routine) Precautions
- Health Safety and Wellness for Percutaneous or Mucus Membrane Exposure.
- Residents may choose to consult Employee Health Services or the Infection Control Practitioner at the site at which they are working
- Additional information can be found on the College of Physicians and Surgeons of Ontario website: <http://www.cpso.on.ca/policies/policies/>
- Should a needlestick injury occur while a resident is working in the OR, the supervising staff should excuse the resident as soon as patient safety considerations permit or immediately, if resident safety is compromised, so that appropriate and timely assessment may be sought.

Radiation Safety

- All residents will receive appropriate instruction with respect to exposures (e.g., chemicals and radiation) that may be encountered during the course of their training
- Of note, if resident have any immediate questions or concerns, radiation safety officers are assigned within each hospital OR and the Radiation Technicians present at the time of exposure are additional resources for questions and concerns.
- Refer to “**Protection Devices for Staff**” **Appendix 3** and “**Protection From X-Ray**” **Appendix 4**.
- Refer to “**Communicable Diseases and Occupational Health,**”:
<http://postgrad.medportal.ca/documents/CommunicableDiseases-McMasterPolicy.pdf>
- Refer to PARO/CAHO agreement, Article 19.14
- Residents should have the opportunity for annual teaching sessions and education should be received early in the residency training program
- Residents working in areas with long term or high exposure to radiation must follow radiation safety policies and minimize exposure according to current guidelines
- Pregnant residents should be aware of specific risks to themselves and their fetus in the training environment; requests for low exposure rooms should be accommodated, so long as it does not affect the resident’s academic experience
- Radiation protective equipment (aprons, neck guards, etc.) should be used by all residents when exposed to radiation
- Appropriately sized protective equipment should be available at all hospital sites (PARO Article 18.11 → disputes pursued under PARO Article 25.1)
- Dosimeters should be made available to residents for them to use between sites to ensure they are not exposed to excessive amounts of radiation and there should be interpreted on a monthly basis

Harassment

Refer to “**Harassment**” policy:

<http://postgrad.medportal.ca/policies/harassment.aspx#>

Please see a number of links in the section, “Safety Away from the Workplace” (e.g. sexual harassment policies from PARO, McMaster and the CPSO are included in this section)

PRIVACY OF RESIDENT EVALUATION

Refer to “**Forwarding of Assessment Information**,”:

<http://postgrad.medportal.ca/policies/documents/ForwardofAssessmentInformation.pdf>

– Recognizing that it is important that staff communicate to one another regarding resident strengths and weaknesses, both for patient safety and resident learning, any concerns that are communicated to other staff should also be conveyed to the resident in question.

WORKPLACE ENVIRONMENTAL HEALTH AND SAFETY

(eg. hazardous material (biological or chemical agent named in the Occupational Health and Safety Act), indoor air quality, chemical spills)

OCCUPATIONAL HEALTH

(e.g., immunization policies, blood borne pathogens, respiratory protection)

Both McMaster University and its employees are jointly responsible for implementing and maintaining an Internal Responsibility System directed at promoting health and safety, preventing incidents involving occupational injuries and illnesses or adverse effects upon the natural environment.

The University is responsible for the provision of information, training, equipment and resources to support the Internal Responsibility System and ensure compliance with all relevant statutes, this policy and internal health and safety programs. Managers, Supervisors, Deans, Directors, Chairs, Research Supervisors are accountable for the safety of postgraduate trainees who work/study within their area of jurisdiction. Postgraduate trainees are required by University policy to comply with all University health, safety and environmental programs such as Workplace Hazardous Materials Information and Safety (WHMIS). (excerpt from Peter George 2008)

The Faculty of Health Sciences and the teaching hospitals each are responsible for ensuring that postgraduate trainees are adequately instructed in infection prevention and control as it relates to communicable diseases.

The Faculty and the teaching hospitals will provide an introductory program on routine practices / standard precautions, infection prevention and control that is consistent with current guidelines and occupational health and safety. In addition, the Faculty and the teaching hospitals will inform postgraduate trainees as to their responsibilities with respect to infection prevention and control and occupational health and safety.

