



# **American Society of Radiologic Technologists Thirtieth Session of the House of Delegates**

**Albuquerque Convention Center and  
Hyatt Regency  
Albuquerque, N.M.  
June 26-28, 2015**

# Thirtieth Session of the ASRT House of Delegates

Albuquerque Convention Center/Hyatt Regency  
Albuquerque, N.M.

June 26-28, 2015

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# **Thirtieth Session of the ASRT House of Delegates**

**Albuquerque Convention Center/Hyatt Regency  
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**June 26-28, 2015**

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# Thirtieth Annual Meeting of the ASRT House of Delegates

Albuquerque Convention Center/Hyatt Regency  
Albuquerque, N.M.  
June 26-28, 2015

## First Business Meeting

### I. Call to Order

Speaker of the House Amanda Garlock called the 30th Annual Meeting of the ASRT House of Delegates to order at 7:35 a.m., Friday, June 26, 2015.

### II. Opening Ceremony

Speaker of the House Amanda Garlock appointed Liana Watson, ASRT Chief Governance and External Affairs Officer, to take the minutes of the House meetings.

### III. Introductions

### IV. Delegate Orientation

Speaker of the House Amanda Garlock presented delegate orientation.

### V. Credentials Report

Vice Speaker of the House Michael Odgren, presented the Credentials Report. Out of a possible 168 delegates, 156 were credentialed as follows:

Credentialed Affiliate Delegates:	96
Credentialed Chapter Delegates:	<u>60</u>
Total Credentialed Delegates:	156

**Action:** Adopted with a majority of delegates voting in the affirmative. The Credentials Report established that a quorum was present.

### VI. Adoption of House of Delegates' Standing Rules

**Action:** Adopted with over two-thirds of delegates voting in the affirmative.

### VII. Adoption of Agenda

**Action:** Adopted by unanimous vote of delegates voting.

### VII. Determining Election of Bone Densitometry Delegate 2016-2017

**Action:** Lynn Howley was elected as bone densitometry delegate for the 2016-2017 term by coin toss. Karen Prouty will serve as first alternate bone densitometry delegate for 2016.

### VIII. Memorial Resolution

**Motion:** Be it resolved, that the American Society of Radiologic Technologists expresses its sorrow over the passing of these members since our 2014 House of Delegates meeting in Orlando, FL., and affirms our sorrow by rising for a moment of silence in memory of our departed colleagues.

**Action:** Adopted by a rising vote without objection. (The [list](#) of deceased members can be found in the attached appendix.)

#### **IX. Courtesy Resolutions**

**Motion:** The State of Nebraska wishes to acknowledge the passing of Connie Mitchell, past president of the ASRT and the NSRT. We have lost a great lady and advocate.

**Action:** Adopted with delegates showing their appreciation through rising and moment of silence.

#### **X. ASRT Annual Report**

President of the ASRT William Brennan, Jr. presented the annual report. The 2015 election results were provided to the House of Delegates.

#### **XI. Awards**

ASRT Foundation Affiliate Annual Drawing awards were presented as follows:

Most tickets sold- first place – New Mexico, second place – Alaska.

Most money raised per capita – first place – Virginia, second place – Texas.

ASRT Individual Advocacy Award was presented to Chad Hensley, R.T.

ASRT Affiliate Advocacy Award was presented to the California Society of Radiologic Technologists.

Most active chapter award was presented to the Radiography chapter.

Second place was awarded to the Radiologist Assistant chapter and third place was awarded to the Cardiovascular Interventional chapter.

#### **XII. Introduction of Late Main Motions Requiring a 2/3 Vote to Debate**

No late motions were submitted prior to the first seating of the ASRT House of Delegates.

#### **XIII. Nominations for Speaker and Vice Speaker**

##### **Speaker**

Michael Odgren

##### **Vice Speaker**

Beth Weber

#### **XIV. Announcements**

#### **XV. Adjournment**

Speaker of the House Amanda Garlock adjourned the first business meeting of the 2015 House of Delegates at 9:45 a.m., Friday, June 26, 2015.

# Thirtieth Annual Meeting of the ASRT House of Delegates

Albuquerque Convention Center/Hyatt Regency  
Albuquerque, N.M.  
June 26-28, 2015

## Second Business Meeting

### I. Call to Order

Speaker of the House Amanda Garlock called the second business meeting of the 30th Annual Meeting of the ASRT House of Delegates to order at 8:08 a.m., Sunday, June 28, 2015.

### II. Credentials Report

Vice Speaker of the House Michael Odgren presented the Credentials Report. There was no change in the number of credentialed delegates (156).

### III. Committee on Bylaws Report

Chairman James Johnston presented the Committee on Bylaws report.

**Motion:** If adopted, the Bylaws revision becomes effective upon the adjournment of the 2015 House of Delegates meeting.

**Action:** Adopted unanimously by the delegates.

**Motion:** Move that Article V House of Delegates, Section 3 Delegate Requirements and Qualifications, Letter A Affiliate Delegates be amended by inserting a new number 5 that states “For affiliates who have not had active status with ASRT for a minimum of 24 months, delegates shall be a voting member of ASRT for two years immediately preceding nomination and a member of the affiliate being represented at the time of nomination.” and renumbering the remaining items.

**Action:** Adopted by 99% in affirmative vote by the delegates.

[Adopted Bylaws Attached](#)

### IV. Commission Report and Consent Calendar

**Action:** Motions 1, 5, 6, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, and 30 were removed from the Consent Calendar. Following this action the remainder of the Consent Calendar, consisting of motions 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, and 26 was adopted unanimously by the delegates.

Chairman Michelle Hutchings-Medina presented the Commission report. The full content of each motion can be found in the attached appendix. The results of each motion are as follows:

Main Motion	Title	Action
C-15.01	<a href="#">Opposition to Use of Medical Imaging for Nonmedical Purposes</a>	Motion 1, amendment adopted with 89% in affirmative. Adopted as amended with 95% in affirmative.
C-15.02	Amend all Practice Standards with editorial changes	Adopted on Consent Calendar.
C-15.03	Amend the Preface as appended to the <a href="#">Bone Densitometry</a> , <a href="#">Cardiovascular-Interventional</a> , <a href="#">Computed Tomography</a> , <a href="#">Magnetic Resonance</a> , <a href="#">Mammography</a> , <a href="#">Medical Dosimetry</a> , <a href="#">Nuclear Medicine</a> , <a href="#">Quality Management</a> , <a href="#">Radiography</a> , <a href="#">Radiologist Assistant</a> , <a href="#">Radiation Therapy</a> and <a href="#">Sonography</a> Practice Standards	Adopted on Consent Calendar.
C-15.04	Amend the Preface as appended to the <a href="#">Limited X-ray Machine Operator</a> Practice Standards	Adopted on Consent Calendar.
C-15.05	Amend the Introduction, Definition section as appended to the <a href="#">Bone Densitometry</a> , <a href="#">Cardiovascular-Interventional</a> , <a href="#">Computed Tomography</a> , <a href="#">Magnetic Resonance</a> , <a href="#">Mammography</a> , <a href="#">Nuclear Medicine</a> , <a href="#">Radiation Therapy</a> , <a href="#">Radiography</a> and <a href="#">Sonography</a> Practice Standards	Motion 2, amendment adopted with 95% in affirmative. Adopted as amended with 97% in affirmative.
C-15.06	Amend the Introduction, Education and Certification section as appended to all Practice Standards  <a href="#">Bone Densitometry</a> <a href="#">Cardiovascular Interventional</a> <a href="#">Computed Tomography</a> <a href="#">Limited X-ray Machine Operators</a> <a href="#">Magnetic Resonance</a> <a href="#">Mammography</a> <a href="#">Medical Dosimetry</a> <a href="#">Nuclear Medicine</a> <a href="#">Quality Management</a> <a href="#">Radiography</a> <a href="#">Radiologist Assistant</a> <a href="#">Radiation Therapy</a> <a href="#">Sonography</a>	Motion 3, amendment adopted with 98% in affirmative. Adopted as amended with 95% in affirmative.
C-15.07	Amend the General Scope of Practice section as appended to the <a href="#">Bone Densitometry</a> , <a href="#">Cardiovascular Interventional</a> , <a href="#">Computed Tomography</a> , <a href="#">Magnetic Resonance</a> , <a href="#">Mammography</a> , <a href="#">Nuclear Medicine</a> , <a href="#">Quality Management</a> , <a href="#">Radiation Therapy</a> and <a href="#">Sonography</a> Practice Standards	Adopted on Consent Calendar

<b>Main Motion</b>	<b>Title</b>	<b>Action</b>
C-15.08	Amend the General Scope of Practice and Specific Scope of Practice sections as appended to the <a href="#">Radiography</a> Practice Standards	Adopted on Consent Calendar
C-15.09	Amend the General Scope of Practice and Specific Scope of Practice section as appended to the <a href="#">Limited X-ray Machine Operator</a> Practice Standards	Adopted on Consent Calendar.
C-15.10	Amend the General Scope of Practice section as appended to the <a href="#">Medical Dosimetry</a> Practice Standards	Adopted on Consent Calendar
C-15.11	Amend the General Criteria section as appended to <a href="#">Bone Densitometry</a> , <a href="#">Cardiovascular Interventional</a> , <a href="#">Computed Tomography</a> , <a href="#">Mammography</a> , <a href="#">Magnetic Resonance</a> , <a href="#">Nuclear Medicine</a> , <a href="#">Quality Management</a> , <a href="#">Radiography</a> , <a href="#">Radiation Therapy</a> , <a href="#">Radiologist Assistant</a> and <a href="#">Sonography</a> Practice Standards	Adopted on Consent Calendar.
C-15.12	Amend the General Criteria section as appended to <a href="#">Limited X-ray Machine Operator</a> Practice Standards	Adopted on Consent Calendar.
C-15.13	Amend the General Criteria section as appended to <a href="#">Medical Dosimetry</a> Practice Standards	Adopted on Consent Calendar
C-15.14	Amend Quality Performance Standards, Standard One Assessment, Specific Criteria of <a href="#">Computed Tomography</a> , <a href="#">Limited X-ray Machine Operator</a> and <a href="#">Radiography</a> Practice Standards	Adopted on Consent Calendar
C-15.15	Amend <a href="#">Nuclear Medicine</a> Quality Performance Standards, Standard One Assessment and Standard Four Performance, Specific Criteria	Adopted on Consent Calendar
C-15.16	Amend <a href="#">Radiography</a> Clinical Performance Standards, Standard Three Patient Education, Specific Criteria Number One	Adopted on Consent Calendar
C-15.17	Amend <a href="#">Nuclear Medicine</a> Professional Performance Standards, Standard Four Collaboration and Collegiality, Specific Criteria Number One	Adopted on Consent Calendar.
C-15.18	Amend Quality Performance Standards, Standard Six Implementation, Specific Criteria <a href="#">Medical Dosimetry</a> Practice Standards	Adopted on Consent Calendar.
C-15.19	Amend the <a href="#">Bone Densitometry</a> Practice Standards	Motion 4, withdraw adopted by consent.
C-15.20	Amend the <a href="#">Cardiovascular Interventional</a> Practice Standards	Motion 5, withdraw adopted by consent.



<b>Main Motion</b>	<b>Title</b>	<b>Action</b>
C-15.21	Amend the <a href="#">Radiation Therapy</a> Practice Standards	Motion 6, withdraw adopted by consent.
C-15.22	Amend the Practice Standards <a href="#">Glossary</a>	Motion 7, amendment adopted with 98% in affirmative. Adopted as amended with 96% in affirmative.
C-15.23	Adopt the Advisory Opinion Statement titled <a href="#">Use of Post-Exposure Shuttering in Radiography</a>	Motion 8, amendment is adopted with 97% in affirmative. Motion 9, amendment adopted with 99% in affirmative. Adopted as amended with 100% in affirmative.
C-15.24	Rescind the <a href="#">Position Statement</a> “Digital Imaging Cropping or Masking in Radiography”	Adopted with 98% in affirmative.
C-15.25	Rescind the <a href="#">Position Statement</a> “Digital Image Post-Processing in Radiography”	Adopted with 95% in affirmative.
C-15.26	Rescind the <a href="#">Position Statement</a> “Entry Level of Education for Radiographers”	Adopted on Consent Calendar
C-15.27	Adopt the <a href="#">Position Statement</a> titled “Qualifications for Performing Fluoroscopic Procedures”	Motion 10, amendment adopted with 85% in affirmative. Not adopted as amended with 79% in negative.
C-15.28	Amend the <a href="#">Bone Densitometry</a> Practice Standards as amended by the Commission	Adopted with 99% in affirmative.
C-15.29	Amend the <a href="#">Cardiovascular Interventional</a> Practice Standards as amended by the Commission	Adopted with 99% in affirmative.
C-15.30	Amend the <a href="#">Radiation Therapy</a> Practice Standards as amended by the Commission	Adopted with 99% in affirmative.

## V. New Business

### A. Introduction of Late Main Motions Requiring a 3/4 Vote to Debate

One late motion received.

Amend the title of the Clinical Performance Standards, Standards three: Patient Education as appended to the Bone Densitometry, Cardiovascular Interventional, Computed Tomography, Magnetic Resonance, Mammography, Medical Dosimetry, Nuclear Medicine, Quality Management, Radiation Therapy, Radiography, Sonography, Limited X-ray Machine Operator and Registered Radiologist Assistant practice standards.

Adopted motion to debate with 83% in the affirmative.

Amend the title of the Clinical Performance Standards, Standards three: Patient Education to read: Clinical Performance Standards, Standard Three, Education.

Adopted motion as amended with 98% in the affirmative.

### **B. Courtesy Resolutions**

Without objection, the House of Delegates agreed to suspend the rules to allow Student Leadership Development Participants to bring a motion of courtesy thanking the ASRT for the opportunity to attend the ASRT Student Leadership Development Program and the Annual Governance and House of Delegates meeting.

**Motion:** The 2015 Student Leadership Development Program wants to thank and express deep gratitude to the House of Delegates for granting students the opportunity to share in the process and activities of the American Society of Radiologic Technologists.

**Action:** Adopted with delegates showing their appreciation through rising applause.

Without objection, the House of Delegates agreed to suspend the rules to allow Dr. Sal Martino, ASRT CEO, to bring a motion of courtesy to the Annual Governance and House of Delegates meeting.

**Motion:** The American Society of Radiologic Technologists House of Delegates congratulate the Hentes on their milestone 40<sup>th</sup> wedding anniversary.

**Action:** Adopted with delegates showing their appreciation through rising applause.

Without objection, the House of Delegates agreed to suspend the rules to allow Dr. Julie Gill, ASRT Board Chairman, to bring a motion of courtesy to the Annual Governance and House of Delegates meeting.

**Motion:** The membership of the American Society of Radiologic Technologists House of Delegates recognize and thank Sal Martino for his vision in the spearheading the creation of the ASRT Museum and Archives. The membership of the ASRT recognize and thank Greg Morrison for taking Sal's vision and breathing life into it. The leadership and oversight of these two men has made the ASRT Museum and Archives an evolving chronicle of our profession and something that all Radiologic Technologists and Radiation Therapists can be proud of.

**Action:** Adopted with delegates showing their appreciation through rising applause.

## **C. Report of Election of Chapter Steering Committee Chairmen**

### **Bone Densitometry**

Chairman Lynn Howley  
Vice Chairman Marjorie Sawyer

### **Cardiovascular Interventional Technology**

Chairman Chris Steelman  
Vice Chairman Steve Miles

### **Computed Tomography**

Chairman Emilee Palmer  
Vice Chairman Larry Maxwell

### **Education**

Chairman Frances Gilman  
Vice Chairman Jeff Killion

### **Magnetic Resonance**

Chairman Cheryl Dubose  
Vice Chairman Joy Cook

### **Mammography**

Chairman Cheryl Worden  
Vice Chairman Rhonda Engebretson

### **Management**

Chairman Susan Castanette  
Vice Chairman Susan Cazaux

### **Medical Dosimetry**

Chairman Stacy Anderson  
Vice Chairman Sharon Chestnut

### **Military**

Chairman Danyll Gardner  
Vice Chairman Jeremy Barber, Sr.

### **Nuclear Medicine**

Chairman Rodney Fisher  
Vice Chairman Donna Newman

### **Quality Management**

Chairman Anne Brittain  
Vice Chairman James Temme

### **Radiation Therapy**

Chairman Marissa Johnston  
Vice Chairman Ruth Hackworth

### **Radiography**

Chairman Sharon Miller  
Vice Chairman Steve Cohen

### **Registered Radiologist Assistant**

Chairman Susan Wertz  
Vice Chairman Travis Prowant

### **Sonography**

Chairman Bettye Wilson  
Vice Chairman Kelley McDonald

**VI. Nominations for Speaker and Vice Speaker**

**Speaker**  
Michael Odgren

**Vice Speaker**  
Beth Weber

**VII. Election of Speaker and Vice Speaker**

**Action:** Michael Odgren elected as speaker and Beth Weber elected as vice speaker for 2014-15 House of Delegates by affirmative voice vote of the delegates.

**VIII. Adjournment**

Speaker of the House Amanda Garlock-Corbin adjourned the second meeting of the 30th Annual Meeting of the House of Delegates at 10:22 a.m., Sunday, June 28, 2015.

**Approved:**



Speaker  
Chairman, Minutes Approval Committee  
Amanda Garlock



Vice Speaker  
Michael Odgren

# Thirtieth Annual Meeting of the ASRT House of Delegates

Motions Appendix

Albuquerque Convention Center  
And  
Hyatt Regency  
Albuquerque, New Mexico, June 26-28, 2015

## *Motion*

Be it resolved, that the American Society of Radiologic Technologists expresses its sorrow over the passing of these members since our 2015 House of Delegates meeting in Albuquerque, N.M., and affirms our sorrow by rising for a moment of silence in memory of our departed colleagues.



