COLLEGE OF PHYSICIANS AND SURGEONS OF BRITISH COLUMBIA

Diagnostic Accreditation Program

ACCREDITATION STANDARDS

Radiation Safety

Diagnostic Accreditation Program
College of Physicians and Surgeons of British Columbia
300–669 Howe Street
Vancouver BC V6C 0B4

Introduction

The radiation safety standards apply to all imaging modalities which produce X-rays, unless otherwise specified (e.g. computed radiography, digital radiography, fluoroscopy, mammography, computed tomography, and bone densitometry)

When using imaging equipment involving ionizing radiation there are four main aspects of radiation protection and safety to be considered. First, patients are not to be subjected to unnecessary procedures. This means that the procedures are requested with justification, including clinical examination, and when the diagnostic information cannot be obtained otherwise. Second, when a procedure is required, it is essential that the patient be protected from excessive radiation exposure during the examination. Third, it is necessary that personnel within the facility be protected from excessive exposure to radiation during the course of their work. Finally, personnel and the general public in the vicinity of such facilities require adequate protection. In all facilities and for all equipment types, procedures are in place in order to ensure that exposures to patients, staff and the public are kept as low as reasonably achievable (the ALARA principle).

A conscious effort must always be made to reduce patient doses to the lowest practical level consistent with optimal quality of diagnostic information. Through close cooperation between medical professionals, technologists, medical physicists, and other support staff it is possible to achieve an effective radiation protection program and maintain a high-quality diagnostic service.

Minimizing radiation exposure to staff and visitors

No.		Description	Risk	Reference	Change
					Revised
RS1.0		**IMAGING STAFF ARE AWARE OF THE RISKS OF IONIZING RADIATION AND MANAGE THE RISKS APPROPRIATELY.** *Guidance: Staff is to be knowledgeable of the hazards of ionizing radiation. The ALARA principle is understood and followed by all imaging staff.* *Guidance: RS1.0 criteria is applied to all X-ray imaging systems, unless otherwise noted.*			
RS1.1		**Imaging staff is aware of the risks of ionizing radiation and manage the risks appropriately.**			
RS1.1.2	**M**	All non-essential individuals should leave the room when irradiation is carried out.	H		
RS1.1.3	**M**	Direct radiation exposure of staff by the primary beam is not allowed.	H		
RS1.1.4	**M**	Deliberate irradiation of an individual for training purposes or equipment evaluation is not permitted.	H		
RS1.1.5	**M**	The operator has a clear view of the patient during every X-ray examination and is able to communicate with the patient and/or attendants without leaving the control booth.	H		
RS1.1.6	**M**	Staff use available personal protective devices to reduce occupational radiation exposure.	H		
RS1.1.7	**M**	Policies and procedures are in place to protect pregnant staff and allow for occupational radiation exposure monitoring. *Guidance: See also Occupational Health and Safety Regulation (WorkSafeBC) section 7.19-1 Exposure to ionizing radiation, and section 7.21 Reproductive Hazards, as well as HCSC 35 and 36, for requirements on minimizing radiation exposure to personnel.*	M		
RS1.1.8	**M**	Policies and procedures are in place for individuals assisting and remaining in the room with the patient during an X-ray exposure.	M		
RS1.1.9	**M**	All entrance doors into a radiological examination room are closed during exposure. This includes control room entrances for interventional radiology and CT if doors are in place.	H		