Affiliated teaching hospitals are required to comply with the Communicable Disease Surveillance Protocols for Ontario Hospitals developed under the Public Hospital Act, Regulation 965. Compliance with these Protocols requires the hospitals, in liaison with the University's academic programs, to provide instruction in infection prevention and control and occupational health and safety. Refer to Policy regarding Communicable Diseases and Occupational Health for Applicants to and Trainees in Undergraduate and Postgraduate Medicine - <http://www.fhs.mcmaster.ca/postgrad/> (See Policies)

The Faculty Postgraduate Medical Education Office collects the immunization data on all Postgraduate Trainees on behalf of the teaching hospitals.

If an injury occurs while working, the injury must be reported as follows (Refer to chart 1 on page 7)

- During daytime hours, while working at one of the Hamilton teaching hospitals: (e.g. Hamilton Health Sciences, St. Joseph's Healthcare)

The Postgraduate Trainee should go to the Employee Health Office at any of the teaching hospitals. An incident form will be provided by the Employee Health office to the Postgraduate Trainee.

Reporting: All trainees are encouraged to submit a copy of the incident form to their home program for notification. The home program will send a copy to the Postgraduate Medical Education Office for University records. **Non-Ministry of Health funded trainees:** (e.g., foreign sponsored Residents and all Clinical Fellows *) must submit a copy of the incident form to the Postgraduate Medical Education Office, in order for the PGME Office to notify their sponsor and ensure proper follow-up. Occupational Health & Safety Office of the University will be notified.

Postgraduate Medical Education Office (PGME)
Phone: 905-525-9140, ext. 22118 Fax: 905-527-2707

- During the evening or on the weekend at one of the Hamilton teaching hospitals or if working at a training site outside of the Hamilton area

The Postgraduate Trainee should go to the nearest Emergency Room and **identify themselves as a Resident / Clinical Fellow and request to be seen on an urgent basis.** The Postgraduate Trainee must complete, within **24 hours**, an Injury/Incident Report (forms should be available in the local Emergency Room).

In Ontario - The injury/incident form should be submitted to the hospital where the injury took place. That hospital will be responsible for administering the claim.

Reporting is the same as indicated above.

* The Postgraduate Trainee's employer administers the claim. All Ministry of Health funded Residents are paid through Hamilton Health Sciences. There are a variety of different funding sources for externally funded Residents and Clinical Fellows. In these instances, HHS would not administer the claim or be responsible for follow-up. **Important: Please see Appendix 1 for information on follow-up.**

Resources available:

