

A decorative graphic consisting of a thick, grey diagonal line that starts from the top left and extends towards the bottom right. A large, grey, three-dimensional sphere is positioned where the line changes direction, appearing to be attached to it.

The Practice Standards for Medical Imaging and Radiation Therapy

Advisory Opinion Statement
Use of Post-Exposure Shuttering, Cropping and Electronic Masking in Radiography

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Use of Post-Exposure Shuttering, Cropping and Electronic Masking in Radiography

After researching evidentiary documentation such as current literature, curriculum, position statements, scopes of practice, laws, federal and state regulations, and inquiries received by the American Society of Radiologic Technologists Governance Department, the American Society of Radiologic Technologists has issued the following opinions.

Accountability and Responsibility of Medical Imaging and Radiation Therapy Professionals

The profession holds practitioners individually responsible and accountable for rendering safe, effective clinical services to patients and for judgments exercised and actions taken in the course of providing those services.

Acts that are within the recognized scope of practice for a given license or certification may be performed only by those individuals who possess the education and skill proficiencies to perform those acts in a safe and effective manner.

The practitioner's performance should be consistent with state and federal laws, established standards of practice, facility policies and procedures, and should be evidence based.

Definitions

Cropping: the process of selecting and removing a portion of the image

Electronic masking: electronic collimation or cropping of the digital radiographic image that occurs during post-processing of the acquired image and does not alter the size of the irradiated field

Processing: manipulation of the raw data just after acquisition

Shuttering: a post processing technique that may be used to eliminate ambient light around an image for the sole purpose of improving the quality of the displayed image. It should not be used as a substitute for insufficient collimation of the irradiated field.

Evidentiary Documentation:

Current Literature

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Willis, C. E. (2009). Optimizing digital radiography of children. *European Journal of Radiology*, 72(2), 266–273. doi:http://dx.doi.org/10.1016/j.ejrad.2009.03.003

Uffmann, M., & Schaefer-Prokop, C. (2009). Digital radiography: the balance between image quality and required radiation dose. *European Journal of Radiology*, 72(2), 202–8. doi:10.1016/j.ejrad.2009.05.060

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Zetterberg, L. G., and A. Espeland. "Lumbar spine radiography—poor collimation practices after implementation of digital technology." (2014)

Fauber, Terri L., and Melanie C. Dempsey. "X-ray Field Size and Patient Dosimetry." *Radiologic Technology* 85.2 (2013): 155-161.

Goske, Marilyn J., et al. "Image Gently: challenges for radiologic technologists when performing digital radiography in children." *Pediatric Radiology* 41.5 (2011): 611-619.

(Quality of Evidence: High)

Curriculum

Not applicable

(Quality of Evidence: Not Applicable)

ASRT Position Statements

Digital Imaging Cropping or Masking in Radiography

It is the position of the American Society of Radiologic Technologists that a digital image should not be cropped or masked such that it eliminates areas of exposure from the image that are presented for interpretation. Pre-exposure collimation of the x-ray beam is necessary to comply with the principle of as low as reasonably achievable (ALARA). To determine that exposed anatomy on an image is not significant or of diagnostic value is a medical decision and is therefore outside of the scope of practice for a radiologic technologist.

Adopted, Main Motion, C-14.10, 2014

Digital Image Post-Processing in Radiography

It is the position of the American Society of Radiologic Technologists that an image obtained for a prescribed projection in a digital imaging system or series be assigned only to that specific projection and not be altered by post-processing in order to be represented as another projection. Adopted, Main Motion, C-14.07, 2014

(Quality of Evidence: High) Scopes of Practice and Practice Standards Reference

ASRT Practice Standards for Medical Imaging and Radiation Therapy, all practice standards documents.

Scope of Practice:

Applying principles of ALARA to minimize exposure to patient, self and others

ASRT Practice Standards for Medical Imaging and Radiation Therapy, Radiography and Limited X-ray Machine Operator Practice Standards (2013)

Clinical Performance Standard Two-Analysis/Determination

Verifies that exposure indicator data for digital radiographic systems has not been altered or modified and is included in the Digital Imaging Communications in Medicine (DICOM) header and on images printed to media.

Clinical Performance Standard Four-Performance

Positions patient for anatomic area of interest, respecting patient ability and comfort.

Employs proper radiation safety practices.

Uses technical factors according to equipment specifications to meet the ALARA principle.

Uses pre-exposure collimation and proper field-of-view selection.

Selects the best position for the demonstration of anatomy (*Radiography only*).

Clinical Performance Standard Five-Evaluation

Evaluates images for positioning to demonstrate the anatomy of interest (*Radiography only*).

Evaluates only images produced by self for positioning, the anatomy of interest and overall image quality (*Limited X-ray Machine Operator only*).

Professional Performance Standard Five – Ethics

Adheres to the established practice standards of the profession.

(Quality of Evidence: High)

Federal and State Statute Reference(s)

Not applicable

(Quality of Evidence: Not applicable)

Advisory Opinion

Advisory Opinion Statement

It is the opinion of the American Society of Radiologic Technologists, based upon current literature, curricula set forth by the ASRT, certification examination specifications by the ARRT, and recommendations by the American College of Radiology that:

1. It is within the scope of practice of a Radiologic Technologist to determine and apply appropriate pre-exposure collimation to individual projections of exams. Post-exposure shuttering, cropping, electronic collimation or electronic masking to eliminate the visibility of large regions of brightness are acceptable, where automatic processing fails to do so.
2. It is outside of the scope of practice of a Radiologic Technologist to use post-exposure shuttering, cropping, electronic collimation or electronic masking to eliminate any anatomical information. This information is a part of the patient's permanent medical record, and should therefore be presented to the licensed independent practitioner to determine whether the exposed anatomy obtained on any image is significant or of diagnostic value.
3. It is outside the scope of practice of a Radiologic Technologist to use post-exposure shuttering,

cropping, electronic collimation or electronic masking to duplicate and use any acquired image for more than one prescribed view or projection on any exam. Facilities acquiring digital images are legally required to retain information in the DICOM information of each image that identifies the selected view or projection at the time of image acquisition. Using the same acquired image to represent two different prescribed views or projections is a falsification of the information in the patient medical record and imaging study made available to the licensed independent practitioner.

GRADE: Strong

Rationale

The ASRT determines the Practice Standards and scopes of practice for medical imaging and radiation therapy professionals. The Practice Standards' general stipulation emphasizes the importance of an individual being educationally prepared and clinically competent to practice in the profession of medical imaging and radiation therapy.

Determining Scope of Practice

Each medical imaging and radiation therapy professional must exercise professional and prudent judgment when determining whether the performance of a given act is within the scope of practice for which the medical imaging and radiation therapy professional is licensed - if applicable within the jurisdiction in which he/she is employed – and educationally prepared and clinically competent to perform.

The ASRT issues advisory opinions as to what constitutes appropriate practice. As such, an opinion is not a regulation or statute and does not have the force and effect of law. It is issued as a guidepost to medical imaging and radiation therapy professionals who engage in safe practices.

Federal and state laws, accreditation standards necessary to participate in government programs, and institutional policies and procedures supersede these standards. The individual must be educationally prepared and clinically competent as a prerequisite to professional practice.

Approved: June 28, 2015
Adopted, Main Motion, C-15.23, 2015
ASRT House of Delegates