No.		Description	Risk	Reference	Change
RS1.1.11	**M**	Individuals required to be immediately adjacent to the patient wear protective lead.	H		
RS1.1.12	**M**	Individuals remaining in the room during irradiation must stay as far back from the X-ray beam as practical, or behind a protective shield.	H		
RS1.2		**Radiation exposure to staff is monitored through the use of personal dosimeters.**			
RS1.2.1	**M**	All operators of X-ray equipment and others likely to receive a radiation dose in excess of 1/20th the dose limit to radiation workers, are declared radiation workers and their radiation exposures is monitored with the use of a personal dosimeter.	H		
RS1.2.2	**M**	Personal dosimeters are worn and stored according to the recommendations of the dosimetry service provider.	H		
RS1.2.3	**M**	When a protective apron is worn, the personal dosimeter is worn under the apron.	H		
RS1.2.4	**M**	If extremities are likely to be exposed to significantly higher doses; additional dosimeters are worn at those locations on the body.	M		
RS1.2.5	**M**	Employees submit personal dosimeters for analysis either to their employer or directly to the dosimetry service provider. *Guidance: It is the responsibility of the dosimetry service provider to submit the results to the National Dose Registry (Health Canada), as well as to the employer.*	M		
RS1.2.6	**M**	Results of personal dosimeters are reviewed and monitored by a radiation safety officer or designate on a regular basis.	M		
RS1.2.7	**M**	An investigation is initiated when a higher dosimetry reading than usual is reported, and remedial steps are taken to improve processes and protective measures.	M		
RS1.2.8	**M**	Results of dosimeter analysis are made available to staff.	M		
RS1.2.9	**B**	For the purposes of measuring eye lens dose, a second personal dosimeter is worn outside of the lead thyroid collar in the areas of the head and neck. Commercially available dosimeters may also be worn at the level of the eyes, attached to eyeglasses or headwear.			

No.		Description	Risk	Reference	Change
RS1.2.10	**M**	All personal dosimetry records are maintained for the lifetime of the facility. *Guidance: WorkSafeBC also requires retention of personal dosimeter records for the period of employment plus ten years. This will address situations where an imaging facility is relocated.*	M		New
RS1.3		**Radiation warning signage is clearly visible to alert patients, staff and visitors of the risks associated with radiation.** *Guidance: See also radiation safety accreditation standard RS6.3 for the requirements for room design and layout.*			
RS1.3.1	**M**	Rooms with stationary X-ray equipment are identified with warning signs incorporating the X-ray warning symbol and the words "CAUTION X-RAYS– ATTENTION RAYONS X." *Guidance: Rooms with equipment installed prior to September 2011 do not require bilingual signage to reflect the requirements in place at the time of installation; however, facilities are strongly encouraged to update their warning signage to meet the new requirements.*	M		
RS1.3.2	**M**	The X-ray warning symbol on signage is legible from a distance and displayed in two contrast colours. *Guidance: Refer to Health Canada Safety Code 35 Appendix VI for acceptable X-ray warning symbols.*	M		
RS1.3.5	**M**	Rooms with stationary X-ray equipment accessible from public areas are identified with signage stating "Unauthorized Entry Prohibited" affixed to or adjacent to the X-ray room door.	M		
RS1.3.6	**B**	Warning signage is displayed in additional languages considering the population served.			
RS1.3.7	**B**	Rooms with stationary X-ray equipment that can be accessed from public areas are equipped with a self-closing door.			

No.		Description	Risk	Reference	Change
RS1.4		**Portable X-ray imaging systems are safely operated.** *Guidance: Portable X-ray imaging systems include: portable CR or DR systems, C-arms, mini-C arms, and portable CT systems. Portable imaging systems are systems designed to move from one location to another within a facility (i.e. intra-facility).* *Guidance: Radiation protection practices are in place to protect the operator and any other individuals in the vicinity of the patient. Every effort should be made to prevent the X-ray beam from irradiating any other person in the vicinity of the patient. The operator is not to stand in the direction of the X-ray beam and is a sufficient distance from the X-ray tube.*			Revised
RS1.4.1	**M**	Portable X-ray imaging systems are used only when clinically indicated. *Guidance: Portable X-ray imaging systems includes portable CR or DR systems, C-arms, mini-C arms, and portable CT systems. Portable imaging systems are systems designed to move from one location to another within a facility (i.e. intra-facility).*	M		Revised
RS1.4.2	**M**	Portable X-ray imaging systems are not utilized as a stationary 'fixed' system without approval from the Diagnostic Accreditation Program (DAP) Committee. *Guidance: The DAP Committee reviews the use of portable X-ray imaging systems as a temporary stationary 'fixed' system on a case-by-case basis. Circumstances which may qualify the temporary use of portable X-ray imaging systems as 'fixed' systems include, but are not limited to, when there is a stationary 'fixed' imaging system failure or when continuance of a radiography service is necessary during room closures due to renovations or repairs. Contact the DAP for more information.*	H		Revised
RS1.5		**Computed radiography (CR) systems and digital radiography (DR) systems are safely operated.**			Revised
RS1.5.2	**M**	CR cassettes and DR detectors are never held by staff during an irradiation.	H		Revised
RS1.6		**Fluoroscopic systems are safely operated.** *Guidance: For each type of fluoroscopic procedure, an assessment is to be made of the physical positions of all personnel to ensure ease of operation of the equipment, visibility of the display, and protection from the radiation field.*			Revised
RS1.6.3	**M**	For fluoroscopy examinations, protective lead gloves are available to the radiologist for palpation.	M		Revised