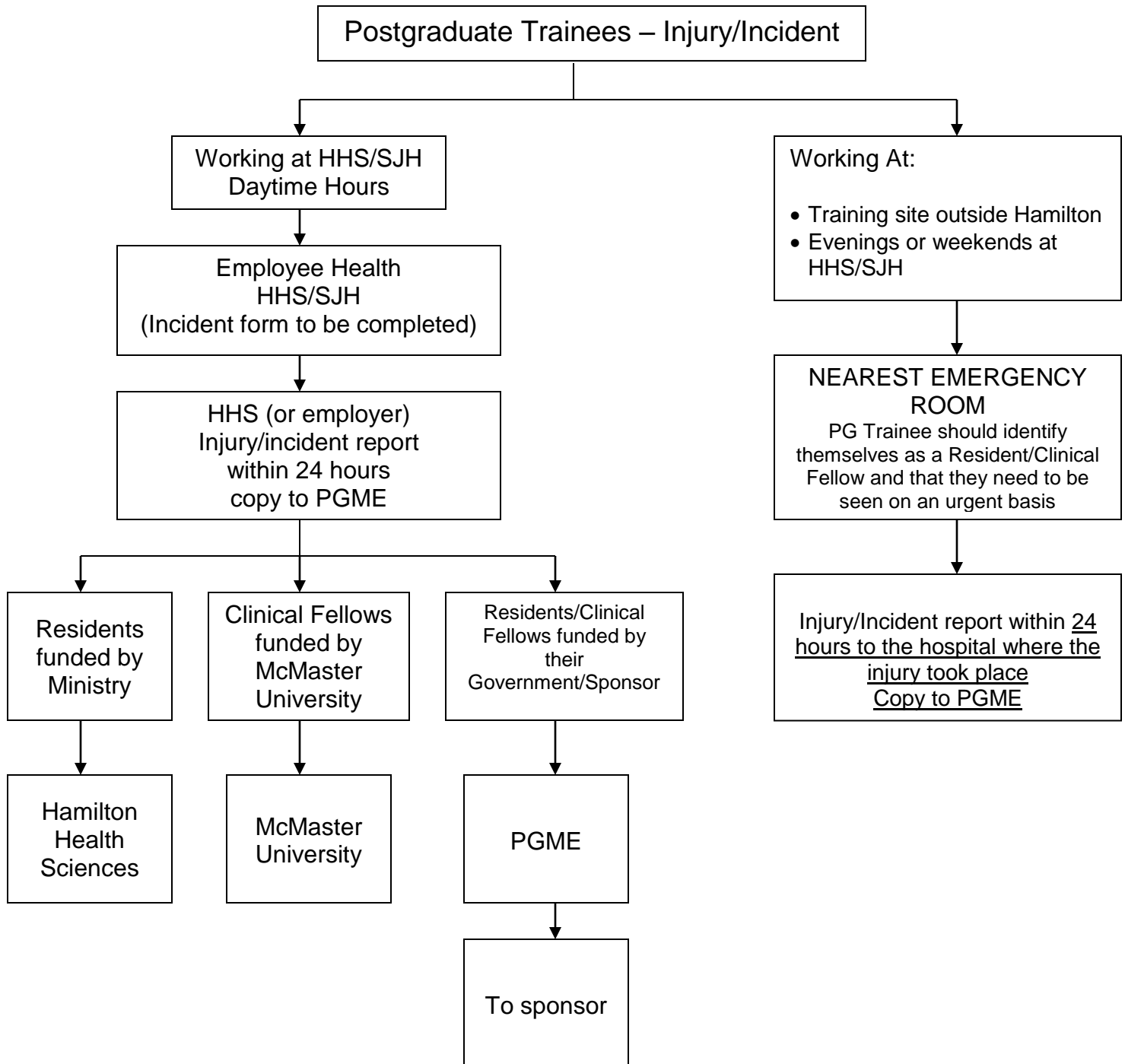
Postgraduate Medical Education Office
Phone: 905-525-9140, ext. 22118
Fax: 905-527-2707

Faculty of Health Sciences Safety Office
Phone: 905-525-9140, ext. 24956
Fax: 905-528-8539
Health Sciences Centre, Room 3N1C
1200 Main Street West, Hamilton, Ontario L8N 3Z5

Hamilton Health Sciences
Human Resources – Employee Health
Telus Sourcing Solutions
120 King Street West, Suite 200
Hamilton, Ontario
Phone: 905-387-9495, ext. 63900

St. Joseph's Healthcare
Occupational Health and Safety Services
50 Charlton Avenue East
Hamilton, Ontario L8N 4A6
Phone: 905-522-1155, ext. 33344

Chart 1: Workplace Environmental Health & Safety



Appendix 1

Notes:

1. Residents* who are funded by the Ministry of Health and Long Term Care and are seen at the Employee Health office at St. Joseph's Healthcare, SJH will submit the incident report to HHS and the Postgraduate Medical Education Office. HHS will follow up with the Resident re Workplace Safety and Insurance Board (WSIB) and follow-up. Hamilton Health Sciences is the paymaster for Ministry of Health funded residents.
2. Residents* and Clinical Fellows who are funded by a foreign sponsor and are seen in Employee Health - the Postgraduate Medical Education Office will forward the incident report to the sponsor for handling. The individual trainee is responsible for follow-up with their family physician.
3. Clinical Fellows who are funded through McMaster University, McMaster University will handle WSIB.

