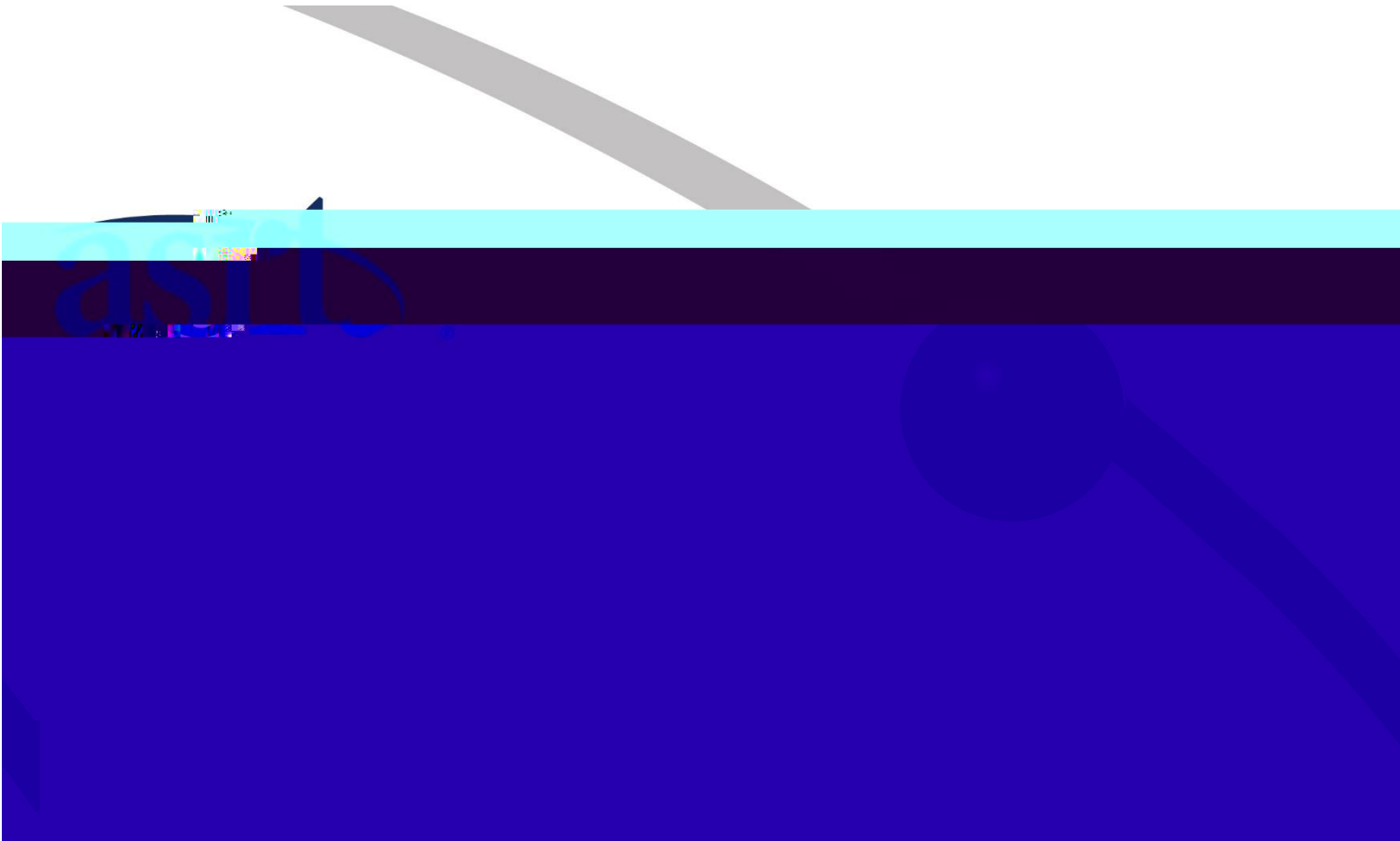


The top of the page features a large graphic. It includes a light blue horizontal bar at the top, a dark blue horizontal bar below it, and a large, solid blue rectangular area. A faint, stylized 'asrt' logo is visible in the upper left. A grey diagonal line extends from the top left towards the center. A magnifying glass icon is positioned on the right side of the blue area.

The ASRT Practice Standards for Medical Imaging and Radiation Therapy

Mammography

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Preface

therapy are similar, others are not. The specific criteria were developed with these differences in mind.