American Society of  
Radiologic Technologists

## **2015 Memorial Resolution**

The American Society of Radiologic Technologists House of Delegates moves the following: Whereas, all members of the American Society of Radiologic Technologists are of immeasurable value within our organization and invaluable as members of the health team in the field of medicine, we present the names of members who have passed since our last House of Delegates Meeting:

Joseph Adcock - Jacksonville, AL  
Lawrence Allenbaugh - Pocatello, ID  
Eugene Aquino - Chula Vista, CA  
Diana Arndt - Little Falls, NJ  
Annette Arp - Gainesville, FL  
Richard Bator - Norwood, NJ  
Bambi Beiling - Salem, OH  
Jerry Benford - Perrysburg, OH  
Virginia Berglund - Paradise, CA  
Cynthia Black - Fort Mohave, AZ  
Anne-Marie Brombal - Plano, TX  
Robert Brown - Cave City, KY  
David Buxbaum - Garden City, NY  
Joe Calhoun Jr - Lagrange, GA  
Kathleen Cassidy - Gouverneur, NY  
Katherine Ceschin - Kenosha, WI  
Caron Colvett - Austin, TX  
Frank Combatti - New Hyde Park, NY

Angela Jenkins - Roanoke, VA  
Rickey Johniken - Craig, CO  
James Joyce - West Hempstead, NY  
Sheila Kamenetzky - Saint Louis, MO  
Erin Kane - Henderson, NV  
Martin Keane - West Babylon, NY  
Mary Knight - San Jose, CA  
Karl Koepke - Burbank, IL  
Karen Krueger - Spring Grove, IL  
Douglas Lewis - Orange, CA  
Angela Lombardo - Tewksbury, MA  
Ronald Lucich - Indianapolis, IN  
Duane McCrorie - Boise, ID  
Alice McFadden - Havertown, PA  
Helen McFadden - Lexington, KY  
Lyle Mersnick - Phoenix, AZ  
Margaret Miyagawa - Pewaukee, WI  
Kim Murphy - Billerica, MA

Stewart Combs - Noble, OK  
Stephen Dadey - Johnstown, PA  
Brenna Darling - Livingston Manor, NY  
Joyce De Leo - San Leandro, CA  
Deborah Doemel - Reedsville, WI  
Julie Durham - Green Bay, WI  
Felicia Estridge - Brandon, MS  
Marvin Foltz - Medina, OH  
George Fournier - South Pasadena, FL  
Robert Freeman - Lansdowne, PA  
Gary Fronabarger - Wynne, AR  
Leona Gann - Jacinto City, TX  
Douglas Gheen - Point Pleasant, WV  
Grace Girts - Middleburg Heights, OH  
Mary Griffith - Norman, OK  
Diane Gwynn - Saint Paul, MN  
William Hamilton - Jacksonville, FL  
Rita Hatch - Cedar City, UT  
June Heaton - Dixon, IL  
George Heiser - Strasburg, PA  
Rodney Heredia - Aurora, CO  
John High - Cookeville, TN  
Danny Hill - Apple Valley, MN  
Arlan Hinkley - Reed City, MI  
Douglas Hjenvik - Easton, MD  
Richard Hone - Keno, OR  
Sandra Hornsby - Rock, MI  
Johnny Howanietz - Damascus, AR  
William Hutson - Northbrook, IL  
Zachary Isenhardt - Chadwick, IL

Timothy Odum - Clinton, NC  
Marilyn Pahl - Minneapolis, MN  
Robert Parker - Newark, OH  
Brandy Pinske - Beecher, IL  
John Radtke - Pomona, CA  
Anna Rajtar - Minneapolis, MN  
Amy Rammel - Fredonia, WI  
Parsram Ramrup - South Ozone Park, NY  
Lori Reeves - Philadelphia, PA  
John Register - Tallahassee, FL  
Sr. Johanna Renn - Roswell, NM  
Rhonda Romeo - Columbus, GA  
James Roof - WA  
Harry Sanders - Boone, NC  
Donald Shugars - Pueblo, CO  
Gwynda Snider - Ulm, AR  
Barbara Spano - Lakeland, FL  
Jeffrey Sphuler - Willernie, MN  
Kay Stout - Skiatook, OK  
Stephen Sundberg - Maple Grove, MN  
Gary Tomaszewski - Tallahassee, FL  
James Wagner - Bartlett, IL  
Richard Warner - Seattle, WA  
Dawn Watts - South Portland, ME  
Earle West - FL  
Eric Whitaker - Hendersonville, NC  
Everett Williard - Atlanta, GA  
Bonnie Womble - Chapel Hill, NC  
Cindy Yarborough - Burkburnett, TX  
Robert Young - Lakewood, CA



# ASRT Articles of Incorporation, 2010 ASRT Bylaws, 2015

Adopted June 28, 2015

American Society of Radiologic Technologists, 15000 Central Ave. SE, Albuquerque, NM 87123-3909  
505-298-4500 • 800-444-2778 • Fax 505-298-5063 • [www.asrt.org](http://www.asrt.org)

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## **The General Nature of the Bylaws**

Bylaws are rules adopted and maintained by an association or society that define and direct its internal structure and management. They are subordinate, and complementary, to an association's articles of incorporation.

Articles of incorporation are the primary law of an association used to establish the general organization and governing of the association to achieve corporate existence.

Bylaws are the secondary law of an association best used to detail how the society is formed and run.

In some states, bylaws are not specifically required for an incorporated or unincorporated association, or they are only mentioned in a cursory manner. ASRT's state of incorporation, Illinois, requires them. Even where legally optional, most associations elect to have a set of bylaws because of its usefulness in management operations.

If the articles constitute an agreement between the society and the state, the bylaws shall be viewed as constituting the terms of an agreement between an association and its members. The agreement ordinarily shall be honored and enforced in a court of law. Bylaws describe the relationships, rights and obligations for the members, directors, officers and staff of an association. They can be invaluable in avoiding or resolving differences among those who are part of the association or who deal with it.

Consequently, bylaws should be kept current, taking into account the changes of an association. Members and staff also should familiarize themselves with the document to better understand the organization they represent and that represents them.

*- Prepared September 2003 by ASRT's legal counsel,  
Webster, Chamberlain and Bean, Washington, D.C.*

## **Articles of Incorporation**

### **ARTICLE I**

The name of this organization shall be known as the American Society of Radiologic Technologists. The general nature of its business shall be educational, scientific and socioeconomic. The principal place of business of this corporation shall be located in the City of Chicago, County of Cook, State of Illinois, or at any other such place or places within the State of Illinois as the Board of Directors may from time to time determine by resolution thereof.

### **ARTICLE II**

The time of commencement of this corporation shall be Jan. 16, 1932, and the period of its duration shall be in perpetuity.

### **ARTICLE III**

The names and places of residence of the persons forming this corporation are:

Margaret Hoing, Chicago, Ill., president;  
Virginia Eller, Janesville, Wis., second vice president;  
Emma C. Grierson, St. Paul, Minn., secretary-treasurer.

### **ARTICLE IV**

The management of this corporation shall be vested in a Board of Directors chosen to serve in accordance with the provisions of the Bylaws of the corporation.

The officers of this corporation shall consist of a chairman, president, president-elect, vice president and a secretary-treasurer. They shall be selected annually by the membership in accordance with the provisions of the Bylaws and shall serve for a period of one year or until their successors have been selected and assumed office.

The Board of Directors shall meet at least once a year at the annual meeting of the corporation.

The election of officers shall be conducted as in the Bylaws provided.

### **ARTICLE V**

Individual members shall be admitted to this corporation in accordance with the qualifications and procedures established by the Bylaws. The candidate shall be notified of acceptance and shall be issued a certificate of membership. The membership may be renewed annually upon payment of such dues as shall be required. Rules of conduct for members, admission, expulsion of members and other related matters shall be governed by suitable Bylaws of this corporation.

Organizations engaged in and existing for purposes analogous to the nature of and business of this corporation may make application for and receive affiliate membership in this corporation upon such conditions and pursuant to such rules as shall be established by the Bylaws of this corporation.

### **ARTICLE VI**

This corporation shall be nonprofit and nonsectarian. No part of any net earnings shall inure to the benefit of any individual, member or affiliate.

### **ARTICLE VII**

Amendments to these Articles of Incorporation may be made by two-thirds of the members voting, following proper notification as established by the Bylaws of this corporation.

# **ASRT BYLAWS**

## **ARTICLE I**

### **Name**

The name of this organization shall be the American Society of Radiologic Technologists, hereinafter referred to as the ASRT.

## **ARTICLE II**

### **Definition and Purpose**

#### **Section 1. Definition**

Radiologic technologist shall be the term used to define radiographer, nuclear medicine technologist, radiation therapist, sonographer and magnetic resonance technologist and shall be used to describe the areas of certification or licensure. Additional terms of description may be adopted by the ASRT to define new areas of certification or licensure.

#### **Section 2. Purpose**

The purpose of ASRT shall be to advance the professions of radiation and imaging disciplines and specialties; to maintain high standards of education; to enhance the quality of patient care; and to further the welfare and socioeconomics of radiologic technologists.

## **ARTICLE III**

### **Membership**

#### **Section 1. Policy and Procedure**

- A. The ASRT is committed to equal opportunity and nondiscrimination in all programs and activities. No one shall be denied opportunities or benefits on the basis of age, sex, color, race, creed, national origin, religious persuasion, marital status, sexual orientation, gender identity, military status, political belief or disability.
- B. The name of the ASRT or any delegate in the House of Delegates, its Board of Directors or its staff, in their official capacities, shall not be used in connection with a corporate company for other than the regular functions of the ASRT.
- C. A candidate for membership shall submit an application for membership along with the required fee to the ASRT office.

#### **Section 2. Categories of Membership**

##### **Voting**

- A. Active members are those who are registered by the American Registry of Radiologic Technologists (ARRT) or equivalent or hold an unrestricted license in medical imaging

or radiation therapy under state statute. They shall have all rights, privileges and obligations of membership including the right to vote, hold office and serve as a delegate.

- B. Student members are those who are enrolled in primary medical imaging or radiation therapy programs. They shall have all rights, privileges and obligations of Active members. Eligibility for Student membership shall terminate upon initial certification.
- C. Graduate Bridge members are those who meet the following qualifications:
  - 1. have graduated from an accredited program in their initial medical imaging or radiation therapy program within the past 24 months; or
  - 2. are registered by the American Registry of Radiologic Technologists (ARRT) or equivalent and are within 24 months of their initial certification.They shall have all rights, privileges and obligations of Active members.
- D. Emeritus members are those who have reached age 65, maintained membership in good standing in the ASRT for at least 30 years and applied for emeritus status. They shall have all rights, privileges and obligations of Active members except to hold office or serve as a delegate. They shall pay no membership dues. No new members shall be inducted into this category after January 1, 1990.
- E. Life members are those voting members who have maintained continuous membership for a minimum of 30 years and shall be limited to one for each 2,500 active members. Their participation as a member shall reflect exceptional service and dedication to the ASRT and the profession. They shall be selected by three-fourths vote of the entire membership of the Board of Directors. They shall have all rights, privileges and obligations of Active members. They shall pay no membership dues.
- F. Retired members are those who hold a certificate of recognition from the American Registry of Radiologic Technologists (ARRT) or equivalent or who meet Social Security Administration requirements for retirement. They shall have all rights, privileges and obligations of Active members except to hold office or serve as a delegate.
- G. Radiologist assistants are those registered radiologic technologists who hold the credential R.R.A. They shall have all rights, privileges and obligations of Active members.

### **Nonvoting**

- A. Associate members are those who are or have been employed in the technical, educational, managerial or corporate aspects of the medical imaging or radiation therapy professions and do not qualify for Active membership. They shall have all rights, privileges and obligations of Active members except to vote, hold office or serve as a delegate.
- B. Limited x-ray machine operators are those who perform diagnostic x-ray procedures on selected anatomical sites and are not registered radiologic technologists. They shall have

all rights, privileges and obligations of Active members except to vote, hold office or serve as a delegate.

- C. International members are those who reside outside the United States or any of its territories, are not registered by the American Registry of Radiologic Technologists (ARRT) or equivalent, and are employed in the technical, educational, managerial or corporate aspects of the medical imaging or radiation therapy professions. They shall have all rights, privileges and obligations of Active members except to vote, hold office or serve as a delegate.

### **Section 3. Dues and Fees**

- A. Dues for all members, proposed by the Board of Directors, require adoption by a two-thirds vote of the delegates voting at the annual meeting of the House of Delegates.
  - 1. Intent to change dues shall be communicated to all delegates a minimum of 45 days prior to the beginning of the annual meeting of the House of Delegates.
- B. One chapter membership shall be included as part of the annual ASRT dues. Each additional chapter membership shall require a fee as established by the ASRT Board of Directors.
- C. Dues shall be paid by the expiration date.

### **Section 4. Resignation**

Any member shall have the right to resign by written communication to the ASRT office.

### **Section 5. Reinstatement**

A member who has resigned or whose membership has been revoked by the ASRT for other reasons may be reinstated only after filing a new application, acceptance of the application by the Board of Directors, and paying the fees as a new member.

## **ARTICLE IV Officers**

### **Section 1. Positions**

The elected officers of the ASRT shall be chairman, president, vice president, president-elect and secretary-treasurer.

### **Section 2. Qualifications**

- A. General qualifications
  - 1. Shall practice in the medical imaging or radiation therapy professions or health care.
  - 2. Shall be a voting member of the ASRT and must have been a voting member for four years immediately preceding nomination.

3. Shall be a voting member of an ASRT affiliate or serve on active duty in the Army, Navy, Air Force or Coast Guard.
  4. Shall show proof of continuing education.
  5. Shall have served as a delegate for a minimum of two years.
  6. Shall not serve concurrently on the board of any national medical imaging or radiation therapy certification or national accreditation agency, or in the House of Delegates.
- B. President-elect
1. Shall have served on the ASRT Board of Directors.
- C. Vice president
1. Shall have served on the ASRT Board of Directors.
- D. Secretary-treasurer
1. Shall have fulfilled two years in any appointed or elected ASRT position, or as president of an affiliate society.
- E. An officer who met qualification requirements at the time of nomination shall be permitted to complete the term regardless of employment status changes.

### **Section 3. Terms of Office**

- A. The vice president and secretary-treasurer shall serve for a term of one year or until their successors have been elected.
- B. The president-elect shall serve for a term of one year as president-elect, one year as president and one year as chairman.
- C. Terms shall begin at the close of the annual meeting of the House of Delegates.

### **Section 4. Duties**

- A. Officers shall perform the duties prescribed by these bylaws.
- B. Chairman
1. Shall preside at meetings of the Board of Directors.
- C. President
1. In the absence or inability of the chairman to serve, the president shall preside at meetings of the Board of Directors.
  2. For additional duties related to committees see Article IX.
- D. Vice President

1. Shall assume the duties of the president when necessary.
- E. President-elect
1. Shall become familiar with all ASRT activities and be prepared to assume the office of president.
  2. For additional duties related to committees see Article IX.
- F. Secretary-treasurer
1. Shall perform duties assigned by the Board of Directors.

### **Section 5. Vacancies**

- A. A vacancy in the office of president shall be filled by the vice president.
- B. A vacancy in the office of president-elect shall be filled by a special election.
- C. A vacancy in the office of vice president or secretary-treasurer shall be filled by appointment by a majority vote of the entire remaining membership of the Board of Directors.

## **ARTICLE V**

### **House of Delegates**

### **Section 1. Purpose**

The House of Delegates shall be the legislative body of the ASRT. The House of Delegates establishes professional standards of practice.

### **Section 2. Composition**

- A. The House of Delegates shall be composed of the speaker and vice speaker, affiliate delegates and chapter delegates.
- B. Each affiliate shall be represented by two delegates.
- C. Each chapter shall be represented by four delegates.

### **Section 3. Delegate Requirements and Qualifications**

- A. Affiliate delegates
  1. Two delegates and two alternate delegates shall be elected or appointed by each ASRT affiliate in accordance with affiliate procedures.
  2. Affiliates shall submit completed affiliate delegate information forms to ASRT for the delegates and alternate delegates by the end of the last business day of January. Delegate and alternate delegate positions not filled with qualified members by the last business day of January shall remain open until after the annual meeting of the House of Delegates.



3. A delegate shall show proof of continuing education.
4. A delegate shall be a voting member of the ASRT and the affiliate being represented for two years immediately preceding nomination.
5. For affiliates who have not had active status with ASRT for a minimum of 24 months, delegates shall be a voting member of ASRT for two years immediately preceding nomination and a member of the affiliate being represented at the time of nomination.
6. A delegate shall have served as an officer, or on the Board of Directors or as a committee member in the affiliate being represented.
7. A delegate shall practice in the medical imaging or radiation therapy professions or health care.
8. A delegate may serve concurrently on the board of any national medical imaging or radiation therapy certification or national accreditation agency.
9. A delegate shall have the time and availability for necessary travel to represent the ASRT.
10. A delegate shall attend the annual meeting of the House of Delegates and all meetings required of delegates.

B. Chapter delegates

1. Two delegates and two alternate delegates shall be elected annually by a plurality vote of the voting members of the ASRT.
2. Delegates shall be elected for a term of two years. The term shall begin at the close of the annual meeting of the House of Delegates in the year the delegate is elected.
3. A delegate shall be limited to two, two-year consecutive terms unless there is not a full slate of qualified candidates nominated.
4. The delegate nominees receiving the third and fourth highest number of votes on the ballot are the elected alternate delegates.
5. An alternate delegate shall serve a one-year term. The term shall begin at the close of the annual meeting of the House of Delegates in the year the alternate delegate is elected.
6. If an alternate is not elected, this position remains open until the next regular election.

7. A delegate shall show proof of continuing education.
8. A delegate shall be a voting member of the ASRT for two years immediately preceding nomination.
9. A delegate, excluding a military delegate, shall be a member of an affiliate or have served as a Military Chapter delegate for two years immediately preceding nomination.
10. A delegate, excluding a military delegate, shall have served as an officer, delegate or an elected or appointed ASRT position, or as an officer on the Board of Directors or as a committee member in an affiliate.
11. In clinical practice chapters where certification and/or post primary examination offered by an ASRT-recognized organization exists, the delegate shall show proof of current credential and documentation of current practice in the discipline or specialty being represented.
12. In management and education chapters, the delegate shall show proof of documentation of current practice in the discipline or specialty being represented.
13. Military delegates shall be on active duty in the Army, Navy, Air Force or Coast Guard.
14. A delegate, excluding a military delegate, shall only be elected to represent a chapter of which the delegate is a member for the two years immediately preceding nomination.
15. A military delegate shall be a member of the Military Chapter at the time of nomination.
16. A delegate who met qualification requirements at the time of nomination shall be permitted to complete the term regardless of employment status changes. A military delegate who met qualification requirements at the time of nomination shall be permitted to complete the term in the event of retirement or honorable discharge from active duty.
17. A delegate may serve concurrently on the board of any national medical imaging or radiation therapy certification or national accreditation agency.
18. A delegate shall have the time and availability for necessary travel to represent the ASRT.
19. A delegate shall attend the annual meeting of the House of Delegates and all meetings required of delegates.

#### **Section 4. Meetings**

- A. The House of Delegates shall meet at least annually.
- B. The House of Delegates may permit any or all delegates to participate in a meeting by, or conduct the meeting through the use of, any means of communication by which all delegates participating may simultaneously hear each other during the meeting.
- C. Special meetings of the House of Delegates may be called at such time and place as designated by a majority vote of the Board of Directors, or by written request of 65 delegates. Members of the House of Delegates shall be notified 30 days in advance of such meetings, with a statement of the business to be transacted. No business other than that specified shall be transacted.

#### **Section 5. Quorum**

A quorum shall consist of at least 65 credentialed delegates.