* Residents refers to individuals proceeding to certification examination, ie. not for Clinical Fellows; who are funded through a variety of sources, but often paid through the University.

Appendix 2

**POSTGRADUATE EDUCATION COMMITTEE OF COFM (PGE:COFM)
Dec. 9, 1999**

EDUCATIONAL PRINCIPLES

RE: THE ROLE OF RESIDENTS DURING MEDIVAC/AMBULANCE TRANSPORTS

- 1) In many programs, participation in patient transport is a valuable learning experience for residents.
- 2) There must be clear educational objectives underlying the resident's participation in patient transport.
- 3) Residents must have appropriate training with demonstrated competency in the circumstances relevant to the transport experience.
- 4) Communication and supervision between the resident and his/her designated supervising physician must be available at all times.
- 5) Resident well-being should be considered in all transports.

Note: On occasion residents/fellows may be confronted with a situation for which they are not sufficiently trained. It is expected that they, like other physicians, will deal with such situations as practicing professionals to the best of their ability.

Appendix 3 – Protective Devices for Staff

Applies to: All HHS staff involved in procedures using X-rays.

1.0 Purpose & Goals Description

To provide a framework for radiation protection of staff involved in procedures using x-rays.

2.0 Policy Statements

2.1 All staff present during the use of x-rays will make full use of protective lead aprons, thyroid collars, gloves, lead glasses and portable/moveable/fixed protective lead barriers.

2.2 Lead aprons are to be hung and not folded to avoid cracking.

2.3 If staff suspects that a lead apron does not provide the proper protection because it may be physically damaged, the site Quality Control representative should be contacted to complete a fluoroscopic inspection or x-ray image of the damaged area. The apron is taken out of service until this inspection has been done.

2.4 X-Ray protective devices that are damaged or found to be inadequate are to be removed from service immediately. A warning tag is to be attached and the x-ray protective device is to be brought to the attention of the Quality Control Officer.

2.5 All staff involved in procedures using ionizing radiation must follow the ALARA principle of radiation safety and use TIME, DISTANCE AND SHEILDING to keep their exposure as low as reasonably achievable as follows:

TIME-Minimize the time the x-ray tube is active

DISTANCE- Maximize the distance from the x-ray tube.

SHEILDING- Make full use of protective devices to reduce exposure.

2.6 Magnification mode in fluoroscopic examinations should only be used when necessary.

2.7 All staff classified as "x-ray workers" and x-ray students must be issued a TLD which should be worn under the apron at the waist level when working with ionizing radiation. Staff working in fluoroscopy areas will be issued a second TLD to be worn outside the apron at the collar level.

2.8 TLD should be kept on-site to reduce the possibility of erroneous readings.

3.0 Definitions

ALARA- basic principle of radiation safety: " As Low As Reasonably Achievable" incorporates the application of time distance and shielding.

Lead Equivalence-that thickness of any material that has, for x-rays of a particular energy the same stopping power as a given quantity of lead.

Pb.-Chemical symbol for the element, lead, from the scientific table of elements.

Thermo luminescent Dosimeter (TLD)-Device worn by medical radiation workers to measure occupational radiation exposure.

X-Ray Protective Device-any accessory with some complement of a material of high atomic number and/or density that provides protection against x-rays.

Appendix 3 – Protective Devices for Staff

X-ray Worker- A worker who, as a necessary part of the worker’s employment, may be exposed to x-rays and may receive a dose equivalent in excess of the annual limits set forth in Column 4 (Appendix 1) of the Schedule in Occupational Health and Safety Regulation 861.