No.		Description	Risk	Reference	Change
RS1.6.5	**M**	For fluoroscopy examinations, staff makes full use of the protective devices provided with X-ray equipment, such as shielded panels, drapes, bucky slot covers, and ceiling-suspended shields.	H		Revised
RS1.7		**Staff members performing angiography examinations are aware of the risks of ionizing radiation and manage the risks appropriately.** *Guidance: Angiography is potentially one of the greatest sources of exposure to personnel in radiology since it requires the presence of a considerable number of personnel close to the patient, radioscopy for extended periods of time and multiple radiographic exposures. For such procedures, all personnel are to be aware of the radiation hazards involved.* *See also radiation safety accreditation standard RS1.6.*			
RS1.7.1	**M**	For angiography examinations, protective thyroid shields with an equivalent of 0.50 mm lead (Pb) are used.	M		Revised
RS1.7.2	**M**	For angiography examinations, leaded glasses are used.	M		Revised

Minimizing radiation exposure to patients

No.		Description	Risk	Reference	Change
					Revised
RS2.0		**APPROPRIATE MEASURES ARE IN PLACE TO PREVENT UNNECESSARY RADIATION EXPOSURE TO PATIENTS.** *Guidance: RS2.0 criteria is applied to all X-ray imaging systems, unless otherwise noted.*			
RS2.1		**Mechanisms are in place to prevent unnecessary radiation to patients.**			
RS2.1.1	**M**	There is clear signage posted in the reception, changing, and waiting areas to alert patients who may be pregnant to notify the technologist.	M		
RS2.1.2	**M**	The operator does not perform any examination which has not been requested by an authorized individual.	H		
RS2.1.3	**B**	Lead shielding is not routinely provided. *Guidance: If lead shielding is requested, it may be used when clinical objectives will not be compromised.*			
RS2.1.5	**M**	The X-ray beam is collimated to restrict the beam to the area of diagnostic interest.	H		
RS2.2		**Procedures are in place to protect pregnant or potentially pregnant patients.** *Guidance: Only essential investigations are taken in the case of pregnant or suspected pregnant patients. Care is taken to protect the fetus from radiation when the X-ray examination of a pregnant patient is unavoidable. This includes keeping the exposure to the absolute minimum, the use of shielding of the abdominal area and the use of a well-collimated X-ray beam.*			Revised

