COLLEGE OF PHYSICIANS AND SURGEONS OF BRITISH COLUMBIA

Diagnostic Accreditation Program

ACCREDITATION STANDARDS

Computed Radiography and Digital Radiography

Diagnostic Accreditation Program
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Introduction

In addition to the general standards, the discipline-specific standards for computed radiography (CR) and digital radiography (DR) provides additional mandatory requirements and best practices.

Imaging procedures

No.		Description	Risk	Reference	Change
					Revised
RA3.0		**COMPUTED RADIOGRAPHY (CR) AND DIGITAL RADIOGRAPHY (DR) STANDARD OPERATING PROCEDURES/PROTOCOLS** *Guidance: See also global modality GM3.0 for additional requirements.*			
RA3.1		**There is a comprehensive process in place for protocol adoption and development.** *Guidance: See also global modality GM3.1.*			
RA3.1.1	**M**	Protocols and imaging technical factors are reviewed and as required every one to three years by qualified individual(s) with appropriate technical or medical expertise.	M		
RA3.2		**Protocols contain all the information necessary to perform the examination.**			
RA3.2.2	**M**	Protocol information includes a description of the equipment and supplies needed.	M		
RA3.2.4	**M**	Protocol information includes a description of patient positioning or required views.	M		
RA3.2.6	**M**	Protocol information includes when guidance or review by a radiologist is required prior to patient discharge (i.e. acute pathology identified or additional views required).	M		
RA3.3		**Examinations are performed following established protocols.**			
RA3.3.1	**M**	Protocols are readily available to staff performing the examination.	H		
RA3.3.3	**M**	There are protocols for the pediatric population where techniques and loading factors are modified for size and age.	M	SC-35	
RA3.3.4	**M**	Facilities define examinations which are undertaken by technologists only through close supervision or collaboration with a radiologist (i.e. flexion and extension spine views).	M	SC-35	Revised
RA3.3.5	**M**	Lead markers indicating laterality are placed prior to exposure, and electronic markers are not used in place of lead markers.	H		Revised
RA3.3.6	**B**	Laterality markers include the initials of the individual taking the exposure.			

No.		Description	Risk	Reference	Change
RA3.3.7	**M**	Procedures are available for the application of electronic markers when errors and omissions are identified after exposure.	M		
RA3.3.8	**M**	Exposure techniques are reflective of the equipment and include parameters such as mA, time, kVp, SID, and focal spot size.	M		
RA3.3.9	**M**	Exposure techniques pre-programmed into the X-ray system are validated and verified.	M		
RA3.4		**Images are reviewed for diagnostic quality before the patient is released.**			
RA3.4.1	**M**	Image review ensures the appropriate positioning and technique factors.	H		
RA3.4.2	**M**	Image review ensures the correct marker placement.	H		
RA3.4.3	**M**	Image review ensures the presence of artifacts or motion does not impact the diagnostic image quality.	H		
RA3.4.4	**M**	Image review ensures the evidence of exposure collimation.	H		
RA3.4.5	**M**	The X-ray beam demonstrates collimation to restrict radiation exposure to the area of diagnostic interest only.	M		

Medical records

No.		Description	Risk	Reference	Change
					Revised
RA7.0		**COMPUTED RADIOGRAPHY (CR) AND DIGITAL RADIOGRAPHY (DR) MEDICAL RECORD DOCUMENTATION** *Guidance: See also global modality GM7.0 for additional requirements.*			
RA7.2		**Comprehensive examination details are recorded in the medical record.** *Guidance: See also global modality GM7.2.*			
RA7.2.1	**M**	Examination details recorded in the medical record include an indicator of patient dose for radiographic, when available. *Guidance: Radiographic examination dose can be recorded as DAP.*	M		Revised
RA7.2.2	**M**	An indicator of patient dose is recorded in the medical record for all pediatric patients. If radiographic equipment does not have the ability to record DAP, the kVp and mAs of each exposure is recorded.	M		