#### **Section 6. Voting**

- A. Members may attend the annual meeting of the House of Delegates, but only credentialed delegates shall vote. There shall be no proxy voting.
- B. Main motions adopted by the House of Delegates shall remain in force until rescinded or amended unless they are subject to Article VII, Section 2, paragraph D.
- C. The House of Delegates shall present recommendations to the Board of Directors. The Board of Directors shall report to the House regarding recommendations no later than the next annual meeting of the House of Delegates.

#### **Section 7. Absences and Vacancies**

- A. Absence
  - 1. An absence exists when an elected/appointed delegate is unable to fulfill the duties of the position during the annual meeting of the House of Delegates. The delegate shall be considered absent for the purpose of that meeting only.
  - 2. It is the responsibility of the delegate to notify the ASRT, the speaker of the House, and the alternate delegate of the delegate's inability to attend the annual meeting of the House of Delegates as soon as possible. The alternate delegate shall be seated for that meeting only.
  - 3. If the alternate delegate is unable to serve because of extenuating circumstances, the speaker of the House may seat a qualified delegate for the annual meeting of the House of Delegates for that meeting only.
- B. Vacancies
  - 1. Delegate vacancies shall be filled by the elected/appointed alternate delegate.

## **Section 8. Probation**

- A. If an affiliate fails to seat all delegates, that affiliate enters into probationary status.
- B. If a chapter fails to elect and seat all delegates, that chapter enters into probationary status.

## **Section 9. Nominations and Elections of Speaker and Vice Speaker**

- A. At the annual meeting of the House of Delegates, prior to the close of the last business meeting of the House, a speaker of the House and a vice speaker of the House, who are members of the House, shall be elected by the credentialed delegates.
- B. Nominations for speaker and vice speaker of the House of Delegates shall be accepted at the first business meeting of the House of Delegates. Nominations shall only be accepted at the second business meeting of the House of Delegates if there are no qualified candidates nominated at the first business meeting of the House of Delegates. An individual may not run for both speaker and vice speaker in the same year.
- C. The elections of speaker and vice speaker shall be by majority vote of the delegates voting. If the majority vote is not obtained on the first ballot, the top two vote candidates, or more in the case of a tie, shall have a runoff ballot.
- D. When there is only one candidate for speaker or vice speaker, the election may be by voice vote.
- E. The affiliate or chapter that the speaker or vice speaker represents shall be entitled to fill that delegate position.
  - 1. The elected/appointed alternate affiliate delegate shall fill the position. A new qualified alternate affiliate delegate may be elected/appointed by the affiliate.
  - 2. The elected alternate chapter delegate shall fill that position. A new qualified alternate delegate may be appointed by the chapter within 60 days following the close of the annual meeting of the House of Delegates.
  - 3. If an elected alternate chapter delegate does not exist for the vacated delegate seat, the delegate position remains vacant until the next regular election.

## **Section 10. Qualifications for Speaker and Vice Speaker**

- A. General qualifications
  - 1. Shall practice in the medical imaging or radiation therapy professions or health care.
  - 2. Shall be a voting member of the ASRT and must have been a voting member for four years immediately preceding nomination.
  - 3. Shall be a voting member of an ASRT affiliate or serve on active duty in the Army, Navy, Air Force or Coast Guard.

4. Shall show proof of continuing education.
  5. Shall have served as a delegate for a minimum of two years.
  6. Once elected, shall not serve concurrently on the board of any national medical imaging or radiation therapy certification or national accreditation agency, or as a delegate in the House of Delegates.
- B. A speaker or vice speaker who met qualification requirements at the time of nomination shall be permitted to complete the term regardless of employment status changes.

### **Section 11. Terms of Speaker and Vice Speaker**

- A. The speaker and vice speaker shall be elected to serve for one year and may be re-elected for one additional, consecutive term.
- B. Terms that are not consecutive shall not be restricted.
- C. The term shall begin at the close of the annual meeting of the House of Delegates.

### **Section 12. Duties of Speaker and Vice Speaker**

- A. Speaker
1. Shall preside at all House meetings.
  2. May vote only if his or her vote will make a difference in the outcome of the question being considered.
  3. Shall be a member of the Board of Directors.
  4. For additional duties related to committees see Article IX.
- B. Vice Speaker
1. Shall be a nonvoting member of the House.
  2. In the absence of the speaker, the vice speaker shall assume the duties of the speaker of the House, including the right to vote when the vote will make a difference.
  3. Shall be a member of the Board of Directors.

### **Section 13. Vacancy of Speaker and Vice Speaker**

- A. A vacancy in the office of speaker of the House shall be filled by the vice speaker.
- B. A vacancy in the office of vice speaker of the House shall be filled by a special election of the House of Delegates.

- C. In the case of a concurrent vacancy in the office of speaker and vice speaker, the office of speaker shall be filled by appointment by a majority vote of the entire remaining membership of the Board of Directors.

## **ARTICLE VI**

### **Nominations and Elections**

#### **Section 1. Composition and Responsibilities of the Committee on Nominations**

- A. The Board of Directors shall appoint a chairman and six members to the Committee on Nominations, none of whom may be members of the Board of Directors.
- B. It shall be the duty of the Committee on Nominations to review candidate information and present all qualified candidates for ASRT officer and chapter delegate positions.

#### **Section 2. Nominations**

- A. Nominations of officers and chapter delegates may be submitted by any ASRT voting member. Nominations shall be received in the ASRT office by the end of the first business day of October. Completed candidate information forms shall be received in the ASRT office by the end of the first business day of November.
- B. An individual may not run for a national office and chapter delegate position on the same ballot.
- C. An individual may not run for more than one chapter delegate position on the same ballot.
- D. An individual shall not hold a national office and chapter delegate position simultaneously.

#### **Section 3. Balloting**

- A. Ballots prepared by the ASRT office shall be made available to the voting members at least 120 days prior to the beginning of the annual meeting of the House of Delegates.
- B. Ballots shall be cast no later than 90 days prior to the beginning of the annual meeting of the House of Delegates. Ballots postmarked after this date shall not be counted.
- C. Write-in votes are prohibited for all officer and chapter delegate positions.

#### **Section 4. Election and Notification**

- A. The vice president, president-elect, secretary-treasurer and chapter delegates shall be elected by a plurality vote of the voting members of the ASRT.
- B. A tie vote shall be decided by lot at a regular business meeting of the House of Delegates.

- C. Newly elected officers and chapter delegates shall be notified of election results at least 60 days prior to the beginning of the annual meeting of the House of Delegates.
- D. Election results shall be announced at a regular business meeting of the House of Delegates.

## **ARTICLE VII**

### **Board of Directors**

#### **Section 1. Composition**

The Board of Directors shall consist of the officers of the ASRT, and the speaker and vice speaker of the House of Delegates.

#### **Section 2. Duties**

The Board of Directors shall:

- A. Be vested with the responsibility of the management of the business of the corporation in concert with its strategic plan.
- B. Appoint external organization representatives.
- C. Act on main motions received from the Commission concerning matters of organizational operations and report the status to the House of Delegates.
- D. Temporarily suspend main motions adopted by the House of Delegates if found to be contrary to federal, state or local laws, ASRT Bylaws, or to be financially infeasible.
- E. Place affiliates and chapters on probationary or inactive status.
- F. Reinstate affiliates to active status when the requirements of these Bylaws, the ASRT Affiliate Charter Agreement and the House of Delegates Procedure Manual are met.
- G. Reinstate chapters to active status when the requirements of these Bylaws and the House of Delegates Procedure Manual are met.

#### **Section 3. Meetings**

- A. The Board of Directors shall meet at least annually at the annual meeting of the House of Delegates.
- B. The president or the chairman of the Board, or a majority of the members of the Board of Directors, upon written request to the chairman of the Board, may call a meeting, and the meeting shall occur, provided no less than a 15-day notice to all Board members is given.
- C. The Board of Directors may permit any or all members to participate in a meeting by, or conduct the meeting through the use of, any means of communication by which all members participating may simultaneously hear each other during the meeting.

#### **Section 4. Quorum**

A majority of the Board of Directors shall constitute a quorum for all meetings. Proxies are prohibited.

### **ARTICLE VIII Censure, Reprimand and Removal**

An ASRT member, delegate or Board member may be censured, reprimanded or removed for cause. Sufficient cause includes a violation of the Bylaws or any lawful rule or practice duly adopted by the ASRT, dereliction of duty, other conduct prejudicial to the interests of the ASRT, or conduct detrimental to the ASRT. Such action may occur following completion of the due process procedure.

- A. The Board of Directors must receive formal and specific charges in writing against the individual.
- B. If the Board of Directors deems the charges to be sufficient, the person charged shall be advised, in writing, of the charges.
- C. A statement of the charges shall be sent by certified or registered mail to the last recorded address of the person charged at least 20 days before final action is taken.
- D. The statement shall be accompanied by a notice of the time and place of the meeting of the Board of Directors at which the charges shall be considered.
- E. The person charged shall have the opportunity to address the charges and be represented by counsel to present any defense to such charges before action is taken.
- F. Censure or reprimand of an ASRT member or delegate shall be by majority vote of the entire membership of the Board of Directors.
- G. Censure or reprimand of a Board member shall be by majority vote of the entire remaining membership of the Board of Directors.
- H. Removal of an ASRT member or delegate shall be by three-fourths vote of the entire membership of the Board of Directors.
- I. Removal of a Board member shall be by three-fourths vote of the entire remaining membership of the Board of Directors.
- J. Affiliates have the power to remove affiliate delegates.

### **ARTICLE IX**



## **Committees**

- A. There shall be committees as deemed necessary appointed by the Board of Directors, president, president-elect or speaker of the House of Delegates.
- B. The appointing authority may appoint Board members as ex-officio members of all committees, except the Committee on Nominations.
- C. The Board shall appoint and provide charges to committees appointed by the Board.
- D. The president-elect shall appoint and provide charges to presidential committees for his or her presidential year.
- E. The speaker shall appoint and provide charges to House committees.
- F. A vacancy in any committee shall be filled by the appointing power.

## **ARTICLE X**

### **Affiliate Organizations and Chapters**

#### **Section 1. Affiliate Organizations**

- A. The ASRT has granted one affiliate charter in each state, the District of Columbia, the city of Philadelphia, Guam and Puerto Rico.
- B. Each affiliate shall renew its charter annually, and within 60 days after the close of its fiscal year, submit the following to the ASRT:
  - 1. Annual budget/financial statement.
  - 2. Affiliate bylaws in agreement with ASRT Bylaws.
  - 3. Articles of incorporation.
  - 4. Certificate of good standing or proof of active incorporation verifying corporate existence is valid dated no later than 90 days prior to application being submitted.
  - 5. Evidence of IRS recognition of tax-exempt status (e.g., determination letter issued to applicant or letter requesting ASRT include applicant in group exemption number).
  - 6. Verification that affiliate officers are ASRT members.
  - 7. Annual meeting information.
  - 8. Names and contact information for officers and board members.

9. List of affiliate subordinates recognized by affiliate and attestation that these subordinates are in compliance with ASRT affiliate subordinate policies and procedures.
  10. Verification that the affiliate filed the appropriate tax returns with the IRS in the prior year.
- C. Any affiliate not in compliance with the ASRT Bylaws, the ASRT Affiliate Charter Agreement or the House of Delegates Procedure Manual shall be placed on probationary status.
- D. An affiliate on probationary status for more than two consecutive years shall be considered inactive.
- E. The ASRT Affiliate Charter Agreement may be terminated by the House of Delegates or by a vote of the members of the affiliate.
- F. The ASRT shall not be responsible for any debts, actions or statements made by, or on behalf of, any affiliate.

## **Section 2. Chapters**

- A. Recognized chapters are:
1. Bone densitometry
  2. Cardiovascular interventional technology
  3. Computed tomography
  4. Education
  5. Magnetic resonance
  6. Mammography
  7. Management
  8. Medical dosimetry
  9. Military
  10. Nuclear medicine
  11. Quality management
  12. Radiation therapy
  13. Radiography
  14. Registered radiologist assistant
  15. Sonography
- B. Chapters shall be governed by the ASRT Bylaws.
- C. Any chapter not in compliance with the ASRT Bylaws or the House of Delegates Procedure Manual shall be placed on probationary status.
- D. A chapter on probationary status for more than two consecutive years shall be considered inactive.

## **ARTICLE XI**

### **Commission and Main Motions**

#### **Section 1. Composition and Responsibilities of the Commission**

- A. The Commission shall consist of a chairman and members appointed by the speaker of the House.
  
- B. Main motions shall be submitted to the Commission via the vice speaker of the House.
  - 1. Main motions submitted by individual delegates must be seconded by another delegate.
  
  - 2. Main motions submitted on behalf of chapters must be adopted by a majority of the chapter steering committee.
  
  - 3. Main motions submitted on behalf of affiliates must be adopted by the affiliate's board of directors.
  
  - 4. Main motions submitted on behalf of Board of Directors, Commission and committees must be adopted by a majority of the submitting group.
  
  - 5. Only motions submitted by individual delegates need to be seconded.
  
- C. The Commission shall distribute main motions as follows: Practice-related main motions shall be reported to the House of Delegates by the Commission; operational main motions shall be reported to the House of Delegates by the Board of Directors; and main motions containing Bylaw implications or Bylaw amendments shall be reported to the House of Delegates by the Committee on Bylaws.

#### **Section 2. Deadline**

Proposed main motions from any approved source other than the Board of Directors and the Commission shall be received by the vice speaker of the House by the first business day of January.

#### **Section 3. Notification**

Main motions received by the Commission and sent to the House of Delegates shall be sent to the delegates 45 days prior to the beginning of the annual meeting of the House of Delegates.

#### **Section 4. Late Main Motions**

- A. Late main motions received by the speaker of the House prior to the beginning of the first business meeting of the House of Delegates shall be read and require a two-thirds vote of the delegates to be debated.

- B. Late main motions received by the speaker of the House after the beginning of the first business meeting of the House of Delegates shall be read and require a three-fourths vote of the delegates to be debated.

## **ARTICLE XII**

### **Parliamentary Authority**

The rules contained in the current edition of *Robert's Rules of Order Newly Revised*, shall govern the ASRT in all cases in which they are applicable unless they are inconsistent with these Bylaws, the Articles of Incorporation, or state or federal law.

## **ARTICLE XIII**

### **Amendments**

- A. Amendments to the Bylaws shall be received by the vice speaker by the first business day of January.
- B. Notice of Bylaw amendments shall be provided to the delegates at least 45 days prior to the beginning of the annual meeting of the House of Delegates.
- C. All main motions received by the first business day of January that require a Bylaw amendment shall be sent to the chairman of the Committee on Bylaws for proper structure to be included in the *Delegate Handbook* at the upcoming annual meeting of the House of Delegates.
- D. These Bylaws may be amended by two-thirds vote of the delegates voting at the annual meeting of the House of Delegates.

## **ARTICLE XIV**

### **Indemnification**

Every officer, director, employee or delegate of the ASRT shall be indemnified by the ASRT against all expenses and liabilities, including attorney's fees, in connection with any threatened, pending or completed proceeding in which the above-named individual is involved by reason of being or having been an officer, director, employee or delegate of the ASRT if the above-named individual acted in good faith and within the scope of the above-named individual's authority and in a manner reasonably believed to be not opposed to the best interests of the ASRT. In no event shall indemnification be paid to or on behalf of any above-named individual going beyond or acting beyond the powers granted by authority of this organization or Bylaws. The foregoing right of indemnification shall be in addition to, and not exclusive of, all other rights to which such officer, director, employee or delegate may be entitled.

**ARTICLE XV**  
**Dissolution**

In the event of dissolution or final liquidation of the ASRT, all of its assets remaining after payment of its obligations shall have been made or provided for, shall be distributed to and among such corporations, foundations or other organizations organized and operated exclusively for scientific and educational purposes in radiologic technology, consistent with those of the ASRT, as designated by the Board of Directors.



# The Practice Standards for Medical Imaging and Radiation Therapy

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**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

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Don, Steven, et al. "Image Gently campaign back to basics initiative: ten steps to help manage radiation dose in pediatric digital radiography." *American Journal of Roentgenology* 200.5 (2013): W431-W436.

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



ASRT

# Position Statements

June 2015

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# **ASRT Position Statements**

## **Introduction**

ASRT position statements reflect the beliefs or standing of the American Society of Radiologic Technologists. In reviewing these position statements, radiologic technologists must take into account existing state statutes and institutional policy.

ASRT uses the term radiologic technologist throughout its official documents to describe personnel working in any discipline or specialty area of radiologic technology. Radiologic technology is the term that describes the medical disciplines and specialties that use radiation for diagnostic medical imaging, interventional procedures and radiation therapy, to include energies used for magnetic resonance and sonographic imaging. The five disciplines in radiologic technology are radiography, radiation therapy, magnetic resonance, sonography and nuclear medicine. Specialties in radiologic technology include cardiovascular-interventional radiography, computed tomography, mammography, and other specialty areas.

## **Position Statements**

### **Collective Bargaining Units**

It is the position of the American Society of Radiologic Technologists that the Society not serve as a collective bargaining unit.

Amended, Resolution, 06-3.09, 2006  
Amended, Main Motion, C-09.57, 2009

### **Conjoint Evaluation of Educational Programs**

It is the position of the American Society of Radiologic Technologists that, in states where state agencies approve radiologic science educational programs, evaluation of such programs be conducted jointly by the state agency and the applicable Joint Review Committee(s) or equivalent.

Amended, Main Motion, C-08.06, 2008  
Amended, Main Motion, C-09.36, 2009

### **Continuing Education of Personnel in Area of Practice to Reduce Radiation Dose**

It is the position of the American Society of Radiologic Technologists that the continuing education of registered radiologic technologists includes their areas of practice and methods to reduce radiation dose.

Adopted, Main Motion, C-11.35, 2011

### **Degree Requirements for Medical Imaging and Radiation Therapy Program Directors and Clinical Coordinators**

It is the position of the American Society of Radiologic Technologists that medical imaging and radiation therapy program directors hold a minimum of a master's degree and that clinical coordinators hold a minimum of a baccalaureate degree.

Adopted, Resolution, 98-2.02, 1998  
Amended, Resolution, 06-2.03, 2006  
Amended, Main Motion, C-09.37, 2009  
Amended, Main Motion, C-14.13, 2014

### **Entry Level of Education for Radiation Therapists**

It is the position of the American Society of Radiologic Technologists that the baccalaureate degree is the entry level for radiation therapists.

Adopted, Resolution, C-07.10, 2007  
Amended, Main Motion, C-09.39, 2009

### **Federal Minimum Standards for Medical Imaging and Radiation Therapy**

It is the position of the American Society of Radiologic Technologists that the U.S. Congress should enact federal minimum standards of education and certification for all individuals performing medical imaging or planning and/or delivering radiation therapy. Such standards should be, at the minimum, equivalent to those established for educational accreditation by the Joint Review Committees or equivalent and certification by the American Registry of Radiologic Technologists or equivalent.