Within this document, all organizations are referenced by their abbreviation and spelled out within the glossary.

Introduction

Definition

The medical imaging and radiation therapy profession comprises health care professionals identified as a bone density technologist, cardiac-interventional and vascular-interventional technologist, computed tomography technologist, magnetic resonance technologist, mammographer, medical dosimetrist, nuclear medicine technologist, quality management technologist, radiation therapist, radiographer, radiologist assistant or sonographer who are educationally prepared and clinically competent as identified by these standards.

Furthermore, these standards apply to health care employees who are legally authorized to perform medical imaging and radiation therapy and who are educationally prepared and clinically competent as identified by these standards.

Medical Imaging and Radiation Therapy Scope of Practice

Scopes of practice delineate the parameters of practice and identify the boundaries for practice. A comprehensive procedure list for the medical imaging and radiation therapy professional is impractical because clinical activities vary by the practice needs and expertise of the individual. As medical imaging and radiation therapy professionals gain more experience, knowledge and clinical competence, the clinical activities may evolve.

The medical imaging and radiation therapy professional and any individual who is legally authorized to perform medical imaging must be educationally prepared and clinically competent as a prerequisite to professional practice. The individual should, consistent with all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure. Federal and state statutes, regulations, accreditation standards and institutional policies could dictate practice parameters and may supersede these standards.

The scope of practice of the medical imaging and radiation therapy professional includes:

- Administering medications parenterally through new or existing vascular access, enterally or through other appropriate routes as prescribed by a licensed practitioner.*†
- Administering medications with an infusion pump or power injector as prescribed by a licensed practitioner.*†
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Applying principles of patient safety during all aspects of patient care.
- Assisting in maintaining medical records, respecting confidentiality and established policy.
- Documenting and making information available for use by a licensed practitioner.
- Educating and monitoring students and other health care providers.*
- Evaluating images for proper positioning and determining if additional images will improve the procedure or treatment outcome.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Identifying, preparing and/or administering medications as prescribed by a licensed practitioner.*†
- Performing ongoing quality assurance activities.
- Performing venipuncture as prescribed by a licensed practitioner.*†
- Postprocessing data.
- Preparing patients for procedures.
- Providing education.
- Providing optimal patient care.
- Receiving, relaying and maintaining medical record.*

* Excludes limited x-ray machine operator

† Excludes medical dosimetry

-

- Assists in setting policy and procedures in the facility to meet certification and accreditation standards specific to breast imaging.
- Establishes all required quality assurance and quality control test criteria.

Standard Three – Education

The medical imaging and radiation therapy professional provides information about the procedure and related health issues according to protocol; informs the patient, public and other health care providers about procedures, equipment and facilities; and acquires and maintains current knowledge in practice.

Rationale

E

* Excludes limited x-ray machine operator

† Excludes medical dosimetry

- Educates the patient about the value and use of additional projections and alternative breast imaging procedures.
- Maintains clinical experience according to federal and state laws, regulations and guidelines.

Standard Four – Performance

The medical imaging and radiation therapy professional performs the action plan and quality assurance activities.

Rationale

* Excludes limited x-ray machine operator

† Excludes medical dosimetry

- Exercises clinical judgment in the application of adequate compression to acquire a quality mammographic image.
- Informs the patient of the right to receive a lay summary result in accordance with the Mammography Quality Standards Act of 1992 (MQSA).

Standard Five – Evaluation

The medical imaging and radiation therapy professional determines whether the goals of the action plan have been achieved, evaluates quality assurance results and establishes an appropriate action plan.

Rationale

Careful examination of the procedure is important to determine that expected outcomes have been met. Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

The medical imaging and radiation therapy professional:

General Criteria

- Communicates the revised action plan to appropriate team members.
- Completes the evaluation process in a timely, accurate and comprehensive manner.
- Develops a revised action plan to achieve the intended outcome.
- Evaluates quality assurance results.
- Evaluates the patient, equipment and procedure to identify variances that might affect the expected outcome.
- Identifies exceptions to the expected outcome.
- Measures the procedure against established policies, protocols and benchmarks.
- Validates quality assurance testing conditions and results.

Specific Criteria

Mammography

- Collaborates with the lead interpreting physician and medical physicist to maintain equipment and comply with federal and state regulations and guidelines.
- Evaluates required quality control tests before breast imaging is performed.
-

Standard Nine – Quality

The medical imaging and radiation therapy professional strives to provide optimal care.