No.		Description	Risk	Reference	Change
RS2.2.2	**M**	If an examination is requested on a pregnant or potentially pregnant patient, there are documented procedures on how to proceed with the examination request. *Guidance: The procedures should speak to who is responsible for discussing the patients' options for imaging such as the risk versus benefit of proceeding with or declining an examination, and how to proceed if the patient has questions regarding their care. The individuals involved in discussing the patient's concerns may encompass the referring physician, radiologist, medical physicist, and imaging technologist.*	H		
RS2.3		**Procedures are in place to minimize radiation exposure to patients during fluoroscopic procedures.**			Revised
RS2.3.1	**M**	Fluoroscopy is not used as a substitute for radiography.	H		
RS2.3.2	**M**	For fluoroscopy examinations, during exposures, the operator has a clear line of sight to the output display at all times.	H		Revised
RS3.0		**PATIENT RADIATION DOSE IS EFFECTIVELY MANAGED.** *Guidance: RS3.0 criteria is applied to all X-ray imaging systems, unless otherwise noted.*			
RS3.1		**Mechanisms are in place to manage patient radiation dose.**			
RS3.1.1	**M**	Mechanisms are in place to identify when an excessive radiation dose from any imaging procedure is administered. Any unusually high radiation doses (e.g. dose indicator values) are investigated by a medical physicist.	M		
RS3.1.2	**M**	All radiographic and fluoroscopic equipment installed after 2012, can record patient dose in the form of the dose-area product (DAP) or reference point air kerma (Kar).	M		
RS3.1.3	**B**	For radiographic equipment that is unable to record patient dose, the kVp, mAs and SID of each exposure is recorded.			
RS3.1.4	**M**	When any unusually high radiation dose has been administered, there is a procedure to identify when notification and guidance to medical practitioners and patients is required.	M		
RS3.2		**Diagnostic reference levels (DRL's) are referenced to optimize patient dose.**			

No.		Description	Risk	Reference	Change
RS3.2.1	**B**	For CT, dose-length product values are compared to published diagnostic reference levels, and techniques are optimized accordingly.			
RS3.2.2	**B**	For fluoroscopic systems, dose-area product values are compared to published diagnostic reference levels and techniques are optimized accordingly.			
RS3.2.3	**B**	For radiography, dose-area product values or air kerma (Kar) are compared to published diagnostic reference levels and techniques are optimized accordingly.			
RS3.2.4	**B**	For mammography, diagnostic reference levels are established to reduce patient dose. *Guidance: Health Canada Safety Code 36 recommends the use of mean glandular dose as a reference level for mammography.*			

Protective lead apparel

No.		Description	Risk	Reference	Change
					Revised
RS4.0		**PROTECTIVE LEAD APPAREL** *Guidance: RS4.0 criteria is applied to all X-ray imaging systems, unless otherwise noted.*			
RS4.3		**Personal protective equipment provides protection to patients, staff and visitors.** *Guidance: See also equipment and supplies accreditation standard DES3.10.*			Revised
RS4.3.1	**M**	Protective lead aprons provide attenuation equivalent to at least 0.25 mm of lead, for examinations where the peak X-ray tube voltage is 100 kVp or less.	M		
RS4.3.2	**M**	Protective lead aprons provide attenuation equivalent to at least 0.35 mm of lead, for examinations where the peak X-ray tube voltage is greater than 100 kV and less than 150 kV.	M		
RS4.3.3	**M**	Protective lead aprons provide attenuation equivalent to at least 0.50 mm of lead, for examinations where the peak X-ray tube voltages is 150 kV or greater.	M		
RS4.3.4	**B**	Protective lead aprons provide attenuation equivalent to at least 0.50 mm Pb in the front panels and 0.25 mm Pb in the back are recommended for full wrap around type aprons used for interventional procedures.			
RS4.3.5	**M**	Protective gonad shields for patients have a lead equivalent of at least 0.25 mm Pb. *Guidance: At a higher kilovoltage (e.g. 150 kV) it is recommended that gonad shields for patients have a lead equivalent thickness of 0.50 mm.*	M		
RS4.3.6	**M**	Protective lead gloves possess at least a 0.25 mm Pb equivalency throughout, including fingers and wrist.	M		
RS4.3.7	**M**	The lead equivalent thickness of the protective material used is permanently and clearly marked on all protective equipment and apparel.	M		
RS4.3.8	**M**	The attenuation value is marked on all protective screens and shields. *Guidance: Refer to radiation safety accreditation standard RS6.3.6 for control booth glass requirements.*	M		
RS4.3.9	**B**	Ceiling-mounted lead acrylic screens and moveable shields provide protection equivalent to at least 0.50 mm Pb.			