Amended, Resolution, 95-2.08, 1995  
Amended, Resolution, 06-2.06, 2006  
Amended, Main Motion, C-09.44, 2009

### **Level of Education for the Medical Imaging and Radiation Therapy Professions**

It is the position of the American Society of Radiologic Technologists that the baccalaureate degree is the professional level of medical imaging and radiation therapy education if it contains related upper division coursework.

Adopted, Resolution, 94-2.04, 1994  
Amended, Resolution, 95-2.05, 1995  
Amended, Resolution, 06-2.05, 2007  
Amended, Main Motion, C-09.41, 2009  
Amended, Main Motion, C-14.14, 2014

### **Majority Representation on State Radiologic Technologist Licensure or Regulatory Boards and Committees**

It is the position of the American Society of Radiologic Technologists that the majority of members appointed or designated to serve on state radiologic technologist licensure or regulatory boards and committees be practicing registered radiologic technologists with expertise in the disciplines licensed or regulated by that entity.

Adopted, Resolution, C-07.05, 2007  
Amended, Main Motion, C-09.46, 2009

### **Monitoring Patient Exposure During Utilization of Digital Radiography Systems**

It is the position of the American Society of Radiologic Technologists that health care facilities using digital radiography systems monitor patient exposure. Exposure indicator data should be included in the Digital Imaging Communications in Medicine (DICOM) header for images sent to picture archiving and communication systems (PACS) or in the patient demographics field for all imaging studies and should be part of the permanent patient record. The exposure indicator should not be altered to modify image appearance and should accurately record the exposure or exposure factors used in producing the image. Health care facilities should collect patient exposure range distributions and reject analyses as part of the quality assurance program. This exposure data should be reviewed routinely by the health care facility.

Adopted, Resolution, 05-3.10, 2005  
Amended, Resolution, C-07.22, 2007  
Amended, Main Motion, C-09.16, 2009  
Amended, Main Motion, C-14.15, 2014

### **Opposition to Employment of Uncertified or Unlicensed Individuals**

The American Society of Radiologic Technologists opposes the employment or utilization of uncertified or unlicensed individuals to administer ionizing or nonionizing radiation for diagnostic or therapeutic procedures. This is a breach of responsibility of the health care industry in providing quality patient care.

Adopted, Resolution, 93-3.01, 1993  
Amended, Resolution, 94-1.21, 1994  
Amended, Resolution, 06-1.04, 2006  
Amended, Main Motion, C-09.81, 2009

### **Opposition to Institutional Licensure of Radiologic Technologists**

The American Society of Radiologic Technologists opposes institutional licensure of radiologic technologists.

Amended, Resolution, 06-1.03, 2006  
Amended, Main Motion, C-09.45, 2009

### **Opposition to Listing in Trade School Directories**

The American Society of Radiologic Technologists opposes the listing of radiologic technology educational programs in any trade school directory. It is the position of the ASRT that radiologic technology is a profession.

Amended, Resolution, 06-3.10, 2006  
Amended, Main Motion, C-09.74, 2009

### **Opposition to Radiologic Technologists Supervising and/or Training Unlicensed or Uncertified Individuals**

The American Society of Radiologic Technologists opposes any radiologic technologists being required to supervise and/or train any unlicensed or uncertified individuals in the delivery of medical imaging or radiation therapy procedures unless they are enrolled in or have graduated from an educational program in the radiologic sciences accredited by a mechanism recognized by the American Registry of Radiologic Technologists or equivalent.

Adopted, Resolution, 02-3.01, 2002  
Amended, Main Motion, C-08.15, 2008  
Amended, Main Motion, C-09.49, 2009

### **Opposition to Supervision by Limited X-ray Machine Operators**

The American Society of Radiologic Technologists opposes limited x-ray machine operators supervising or managing the technical aspects of imaging procedures performed by registered radiologic technologists.

Adopted, Resolution, 04-3.07, 2004  
Amended, Main Motion, C-08.13, 2008  
Amended, Main Motion, C-09.47, 2009

### **Opposition to Use of Fluoroscopy for Positioning**

The American Society of Radiologic Technologists opposes the use of fluoroscopy to ensure proper positioning for radiography prior to making an exposure. This is unethical, increases patient dose and should never be used in place of appropriate skills required of the competent radiologic technologist.

Adopted, Resolution, 06-3.14, 2006  
Amended, Main Motion, C-09.55, 2009



## **Opposition to Use of Full-body Computed Tomography Screening**

The American Society of Radiologic Technologists opposes the use of full-body computed tomography as a screening tool.

Adopted, Resolution, 02-3.08, 2002  
Amended, Main Motion, C-08.42, 2008  
Amended, Main Motion, C-09.80, 2009

## **Opposition to Use of Medical Imaging and Radiation Therapy Equipment for Nonmedical Purposes**

The American Society of Radiologic Technologists opposes the use of all medical imaging and radiation therapy equipment to produce images on live humans for nonmedical entrepreneurial application or entertainment contrary to the tenets of ethical medical practice.

Adopted, Resolution, 05-3.01, 2005  
Amended, Main Motion, C-08.41, 2008  
Amended, Main Motion, C-09.75, 2009  
Amended, Main Motion, C-15.01, 2015

## **Pregnant Radiologic Technologists and the Magnetic Resonance Environment**

It is the position of the American Society of Radiologic Technologists that the pregnant radiologic technologist should not enter the magnetic resonance scanner/magnet room while scanning is in progress due to limited knowledge of the effects of gradient magnetic/radiofrequency fields.

Adopted, Resolution, 02-3.04, 2002  
Amended, Resolution, C-07.24, 2007  
Amended, Main Motion, C-09.61, 2009

## **Professional Programmatic Peer Review**

The American Society of Radiologic Technologists supports professional programmatic peer review for all medical imaging and radiation therapy educational programs.

Adopted, Main Motion, C-11.34, 2011

## **Public Health Statements**

It is the position of the American Society of Radiologic Technologists that the Society release position statements on public health issues to increase public awareness of the diverse contributions in health care by the members of the ASRT.

Adopted, Resolution, 92-1.07, 1992  
Amended, Resolution, 94-1.23, 1994  
Amended, Main Motion, C-09.34, 2009

## **Qualifications for Performing Image Acquisition With Hybrid Imaging Equipment in Fusion Mode**

It is the position of the American Society of Radiologic Technologists that radiologic technologists performing multiple modality fusion imaging be registered by the American Registry of Radiologic Technologists, Nuclear Medicine Technology Certification Board, American Registry for Diagnostic Medical Sonography or equivalent and be educationally prepared and clinically competent in all components of the specific fusion procedures.

Adopted, Resolution, 03-3.03, 2003  
Amended, Resolution, 06-3.07, 2006  
Amended, Main Motion, C-09.72, 2009  
Amended, Main Motion, C-10.36, 2010

## **Radiographic Exposure Technique Guidelines**

It is the position of the American Society of Radiologic Technologists that all health care facilities develop, maintain and make available optimal exposure technique guidelines for all radiographic and fluoroscopic equipment.

Adopted, Resolution, 91-4.03, 1991  
Amended, Resolution, C-07.31, 2007  
Amended, Main Motion, C-09.73, 2009  
Amended, Main Motion, C-13.18a, 2013

## **Staffing for Radiation Therapy Treatment Delivery**

It is the position of the American Society of Radiologic Technologists that two registered radiation therapists per patient per treatment unit is the minimum standard for safe and efficient delivery of radiation therapy.

Adopted, Resolution, 98-3.04, 1998  
Amended, Main Motion, C-08.44, 2008

## **State Agency Recognition of Joint Review Committees**

It is the position of the American Society of Radiologic Technologists that state agencies accept accreditation of medical imaging and radiation therapy educational programs by Joint Review Committees or equivalent to meet state standards.

Adopted, Main Motion, C-09.03, 2009  
Amended, Main Motion, C-14.11, 2014

## **State Licensure Examinations by the American Registry of Radiologic Technologists**

It is the position of the American Society of Radiologic Technologists that state agencies should contract with the American Registry of Radiologic Technologists to administer state licensure examinations.

Amended, Main Motion, C-08.14, 2008  
Amended, Main Motion, C-09.48, 2009

## **Unification of the Profession**

It is the position of the American Society of Radiologic Technologists that the Society foster unification of the medical imaging and radiation therapy professions.

Adopted, Resolution, 89-1.20, 1989  
Amended, Resolution, 94-1.19, 1994  
Amended, Resolution, C-07.13, 2007  
Amended, Main Motion, C-09.35, 2009  
Amended, Main Motion, C-14.12, 2014

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

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## Bone Densitometry Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# Introduction to Bone Densitometry Practice Standards

## Definition

The practice of bone densitometry is performed by health care professionals responsible for the administration of ionizing radiation to humans and animals for diagnostic, therapeutic or research purposes. A bone densitometry technologist performs bone densitometry procedures at the request of and for interpretation by a licensed independent practitioner.

The complex nature of disease processes involves multiple imaging modalities. Although an interdisciplinary team of clinicians, bone densitometry technologists and support staff plays a critical role in the delivery of health services, it is the bone densitometry technologist who performs the bone densitometry examination and acquires and analyzes data needed for diagnosis.

Bone densitometry integrates scientific knowledge, technical competence and patient interaction skills to provide safe and accurate procedures with compassion. A bone densitometry technologist recognizes patient conditions essential for the successful completion of the procedure.

Bone densitometry technologists must demonstrate an understanding of human anatomy, physiology, pathology and medical terminology. They must maintain a high degree of accuracy in positioning. Bone densitometry technologists must possess, use and maintain knowledge about radiation protection and safety. Bone densitometry technologists independently perform or assist the licensed independent practitioner in the completion of densitometric procedures.

Bone densitometry technologists are the primary liaison between patients, licensed independent practitioners and other members of the support team. Bone densitometry technologists must remain sensitive to the needs of the patient through good communication, patient assessment, patient monitoring and patient care skills. As members of the health care team, bone densitometry technologists participate in quality improvement processes and continually assess their professional performance.

Bone densitometry technologists think critically and use independent, professional and ethical judgments in all aspects of their work. They engage in continuing education, to include their area of practice, to enhance patient care, radiation safety, public education, knowledge and technical competence.

## Education and Certification

Bone densitometry technologists prepare for their roles on the interdisciplinary team by successfully completing a program in radiography, nuclear medicine technology or radiation therapy that is programmatically accredited or part of an institution that is regionally accredited and by attaining appropriate primary certification from the American Registry of Radiologic Technologists or Nuclear Medicine Technology Certification Board.

Eligibility to take the ARRT postprimary examination in bone densitometry requires appropriate primary certification at the time of the examination and documentation of clinical experience in specific procedures. Those passing the bone densitometry postprimary examination use the credentials R.T.(BD).

The International Society for Clinical Densitometry is another certifying agency. Individuals with the appropriate primary certification who pass the certified bone densitometry technologist examination use the credential CDBT.

To maintain ARRT postprimary certification and/or ISCD certification, bone densitometry technologists must complete appropriate continuing education requirements to sustain a level of expertise and awareness of changes and advances in practice.

## Overview

An interdisciplinary team of clinicians, bone densitometry technologists, radiographers and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for imaging procedures increases. A comprehensive procedure list for the bone densitometry technologist is impractical because clinical activities vary by the practice needs and expertise of the bone densitometry technologist. As bone densitometry technologists gain more experience, knowledge and clinical competence, the clinical activities for the bone densitometry technologist may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A bone densitometry technologist should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.

## **Bone Densitometry Technologist Scope of Practice**

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Performing venipuncture as prescribed by a licensed independent practitioner.
- Starting, maintaining and/or removing intravenous access as prescribed by a licensed independent practitioner.
- Identifying, preparing and/or administering medications as prescribed by a licensed independent practitioner.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the bone densitometry technologist also includes:

1. Performing and analyzing bone densitometry scans.



# **Bone Densitometry Clinical Performance Standards**

## **Standard One – Assessment**

The bone densitometry technologist collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The bone densitometry technologist:

1. Locates and reviews previous examinations for comparison.
2. Assesses patient compliance with prescribed treatment as it relates to the procedure.

# Bone Densitometry Clinical Performance Standards

## Standard Two – Analysis/Determination

The bone densitometry technologist analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

None added.

# Bone Densitometry Clinical Performance Standards

## Standard Three – Education

The bone densitometry technologist provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The bone densitometry technologist:

1. Provides information regarding the risks and benefits of radiation.

# Bone Densitometry Clinical Performance Standards

## Standard Four – Performance

The bone densitometry technologist performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

### *Specific Criteria*

The bone densitometry technologist:

1. Confirms patient position matches the selected scan parameters.
2. Scans alternate sites when indicated.
3. Applies the concepts of accuracy and precision in bone densitometry.

# Bone Densitometry Clinical Performance Standards

## Standard Five – Evaluation

The bone densitometry technologist determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

The bone densitometry technologist:

1. Reviews previous scan(s) and reanalyzes as necessary.
2. Evaluates changes in the bone mineral density.
3. Reviews T-scores and Z-scores to modify the action plan.
4. Identifies and evaluates unexpected serial bone mineral density changes.

# Bone Densitometry Clinical Performance Standards

## Standard Six – Implementation

The bone densitometry technologist implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

None added.

# Bone Densitometry Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The bone densitometry technologist reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the bone densitometry technologist compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

None added.

# Bone Densitometry Clinical Performance Standards

## Standard Eight – Documentation

The bone densitometry technologist documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

None added.



# Bone Densitometry Quality Performance Standards

## Standard One – Assessment

The bone densitometry technologist collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The bone densitometry technologist:

1. Participates in radiation protection, patient and personnel safety, risk management and quality management activities.
2. Maintains restricted access to controlled areas.

# Bone Densitometry Quality Performance Standards

## Standard Two – Analysis/Determination

The bone densitometry technologist analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

None added.

# Bone Densitometry Quality Performance Standards

## Standard Three – Education

The bone densitometry technologist informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

None added.

# Bone Densitometry Quality Performance Standards

## Standard Four – Performance

The bone densitometry technologist performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The bone densitometry technologist:

1. Monitors image production to determine technical acceptability.
2. Consults with medical physicist and/or engineer in performing and documenting the quality assurance tests.

# Bone Densitometry Quality Performance Standards

## Standard Five – Evaluation

The bone densitometry technologist evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

None added.

# Bone Densitometry Quality Performance Standards

## Standard Six – Implementation

The bone densitometry technologist implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

None added.

# **Bone Densitometry Quality Performance Standards**

## **Standard Seven – Outcomes Measurement**

The bone densitometry technologist assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

None added.

# **Bone Densitometry Quality Performance Standards**

## **Standard Eight – Documentation**

The bone densitometry technologist documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

None added.



# Bone Densitometry Professional Performance Standards

## Standard One – Quality

The bone densitometry technologist strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

The bone densitometry technologist:

1. Advocates that facilities determine precision error and calculate the least significant change.

# **Bone Densitometry Professional Performance Standards**

## **Standard Two – Self-Assessment**

The bone densitometry technologist evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and-improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.

# **Bone Densitometry Professional Performance Standards**

## **Standard Three – Education**

The bone densitometry technologist acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

None added.

# **Bone Densitometry Professional Performance Standards**

## **Standard Four – Collaboration and Collegiality**

The bone densitometry technologist promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

The bone densitometry technologist:

1. Informs others about radiation safety.

# Bone Densitometry Professional Performance Standards

## Standard Five – Ethics

The bone densitometry technologist adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

None added.

# Bone Densitometry Professional Performance Standards

## Standard Six – Research and Innovation

The bone densitometry technologist participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The bone densitometry technologist:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None added.

## **Bone Densitometry Advisory Opinion Statements**

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication Injections by Radiologic Technologists.

Medication Injection Through Existing Vascular Access.

Placement of Personal Radiation Monitoring Devices.



# The Practice Standards for Medical Imaging and Radiation Therapy

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## Cardiovascular Interventional Technology Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# Introduction to Cardiovascular Interventional Technology Practice Standards

## Definition

This practice standards document for cardiovascular interventional technology is inclusive of the practice areas of vascular interventional and cardiac interventional technology.

The practice of cardiovascular interventional technology is performed by health care professionals responsible for the administration of ionizing radiation to humans and animals for diagnostic, therapeutic or research purposes. A cardiovascular interventional technologist performs radiographic and other procedures at the request of and for interpretation by a licensed independent practitioner.

The complex nature of disease processes involves multiple imaging modalities. The cardiovascular interventional technologist is a vital member of a multidisciplinary team that forms a core of highly trained health care professionals who each bring expertise to the area of patient care.

Cardiovascular interventional technology integrates scientific knowledge, technical competence and patient interaction skills to provide safe and accurate procedures with compassion. A cardiovascular interventional technologist recognizes patient conditions essential for the successful completion of the procedure.

The cardiovascular interventional technologist must demonstrate an understanding of human anatomy, physiology, pathology and medical terminology. He or she must maintain a high degree of accuracy in radiographic positioning and exposure technique. Cardiovascular interventional technologists must possess, use and maintain knowledge about radiation protection and safety. Cardiovascular interventional technologists independently perform or assist the licensed independent practitioner in the completion of cardiovascular interventional technology procedures. Cardiovascular interventional technologists prepare, administer and document activities related to medications in accordance with state and federal regulations or lawful institutional policy.

The cardiovascular interventional technologist is the primary imaging liaison between patients, licensed independent practitioners and other members of the support team. Cardiovascular interventional technologists must remain sensitive to the needs of the patient through good communication, patient assessment, patient monitoring, and patient care skills. As members of the health care team, cardiovascular interventional technologists participate in quality improvement processes and continually assess their professional performance.

Cardiovascular interventional technologists think critically and use independent, professional and ethical judgments in all aspects of their work. They engage in continuing education, to include their area of practice, to enhance patient care, radiation safety, public education, knowledge, and technical competence.

## Education and Certification

Cardiovascular interventional technologists prepare for their roles on the interdisciplinary team by successfully completing a program in radiography that is programmatically accredited or part of an institution that is regionally accredited, and by attaining appropriate primary certification from the American Registry of Radiologic Technologists.

Eligibility to take the ARRT postprimary examination in vascular interventional radiography or cardiac interventional radiography requires appropriate primary certification in radiography at the time of examination and documentation of clinical experience in specific procedures. Those passing the vascular interventional radiography examination use the credentials R.T.(R)(VI) and those passing the cardiac interventional radiography examination use the credentials R.T.(R)(CI). Individuals with the appropriate primary certification in radiography who have passed the ARRT postprimary examination in cardiovascular interventional radiography use the credentials R.T.(R)(CV). The Cardiovascular Credentialing International is another certifying agency. Individuals with primary certification in radiography who pass the cardiovascular invasive specialist examination as a postprimary certification use the credentials R.T.(R), RCIS.