Rationale

Patients expect and deserve optimal care during diagnosis and treatment.

The medical imaging and radiation therapy professional:

General Criteria

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Standard Thirteen – Research, Innovation and Professional Advocacy

The medical imaging and radiation therapy professional participates in the acquisition and dissemination of knowledge and the advancement of the profession.

Rationale

Participation in professional organizations and scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

The medical imaging and radiation therapy professional:

General Criteria

- Adopts new best practices.
- Investigates innovative methods for application in practice.
- Monitors changes to federal and state law, regulations and accreditation standards affecting area(s) of practice.
- Participates in data collection.
- Participates in professional advocacy efforts.
- Participates in professional societies and organizations.
- Pursues lifelong learning.
- Reads and evaluates research relevant to the profession.
- Shares information through publication, presentation and collaboration.

Specific Criteria

Mammography

Refer to general criteria.

Glossary

The glossary is an alphabetical list of defined terms or words specifically found in the ASRT Practice Standards for Medical Imaging and Radiation Therapy. The terms or words have meaning that might not be general knowledge. The definitions are formulated using evidentiary documentation and put into place following extensive review and subsequent approval. The glossary is not all-inclusive. New terms and new usage of existing terms will emerge with time and advances in technology.

AAPM American Association of Physicists in Medicine

ACR American College of Radiology

advanced-practice radiographer A registered technologist who has gained additional knowledge and skills through the successful completion of an organized program or radiologic technology education that prepares radiologic technologists for advanced-practice roles and has been recognized by the national certification organization to engage in advanced-practice radiologic technology.

adverse event Any undesirable experience associated with the use of a medical product in a patient.

ALARA

CCI Cardiovascular Credentialing International
change management

panning Movement of the imaging equipment during image acquisition to maintain visualization of an anatomic region of interest.

personal radiation monitoring devices Devices designed to be worn or carried by an individual for the purpose of measuring the dose of radiation received.

physics survey Performing equipment testing, evaluating the testing results and completing a formal written report of results. The written survey report, validated by a medical physicist, contains sufficient information to document that each test was conducted according to local, federal or state requirements and includes an assessment of corrective actions and recommendations for improvements.

postprocessing Computerized processing of data sets after acquisition to create a diagnostic or therapeutic image.

procedure Specific course of action intended to result in an imaging study, treatment or other outcome.

protocol The plan for carrying out a procedure, scientific study or a patient's treatment regimen.

quality assurance Activities and programs designed to achieve a desired degree or grade of care in a defined medical, nursing or health care setting or program. Sometimes indicated with the abbreviation QA.

quality control The routine performance of techniques used in monitoring or testing and maintenance of components of medical imaging and radiation therapy equipment. This includes the interpretation of data regarding equipment function and confirmation that corrective actions are/were taken. Sometimes indicated with the abbreviation QC.

radiation oncologist A physician who specializes in using radiation to treat cancer.

radiation protection Prophylaxis against injury from ionizing radiation. The only effective preventive measures are shielding the operator, handlers and patients from the radiation source; maintaining appropriate distance from the source; and limiting the time and amount of exposure.

radioactive material

shuttering A postprocessing 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.

simulation A process using imaging technologies to plan radiation therapy so that the target area is precisely located and marked; the mockup procedure of a patient treatment with medical imaging documentation of the treatment portals.

SNMMI Society of Nuclear Medicine and Molecular Imaging

static Any medical image that is fixed or frozen in time.

supervising radiologist A board-certified radiologist who oversees duties of the radiologist assistant and has appropriate clinical privileges for the procedure performed by the radiologist assistant.

timeout Preprocedural pause to conduct a final assessment that the correct patient, site and procedure are identified.

tolerance levels (doses) The maximum radiation dose that may be delivered to a given biological tissue at a specified dose rate and throughout a specified volume without producing an unacceptable change in the tissue.

treatment calculations *See dosimetric calculations.*

treatment field (portal) Volume of tissue exposed to radiation from a single radiation beam.

treatment planning The process by which dose delivery is optimized for a given patient and clinical situation. It encompasses procedures involved in planning a course of radiation treatment, including simulation through completion of the treatment summary.

treatment record Documents the delivery of treatments, recording of fractional and cumulative doses, machine settings, verification imaging and the ordering and implementation of prescribed changes.