No.		Description	Risk	Reference	Change
RS4.3.10	**M**	Protective lead apparel and equipment is stored and maintained according to manufacturers' recommendations.	M		
RS4.3.11	**M**	Thyroid shields provide an attenuation equivalent to 0.50 mm lead (Pb).	M		
RS4.3.12	**M**	Leaded glasses are made available for staff conducting angiographic and interventional procedures.	M		
RS4.4		**Quality control procedures are established and used to monitor performance of protective lead apparel and equipment**			New
RS4.4.1	**M**	Protective lead apparel and equipment records are retained for the lifetime of the equipment.	M		New
RS4.4.2	**M**	Protective lead apparel and equipment (e.g. lead aprons, mobile barriers etc.) are inspected and tested for defects annually. *Guidance: All protective lead apparel and equipment is examined using radiographic or radioscopic equipment to ensure they are not defective. Any defective equipment is removed from clinical use. Personal judgment is to be used when small defects are located along the edges of the protective lead apparel and equipment and when defects are due to stitching of the equipment.*	M		New
RS4.4.3	**M**	Protective lead apparel and equipment where the total defective area is greater than 670 mm2 are removed from clinical use.	H		New
RS4.4.4	**M**	Protective lead apparel and equipment having a defect in the vicinity of the thyroid or the reproductive organs which is larger than the equivalent of a 5 mm diameter circle is removed from clinical use.	H		New

Radiation protection surveys

No.		Description	Risk	Reference	Change
					Revised
RS5.0		**RADIATION PROTECTION SURVEYS** *Guidance: Due to the relatively low radiation risks associated with bone densitometry, RS5.0 is not applied to bone densitometry services.*			
RS5.1		**Radiation protection surveys are conducted to ensure patient and staff safety.**			
RS5.1.6	**M**	A radiation protection survey is conducted: I. at installation and or relocation of equipment; II. routinely, once every four years; III. when equipment or barriers are damaged or modified in a manner which impacts radiation safety; and IV. when there is an unusually high radiation exposure.	H	Equip-QA-RPS-AC-23	Revised
RS5.1.7	**M**	Radiation protection surveys are retained for ten years.	M	Equip-QA-RPS-AC-23	New
RS5.2		**The radiation protection survey report provides results and recommendations based on the surveyor's findings.** *Guidance: The survey report presents in a clear systematic way the details and results of the measurements carried out, as well as the conclusions drawn, and recommendations made by the surveyor.*			
RS5.2.1	**M**	Surveyors are qualified by education and experience to perform advanced or complex procedures in radiation protection.	H	SC-35 SC-36	
RS5.2.2	**M**	The survey report includes a sketch of the room and adjoining spaces, showing the location of the X-ray equipment and control booth within the room. The sketch also identifies the nature and occupancy of the spaces adjoining the room.	M	SC-35 SC-36	Revised
RS5.2.3	**M**	The survey report includes identification of the X-ray equipment, such as a unique identifier (i.e. serial number, asset number).	M	Equip-QA-RPS-AC-23	Revised
RS5.2.6	**M**	The survey report includes the actual or estimated total workload of the facility, as well as the workload apportioned into various X-ray beam directions for commonly used procedures.	M	SC-35 SC-36	

No.		Description	Risk	Reference	Change
RS5.2.7	**M**	The survey report includes the locations and results of radiation measurements made both inside and outside the controlled area, under typical operating conditions. *Guidance: For mammography radiation protection surveys, radiation measurements made both inside and outside the controlled area, under typical operating conditions are only required with acceptance testing or if there has been a change to the room building materials or floorplan.*	M	Equip-QA-RPS-AC-23	Revised
RS5.2.9	**M**	The survey report includes an estimation of potential exposures to personnel and the general public, in and around the facility. *Guidance: For mammography, the estimation of potential exposures to personnel/general public is not required.*	M	SC-35	Revised
RS5.2.12	**M**	The survey report includes an assessment of radiological techniques from the point of view of radiation safety. *Guidance: This may include an assessment of the diagnostic reference levels for the facility, as applicable. Any practice, as it relates to radiation safety, which are or could be detrimental to the patient or to personnel working in the facility are identified. Recommendations of improved or safer techniques should be made in such cases.*	M	SC-35 SC-36	Revised
RS5.2.15	**M**	The results of surveys including conclusions drawn by the surveyors are submitted to the owner, radiation safety officer or responsible user in a written report.	M	SC-35 SC-36	Revised