4.0 Cross References

DI-Code of Practice for Protection from Radiation
 DI-Radiation Dosimetry for X-Ray Workers and X-Ray Students at HHs
 DI-X-ray Protective Devices – Purchase and Quality Control
 DI-X-ray Protective Devices for Patient, Non X-Ray Workers and the Members of the Public
 HSW- Warning Tag Procedure

5.0 External References

Occupational Health and Safety Act R.R.O. 1990 Reg. 861,s. 12, 13,14

6.0 Developed By

Diagnostic Service Policy and Procedure Committee

7.0 In Consultation With

Health Safety and Wellness
 Joint Health and Safety Committee
 Diagnostic Imaging Radiation Safety Committee

8.0 Approved By

Director, Diagnostic Imaging

9.0 Posting Dates

Initial Posting Date: 2006-03-08

Review/Revision Posting Date:

Keyword Assignment	X-ray Protective Devices, lead, aprons, warning tags, TLD
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END OF DOCUMENT

For internal use only at HHS. Persons reviewing a hard copy of this document should refer to the electronic version posted in the Policy Library to ensure this copy is current.

Appendix 4 – Protection from X-Ray

Applies to: Hamilton Health Sciences Diagnostic Imaging Medical Radiation Technologists M.R.T. (R) and physicians that operate x-ray equipment.

1.0 Purpose & Goals Description

- 1.1** To describe recommendations for the safety of patients, staff (including non-radiation workers) and the general public from x-rays.
- 1.2** To describe responsibilities of the department and individual responsibilities of x-ray equipment operators.
- 1.3** It includes and does not supercede, sections of the Federal Safety Code 20A and Regulations under the HARP Act and X-ray Safety Regulation 861.

2.0 Policy Statements

2.1 Diagnostic Imaging Radiation Safety Committee (DISC)

- 2.1.1** DISC has the authority to:
 - Set policy concerning the use and safety of radiation emitting devices
 - Ensure that policies and procedures are consistent with all government regulations.
 - Ensure that these policies and procedures enforce the regulations
 - Review and act on reports and recommendations received from regulatory agencies.
 - Initiate educational programs
 - Maintain a manual for Radiation Protection Policies
- 2.1.2** The Diagnostic Imaging Radiation Safety Committee (DISC) consists of the director of diagnostic services, head of orthopedic services, Radiation Protection Officers, (Diagnostic Imaging, Cardiology, Surgery, Juravinski Cancer Center, Nuclear Medicine), Quality Control Officer, medical physicist and Clinical Instructors.
- 2.1.3** The Committee shall meet quarterly or as required.
- 2.1.4** The committee shall report through the Diagnostic Services Executive to the CEO.

2.2 Radiation Protection Officer: The RPO is to provide guidelines relating to the use of x-rays to:

- 2.2.1** Staff and students of HHS, including those who are not
 - x-ray workers and who may work in other departments where
 - x-ray equipment is operated by staff from Diagnostic Imaging.
- 2.2.2** Patients who have been or who are to undergo examination by Diagnostic Services using ionizing radiation.
- 2.2.3** Referring physicians and heads of clinical departments at HHS.
- 2.2.4** Ensure that x-ray equipment is operated only by those persons considered qualified under provincial regulations.
- 2.2.5** Ensure that the testing of equipment complies with the Healing Arts Radiation Protection Act (HARP) guidelines.
- 2.2.6** Ensure that appropriate x-ray protective devices are available
- 2.2.7** Ensure that records are kept of any quality assurance tests as are appropriate to the regulations

2.3 Personnel Monitoring

- 2.3.1 TLDs are to be issued to all staff defined as x-ray workers under the X-ray Safety Regulation 861 These workers are defined as persons that in the normal course of their work are likely to be occupationally exposed to the limits set out in Column 3 of the schedule in X-ray Safety Regulation 861.
- 2.3.2 Designated individual(s) in each department are responsible for the order and return of TLDs. Name changes must be reported to the designated individual.
- 2.3.3 When a lead protective apron is worn, the body/trunk dosimeter must be worn at waist level under the apron. All staff designated to work in fluoroscopy rooms are to be issued a second TLD to monitor the head/collar region. This second TLD is to be worn outside of the thyroid collar.
- 2.3.4 Reports received from Health Canada or private companies indicating current and cumulative records are to be posted. The quality control officer is to ensure the reports are reviewed quarterly and is to investigate unusual readings. X-ray workers are responsible to review their TLD report.
Special dose limits applying to staff known to be pregnant and are to be monitored closely. (*Pregnancy of X-ray Workers at HHS- Policy Draft*).