To maintain postprimary certification for the ARRT and/or CCI, cardiovascular interventional technologists must complete the appropriate continuing education requirements to sustain a level of the expertise and awareness of changes and advances in practice.

## Overview

An interdisciplinary team of radiologists, cardiovascular interventional technologists, radiographers and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for imaging procedures increases. A comprehensive procedure list for the cardiovascular interventional technologist is impractical because clinical activities vary by the practice needs and expertise of the cardiovascular interventional technologist. As cardiovascular interventional technologists gain more experience, knowledge and clinical competence, the clinical activities for the cardiovascular interventional technologist may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A cardiovascular interventional technologist should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.

# **Cardiovascular-Interventional Technologist Scope of Practice**

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Performing venipuncture as prescribed by a licensed independent practitioner.
- Starting, maintaining and/or removing intravenous access as prescribed by a licensed independent practitioner.
- Identifying, preparing and/or administering medications as prescribed by a licensed independent practitioner.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the cardiovascular interventional technologist also includes:

1. Performing cardiovascular diagnostic/interventional procedures as prescribed by a licensed independent practitioner.
2. Determining radiographic technique exposure factors.
3. Effectively panning the table during exposure.
4. Assisting licensed independent practitioner with fluoroscopic and specialized interventional radiography procedures.

5. Performing noninterpretive fluoroscopic procedures as prescribed by a licensed independent practitioner.
6. Maintaining intra-arterial access as prescribed by a licensed independent practitioner.
7. Participating in physiologic monitoring of patients.-
8. Performing manual and mechanical hemostasis, including the use of vascular closure devices, as prescribed by a licensed independent practitioner.-
9. Placing, maintaining and removing peripherally inserted central catheters as prescribed by a licensed independent practitioner.
10. Post processing digital data for display or hard copy records, ensuring proper identification is evident.

# Cardiovascular Interventional Clinical Performance Standards

## Standard One – Assessment

The cardiovascular interventional technologist collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Assesses patient lab values prior to procedure.
2. Assesses patient risk for allergic reaction to medication prior to administration.

# Cardiovascular Interventional Clinical Performance Standards

## Standard Two – Analysis/Determination

The cardiovascular interventional technologist analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Analyzes and determines action plans in conjunction with the cardiovascular team.
2. Verifies current patient history and physical examination are available.
3. Documents or assists in documenting patient medical history related to the procedure.



# Cardiovascular Interventional Clinical Performance Standards

## Standard Three – Education

The cardiovascular interventional technologist provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Provides pre-, peri- and post-procedure education.
2. Provides information regarding the risks and benefits of radiation.

# Cardiovascular Interventional Clinical Performance Standards

## Standard Four – Performance

The cardiovascular interventional technologist performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Monitors ECG, blood pressure, respiration, oxygen saturation, level of consciousness and pain pre-, peri- and post-procedure.
2. Collects, labels and documents blood and tissue samples.
3. Adjusts imaging parameters to achieve a quality diagnostic/interventional procedure.

# Cardiovascular Interventional Clinical Performance Standards

## Standard Five – Evaluation

The cardiovascular interventional technologist determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Evaluates access site for complications requiring intervention or further treatment.

# Cardiovascular Interventional Clinical Performance Standards

## Standard Six – Implementation

The cardiovascular interventional technologist implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Adjusts imaging parameters, patient procedure or computer-generated information to improve the outcome.
2. Performs routine and specialized postprocessing.

# Cardiovascular Interventional Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The cardiovascular interventional technologist reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the cardiovascular interventional technologist compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

None added.

# Cardiovascular Interventional Clinical Performance Standards

## Standard Eight – Documentation

The cardiovascular interventional technologist documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Obtains and documents data in the medical record pre-, peri- and post-procedure.
2. Documents use of sedation.
3. Documents radiation exposure parameters and initiates further action as needed.
4. Documents administered medications.

# Cardiovascular Interventional Quality Performance Standards

## Standard One – Assessment

The cardiovascular interventional technologist collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Controls access to restricted areas during radiation exposure.
2. Participates in radiation protection, patient and personnel safety, risk management, and quality management activities.

# Cardiovascular Interventional Quality Performance Standards

## Standard Two – Analysis/Determination

The cardiovascular interventional technologist analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Maintains documentation for tracking implantable devices.



# Cardiovascular Interventional Quality Performance Standards

## Standard Three – Education

The cardiovascular interventional technologist informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

None added.

# Cardiovascular Interventional Quality Performance Standards

## Standard Four – Performance

The cardiovascular interventional technologist performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Provides a safe and sterile environment for patients and staff.
2. Monitors image production to maintain optimal image quality.
3. Consults with medical physicist and/or engineer in performing and documenting the quality assurance tests.
4. Maintains and performs quality control on radiation safety equipment.

# Cardiovascular Interventional Quality Performance Standards

## Standard Five – Evaluation

The cardiovascular interventional technologist evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

None added.

# Cardiovascular Interventional Quality Performance Standards

## Standard Six – Implementation

The cardiovascular interventional technologist implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

None added.

# Cardiovascular Interventional Quality Performance Standards

## Standard Seven – Outcomes Measurement

The cardiovascular interventional technologist assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

None added.

# Cardiovascular Interventional Quality Performance Standards

## Standard Eight – Documentation

The cardiovascular interventional technologist documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

None added.

# Cardiovascular Interventional Professional Performance Standards

## Standard One – Quality

The cardiovascular interventional technologist strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

None added.

# Cardiovascular Interventional Professional Performance Standards

## Standard Two – Self-Assessment

The cardiovascular interventional technologist evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.



# Cardiovascular Interventional Professional Performance Standards

## Standard Three – Education

The cardiovascular interventional technologist acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Maintains competency in the use of diagnostic/interventional devices.

# Cardiovascular Interventional Professional Performance Standards

## Standard Four – Collaboration and Collegiality

The cardiovascular interventional technologist promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

The cardiovascular interventional technologist:

1. Informs others about radiation safety.
2. Informs others regarding medication considerations as they relate to the procedure.

# Cardiovascular Interventional Professional Performance Standards

## Standard Five – Ethics

The cardiovascular interventional technologist adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

None added.

# Cardiovascular Interventional Professional Performance Standards

## Standard Six – Research and Innovation

The cardiovascular interventional technologist participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The cardiovascular interventional technologist:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None added.

## **Cardiovascular Interventional Advisory Opinion Statements**

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication Injections by Radiologic Technologists.

Medication Injection Through Existing Vascular Access.

Placement of Personal Radiation Monitoring Devices.

A decorative graphic in the top right corner consists of a thick, grey diagonal line that curves downwards from the top right towards the center. A large, grey, three-dimensional sphere is positioned where the line curves, appearing to be attached to or resting on the line.

# The Practice Standards for Medical Imaging and Radiation Therapy

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## Computed Tomography Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.



# Introduction to Computed Tomography Practice Standards

## Definition

The practice of computed tomography is performed by a segment of health care professionals responsible for the administration of ionizing radiation to humans for diagnostic, therapeutic, or research purposes. A computed tomography technologist performs computed tomography procedures and related techniques, producing data at the request of and for interpretation by a licensed independent practitioner.

Although an interdisciplinary team of clinicians, computed tomography technologists and support staff plays a critical role in the delivery of health services, it is the computed tomography technologist who performs computed tomography procedures and reformats the computed tomography data that creates images needed for diagnosis and the performance of interventional and therapeutic procedures.

Computed tomography integrates scientific knowledge, technical competence and patient interaction skills to provide safe and accurate procedures with compassion. A computed tomography technologist recognizes patient conditions essential for the successful completion of the procedure.-

Computed tomography technologists must demonstrate an understanding of human anatomy, human physiology, pathology and medical terminology. They must maintain a high degree of accuracy in positioning and exposure technique. Computed Tomography technologists must possess, use and maintain knowledge about radiation safety. Computed tomography technologists prepare, administer and document activities related to medications and radiation exposure in accordance with federal and state laws or lawful institutional policy.

Computed tomography technologists independently perform or assist the licensed independent practitioner in the completion of diagnostic, therapeutic, interventional, and fusion computed tomography procedures.

Computed tomography technologists are the primary liaison between patients, licensed independent practitioners, and other members of the support team. Computed tomography technologists must remain sensitive to the needs of the patient through good communication, patient assessment, patient monitoring and patient care skills. As members of the health care team, computed tomography technologists participate in quality improvement processes and continually assess their professional performance.

Computed tomography technologists think critically and use independent, professional and ethical judgments in all aspects of their work. They engage in continuing education to include their area of practice to enhance patient care, radiation safety, public education, knowledge and technical competence.

## **Education and Certification**

Computed tomography technologists prepare for their roles on the interdisciplinary team by successfully completing a program in radiography, radiation therapy or nuclear medicine technology that is programmatically accredited or part of an institution that is regionally accredited, and by attaining appropriate primary certification from the American Registry of Radiologic Technologists or Nuclear Medicine Technology Certification Board.

Eligibility to take the postprimary examination in computed tomography requires appropriate primary certification at the time of examination and documentation of clinical experience in specific procedures. Those passing the computed tomography examination use R.T.(CT).

To maintain ARRT postprimary certification, computed tomography technologists must complete appropriate continuing education requirements to sustain a level of expertise and awareness of changes and advances in practice.

## **Overview**

An interdisciplinary team of radiologists, computed tomography technologists, radiographers and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for imaging procedures increases. A comprehensive procedure list for the computed tomography technologist is impractical because clinical activities vary by the practice needs and expertise of the computed tomography technologist. As computed tomography technologists gain more experience, knowledge and clinical competence, the clinical activities for the computed tomography technologist may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A computed tomography technologist should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.

# Computed Tomography Technologist Scope of Practice

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Performing venipuncture as prescribed by a licensed independent practitioner.
- Starting, maintaining and/or removing intravenous access as prescribed by a licensed independent practitioner.
- Identifying, preparing and/or administering medications as prescribed by a licensed independent practitioner.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the computed tomography technologist also includes:

1. Performing computed tomography procedures as prescribed by a licensed independent practitioner.
2. Assisting a licensed independent practitioner with interventional computed tomography procedures.
3. Selecting appropriate technical factors with consideration given to established protocols and other factors influencing data acquisition.
4. Manipulating and reconstructing data for interpretation.

5. Archiving data as appropriate and documenting patient exposures.

# Computed Tomography Clinical Performance Standards

## Standard One – Assessment

The computed tomography technologist collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The computed tomography technologist:

1. Assesses patient for renal function prior to contrast media administration.
2. Assesses patient risk for allergic reaction to contrast media prior to administration.
3. Locates and reviews previous examinations for comparison.
4. Introduces oneself to the patient.
5. Identifies and removes artifact-producing objects.

# Computed Tomography Clinical Performance Standards

## Standard Two – Analysis/Determination

The computed tomography technologist analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The computed tomography technologist:

1. Performs various power-up techniques per manufacturers specifications.
2. Evaluates lab values prior to administering contrast media, beginning interventional procedures or fusion imaging.
3. Determines patient compliance with pre-examination preparation instructions.
4. Reviews the patient's medical record and the licensed independent practitioner's request to determine optimal scanning parameters for clinical indication.
5. Determines the appropriate type and dose of contrast media to be administered, based on established protocols.

# Computed Tomography Clinical Performance Standards

## Standard Three – Education

The computed tomography technologist provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The computed tomography technologist:

1. Provides pre-, peri- and post-procedure education.
2. Instructs patients regarding contrast considerations.
3. Provides information about risks and benefits of radiation.
4. Consults with other departments for patient services.

# Computed Tomography Clinical Performance Standards

## Standard Four – Performance

The computed tomography technologist performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

### *Specific Criteria*

The computed tomography technologist:

1. Uses a power injector for administration of medication when a Food and Drug Administration approved PICC line catheter or port specifically for power injectors is available following manufacturer guidelines regarding infusion rate and pressure.
2. Uses radiation shielding devices.



3. Uses technical factors according to equipment specifications to minimize radiation exposure to the patient while maintaining image quality.
4. Confirms patient position matches the selected scanning orientation parameters.
5. Determines optimum placement of electrocardiogram (ECG) electrodes and correctly identifies ECG wave trigger.
6. Collects and documents tissue samples.

# Computed Tomography Clinical Performance Standards

## Standard Five – Evaluation

The computed tomography technologist determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

The computed tomography technologist:

1. Reviews images to determine if additional scans will enhance the diagnostic value of the procedure.

# Computed Tomography Clinical Performance Standards

## Standard Six – Implementation

The computed tomography technologist implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

The computed tomography technologist:

1. Performs routine and specialized postprocessing.
2. Adjusts imaging parameters, patient procedure or computer-generated information to improve the outcome.

# Computed Tomography Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The computed tomography technologist reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the computed tomography technologist compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

None added.

# Computed Tomography Clinical Performance Standards

## Standard Eight – Documentation

The computed tomography technologist documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The computed tomography technologist:

1. Documents radiation exposure parameters.
2. Documents administered medications.
3. Documents the use of shielding devices and proper radiation safety practices per institutional policy.

# Computed Tomography Quality Performance Standards

## Standard One – Assessment

The computed tomography technologist collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The computed tomography technologist:

1. Participates in radiation protection, patient safety, risk management and quality management activities.
2. Maintains controlled access to restricted area during radiation exposure.

# Computed Tomography Quality Performance Standards

## Standard Two – Analysis/Determination

The computed tomography technologist analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

None added.

# Computed Tomography Quality Performance Standards

## Standard Three – Education

The computed tomography technologist informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

The computed tomography technologist:

1. Provides information on certification or accreditation to the patient, other health care providers and the general public.
2. Displays certificate(s) of compliance.



# Computed Tomography Quality Performance Standards

## Standard Four – Performance

The computed tomography technologist performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The computed tomography technologist:

1. Monitors image production to determine technical acceptability.
2. Performs routine archiving status checks.
3. Consults with medical physicist in performing and documenting the quality assurance tests.

# Computed Tomography Quality Performance Standards

## Standard Five – Evaluation

The computed tomography technologist evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

None added.

# Computed Tomography Quality Performance Standards

## Standard Six – Implementation

The computed tomography technologist implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

None added.

# Computed Tomography Quality Performance Standards

## Standard Seven – Outcomes Measurement

The computed tomography technologist assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

None added.

# Computed Tomography Quality Performance Standards

## Standard Eight – Documentation

The computed tomography technologist documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

None added.

# Computed Tomography Professional Performance Standards

## Standard One – Quality

The computed tomography technologist strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

None added.

# Computed Tomography Professional Performance Standards

## Standard Two – Self-Assessment

The computed tomography technologist evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.

# Computed Tomography Professional Performance Standards

## Standard Three – Education

The computed tomography technologist acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

None added.



# Computed Tomography Professional Performance Standards

## Standard Four – Collaboration and Collegiality

The computed tomography technologist promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

None added.

# Computed Tomography Professional Performance Standards

## Standard Five – Ethics

The computed tomography technologist adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

None added.

# Computed Tomography Professional Performance Standards

## Standard Six – Research and Innovation

The computed tomography technologist participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The computed tomography technologist:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None added.

## **Computed Tomography Advisory Opinion Statements**

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication Injection through Existing Vascular Access.

Medication Injections by Radiologic Technologists.

Placement of Personal Radiation Monitoring Devices.

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# The Practice Standards for Medical Imaging and Radiation Therapy

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## Glossary

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# Glossary to The Practice Standards for Medical Imaging and Radiation Therapy

**Act** – anything done, being done, or to be done; the process of doing. Synonymous with “procedure” and “clinical services.”

**Action plan** – A program or method that explains the actions or steps to be taken.

**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 the practice of advanced-practice radiologic technology.

**Anatomic (anatomical) landmarks** – Bones or other identifiable points that are visible or palpable and indicate the position of hidden anatomy.

**Archive** – (archival) The storage of data in either hard (film) or soft (digital) form.

**Artifact** – A structure or feature produced by the technique used and not occurring naturally.

**As low as reasonably achievable (ALARA)** – Acronym for “as low as (is) reasonably achievable,” which means making every reasonable effort to maintain exposures to radiation as far below the dose limits as practical, consistent with the purpose for which the licensed activity is undertaken, while taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety; and other societal and socioeconomic considerations, and in relation to the use of nuclear energy and licensed materials in the public interest. The ASRT recognizes the concept of ALARA to include energies used for magnetic resonance and sonographic imaging.

**Assess** – To determine the significance, importance or value.

**Assessment** – The process by which a patient’s condition is appraised or evaluated.

**Beam modification devices** – Devices that change the shape of the treatment field or distribution of the radiation at (tissue) depth.

**Blocks/custom made blocks** – Devices designed to shape the radiation field.

**Brachytherapy** – A type of radiation therapy in which radioactive material sealed in needles, seeds, wires or catheters is placed directly into or near a tumor. Also called implant radiation therapy, internal radiation therapy and radiation brachytherapy.

**Clinical** – Pertaining to or founded on actual observations and treatments of patients.

**Clinically competent** – The ability to perform a clinical procedure in a manner that satisfies the demands of a situation, as assessed and documented by a qualified individual.

**Contraindicate** – To warrant an otherwise advisable procedure or treatment as inappropriate.

**Contrast media** – A substance administered during a medical imaging procedure for the purpose of enhancing the contrast between an internal structure or fluid and the surrounding tissue.

**Customer** – Those internal and external individuals, departments and organizations that receive services or output or are the beneficiaries of the department's activities.

**Digital imaging communications in medicine (DICOM)** – The Digital Imaging and Communications in Medicine (DICOM) standards are a complex set of instructions to exchange and present medical image information.

**Disease** – A pathological condition of the body that presents a group of clinical signs, symptoms and laboratory findings peculiar to it and setting the condition apart as an abnormal entity differing from normal or other pathological conditions.

**Dose distributions** – Spatial representations of the magnitude of the dose produced by a source of radiation. They describe the variation of dose with position within an irradiated volume.

**Dosimetric calculations** – Computation of treatment unit settings, monitor units, treatment times and radiation doses to anatomical areas of interest.

**Educationally prepared** – The successful completion of didactic and clinical education necessary to properly perform a procedure in accordance with accepted practice standards.

**Electrocardiogram (ECG)** – A record of the electrical activity of the heart.

**Ethical** – Conforming to the norms or standards of professional conduct.

**Examination preparation** – The act of helping to ready a patient for a diagnostic imaging procedure.

**Fiducial markers** – Fixed reference points against which other objects can be measured. They may be placed internally, at skin surface or fixed externally to the patient.

**Image guided radiation therapy** – A process of using various imaging techniques to localize the target and critical tissues and, if needed, reposition the patient just before or during the delivery of radiotherapy.