Acceptance testing

No.		Description	Risk	Reference	Change
					Revised
RA12.0		**ACCEPTANCE TESTING OF COMPUTED RADIOGRAPHY (CR) AND DIGITAL RADIOGRAPHY (DR) SYSTEMS** *Guidance: See also equipment and supplies DES2.0 for additional requirements.*			
RA12.2		**Acceptance testing is performed after purchase and prior to clinical use of CR/DR systems.**			
RA12.2.1	**M**	Acceptance testing of CR/DR systems includes visual and functional testing of the mechanical properties, as well as any other mechanical checks as recommended by the manufacturer. *Guidance: Unit appears electro-mechanically sound and all moving parts move smoothly, without obstruction. All locks and détentes work properly, and all patient and operator contact surfaces are safe and free from hazards.*	H	SC-35	Revised
RA12.2.2	**M**	Acceptance testing of CR/DR systems includes visual and functional evaluations of the safety systems for damage, as well as any other safety checks as recommended by the manufacturer.	H	SC-35	Revised
RA12.2.3	**M**	Acceptance testing of CR/DR systems includes evaluation of the accuracy of the kVp, current time product (mAs) and timer accuracy.	H	SC-35	Revised
RA12.2.4	**M**	Acceptance testing of CR/DR systems includes evaluation of the backup timer. *Guidance: The back-up (or guard) timer terminates the radiographic exposure if the AEC or timer fails. Health Canada Safety Code 35 has not required testing of the backup timer; however, this is a requirement in the RED Act.*	H	SC-35	Revised
RA12.2.5	**M**	Acceptance testing of CR/DR systems includes evaluation of the radiation output reproducibility.	H	SC-35	Revised
RA12.2.6	**M**	Acceptance testing of CR/DR systems includes evaluation of the radiation output linearity.	H	SC-35	Revised
RA12.2.7	**M**	Acceptance testing of CR/DR systems includes evaluation of the (HVL) X-ray beam filtration.	H	SC-35	Revised
RA12.2.8	**M**	Acceptance testing of CR/DR systems includes evaluation of the automatic exposure control (AEC).	H	SC-35	Revised

No.		Description	Risk	Reference	Change
RA12.2.9	**M**	Acceptance testing of CR/DR systems includes evaluation of the X-ray field and light field alignment for congruency.	H	SC-35	Revised
RA12.2.10	**M**	Acceptance testing of CR/DR systems includes evaluation of collimator operation. *Guidance: Using each collimating option, a test is performed to ensure smooth collimator blade motion. If applicable, vary the SID to assure the collimator tracks as the SID changes (i.e. automatically maintain the field size).*	H	SC-35	Revised
RA12.2.11	**M**	Acceptance testing of CR/DR systems includes evaluation of the accuracy of the dose area product value.	H	SC-35	Revised
RA12.2.12	**M**	Acceptance testing of CR/DR systems includes evaluation of the grid performance through the uniformity and movement of the grid.	H	SC-35	Revised
RA12.2.14	**M**	Acceptance testing of CR/DR systems includes evaluation of the exposure index or manufacturer's equivalent measure.	H	SC-35	Revised
RA12.2.15	**M**	Acceptance testing of CR/DR systems includes evaluation of the dynamic range.	H	SC-35	Revised
RA12.2.16	**M**	Acceptance testing of CR/DR systems includes evaluation of the noise, uniformity and image artifacts.	H	SC-35	Revised
RA12.2.17	**M**	Acceptance testing of CR/DR systems includes evaluation of spatial resolution.	H	SC-35	Revised
RA12.2.18	**M**	Acceptance testing of CR/DR systems includes evaluation of low contrast detectability.	H	SC-35	Revised
RA12.2.19	**M**	Acceptance testing of CR/DR systems includes evaluation of the digital detector residual image.	H	SC-35	Revised
RA12.2.20	**M**	Acceptance testing of CR/DR systems includes evaluation of phantom entrance dose.	H	SC-35	Revised
RA12.2.21	**B**	Acceptance testing of CR/DR systems includes evaluation of the modulation transfer function (MTF).		SC-35	Revised

Quality assurance

No.		Description	Risk	Reference	Change
					Revised
RA13.0		**QUALITY CONTROL TESTING OF COMPUTED RADIOGRAPHY (CR) AND DIGITAL RADIOGRAPHY (DR) SYSTEMS** *Guidance: See also equipment and supplies DES3.0 for additional requirements.*			
RA13.7		**Daily quality control procedures are established and used to monitor performance of CR/DR systems.**			
RA13.7.1	**M**	The frequency and method of CR/DR systems start-up is conducted according to the manufacturer's recommendations.	M		Revised
RA13.7.2	**B**	Daily quality control testing of CR/DR systems includes evaluation of all meters and visual/audible indicators.			Revised
RA13.7.3	**B**	Daily quality control testing of CR/DR systems includes evaluation of the X-ray equipment condition to inspect for loose or broken components and cleanliness.			Revised
RA13.7.4	**B**	Daily quality control testing of CR/DR systems includes evaluation of all moving parts to ensure smooth operation, and without obstruction. All position locks and détentes work properly, and all patient and operator contact surfaces are safe and free from hazards.			Revised
RA13.8		**Routine quality control procedures are established and used to monitor performance of CR/DR systems.**			Revised
RA13.8.1	**M**	Weekly quality control testing of CR systems includes a visual inspection of (CR) imaging cassettes and plates and if required, cleaned of debris according to the frequency and process recommended by the manufacturer. *Guidance: Imaging plates are checked for damage such as wear, warping, fatigue of foam compression material and closure mechanism, and fluid damage. If cleaning is required, it is conducted with manufacturer recommended cleaners and procedures. When artifacts are seen on images, cassette is removed for inspection and cleaned if necessary.*	M		Revised