2.4 Environmental X-Ray Surveys

- 2.4.1 Surveys to test for x-ray leakage and scatter, and exposure levels with fluoroscopy, must be made before use of new equipment or of existing equipment when an x-ray tube or collimator has been removed for maintenance
- 2.4.2 Diagrams indicating low and high exposure locations during fluoroscopy must be posted in a prominent position and must be observed by staff are required to remain in the room for procedures.

2.5 Use of Fluoroscopy by Physicians Other Than a Radiologist

- 2.5.1 Physicians other than radiologists, may use fluoroscopy equipment, but must be familiar with the safe use of x-rays, with this Code, and with the HARP act and its regulation.
- 2.5.2 Department policies outline the use of fluoroscopy by a physician other than a radiologist and the use of a mini c-arm at HHS.
- 2.5.3 The Technologist is to advise the physician of proper use of the equipment and dose reduction methods. In addition, the technologist must inform the physician when fluoroscopy times appear excessive, and may bring any concerns about radiation practices to the R.P.O.

2.6 Protection of Workers and Public

- 2.6.1 Protective entrance doors to examination rooms must be closed before any x-ray exposure is made.
- 2.6.2 Switches on radiographic controls prevent the operator from making an exposure from the tube side of the protective barrier.
- 2.6.3 Only staff whose presence is essential may remain in the examination room. They must wear x-ray protective devices that have both appropriate coverage and lead equivalency. Anyone within one meter of the primary beam should wear both thyroid and eye protection (*X-Ray Protective Devices for Patients, Non X-ray Workers and Members of the Public, Policy-Draft, X-Ray Protective Devices for Staff, Policy Draft*).
- 2.6.4 X-Ray protective devices must checked for leaks annually either radiographically or fluoroscopy. Results should be recorded in a log.

- 2.6.5 Within the examination room all staff must work as far as possible from the primary beam. In fluoroscopy areas, low exposure areas are shown in diagrams referred to in 2.4.2.
- 2.6.6 If children or weak patients require support, immobilization devices should be used. If necessary, parents, escorts or non-radiation worker should be called to hold the patient and are to be provided with x-ray protective devices. (*X-Ray Protective Devices for Patients, Non X-ray Workers and Members of the Public*).
No one person may regularly perform this task. (*Guidelines for Holding Patients for X-Ray Examinations, Policy-Draft*).
- 2.6.7 Mobile radiography should only be performed when the ordering physician has deemed that the condition of the patient makes it inadvisable for the patient to be transported to the department. (*Mobile Radiography, Procedure-Draft*)
- 2.6.8 During operation of a mobile unit
- the beam should be directed away from occupied areas without intervening walls. Otherwise protective barriers must be used if available.
 - the intention to make an exposure must be clearly announced
 - "Caution X-Ray in Progress" signs must be posted outside the room of area where the x-ray is being taken.
 - the operators must not begin an examination if there is no lead protective apron.
 - use must be made of the extension cord on the exposure switch to provide maximum distance from the primary beam.
 - the technologist must be at least 3 meters away from the tube head during exposure (*Performing Mobile Radiography, Procedure-Draft*).

2.7 Ensuring Patient Exposure is As Low As Reasonably Achievable

- 2.7.1 M.R.T.(R)s, Radiologists and Physicians must be satisfied that an examination is clinically justified. This includes:
- written evidence on the Request for Consultation or the physician's note
 - that it is for the purpose of obtaining diagnostic information or performing a therapeutic procedure
- 2.7.2 Recent imaging history should be used to determine whether further exposure to x-rays is either unnecessary or can be abbreviated.
- 2.7.3 The number of radiographic views should not exceed that prescribed by the department procedure books.
- 2.7.4 If an image contains the required information, repeat exposures should not be made simply because the image may not be of the best diagnostic quality.
- 2.7.5 Each radiographic unit is to have a technique chart.
- 2.7.6 Technical factors (Kv, mAs and time) are to be adjusted for body habitus and pathological consideration.
- 2.7.7 Imaging plates are to be stored away from the source of radiation or scatter.
- 2.7.8 Policies and Procedures for excluding irradiation of unknown pregnancy must be followed. There must be consultation with a radiologist or physician prior to x-raying a pregnant woman. (*Irradiation of Pregnant Patients in Diagnostic Imaging, Policy-Draft*).
- 2.7.9 The primary beam must be collimated to cover the minimum area necessary for the examination. Limits of the beam must be visible on the image. Compliance with this requirement alone is not cause for a repeat image.