X-ray facility design

No.		Description	Risk	Reference	Change
					Revised
RS6.0		**X-RAY FACILITY DESIGN** *Guidance: In the planning of any X-ray imaging system facility the main priority is to ensure that persons in the vicinity of the facility are not exposed to levels of radiation which surpass the current regulatory exposure limits. In the early stages of designing and planning, three steps are taken to ensure adequate shielding is in place to provide the necessary level of radiation protection:* • *determination of parameters governing shielding requirements* • *preparation of facility floor plans* • *consideration of room design and use of X-ray imaging systems* *Guidance: Due to the relatively low radiation risks associated with bone densitometry, RS6.0 is not applied to bone densitometry services.*			
RS6.1		**Appropriate steps are taken to ensure adequate shielding is present in controlled and uncontrolled areas of stationary "fixed" X-ray imaging systems.**			Revised
RS6.1.1	**M**	Adequate shielding is in place, such that radiation workers routinely occupying controlled areas are not exposed to more than 20 mSv over any period of 12 consecutive months.	H		
RS6.1.2	**M**	Adequate shielding is in place in uncontrolled areas such that no person receives more than 1 mSv per year.	H		
RS6.1.3	**B**	The radiation levels in uncontrolled areas are limited to 0.3 mSv per year, where radiosensitive populations such as pediatric patients are located.			
RS6.1.4	**M**	Computed radiography cassettes are stored in areas with scatter radiation of less than 0.5μGy radiation level over the storage period.	M		
RS6.1.5	**M**	Shielding calculations are performed by trained individuals with current knowledge of structural shielding design, radiation protection requirements, radiation shielding barriers, and the acceptable methods of performing these calculations.	H		
RS6.1.6	**M**	If a control booth or viewing window is present, it has shielding properties such that no operator is occupationally exposed to more than 0.4 mSv/week.	H		New

No.		Description	Risk	Reference	Change
RS6.1.7	**M**	The lead equivalency of the control booth glass is documented and is readily available.	M		New
RS6.1.8	**M**	Room shielding is constructed to form an unbroken barrier. Where lead is used, it is adequately supported to prevent creeping.	H		New
RS6.2		**Preparation of facility plans includes preparing a facility floor plan.**			
RS6.2.1	**M**	The dimensions and shape of the room where the X-ray equipment is operated and the physical orientation of the room (e.g. a mark indicating north).	H		
RS6.2.2	**M**	The facility floor plan includes the location where the X-ray equipment is placed and the range of movement of the X-ray tube(s).	H		
RS6.2.3	**M**	The facility floor plan includes the location of the control booth or control panel.	H		
RS6.2.4	**M**	The facility floor plan includes the location, use, occupancy level and accessibility of adjacent rooms, as well as rooms above and below the facility.	H		
RS6.2.5	**M**	The facility floor plan includes the designation of the adjacent rooms as a controlled or uncontrolled area.	H		
RS6.2.6	**M**	The facility floor plan includes the location of the CR cassette storage area, CR reader and computer workstations.	H		
RS6.2.7	**M**	The facility floor plan includes the position of all windows and doors that may affect radiation protection requirements.	H		
RS6.2.8	**M**	The facility floor plan includes the planned and existing materials used to construct the walls, floor, ceiling, and the control booth. The floor plan also includes the thicknesses of the construction materials, and the materials being used as radiation shielding barriers.	H		
RS6.2.9	**M**	The facility floor plan includes the application of the protective barriers and differentiates between primary protective barriers and secondary protective barriers.	H		
RS6.3		**Radiation safety planning includes considerations of room design and use of X-ray imaging systems.** *Guidance: See also radiation safety accreditation standards RS1.3.1 to RS1.3.2 for the requirements for radiation warning and restricted access signage.*			Revised