T-score

average bone mineral density for gender-matched young normal peak bone mass.

v

II. Evaluation of Diagnostic Accuracy

- A. Benchmarks
- B. Sensitivity and specificity
- C. Predictive values
- D. Prior probability
- E. Bias

III. Clinical Audit

- A. Rationale
- B. Audit schemes
 - 1. External quality assessment
 - 2. Internal quality assessment
 - 3. Accreditation
 - 4. Clinical governance (i.e., credentialing)
- C. Audit categories
 - 1. Access
 - 2. Process
 - 3. Output
 - 4. Outcome
 - 5. Use of resources
- D. Measurement criteria and instruments (i.e., ACR Appropriateness Criteria)

QUALITY OF EVIDENCE: High

Certification Agency Entry-Level Clinical Activities

- Registered Radiologist Assistant Entry-Level Clinical Activities (ARRT, 2018)

initial observations, and communicate observations **ONLY** [*emphasis added*] to the radiologist; record initial observations of imaging procedures following radiologist approval;
with the ACR Practice Parameter for Communication of Diagnostic Imaging Findings.

QUALITY OF EVIDENCE: High

Scopes of Practice and Practice Standards Reference

- Scope of Practice
 - o provider consistent with the American College of Radiology Practice Guidelines for Communication of Diagnostic Imaging Findings.
 - o Evaluating images for completeness and diagnostic quality and recommending additional images.
 - o Obtaining images necessary for diagnosis and communicating initial observations to the supervising radiologist. The radiologist assistant does not provide image interpretation as defined by the American College of Radiology.

- o Providing follow-up patient evaluation.
- The ASRT Practice Standards for Medical Imaging and Radiation Therapy
 - o Performs follow-up patient evaluation and communicates findings to the supervising radiologist. (Standard Seven, radiologist assistant only)
 - o Reports clinical and imaging observations and procedure details to the supervising radiologist. (Standard Eight, radiologist assistant only)
 - o Maintains documentation of quality assurance activities, procedures and results. (Standard Eight)
 - o Documents in a timely, accurate and comprehensive manner. (Standard Eight)
 - o Documents and assists radiologist in quality reporting measures for the purpose of improved patient care. (Standard Eight, radiologist assistant only)

QUALITY OF EVIDENCE: High

Federal and State Statute References

Not applicable

Other

Not applicable

Approved: June 19, 2011

Amended, Main Motion, C-13.21 & C13.23, 2013

Amended, Main Motion, C-16.11, 2016

Amended, Main Motion, C-18.07, 2018

ASRT House of Delegates

Medication Administration by Medical Imaging and Radiation Therapy Professionals

After research of evidentiary documentation such as current literature, curricula, position statements, scopes of practice, laws, federal and state regulations and inquiries received by the ASRT, the ASRT issued opinions contained herein.

Advisory Opinion

It is the opinion of the ASRT that based upon current literature; curricula set forth by the ASRT, SNMMI and the NECS; certification examination specifications by the ARRT, NMTCB and CCI; recommendations by the ACR and Centers for Medicare & Medicaid Services; and where federal or state law and/or institutional policy permits that:

1. It is within the scope of practice for medical imaging and radiation therapy professionals to perform the parenteral administration of contrast media and other medications.
2. The parenteral administration of contrast media and other medications by medical imaging and radiation therapy professionals shall be performed only when a licensed practitioner is immediately available to ensure proper diagnosis and treatment of adverse events.

With proper education and proven competence, the parenteral administration of contrast media and other medications by medical imaging and radiation therapy professionals provides quality patient services in a safe environment when a licensed practitioner is immediately available to ensure proper diagnoses and treatment of possible adverse events.

GRADE: Strong

Definitions

The following definitions can be found in the glossary to the ASRT Practice Standards for Medical Imaging and Radiation Therapy:

- adverse event
- clinically competent
- educationally prepared
- licensed practitioner
- medication

Evidentiary Documentation

Current Literature

- ACR Committee on Contrast Media. *ACR Manual on Contrast Media*. Version 10.3. Reston, VA: American College of Radiology; 2017. Accessed November 29, 2018.
- American College of Radiology. ACR accreditation facility toolkit for validation site surveys. Revised April 9, 2018. Accessed November 29, 2018.
- American College of Radiology. ACR practice parameter for performing and interpreting magnetic resonance imaging (MRI). Revised 2017. Accessed November 29, 2018.