- 2.7.10 If the projection of the illuminated collimator field is less than 5cm from the gonads, the thyroid, anterior chest wall or the rib cage lead shielding should be used for these areas unless it masks the diagnostic area of interest. Shielding should not be used on the first examination of the hip of infants.
- 2.7.11 The x-ray source must be kept as far as is practical from the patient to reduce dose.
- 2.7.12 Fluoroscopy with other than the largest image intensifier input diameter must be minimized. Fluoroscopy magnification mode should be used only when necessary.
- 2.7.13 When using automatic brightness control with fluoroscopy, periodic note must be made during examinations of kilo voltage and tube current readings; low kilo voltages or high tube currents must be reported.
- 2.7.14 X-Ray film processors must have daily sensitometry checks before the dayswork is processed. Trends can be monitored and any deviations are to be corrected.
- 2.7.15 Routine H.A.R.P and preventative maintenance is to be done on a regular basis as per regulation or manufacturing recommendations.

3.0 Definitions

Fluoroscopy- The administration of ionizing radiation to produce a continuous image of internal structures while the x-ray tube is energized. Fluoroscopy may be used for real time imaging procedures requiring dynamic studies

RPO – Radiation Protection Officer : Physician appointed by the CEO to oversee the safe use and practice of diagnostic imaging equipment, and radiation safety devices.

Thermoluminescent Dosimeter (TLD) –Device worn by medical radiation workers to measure occupational radiation exposure.

4.0 Cross References

Fluoroscopy by a Physician Other Than a Radiologist (other than Mobile C-Arms)
 Fluoroscopy by a Medical Radiation Technologist (R)
 Pregnancy of X-Ray Workers at HHS
 X-Ray Protective Devices-Purchase and Quality Control
 X-Ray Protective Devices for Staff
 X-Ray Protective Devices –Patient, Non X-Ray Workers and Members of the Public
 Guidelines for Holding Patients for X-Ray Examinations
 Scheduling of Patients
 Completing Documentation for Examinations
 Performing an Examination
 The Use of Mini C-Arms at HHS by a Physician Other Than a Radiologist
 Irradiation of Pregnant Patients in Diagnostic Imaging

5.0 External References

Federal Safety Code 20A
 Regulations under the HARP Act.
 X-ray Safety Regulation 861

6.0 Developed By

Diagnostic Services Policy and Procedure Committee.

7.0 In Consultation With

Health Safety and Wellness
 Joint Health and Safety Committee
 Diagnostic Imaging Radiation Safety Committee
 Diagnostic Imaging Management

8.0 Approved By

Director, Diagnostic Imaging

9.0 Posting Dates**Initial Posting Date:** 2006-02-02**Review/Revision Posting Date:**

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END OF DOCUMENT

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Some related links for further reference:

(links available on Medportal)

1. Occupational Health and Safety Act: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o01_e.htm
2. PARO/CAHO Agreement: <http://www.pairo.org/>
3. Hamilton Health Sciences – Infection Protection and Control and Personal Protective Equipment <http://www.hamiltonhealthsciences.ca/Workfiles/PHYSICIANS/IC-Physician%20Orientation%20Manual%202007-08.doc%20dec4.07.doc>
4. McMaster University, Postgraduate Medical Education Support Systems Booklet: <http://postgrad.medportal.ca/>
5. McMaster University, Postgraduate Medical Education, Communicable Diseases Policy <http://postgrad.medportal.ca/>

PG policies/VS resident safety

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