**Immobilization device** – Device that assists in reproducing the position while restricting patient movement.

**Initial observation** – Assessment of technical image quality with pathophysiology correlation communicated to a radiologist.

**Interpretation** – The process of examining and analyzing all images within a given procedure and integration of the imaging data with appropriate clinical data in order to render an impression or conclusion set forth in a formal written report composed and signed by the radiologist.

**Interventional procedures** – Minimally invasive medical imaging guidance methods used to gain access to vessels and organs to diagnose and/or treat certain conditions percutaneously that might otherwise require surgery.

**Least Significant Change** – The least amount of bone mineral densitometry change that can be considered statistically significant.

**Licensed independent practitioner** – An individual permitted by law to provide care and services, without direction or supervision, within the scope of the individual's license and consistent with individually granted privileges.

**Medical dosimetrist** – An individual who has education and knowledge in treatment planning and who, under the supervision of a radiation physicist and/or radiation oncologist, is capable of performing dose calculations and of assisting in calibration and verification of dose distribution within the patient.

**Medical physicist** – An individual who is competent to practice independently in the safe use of x-rays, gamma rays, electron and other charged particle beams, neutrons, radionuclides, sealed radionuclide sources, ultrasonic radiation, radiofrequency radiation and magnetic fields for both diagnostic and therapeutic purposes. An individual will be considered competent to practice in the field of Medical Physics if he or she is certified by the appropriate recognized certification organization.

**Medication** – Any chemical substance intended for use in the medical diagnosis, cure, treatment or prevention of disease.

**Minimal sedation (anxiolysis)** – A drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected.

**Moderate sedation** – A drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained.

**Molecular imaging** – A biomedical discipline enabling the visualization, characterization, and quantification of biologic processes taking place at the cellular and subcellular levels within intact living subjects.

**Monitor units (MU)** – Unit of output measure used for linear accelerators. Accelerators are calibrated so that 1MU delivers 1cGy for a standard, reference field size at a standard reference depth at a standard source to calibration point.

**Normal tissue tolerance** – Radiation tolerance levels of healthy organs near or within the radiation treatment fields.

**Panning** – Horizontal movement of the radiographic table during image acquisition to maintain visualization of an anatomic region of interest.

**Pathophysiology** – The study of how normal physiological processes are altered by disease.

**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 same. The written survey report, validated by a medical physicist, contains



sufficient information to document that each test was conducted according to local, state or federal requirements and includes an assessment of corrective actions and recommendations for improvements.

**Postprocessing** – Computerized processing of data sets after acquisition to create a diagnostic image.

**Protocol** – The plan for carrying out a scientific study or a patient's treatment regimen.

**Qualified supervisor** (limited x-ray machine operator) – Individual who is educationally prepared, clinically competent, and credentialed in the medical imaging and radiation therapy profession to provide clinical supervision to another individual.

**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.

**Quality control (QC)** – 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.

**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.

**Radiobiology** – The study of the effects of radiation on living organisms.

**Radiography** – The process of obtaining an image for diagnostic examination using x-rays.

**Repeat analysis** – A systematic approach to critically investigate images or procedures that did not meet established standards. The general purpose of repeat analysis is to determine why images or procedures did not meet established standards, implement corrective action and avoid the same outcome(s) in the future.

**Sentinel event** – An unexpected occurrence involving death or serious physical or psychological injury, or the risk thereof. Serious injury specifically includes loss of limb or function. The phrase “or the risk thereof” includes any process variation for which a recurrence would carry a significant chance of a serious adverse outcome.

**Setup** – Arrangement of treatment parameters used in preparation for delivering radiation therapy; includes patient positioning data, field alignment information and equipment configurations.

**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.

**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 RA.

**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** – Number of standard deviations the individual's bone mineral density is from the average bone mineral density for gender-matched young normal peak bone mass.

**Vascular closure device** – Active or passive medical devices used to achieve hemostasis after a cardiovascular or endovascular procedure that requires catheterization.

**Venipuncture** – The transcutaneous puncture of a vein by a sharp rigid stylet or cannula carrying a flexible plastic catheter or by a steel needle attached to a syringe or catheter.

A large, light gray decorative graphic is positioned in the upper right quadrant of the page. It consists of a thick, diagonal line that passes through a shaded, three-dimensional sphere, creating a sense of depth and movement.

# The Practice Standards for Medical Imaging and Radiation Therapy

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## Limited X-Ray Machine Operator Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# **Introduction to Limited X-Ray Machine Operator Practice Standards**

## **Definition**

The operation of x-ray equipment in a limited scope is performed by a segment of health care employees responsible for the administration of ionizing radiation for diagnostic, therapeutic or research purposes. A limited x-ray machine operator performs radiographic procedures within the scope of practice, producing images at the request of and for the interpretation by a licensed independent practitioner. A limited x-ray machine operator acquires additional images at the request of a licensed independent practitioner or radiographer.

An interdisciplinary team of clinicians, radiologic technologists and support staff plays a critical role in the delivery of health services; the limited x-ray machine operator plays a supporting role through the performance of radiographic examinations within the scope of practice.

Limited x-ray machine operators are individuals other than a radiographer who performs static diagnostic radiologic images on selected anatomical sites. They must demonstrate an understanding of human anatomy, physiology, pathology and medical terminology. Limited x-ray machine operators must possess, use and maintain a high degree of accuracy in radiographic positioning and exposure technique. They must maintain knowledge of radiation protection and safety.

Limited x-ray machine operators perform radiographic procedures within their scope or assist the licensed independent practitioner or radiographer in the completion of radiographic procedures.

Limited x-ray machine operators must remain sensitive to the needs of the patient through good communication, patient monitoring and patient care skills. As members of the health care team, limited x-ray machine operators participate in quality improvement processes and continually assess their performance.

Limited x-ray machine operators think critically and use independent and ethical judgments in all aspects of their work. They engage in ongoing education to include their area of practice to enhance patient care, public education, knowledge and technical competence.

## **Education and Certification**

Limited x-ray machine operators prepare for their roles on the interdisciplinary team in a number of ways. Various education and training programs for limited x-ray machine operators exist throughout the United States.

Many states may require completion of a course of study prior to administering a state licensure exam for limited x-ray machine operators. Several states use some or all of the Limited Scope of Practice in Radiography state licensing exams developed by the American Registry of Radiologic Technologists. States that administer an exam and issue a license or certification may use various terminologies to designate a limited x-ray machine operator. The limited x-ray machine operator may have limitations in performing ionizing radiation procedures specific to their scope of practice, and may be prohibited from performing other tasks.

## Overview

An interdisciplinary team of radiologists, limited x-ray machine operators, radiographers and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for imaging procedures increases. A comprehensive procedure list for the limited x-ray machine operator is impractical because clinical activities vary by the practice needs and expertise of the limited x-ray machine operators. As limited x-ray machine operators gain more experience, knowledge and clinical competence, the clinical activities for the limited x-ray machine operators may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A limited x-ray machine operator should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.-

## Limited X-ray Machine Operator Scope of Practice

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

- Providing optimal patient care.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Preparing patients for procedures.
- Assuming responsibility for patient needs during procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the limited x-ray machine operator also includes:

1. Performing radiographic procedures limited to education or the specific area of anatomical interest based on training and licensure/certification as prescribed by a licensed independent practitioner.
2. Assisting a licensed independent practitioner or radiographer during static radiographic procedures.
3. Determining technical exposure factors in accordance with the principles of ALARA.
4. Evaluating images for overall diagnostic quality.
5. Assisting the licensed independent practitioner or radiographer in providing patient education.



# Limited X-ray Machine Operator Clinical Performance Standards

## Standard One – Assessment

The limited x-ray machine operator collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The limited x-ray machine operator:

1. Identifies and removes artifact-producing.
2. Locates and reviews previous examinations for comparison.

# Limited X-ray Machine Operator Clinical Performance Standards

## Standard Two – Analysis/Determination

The limited x-ray machine operator analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The limited x-ray machine operator:

1. 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.
2. Analyzes digital images to determine the use of appropriate imaging parameters.

# Limited X-ray Machine Operator Clinical Performance Standards

## Standard Three – Education

The limited x-ray machine operator provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.

### *Specific Criteria*

The limited x-ray machine operator:

1. Consults with other departments, such as patient transportation, for integrated patient-centered services.

# Limited X-ray Machine Operator Clinical Performance Standards

## Standard Four – Performance

The limited x-ray machine operator performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Positions patient for anatomic area of interest, respecting patient ability and comfort.
10. Immobilizes patient for procedure.

### *Specific Criteria*

The limited x-ray machine operator:

1. Employs proper radiation safety practices.
2. Performs radiographic procedures under the direction of a licensed independent practitioner or radiographer.
3. Uses technical factors according to equipment specifications to meet the ALARA principle.
4. Modifies normal protocol for optimal demonstration of anatomy under the direction of a licensed independent practitioner or radiographer.
5. Uses pre-exposure collimation and proper field-of-view selection.

6. Uses appropriate pre-exposure radiopaque markers for anatomical and procedural purposes.
7. Applies principles of medical aseptic technique.

# Limited X-ray Machine Operator Clinical Performance Standards

## Standard Five – Evaluation

The limited x-ray machine operator determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

The limited x-ray machine operator:

1. Evaluates only images produced by self for positioning, the anatomy of interest and overall image quality.
2. Recognizes the need to adjust patient position or technical exposure factors to improve the quality of the examination.
3. Seeks assistance from a licensed independent practitioner or radiographer to improve the quality of the examination.

# Limited X-ray Machine Operator Clinical Performance Standards

## Standard Six – Implementation

The limited x-ray machine operator implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

The limited x-ray machine operator:

1. Performs additional images that will produce the expected outcome based on patient condition and procedural variance under the direction of a licensed independent practitioner or radiographer.

# Limited X-ray Machine Operator Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The limited x-ray machine operator reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the limited x-ray machine operator compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

None added.



# Limited X-ray Machine Operator Clinical Performance Standards

## Standard Eight – Documentation

The limited x-ray machine operator documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.

### *Specific Criteria*

The limited x-ray machine operator:

1. Documents the use of shielding devices and proper radiation safety practices per institutional policy.

# Limited X-ray Machine Operator Quality Performance Standards

## Standard One – Assessment

The limited x-ray machine operator collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The limited x-ray machine operator:

1. Maintains controlled access to restricted area during radiation exposure.
2. Follows federal and state guidelines to minimize radiation exposure levels.
3. Performs quality assurance activities with assistance from a licensed independent practitioner, radiographer or medical physicist.
4. Participates in radiation protection, patient safety, risk management and quality management activities.
5. Develops and maintains standardized exposure technique guidelines under the direction of a licensed independent practitioner or radiographer.

# Limited X-ray Machine Operator Quality Performance Standards

## Standard Two – Analysis/Determination

The limited x-ray machine operator analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

The limited x-ray machine operator:

1. Analyzes results of assessment activities under the direction of a licensed independent practitioner, radiographer and/or medical physicist.

# Limited X-ray Machine Operator Quality Performance Standards

## Standard Three – Education

The limited x-ray machine operator informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

None added.

# Limited X-ray Machine Operator Quality Performance Standards

## Standard Four – Performance

The limited x-ray machine operator performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The limited x-ray machine operator:

1. Performs assessment activities under the direction of a licensed independent practitioner, radiographer or medical physicist.

# Limited X-ray Machine Operator Quality Performance Standards

## Standard Five – Evaluation

The limited x-ray machine operator evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results to accepted values.
3. Formulates an action plan.

### *Specific Criteria*

The limited x-ray machine operator:

1. Performs evaluations under the direction of a licensed independent practitioner, radiographer or medical physicist.

# Limited X-ray Machine Operator Quality Performance Standards

## Standard Six – Implementation

The limited x-ray machine operator implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

The limited x-ray machine operator:

1. Implements the quality assurance action plan under the direction of a licensed independent practitioner, radiographer or medical physicist.

# Limited X-ray Machine Operator Quality Performance Standards

## Standard Seven – Outcomes Measurement

The limited x-ray machine operator assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

The limited x-ray machine operator:

1. Develops and implements a modified action plan under the direction of a licensed independent practitioner, radiographer or medical physicist.



# Limited X-ray Machine Operator Quality Performance Standards

## Standard Eight – Documentation

The limited x-ray machine operator documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

The limited x-ray machine operator:

1. Documents quality assurance activities under the direction of a licensed independent practitioner, radiographer and/or medical physicist.

# Limited X-ray Machine Operator Professional Performance Standards

## Standard One – Quality

The limited x-ray machine operator strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

The limited x-ray machine operator:

1. Applies clinical judgment and discretion while performing radiographic procedures.

# Limited X-ray Machine Operator Professional Performance Standards

## Standard Two – Self-Assessment

The limited x-ray machine operator evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Participates in professional societies and organizations.

### *Specific Criteria*

The limited x-ray machine operator:

1. Recognizes and applies personal and clinical strengths.

# Limited X-ray Machine Operator Professional Performance Standards

## Standard Three – Education

The limited x-ray machine operator acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
2. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

The limited x-ray machine operator:

1. Maintains license related to practice.

# Limited X-ray Machine Operator Professional Performance Standards

## Standard Four – Collaboration and Collegiality

The limited x-ray machine operator promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

None added.

# Limited X-ray Machine Operator Professional Performance Standards

## Standard Five – Ethics

The limited x-ray machine operator adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Provides health care services with consideration for a diverse patient.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.

### *Specific Criteria*

None added.

# Limited X-ray Machine Operator Professional Performance Standards

## Standard Six – Research and Innovation

The limited x-ray machine operator participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The limited x-ray machine operator:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

The limited x-ray machine operator:

1. Investigates avenues to continue progress to become a registered radiographer.

# **Limited X-ray Machine Operator Advisory Opinion Statements**

Placement of Personal Radiation Monitoring Devices.





# The Practice Standards for Medical Imaging and Radiation Therapy

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## Magnetic Resonance Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# Introduction to Magnetic Resonance Practice Standards

## Definition

The practice of magnetic resonance is performed by a segment of health care professionals responsible for the use of radiofrequencies (RFs) within a magnetic field on humans and animals for diagnostic, therapeutic, or research purposes. A magnetic resonance technologist performs magnetic resonance procedures at the request of and for interpretation by a licensed independent practitioner.

The complex nature of disease processes involves multiple imaging modalities. Although an interdisciplinary team of clinicians, magnetic resonance technologists and support staff plays a critical role in the delivery of health services, it is the magnetic resonance technologist who performs the magnetic resonance examination that creates the images needed for diagnosis.

Magnetic resonance integrates scientific knowledge, technical competence and patient interaction skills to provide safe and accurate procedures with compassion. A magnetic resonance technologist recognizes patient conditions essential for the successful completion of the procedure.

Magnetic resonance technologists must demonstrate an understanding of human anatomy, human physiology, pathology, pharmacology and medical terminology. They must maintain a high degree of accuracy in positioning and magnetic resonance technique. Magnetic resonance technologists must possess, use and maintain knowledge about magnetic protection and safety. Magnetic resonance technologists independently perform or assist the licensed independent practitioner in the completion of diagnostic, therapeutic, interventional and fusion magnetic resonance procedures. Magnetic resonance technologists prepare, administer and document activities related to medications in accordance with state and federal regulations or lawful institutional policy.

The magnetic resonance technologist is the primary liaison between patients, licensed independent practitioners, and other members of the support team. Magnetic resonance technologists must remain sensitive to the needs of the patient through good communication, patient assessment, patient monitoring and patient care skills. As members of the health care team, magnetic resonance technologists participate in quality improvement processes and continually assess their professional performance.

Magnetic resonance technologists think critically and use independent, professional and ethical judgments in all aspects of their work. They engage in continuing education to include their area of practice to enhance patient care, public education, knowledge and technical competence.-

## Education and Certification

Magnetic resonance technologists prepare for their role on the interdisciplinary team through one of the following:

- Successfully completing a program in magnetic resonance technology that is programmatically accredited or part of an institution that is regionally accredited, and by attaining certification in magnetic resonance from the American Registry of Radiologic Technologists.

Or

- Possessing appropriate primary certification from the American Registry of Radiologic Technologists or Nuclear Medicine Technology Certification Board at the time of examination, documenting didactic and clinical experience in specific procedures and by attaining certification in magnetic resonance from the American Registry of Radiologic Technologists.

Those passing the magnetic resonance examination use the credentials R.T.(MR).

To maintain ARRT certification, magnetic resonance technologists must complete appropriate continuing education requirements to sustain a level of expertise and awareness of changes and advances in practice.

## Overview

An interdisciplinary team of radiologists, magnetic resonance technologists, radiographers and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for imaging procedures increases. A comprehensive procedure list for the magnetic resonance technologist is impractical because clinical activities vary by the practice needs and expertise of the magnetic resonance technologist. As magnetic resonance technologists gain more experience, knowledge and clinical competence, the clinical activities for the magnetic resonance technologist may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A magnetic resonance technologist should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.

# Magnetic Resonance Technologist Scope of Practice

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Performing venipuncture as prescribed by a licensed independent practitioner.
- Starting, maintaining and/or removing intravenous access as prescribed by a licensed independent practitioner.
- Identifying, preparing and/or administering medications as prescribed by a licensed independent practitioner.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the magnetic resonance technologist also includes:

1. Performing procedures or examinations under the order of a licensed independent practitioner for diagnostic interpretation or therapeutic intervention.
2. Applying principles of magnetic resonance safety to minimize risk to patient, self and others.
3. Selecting appropriate pulse sequences with consideration given to established protocols and other factors influencing data acquisition parameters.

4. Assisting the licensed independent practitioner with interventional procedures.
5. Post processing digital data for display or hard copy records, ensuring proper identification is evident.
6. Maintaining archival storage of digital data as appropriate.

# Magnetic Resonance Clinical Performance Standards

## Standard One – Assessment

The magnetic resonance technologist collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The magnetic resonance technologist:

1. Screens patient for potential MRI contraindications either within the patients' body or on their person prior to entering the magnet room.
2. Locates and reviews previous examinations for comparison.
3. Identifies and removes items that may affect patients safety, damage the equipment or affect the image quality.



# Magnetic Resonance Clinical Performance Standards

## Standard Two – Analysis/Determination

The magnetic resonance technologist analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The magnetic resonance technologist:

1. Selects appropriate imaging coil.
2. Determines optimum placement of electrocardiogram (ECG) electrodes.
3. Reviews the patient's medical record and licensed independent practitioner's request to determine optimal imaging parameters for clinical indications.
4. Determines the appropriate type and dose of contrast media to be administered based on established protocols.
5. Determines patient compliance with pre-examination preparation instructions.

# Magnetic Resonance Clinical Performance Standards

## Standard Three – Education

The magnetic resonance technologist provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Provides an accurate explanations and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The magnetic resonance technologist:

1. Consults with other departments such as patient transportation and anesthesia for patient services.
2. Determines that all procedural requirements are in place to achieve a quality diagnostic examination.