No.		Description	Risk	Reference	Change
RS6.3.1	**M**	Portable X-ray imaging systems which are routinely used in one location are considered a stationary "fixed" installation and the shielding needs for the equipment and room are determined accordingly. *Guidance: See RS6.1 for shielding requirements. See RS1.4 for the use of portable X-ray imaging systems as stationary "fixed" systems.*	M		
RS6.3.3	**B**	The X-ray equipment is positioned in the room in such a way that during an irradiation, no one can enter the room without the knowledge of the equipment operator.			
RS6.3.4	**M**	The X-ray beam is always directed toward adequately shielded areas.	H		

Responsibility of personnel

No.		Description	Risk	Reference	Change
					Revised
RS7.0		**RESPONSIBLE STAFF ENSURES THE OPTIMUM LEVEL OF RADIATION SAFETY AND IMAGE QUALITY.** *Guidance: It is the responsibility of the owner to ensure that the equipment and the facilities in which such equipment is installed and used meet all applicable radiation safety standards, and that a radiation safety program is developed, implemented and maintained for the facility. The owner may delegate this responsibility to competent staff. How this responsibility is delegated will depend upon the number of staff members, the nature of the operation, and on the number of X-ray equipment owned.* *Guidance: Due to the relatively low radiation risks associated with bone densitometry, RS7.0 is not applied to bone densitometry services.*			
RS7.1		**The radiation safety program is monitored and managed by competent staff.**			
RS7.1.1	**M**	The governing body and ownership ensure that competent individuals are designated to carry out the duties identified for the responsible user and the radiation safety officer.	M		
RS7.2		**Radiation safety activities are performed by competent staff.**			
RS7.2.1	**M**	There is at least one individual designated to perform the duties of responsible user. The responsible user can be an owner, licensed physician, technologist or administrator of a facility who is able to demonstrate competency in the duties of a responsible user.	M		
RS7.2.2	**M**	The responsible user ensures that the X-ray equipment, image processing equipment, and ancillary equipment function correctly.	M		
RS7.2.3	**M**	The responsible user ensures that the equipment is maintained by implementing an effective imaging quality assurance program for the facility which includes quality control testing, establishing diagnostic reference levels, and record keeping.	M		
RS7.2.4	**M**	The responsible user ensures that equipment is used correctly, and maintained properly, by competent personnel who are properly trained in the safe operation of the equipment.	M		

No.		Description	Risk	Reference	Change
RS7.2.5	**M**	The responsible user ensures that inexperienced personnel, including students, operate the equipment only under the direct supervision of a Canadian Association of Medical Radiation Technologists (CAMRT) certified and experienced X-ray equipment operator. Supervision is in place until competence in each clinical procedure is achieved, at which time supervision can be indirectly provided by a supervisor available on-site when needed.	M		
RS7.2.6	**M**	The responsible user establishes documented safe operating procedures for the equipment and ensures that operating staff are adequately instructed.	M		
RS7.2.7	**M**	The responsible user promulgates documented rules of radiation safety and ensures that staff members are made aware of them through training.	M		
RS7.2.8	**M**	The responsible user ensures an investigation is completed of any known or suspected exposures received by personnel that are unusually higher than the usual dose received by that individual, or in excess of 1/20th of the dose limit for radiation workers.	M		
RS7.2.9	**M**	The responsible user ensures that radiation levels in controlled and uncontrolled areas are below the maximum permissible limits such that the annual dose limits to radiation workers and the public will not be exceeded.	M		
RS7.2.10	**M**	The responsible user participates in the establishment of diagnostic reference levels. *Guidance: See also radiation safety accreditation standard RS3.2.*	M		
RS7.3		**Radiation protection specialists act as an advisor for all aspects of radiation protection.**			
RS7.3.1	**M**	There is a medical physicist or radiation safety officer to act as an advisor on all radiation protection aspects during the initial stages of construction of the facility, installation of the equipment, and during subsequent operations.	M		
RS7.3.2	**M**	The medical physicist or radiation safety officer assesses the radiation safety of an installation at the time of planning and construction of the facility, or when modifications are planned and are being made to an existing facility.	H		
RS7.3.3	**M**	The medical physicist or radiation safety officer registers the equipment with the Diagnostic Accreditation Program when new equipment is purchased, or equipment is replaced.	M		