No.		Description	Risk	Reference	Change
RA13.8.2	**M**	Weekly quality control testing of DR systems includes a visual inspection of the (DR) image detectors and if required cleaned of debris, or according to the frequency and process recommended by the manufacturer. *Guidance: If cleaning is required, it is conducted with manufacturer recommended cleaners and procedures.*	M		Revised
RA13.8.3	**M**	Monthly quality control testing of CR/DR systems includes evaluation of the reject image analysis. Reject images are defined as images of inadequate quality excluded from the patient's medical record. *Guidance: Monthly analysis of reject records is performed to help identify and correct any trends.*	M		New
RA13.8.4	**M**	Records are retained of every rejected image, including the reason the image was rejected (e.g. positioning error, clipped anatomy, insufficient image quality, patient motion, artifacts, X-ray equipment failure, etc.).	H		New
RA13.8.5	**M**	The imaging service establishes reject rate action thresholds based on the service's clinical environment and provides corrective action when required.	M		New
RA13.8.6	**B**	The reject rate is less than 5%, not including quality control films.			New
RA13.10		**Quarterly quality control procedures are established and used to monitor performance of CR/DR systems.**			
RA13.10.2	**M**	Quarterly quality control testing of CR/DR systems includes evaluation of interlocks if present. *Guidance: If there are interlocks on the door, they are tested to ensure that they prevent the X-ray equipment from producing radiation when the door is open.*	L		Revised
RA13.11		**Annual quality control procedures are established and used to monitor performance of CR/DR systems.**			
RA13.11.1	**M**	Annual quality control testing of CR/DR systems includes evaluation of kVp, current time product (mAs) and timer accuracy.	M	SC-35	Revised
RA13.11.2	**M**	Annual quality control testing of CR/DR systems includes evaluation of radiation output reproducibility.	M	SC-35	Revised
RA13.11.3	**M**	Annual quality control testing of CR/DR systems includes evaluation of radiation output linearity with mAs.	M	SC-35	Revised

No.		Description	Risk	Reference	Change
RA13.11.4	**M**	Annual quality control testing of CR/DR systems includes evaluation of the (HVL) X-ray beam filtration.	M	SC-35	Revised
RA13.11.5	**M**	Annual quality control testing of CR/DR systems includes evaluation of automatic exposure control (AEC).	M	SC-35	Revised
RA13.11.6	**M**	Annual quality control testing of CR/DR systems includes evaluation of the X-ray field and light field alignment for congruency.	M	SC-35	Revised
RA13.11.7	**M**	Annual quality control testing of CR/DR systems includes evaluation of the collimator operation. *Guidance: Using each collimating option, a test is performed to ensure smooth collimator blade motion. If applicable, vary the SID to assure the collimator tracks as the SID changes (i.e. automatically maintain the field size).*	M	SC-35	Revised
RA13.11.8	**M**	Annual quality control testing of CR/DR systems includes evaluation of the dose area product and the reference point air kerma measurements. All available measures of dose are assessed and calibrated.	M	SC-35	Revised
RA13.11.9	**M**	Annual quality control testing of CR/DR systems includes evaluation of grid performance through the uniformity and movement of the grid.	M	SC-35	Revised
RA13.11.10	**M**	Annual quality control testing of CR/DR systems includes evaluation of the exposure index or manufacturer's equivalent measure.	M	SC-35	Revised
RA13.11.12	**M**	Annual quality control testing of CR/DR systems includes evaluation of noise, uniformity and image artifacts.	M	SC-35	Revised
RA13.11.13	**M**	Annual quality control testing of CR/DR systems includes evaluation of spatial resolution.	M	SC-35	Revised
RA13.11.14	**B**	Annual quality control testing of CR/DR systems includes evaluation of dynamic range.		SC-35	Revised
RA13.11.15	**B**	Annual quality control testing of CR/DR systems includes evaluation of low contrast detectability.		SC-35	Revised
RA13.11.16	**M**	Annual quality control testing of CR/DR systems includes evaluation of digital detector residual images.	M	SC-35	Revised
RA13.11.17	**M**	Annual quality control testing of CR/DR systems includes evaluation of phantom dose measurements at the surface of a standard phantom.	M	SC-35	Revised

No.		Description	Risk	Reference	Change
RA13.11.18	**B**	Annual quality control testing of CR/DR systems includes evaluation of source image distance (SID) and tube détente positions.		SC-35	Revised

References

Abbreviation	Reference
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

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