- American College of Radiology. ACR-SAR practice parameter for the performance of excretory urography. Revised 2014. Accessed November 29, 2018.
- American College of Radiology. ACR-SPR practice parameter for the use of intravascular contrast media. Revised 2017. Accessed November 29, 2018.
- American College of Radiology. ACR-

- Scope of Practice*†
 - o Identifying, preparing and/or administering medications as prescribed by a licensed practitioner.

* Excludes limited x-ray machine operator

† Excludes medical dosimetry

Certification Agency Examination Content Specifications

- Components of Preparedness (NMTCB, 2017)
- Computed Tomography (ARRT, 2017)
- Vascular Interventional Radiography (ARRT, 2017)

Other Certification Agency Content Specifications

- Components of Preparedness (NMTCB, 2017)
- Positron Emission Tomography (PET) Specialty Examination Content Outline (NMTCB, 2016)

QUALITY OF EVIDENCE: High

Scopes of Practice and Practice Standards Reference

- Scope of Practice †
 - Administering medications parenterally through new or existing vascular access, enterally or through other appropriate routes as prescribed by a licensed practitioner.
 - Administering medications with an infusion pump or power injector as prescribed by a licensed practitioner.
 - Identifying, preparing and/or administering medications as prescribed by a licensed practitioner.
- The ASRT Practice Standards for Medical Imaging and Radiation Therapy*†
 - Uses accessory equipment. (Standard Four)

QUALITY OF EVIDENCE: High

Federal and State Statute Reference(s)

Not Applicable

Other

Approved: June 19, 2011

Amended, Main Motion, C-13.21 and C13.23, 2013

Amended, Main Motion, C-16.12, 2016

Amended, Main Motion, C-17.08, 2017

Amended, Main Motion, C-18.08, 2018

ASRT House of Delegates

* Excludes limited x-ray machine operator

† Excludes medical dosimetry

Medication Administration Through Existing Vascular Access

After research of evidentiary documentation such as current literature, curricula, position statements, scopes of practice, laws, federal and state regulations and inquiries received by the ASRT, the ASRT issued opinions contained herein.

Advisory Opinion

It is the opinion of the ASRT that based upon current literature; curricula set forth by the ASRT, SNMMI and the NECS; certification examination specifications by the ARRT, NMTCB and CCI; recommendations by the ACR; and where federal or state law and/or institutional policy permits that:

1. It is within the scope of practice for medical imaging and radiation therapy professionals to access and administer medications through existing vascular access.

With proper education and proven competence, accessing and administering medications through existing vascular access provides quality patient services in a safe environment.

GRADE: Strong

Definitions

access The process of inserting the designated needle through the access point of an existing vascular access device to deliver IV fluids or medication.

existing vascular access Peripheral or central vascular implanted devices or external access lines that include, but are not limited to, peripherally inserted central catheter lines, intravenous lines, central lines and ports.

The following definitions can be found in the glossary to the ASRT Practice Standards for Medical Imaging and Radiation Therapy:

- clinically competent
- educationally prepared
- medication

Evidentiary Documentation

Current Literature

- ACR Committee on Contrast Media. *ACR Manual on Contrast Media*. American College of Radiology, 2017. <http://www.acr.org/contrast-media>.

Other

Not applicable

Approved: July 1, 2012

Amended, Main Motion, C-13.21 and C13.23, 2013

Amended, Main Motion, C-16.14, 2016

Amended, Main Motion, C-17.10, 2017

Amended, Main Motion, C-18.12, 2018

ASRT House of Delegates

Placement of Personal Radiation Monitoring Devices

After research of evidentiary documentation such as current literature, curricula, position statements, scopes of practice, laws, federal and state regulations and inquiries received by the ASRT, the ASRT issued opinions contained herein.

Advisory Opinion

It is the opinion of the ASRT that based upon current literature; curricula set forth by the ASRT and SNMMI; certification examination specifications by the ARRT and NMTCB; regulatory requirements; AAPM recommendations; and where federal or state law and/or institutional policy permits that:

- 1.

pproved: July 1, 2012
Amended, Main Motion, C-13.21 & C13.23, 2013
Amended, Main Motion, C-16.15, 2016
Amended, Main Motion, C-18.09, 2018
ASRT House of Delegates

Evidentiary Documentation
Current Literature

-

Federal and State Statute References

Not applicable

Other

Not applicable

Approved: June 28, 2015

Adopted, Main Motion, C-15.23, 2015

Amended, Main Motion, C-18.10, 2018

ASRT House of Delegates