# Magnetic Resonance Clinical Performance Standards

## Standard Four – Performance

The magnetic resonance technologist performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

### *Specific Criteria*

The magnetic resonance technologist:

1. Provides hearing protection to patient and others.
2. Positions imaging coil.
3. Monitors the patient's specific absorption rate for variances.
4. Identifies appropriate cardiac or respiratory triggers.

5. Uses appropriate positioning and/or insulation materials to shield the patient from excessive heating and/or burns.

# Magnetic Resonance Clinical Performance Standards

## Standard Five – Evaluation

The magnetic resonance technologist determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

The magnetic resonance technologist:

1. Reviews images to determine if additional imaging sequences will enhance the diagnostic value of the procedure.

# Magnetic Resonance Clinical Performance Standards

## Standard Six – Implementation

The magnetic resonance technologist implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

The magnetic resonance technologist:

1. Performs routine and specialized postprocessing.
2. Adjusts imaging parameters, patient procedure or computer-generated information to improve the outcome.

# Magnetic Resonance Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The magnetic resonance technologist reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the magnetic resonance technologist compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

None added.

# Magnetic Resonance Clinical Performance Standards

## Standard Eight – Documentation

The magnetic resonance technologist documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The magnetic resonance technologist:

1. Documents unintended patient outcomes according to established guidelines.



# Magnetic Resonance Quality Performance Standards

## Standard One – Assessment

The magnetic resonance technologist collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The magnetic resonance technologist:

1. Maintains controlled access to the magnet room.
2. Participates in patient safety, risk management and quality management activities.

# Magnetic Resonance Quality Performance Standards

## Standard Two – Analysis/Determination

The magnetic resonance technologist analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

None added.

# Magnetic Resonance Quality Performance Standards

## Standard Three – Education

The magnetic resonance technologist informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

None added.

# Magnetic Resonance Quality Performance Standards

## Standard Four – Performance

The magnetic resonance technologist performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The magnetic resonance technologist:

1. Performs routine archiving status checks.
2. Monitors image production to determine technical acceptability.
3. Consults with medical physicist and/or engineer in performing and documenting the quality assurance tests.

# Magnetic Resonance Quality Performance Standards

## Standard Five – Evaluation

The magnetic resonance technologist evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

None added.

# Magnetic Resonance Quality Performance Standards

## Standard Six – Implementation

The magnetic resonance technologist implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

None added.

# Magnetic Resonance Quality Performance Standards

## Standard Seven – Outcomes Measurement

The magnetic resonance technologist assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

None added.

# Magnetic Resonance Quality Performance Standards

## Standard Eight – Documentation

The magnetic resonance technologist documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

None added.



# Magnetic Resonance Professional Performance Standards

## Standard One – Quality

The magnetic resonance technologist strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

None added.

# Magnetic Resonance Professional Performance Standards

## Standard Two – Self-Assessment

The magnetic resonance technologist evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.

# Magnetic Resonance Professional Performance Standards

## Standard Three – Education

The magnetic resonance technologist acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

None added.

# Magnetic Resonance Professional Performance Standards

## Standard Four – Collaboration and Collegiality

The magnetic resonance technologist promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

The magnetic resonance technologist:

1. Instructs others on magnet and radiofrequency energy safety.
2. Instructs health care team regarding contrast media considerations.

# Magnetic Resonance Professional Performance Standards

## Standard Five – Ethics

The magnetic resonance technologist adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

None added.

# Magnetic Resonance Professional Performance Standards

## Standard Six – Research and Innovation

The magnetic resonance technologist participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The magnetic resonance technologist:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None added.

## **Magnetic Resonance Advisory Opinion Statements**

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication Injections by Radiologic Technologists.

Medication Injection Through Existing Vascular Access.

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# The Practice Standards for Medical Imaging and Radiation Therapy

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## Mammography Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# Introduction to Mammography Practice Standards

## Definition

The practice of mammography is performed by a segment of health care professionals responsible for the administration of ionizing radiation and high-frequency sound waves for diagnostic, therapeutic or research purposes. A mammography technologist performs breast imaging procedures and related techniques, producing data at the request of and for the interpretation by a licensed independent practitioner.

Although an interdisciplinary team of clinicians, mammography technologists and support staff play a critical role in the delivery of health services, it is the mammography technologist who performs the breast imaging procedures that create mammographic and sonographic images needed for diagnosis.

Mammography integrates scientific knowledge, technical competence and patient interaction skills to provide safe and accurate procedures with compassion. A mammography technologist recognizes patient conditions essential for the successful completion of the procedure.

Mammography technologists must demonstrate an understanding of human anatomy, physiology, pathology and medical terminology. They must maintain a high degree of accuracy in positioning. Mammography technologists must possess, use and maintain knowledge about radiation protection and safety and bioeffects of high-frequency sound waves. Mammography technologists prepare, administer and document activities related to medications in accordance with state and federal regulations or lawful institutional policy.

Mammography technologists independently perform or assist the licensed independent practitioner in the completion of mammographic and sonographic breast imaging procedures.

Mammography technologists are the primary liaison between patients, licensed independent practitioners, and other members of the support team. Mammography technologists must remain sensitive to the needs of the patient through good communication, patient assessment, patient monitoring and patient care skills. As members of the health care team, mammography technologists participate in quality improvement processes and continually assess their professional performance.

Mammography technologists think critically and use independent, professional and ethical judgments in all aspects of their work. They must comprehend the complexities of the appropriate state and federal regulations and have knowledge of the quality control and quality assurance requirements for mammography and breast sonography. They engage in continuing education to include their area of practice to enhance patient care, radiation safety, public education, knowledge and technical competence.

## Education and Certification

Mammography technologists prepare for their roles on the interdisciplinary team by successfully completing a program in radiography that is programmatically accredited or part of an institution that is regionally accredited, and by attaining appropriate primary certification from the American Registry of Radiologic Technologists. Initial mammography training hours may be required on a state or federal level.

Eligibility to take the ARRT postprimary examination in mammography requires appropriate primary certification at the time of the examination and documentation of clinical experience in specific procedures. Those passing the mammography examination use the credential R.T.(M).

Eligibility to take the ARRT postprimary examination in breast sonography requires appropriate primary and/or postprimary certification at the time of examination and documentation of clinical experience in specific procedures. Those passing the breast sonography examination use the credential R.T.(BS).

To maintain ARRT postprimary certification, mammography technologists must complete appropriate continuing education requirements to sustain a level of expertise and awareness of changes and advances in practice.

## Overview

An interdisciplinary team of radiologists, mammography technologists, radiographers and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for imaging procedures increases. A comprehensive procedure list for the mammography technologist is impractical because clinical activities vary by the practice needs and expertise of the mammography technologist. As mammography technologists gain more experience, knowledge and clinical competence, the clinical activities for the mammography technologist may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A mammography technologist should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.

## **Mammography Technologist Scope of Practice**

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Performing venipuncture as prescribed by a licensed independent practitioner.
- Starting, maintaining and/or removing intravenous access as prescribed by a licensed independent practitioner.
- Identifying, preparing and/or administering medications as prescribed by a licensed independent practitioner.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the mammography technologist also includes:

1. Performing mammographic procedures.
2. Performing breast ultrasound procedures.
3. Determining image exposure factors.

4. Imaging pathologic breast specimens.
5. Providing or assisting with physical breast inspection or palpation.
6. Assisting in maintaining medical records, respecting confidentiality and established policy.

# Mammography Clinical Performance Standards

## Standard One – Assessment

The mammography technologist collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The mammography technologist:

1. Reviews information about previous breast imaging procedures.
2. Assesses the need for alternative procedures based on the patient's age, hormonal status and the presence of surgical implants.
3. Assesses any potential patient limitations (body habitus, physical or mental capabilities) and modifies the performance of the procedure when possible.

# Mammography Clinical Performance Standards

## Standard Two – Analysis/Determination

The mammography technologist analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The mammography technologist:

1. Determines the need for additional projections to complete the procedure.



# Mammography Clinical Performance Standards

## Standard Three – Education

The mammography technologist provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Provides an accurate explanations and instructions at an appropriate time and at a level the patients and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The mammography technologist:

1. Educates the patient on the benefits of early detection of breast cancer.
2. Educates the patient, when requested, on radiation the value and use of additional projections or alternative breast imaging procedures.
3. Educates the patient on the need for adequate compression in achieving a quality mammogram and instructs the patient to indicate if the compression becomes intolerable.

# Mammography Clinical Performance Standards

## Standard Four – Performance

The mammography technologist performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

*Specific Criteria*

The mammography technologist:

1. Performs standard projections during a screening mammogram and additional projections to ensure breast tissue is adequately imaged.
2. Ensures correct annotation of images.
3. Applies appropriate radiopaque markers to the breast to mark nipples, scars, lumps, etc.
4. Exercises clinical judgment in the application of adequate compression to acquire a quality mammographic image.
5. Performs the required or recommended projections during a diagnostic mammogram.
6. Informs the patient of the right to receive a lay summary result in accordance with the Mammography Quality Standards Act of 1992 (MQSA).
7. Assists in the collecting and labeling of tissue samples for further processing.

# Mammography Clinical Performance Standards

## Standard Five – Evaluation

The mammography technologist determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

The mammography technologist:

1. Evaluates the quality of each mammographic.

# Mammography Clinical Performance Standards

## Standard Six – Implementation

The mammography technologist implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

The mammography technologist:

1. Adjusts imaging parameters, patient procedure or computer-generated information to improve the outcome.

# Mammography Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The mammography technologist reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the mammography technologist compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

None added.

# Mammography Clinical Performance Standards

## Standard Eight – Documentation

The mammography technologist documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The mammography technologist:

1. Documents the clinical history and location of visible and palpable breast conditions.
2. Documents the location of previous breast imaging procedures and obtains authorization for release of prior studies.

# Mammography Quality Performance Standards

## Standard One – Assessment

The mammography technologist collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The mammography technologist:

1. Sets required quality control test criteria and performs tests at required intervals adhering to state and federal regulations and guidelines.



# Mammography Quality Performance Standards

## Standard Two – Analysis/Determination

The mammography technologist analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

None added.

# Mammography Quality Performance Standards

## Standard Three – Education

The mammography technologist informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

The mammography technologist:

1. Provides information on certification or accreditation of mammography facilities to the patient, other health care providers and the general public.
2. Displays certificate(s) of compliance.

# Mammography Quality Performance Standards

## Standard Four – Performance

The mammography technologist performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The mammography technologist:

1. Communicates to the lead interpreting physician and medical physicist about quality control tests as required.
2. Monitors image production to determine technical acceptability.

# Mammography Quality Performance Standards

## Standard Five – Evaluation

The mammography technologist evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

The mammography technologist:

1. Evaluates the required quality control tests before breast imaging is performed.
2. Reviews the medical physicist's report and inspection reports to assess the quality of the mammographic equipment performance.
3. Collaborates with the lead interpreting physician and medical maintain equipment in compliance with state and federal regulations and guidelines.

# Mammography Quality Performance Standards

## Standard Six – Implementation

The mammography technologist implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

The mammography technologist:

1. Proceeds with the mammographic procedure only when mammography equipment is in correct working order and results from the required quality control tests, medical physicist's report and inspection are in compliance.

# Mammography Quality Performance Standards

## Standard Seven – Outcomes Measurement

The mammography technologist assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

The mammography technologist:

1. Performs the annual medical outcomes audit and provides results to each interpreting licensed independent practitioner.

# Mammography Quality Performance Standards

## Standard Eight – Documentation

The mammography technologist documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

The mammography technologist:

1. Provides documentation of the quality assurance program as required for the lead interpreting physician, medical physicist, accrediting body and state and federal inspectors.

# Mammography Professional Performance Standards

## Standard One – Quality

The mammography technologist strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

The mammography technologist:

1. Performs mammographic procedures that meet or exceed expected quality guidelines and documents variances.



# Mammography Professional Performance Standards

## Standard Two – Self-Assessment

The mammography technologist evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.

# Mammography Professional Performance Standards

## Standard Three – Education

The mammography technologist acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

The mammography technologist:

1. Maintains clinical experience according to state and federal regulations and guidelines.

# Mammography Professional Performance Standards

## Standard Four – Collaboration and Collegiality

The mammography technologist promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

None added.

# Mammography Professional Performance Standards

## Standard Five – Ethics

The mammography technologist adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

None added.

# Mammography Professional Performance Standards

## Standard Six – Research and Innovation

The mammography technologist participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The mammography technologist:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None added.

## **Mammography Advisory Opinion Statements**

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication Injection Through Existing Vascular Access

Medication Injections by Radiologic Technologists

Placement of Personal Radiation Monitoring Devices

A decorative graphic consisting of a thick, grey diagonal line that passes through a shaded, 3D-style sphere, extending from the top left towards the bottom right of the page.

# The Practice Standards for Medical Imaging and Radiation Therapy

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## Medical Dosimetry Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.



Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# Introduction to Medical Dosimetry Practice Standards

## Definition

The practice of medical dosimetry is performed by health care professionals responsible for designing a treatment plan for use in the administration of ionizing radiation for the purpose of treating diseases, primarily cancer.

The complex nature of cancer frequently requires the use of multiple treatment specialties. Radiation oncology is one such specialty. It requires an interdisciplinary team of radiation oncologists, medical dosimetrists, radiation therapists, medical radiation physicists and nurses. It is typically the medical dosimetrist who generates an optimal treatment plan and ensures the appropriate transfer of data that the radiation therapist will use to treat the patient. The medical dosimetrist maintains a commitment to a high degree of accuracy, thoroughness and safety.

Medical dosimetrists must demonstrate an understanding of anatomy, physiology, pathology and medical terminology. In addition, comprehensive knowledge of characteristics and clinical relevance of radiation oncology treatment machine and equipment, radiobiology, radiation physics, radiation safety and psychosocial aspects of cancer is required.

Medical dosimetrists must maintain a high degree of accuracy in treatment planning optimization, treatment techniques and positioning. Medical dosimetrists assist the radiation oncologist in localizing the treatment area, generate a treatment plan and actively communicate with the radiation oncology team to enable and ensure the appropriate transfer of information.

Medical dosimetrists are the primary liaison between the radiation oncologist, radiation therapist, and medical physicist. Medical dosimetrists must remain sensitive to the physical and emotional needs of the patient through good communication and patient assessment. Radiation therapy often involves daily treatments extending over several weeks using highly sophisticated equipment. It requires thorough initial planning as well as constant patient care and monitoring. As members of the health care team, medical dosimetrists participate in quality improvement processes and continually assess their professional performance.

Medical dosimetrists think critically and use independent, professional and ethical judgments in all aspects of their work. They engage in continuing education in their area of practice in order to enhance treatment planning skills, radiation safety, public education, knowledge and technical competence.

## Education and Certification

Medical dosimetrists prepare for their roles on the interdisciplinary team through one of the following:

- Possessing a Bachelor's of Science or Bachelor of Applied Science degree and by successfully completing an accredited education program in Medical Dosimetry and attaining appropriate certification from the Medical Dosimetry Certification Board.

Or

- Possessing a Bachelor's of Science or Bachelor of Applied Science degree in a science related to Medical Dosimetry, documenting clinical experience and continuing education in medical dosimetry as specified by the Medical Dosimetry Certification Board and attaining appropriate certification from the Medical Dosimetry Certification Board.

Those passing this examination use the credential Certified Medical Dosimetrist, or CMD.

To maintain CMD certification, medical dosimetrists must complete appropriate continuing education requirements to sustain a level of expertise and awareness of changes and advances in practice.

## Overview

An interdisciplinary team of radiation oncologists, radiation therapists, medical dosimetrists, medical physicists and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for radiation therapy treatment procedures and treatment planning evolve. A comprehensive procedure list for the medical dosimetrist is impractical because clinical activities vary by practice needs and expertise of the medical dosimetrist. As medical dosimetrists gain more experience, knowledge and clinical competence, the clinical activities for the medical dosimetrist may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A medical dosimetrist should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.

## Medical Dosimetrist Scope of Practice

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the medical dosimetrist also includes:

1. Preparing radiation therapy treatment plans as prescribed by a radiation oncologist.
2. Obtaining and incorporating patient data from medical imaging procedures to be used in simulation, treatment planning, treatment delivery and quality assurance.
3. Performing or assisting with patient simulation as prescribed by a radiation oncologist.
4. Performing or assisting with the fabrication of patient immobilization and other treatment devices.
5. Preparing the patient for general or special treatment procedures.

6. Developing treatment strategies leading to optimal treatment plans under the direction of a radiation oncologist.
7. Performing dose calculations.
8. Evaluating treatment plans for accuracy.
9. Transferring and documenting treatment planning data according to departmental policy.
10. Monitoring, under the direction of a radiation oncologist, doses to normal tissues within the irradiated volume to ensure tolerance levels are not exceeded.
11. Participating in brachytherapy treatment planning and delivery.

# Medical Dosimetrist Clinical Performance Standards

## Standard One – Assessment

The medical dosimetrist collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
6. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The medical dosimetrist:

1. Reviews patient history for previous therapeutic treatments.
2. Assesses the patient's need for information and reassurance.

# Medical Dosimetrist Clinical Performance Standards

## Standard Two – Analysis/Determination

The medical dosimetrist analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The medical dosimetrist:

1. Gathers pertinent data relevant to the treatment planning and delivery process.
2. Recommends the appropriate immobilization devices and positioning aids for simulation and treatment.
3. Participates in reviewing patient treatment parameters and dose records to ensure treatment does not exceed the prescribed dose or normal tissue tolerances.
4. Recommends when to hold treatment until a radiation oncologist is notified.

# Medical Dosimetrist Clinical Performance Standards

## Standard Three – Education

The medical dosimetrist provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.

### *Specific Criteria*

The medical dosimetrist:

1. Explains the role and function of the medical dosimetrist in the overall treatment course.
2. Reviews the treatment plan with the patient as requested by a radiation oncologist.



# Medical Dosimetrist Clinical Performance Standards

## Standard Four – Performance

The medical dosimetrist performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Uses accessory equipment.
7. Assesses and monitors the patient's physical, emotional and mental status.
8. Positions patient for anatomic area of interest, respecting patient ability and comfort.
9. Immobilizes patient for procedure.

### *Specific Criteria*

The medical dosimetrist:

1. Collaborates with the medical physicist and radiation therapist to fabricate individualized immobilization, custom blocks and other beam-modifying devices.
2. Consults with the radiation oncologist regarding an optimal treatment plan for the patient.
3. Collaborates with the radiation therapist, medical physicist and radiation oncologist regarding the simulation process and procedures.