No.		Description	Risk	Reference	Change
RS7.3.4	**M**	The medical physicist or radiation safety officer ensures that radiation protection inspections for the facility are scheduled and performed.	M		
RS7.3.5	**M**	The medical physicist or radiation safety officer establishes safe working conditions according to the recommendations of Health Canada Safety Codes and the statutory requirements of federal or provincial legislation, where applicable.	M		
RS7.3.6	**M**	The medical physicist or radiation safety officer ensures that established safety procedures are being followed and reports any non-compliance to the responsible user.	M		
RS7.3.7	**M**	The medical physicist or radiation safety officer reviews the safety procedures periodically and updates them to ensure optimum patient and operator safety.	M		
RS7.3.8	**M**	The medical physicist or radiation safety officer instructs X-ray equipment operators and other personnel participating in X-ray procedures in proper radiation protection practices.	M		
RS7.3.9	**M**	The medical physicist or radiation safety officer carries out routine checks of equipment and facility safety features and radiation surveys.	M		
RS7.3.10	**M**	The medical physicist or radiation safety officer ensures that appropriate radiation survey instruments are available, in good working condition, and properly calibrated.	M		
RS7.3.11	**M**	The medical physicist or radiation safety officer keeps records of radiation protection surveys, including summaries of corrective measures recommended and instituted.	M		
RS7.3.12	**M**	The medical physicist or radiation safety officer declares who is to be considered an occupationally exposed person (e.g. personnel who may receive a radiation dose in excess of 1/20th of the recommended dose limit for a radiation worker).	M		
RS7.3.13	**M**	The medical physicist or radiation safety officer organizes participation in a personnel radiation monitoring service, such as that provided by the National Dosimetry Services, Health Canada.	M		
RS7.3.14	**M**	The medical physicist or radiation safety officer ensures that all occupationally exposed persons wear personal dosimeters during radiological procedures or when occupational exposures are likely.	M		

No.		Description	Risk	Reference	Change
RS7.3.15	**M**	The medical physicist or radiation safety officer reviews, manages and maintains records of occupational exposures received by personnel.	M		
RS7.3.16	**M**	The medical physicist or radiation safety officer investigates each known or suspected case of excessive or abnormal exposure to patients and staff to determine the cause and to take remedial steps to prevent its recurrence.	H		
RS7.3.17	**M**	The medical physicist or radiation safety officer participates in the establishment of diagnostic reference levels.	L		
RS7.3.18	**M**	The radiation safety officer must have documented training in radiation safety which includes an understanding of the work, hazards and control measures associated with ionizing radiation.	M		

References

Abbreviation	Reference
Equip-QA-RPS-AC-23	2023 DAP Equipment Quality Assurance and Radiation Protection Surveys Advisory Committee Recommendation
SC-35	Health Canada. Safety Code 35. Radiation protection in radiology–large facilities [internet]. Ontario: Health Canada; 2024. Available from: https://www.canada.ca/content/dam/hc-sc/documents/services/environmental-workplace-health/reports-publications/radiation/safety-code-35-safety-procedures-installation-use-control-equipment-large-medical-radiological-facilities-safety-code/safety-code-35-safety-procedures-installation-use-control-equipment-large-medical-radiological-facilities-safety-code.pdf
SC-36	Health Canada. Safety Code 36. Radiation Protection and Quality Standards in Mammography - Safety Procedures for the Installation, Use and Control of Mammographic X-ray Equipment [Internet]. Ontario: Health Canada; 2013. Available from: https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/radiation/safety-code_36-securite/safety-code36-securite-eng.pdf

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