4. Prepares and positions the patient for simulation and treatment using appropriate positioning aids and immobilization devices.
5. Reviews simulation images with the radiation therapist, medical physicist and radiation oncologist.
6. Develops a treatment plan as directed and prescribed by the radiation oncologist.
7. Adheres to established best practice protocols, guidelines and radiation oncologist directives.
8. Calculates treatment unit parameters and doses to treatment volumes and points of interest.
9. Reviews treatment planning data for accuracy and appropriateness prior to input into the patient's chart and initial treatment.
10. Develops a manual or computer generated brachytherapy treatment plan as prescribed by a radiation oncologist.
11. Prepares or assists in preparing brachytherapy sources and equipment.
12. Ensures an independent machine-setting check is completed before treatment is delivered.

# Medical Dosimetrist Clinical Performance Standards

## Standard Five – Evaluation

The medical dosimetrist determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

None Added.

# Medical Dosimetrist Clinical Performance Standards

## Standard Six – Implementation

The medical dosimetrist implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

The medical dosimetrist:

1. Reviews and implements treatment field changes indicated on simulation or portal images.
2. Evaluates reports from the clinical staff regarding deviations from standards or treatment plans and makes adjustments as necessary.
3. Develops additional treatment plans to achieve an optimal dose distribution.
4. Adapts procedures to equipment limitations and patient needs.
5. Ensures accuracy in the transfer and documentation of treatment parameters, according to departmental policies.
6. Works with radiation oncologists, medical physicists and radiation therapists to compensate for treatment inaccuracies.

# Medical Dosimetrist Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The medical dosimetrist reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the medical dosimetrist compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.

### *Specific Criteria*

None Added.

# Medical Dosimetrist Clinical Performance Standards

## Standard Eight – Documentation

The medical dosimetrist documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The Medical Dosimetrist:

1. Reports deviations from the standard or planned treatment.

# Medical Dosimetrist Quality Performance Standards

## Standard One – Assessment

The medical dosimetrist collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The medical dosimetrist:

1. Assesses the environment for any potential radiation hazards.
2. Participates in radiation protection, patient safety, risk management and quality management activities according to departmental policies.

# Medical Dosimetrist Quality Performance Standards

## Standard Two – Analysis/Determination

The medical dosimetrist analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

The medical dosimetrist:

1. Verifies the treatment summary and the mathematical accuracy of the prescription.
2. Reviews the treatment record and verifies calculations before and/or after treatment delivery.



# Medical Dosimetrist Quality Performance Standards

## Standard Three – Education

The medical dosimetrist informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

The medical dosimetrist:

1. Addresses concerns from the patient and significant others about appropriate and essential uses of radiation in treatment of diseases.
2. Assists in developing and producing educational materials for patients and the public regarding radiation therapy treatments.

# Medical Dosimetrist Quality Performance Standards

## Standard Four – Performance

The medical dosimetrist performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
6. Participates in safety and risk management activities.
7. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The medical dosimetrist:

1. Adheres to radiation safety rules and standards.
2. Makes the recommendation to discontinue patient treatment until equipment is operating properly.
3. Demonstrates safe handling, storing and disposal of brachytherapy sources.

# Medical Dosimetrist Quality Performance Standards

## Standard Five – Evaluation

The medical dosimetrist evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

The medical dosimetrist:

1. Reviews treatment calculations and ensures the validity of the treatment plan.
2. Ensures treatment parameters have been transferred correctly to the oncology information system.
3. Acquires data necessary to perform accurate patient protocol plans and participates in implementation of the plan.
4. Reviews treatment deviations and assists in determining possible causes and solutions.

# Medical Dosimetrist Quality Performance Standards

## Standard Six – Implementation

The medical dosimetrist implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Implements the quality assurance action plan.

### *Specific Criteria*

The medical dosimetrist:

1. Assists in supporting the quality assurance action plan.

# Medical Dosimetrist Quality Performance Standards

## Standard Seven – Outcomes Measurement

The medical dosimetrist assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

None Added.

# Medical Dosimetrist Quality Performance Standards

## Standard Eight – Documentation

The medical dosimetrist documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

The medical dosimetrist:

1. Reports any treatment deviations in accordance with departmental, institutional and national quality assurance guidelines.

# Medical Dosimetrist Professional Performance Standards

## Standard One – Quality

The medical dosimetrist strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

The medical dosimetrist:

1. Applies professional judgment and discretion while performing virtual or computer-aided simulations and during treatment planning.

# Medical Dosimetrist Professional Performance Standards

## Standard Two – Self-Assessment

The medical dosimetrist evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None Added.



# Medical Dosimetrist Professional Performance Standards

## Standard Three – Education

The medical dosimetrist acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

None Added.

# Medical Dosimetrist Professional Performance Standards

## Standard Four – Collaboration and Collegiality

The medical dosimetrist promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

The medical dosimetrist:

1. Interacts with all members of the radiation oncology team.

# Medical Dosimetrist Professional Performance Standards

## Standard Five – Ethics

The medical dosimetrist adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

None Added.

# Medical Dosimetrist Professional Performance Standards

## Standard Six – Research and Innovation

The medical dosimetrist participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The medical dosimetrist:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information with colleagues through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None Added.

# **Medical Dosimetrist Advisory Opinion Statements**

Placement of Personal Radiation Monitoring Devices.

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

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## Nuclear Medicine Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.



# Introduction to Nuclear Medicine Practice Standards

## Definition

The practice of nuclear medicine and molecular imaging is performed by a segment of health care professionals responsible for the administration of ionizing radiation (x-rays in the performance of computed tomography and radioactive material), radiofrequencies in a magnetic field (magnetic resonance imaging) and medications to patients for diagnostic, therapeutic or research purposes. Radioactive materials, medications and imaging and nonimaging equipment are used in nuclear medicine and molecular imaging to study various organs, body systems and samples to aid in the diagnosis, treatment and treatment planning of various pathological conditions.-

Although an interdisciplinary team of clinicians, nuclear medicine technologists and support staff plays a critical role in the delivery of health services, it is the nuclear medicine technologist who performs the nuclear medicine and molecular imaging procedure or treatment at the request of and for interpretation by a licensed independent practitioner.

Nuclear medicine and molecular imaging technology integrates scientific knowledge, technical competence and patient interaction skills to provide safe and accurate procedures with compassion. A nuclear medicine technologist recognizes patient conditions essential for the successful completion of the procedure.

Nuclear medicine technologists must demonstrate an understanding of human anatomy and physiology, chemistry, physics, mathematics, medical terminology and pharmacology. Nuclear medicine technologists must maintain a high degree of accuracy. They must possess, use and maintain knowledge about radiation safety principles. Nuclear medicine technologists independently perform or assist the licensed independent practitioner in the completion of nuclear medicine and molecular imaging procedures and treatments. The nuclear medicine technologist prepares and administers ionizing radiation (x-ray in the performance of computed tomography and radioactive material), radiofrequencies with in a magnetic field (magnetic resonance) and medications in accordance with state and federal regulations.

Nuclear medicine technologists are the primary liaison between patients, licensed independent practitioners and other members of the health care team. Nuclear medicine technologists must remain sensitive to the needs of the patient through good communication, patient assessment, patient monitoring and patient care skills. As members of the health care team, nuclear medicine technologists participate in quality improvement processes and continually assess their professional performance.

Nuclear medicine technologists think critically and use independent, professional and ethical judgments in all aspects of their work. They engage in continuing education to include their area of practice to enhance patient care, radiation safety, public education, knowledge and technical competence.

## Education and Certification

Nuclear medicine technologists prepare for their roles on the interdisciplinary team by successfully completing a program in nuclear medicine that is programmatically accredited or part of an institution that is regionally accredited, and by attaining appropriate primary certification from the American Registry of Radiologic Technologists or the Nuclear Medicine Technology Certification Board. Those passing the ARRT examination use the credential R.T.(N). Those passing the NMTCB examination use the credential CNMT.

Eligibility to take the postprimary examinations in nuclear cardiology and/or positron emission tomography requires appropriate primary certification at the time of examination and documentation of clinical experience. Those who successfully complete these examinations may use the credentials CNMT-NCT and/or CNMT-PET.

Nuclear medicine technologists performing computed tomography or magnetic resonance imaging prepare for those roles by attaining certification by the ARRT. Eligibility to take the postprimary examinations in computed tomography and/or magnetic resonance imaging requires appropriate primary certification at the time of examination and documentation of clinical experience in specific procedures. Those who successfully complete these examinations may use the credentials R.T.(CT) and/or R.T.(MR).

To maintain ARRT and/or NMTCB certification, nuclear medicine technologists must complete appropriate continuing education requirements to sustain a level of expertise and awareness of changes and advances in practice.

## Overview

Nuclear medicine technologists are part of the interdisciplinary team that plays a critical role in the delivery of health services as new modalities emerge and the need for imaging and nonimaging procedures increases. A comprehensive procedure list for the nuclear medicine technologist is impractical because clinical activities vary by practice needs. As the field of nuclear medicine and molecular imaging advances, the clinical activities for the nuclear medicine technologist may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A nuclear medicine technologist should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.

## **Nuclear Medicine Technologist Scope of Practice**

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Performing venipuncture as prescribed by a licensed independent practitioner.
- Starting, maintaining and/or removing intravenous access as prescribed by a licensed independent practitioner.
- Identifying, preparing and/or administering medications as prescribed by a licensed independent practitioner.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the nuclear medicine technologist also includes:

1. Performing procedures or examinations upon the order of a licensed independent practitioner for diagnostic interpretation and therapeutic procedures.

2. Identifying, preparing and/or administering ionizing radiation (x-ray in the performance of computed tomography and radioactive material) and radiofrequencies within a magnetic field (magnetic resonance) as prescribed by a licensed independent practitioner.
3. Providing optimal patient care by applying established and accepted protocols.
4. Continually evaluating responsibilities and methods with recommendations for expansion of the profession.
5. Assisting in maintaining records, respecting confidentiality and established policy.

# Nuclear Medicine Clinical Performance Standards

## Standard One – Assessment

The nuclear medicine technologist collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The nuclear medicine technologist:

1. Locates and reviews previous examinations and/or procedures for comparison.
2. Identifies and removes artifact-producing objects.
3. Verifies the patient's lactation status.
4. Verifies the patient's menstrual cycle.

# Nuclear Medicine Clinical Performance Standards

## Standard Two – Analysis/Determination

The nuclear medicine technologist analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The nuclear medicine technologist:

1. Selects detector and optimal collimator to perform procedure.
2. Determines radionuclide dosage based on patient's age, weight, medical and physical status.
3. Reviews the patient's medical record and the examination request to determine optimal procedure parameters for clinical indications.
4. Determines patient compliance with pre-examination preparation and instructions.

# Nuclear Medicine Clinical Performance Standards

## Standard Three – Education

The nuclear medicine technologist provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The nuclear medicine technologist:

1. Instructs patient and others regarding exam preparation prior to.
2. Provides instruction to patient regarding reduction of radiation exposure to self and others postprocedure.
3. Provides information regarding risks and benefits of ionizing radiation (x-ray in the performance of computed tomography and radioactive material) and radiofrequencies within a magnetic field (magnetic resonance).

# Nuclear Medicine Clinical Performance Standards

## Standard Four – Performance

The nuclear medicine technologist performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

### *Specific Criteria*

The nuclear medicine technologist:



1. Prepares and administers ionizing radiation (x-ray in the performance of computed tomography and radioactive material) and radiofrequencies within a magnetic field (magnetic resonance) and medications.
2. Injects radioactive material and/or medication in peripherally inserted central catheter lines or ports.
3. Uses shielding devices.
4. Monitors imaging production to determine variance from established quality standards.
5. Determines optimum placement of ECG electrodes.

# Nuclear Medicine Clinical Performance Standards

## Standard Five – Evaluation

The nuclear medicine technologist determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

The nuclear medicine technologist:

1. Reviews procedure to determine if additional images or data will enhance the diagnostic value.
2. Processes images for evaluation by a licensed independent practitioner.
3. Consults with a licensed independent practitioner to confirm diagnostic completeness.

# Nuclear Medicine Clinical Performance Standards

## Standard Six – Implementation

The nuclear medicine technologist implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

The nuclear medicine technologist:

1. Adjusts imaging parameters, patient procedure or computer-generated information to improve the outcome.
2. Assesses procedure for technical quality and makes technical modifications to the data presentations.
3. Performs additional images or data collection as needed.

# **Nuclear Medicine Clinical Performance Standards**

## **Standard Seven – Outcomes Measurement**

The nuclear medicine technologist reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the nuclear medicine technologist compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

None added.

# Nuclear Medicine Clinical Performance Standards

## Standard Eight – Documentation

The nuclear medicine technologist documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The nuclear medicine technologist:

1. Maintains records of the receipt, administration and disposal of radioactive materials.
2. Documents administered dosage and route of administration.

# Nuclear Medicine Quality Performance Standards

## Standard One – Assessment

The nuclear medicine technologist collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The nuclear medicine technologist:

1. Performs area monitoring and surveys to assess radiation exposure levels and contamination sites.
2. Complies with federal and state laws to minimize radiation exposure levels.
3. Maintains controlled access to restricted area during radiation exposure.
4. Participates in radiation protection, patient safety, risk management and quality management activities.

# **Nuclear Medicine Quality Performance Standards**

## **Standard Two – Analysis/Determination**

The nuclear medicine technologist analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

The nuclear medicine technologist:

1. Evaluates results of quality control testing on radioactive material for compliance.

# Nuclear Medicine Quality Performance Standards

## Standard Three – Education

The nuclear medicine technologist informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

None added.



# Nuclear Medicine Quality Performance Standards

## Standard Four – Performance

The nuclear medicine technologist performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The nuclear medicine technologist:

1. Complies with radiation protection rules and standards.
2. Uses radiation detecting equipment.
3. Demonstrates safe handling, storage and disposal of radioactive materials.
4. Monitors shielding effectiveness.
5. A ring badge should be worn on the dominant hand with the label facing the radiation source.

# Nuclear Medicine Quality Performance Standards

## Standard Five – Evaluation

The nuclear medicine technologist evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

None added.

# Nuclear Medicine Quality Performance Standards

## Standard Six – Implementation

The nuclear medicine technologist implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

The nuclear medicine technologist:

1. Employs devices to minimize radiation levels.
2. Uses decontamination procedures.

# Nuclear Medicine Quality Performance Standards

## Standard Seven – Outcomes Measurement

The nuclear medicine technologist assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

None added.

# **Nuclear Medicine Quality Performance Standards**

## **Standard Eight – Documentation**

The nuclear medicine technologist documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

The nuclear medicine technologist:

1. Documents radioactive materials quality testing procedures and maintains results for inspection.
2. Documents instrumentation quality testing procedures and maintains results for review.

# **Nuclear Medicine Professional Performance Standards**

## **Standard One – Quality**

The nuclear medicine technologist strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

The nuclear medicine technologist:

1. Performs procedures in accordance with the Nuclear Regulatory Commission (NRC) and/or in agreement with state regulations.

# **Nuclear Medicine Professional Performance Standards**

## **Standard Two – Self-Assessment**

The nuclear medicine technologist evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.

# **Nuclear Medicine Professional Performance Standards**

## **Standard Three – Education**

The nuclear medicine technologist acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

None added.



# **Nuclear Medicine Professional Performance Standards**

## **Standard Four – Collaboration and Collegiality**

The nuclear medicine technologist promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

The nuclear medicine technologist:

1. Instructs others in radiation safety.

# **Nuclear Medicine Professional Performance Standards**

## **Standard Five – Ethics**

The nuclear medicine technologist adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

The nuclear medicine technologist:

1. Reports unsafe practices to the Radiation Safety Officer (RSO), Nuclear Regulatory Commission (NRC) and/or appropriate state agency.

# **Nuclear Medicine Professional Performance Standards**

## **Standard Six – Research and Innovation**

The nuclear medicine technologist participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The nuclear medicine technologist:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None added.

## **Nuclear Medicine Advisory Opinion Statements**

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication and Contrast Media Injections by Radiologic Technologists.

Medication Injection through Existing Vascular Access.

Placement of Personal Radiation Monitoring Devices.

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

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## Quality Management Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# Introduction to Quality Management Practice Standards

## Definition

The practice of quality management is performed by health care professionals responsible for the identification, measurement, control, and improvement of the various core processes that will ultimately lead to improved medical imaging and radiation therapy department performance.

The goal of quality management is to ensure excellence in healthcare through the systematic collection and evaluation of data, with a primary objective of enhancing patient care.

Today's medical imaging and radiation therapy departments involve multiple modalities, creating an interdisciplinary team. The quality management technologist is a vital member of the team of clinicians, quality management technologists and support staff, as well as personnel from outside the department.

Quality management includes but is not limited to four main components: quality planning, quality control, quality assurance and quality improvement. Quality management focuses on image/service quality and the means to achieve it. A quality management technologist combines all of these components to ensure efficient and effective patient care.

The quality management technologist must demonstrate an understanding of the various modalities, equipment performance, regulatory/accreditation requirements, performance improvement processes, patient throughput, and the various information technologies present in the medical imaging and radiation therapy departments.

Quality management technologists must maintain a high degree of accuracy. They must possess, use and maintain knowledge about radiation protection and safety. Quality management technologists independently perform or assist the medical physicist in the completion of quality control procedures. Quality management technologists prepare, administer and document activities related to all facets of quality management in accordance with state and federal regulations or lawful institutional policy.

Quality management technologists serve as liaisons between patients, licensed independent practitioners and other members of the healthcare team. Quality management technologists must remain sensitive to the needs of patients and coworkers through good communication, assessment, monitoring and patient care skills. As members of the health care team, quality management technologists facilitate quality improvement processes and continually assess their professional performance.

Quality management technologists think critically and use independent, professional and ethical judgments in all aspects of their work. They engage in continuing education to include their area of practice to enhance patient care, radiation safety, public education, knowledge and technical competence.



## **Education and Certification**

Quality management technologists prepare for their roles on the interdisciplinary team by successfully completing a program in radiography, nuclear medicine technology or radiation therapy that is programmatically accredited or part of an institution that is regionally accredited, and by attaining appropriate primary certification from the American Registry of Radiologic Technologists or the Nuclear Medicine Technology Certification Board.

Eligibility to take the ARRT postprimary examination in quality management requires appropriate primary certification at the time of examination and documentation of clinical experience in specific procedures. Those passing the quality management postprimary examination, use the credentials R.T.(QM).

To maintain ARRT postprimary certification, quality management technologists must complete appropriate continuing education requirements to sustain a level of expertise and awareness of changes and advances in practice.

## **Overview**

An interdisciplinary team of clinicians, quality management technologists and support staff plays a critical role in the delivery of health services as new modalities emerge and the need for imaging procedures increases. A comprehensive procedure list for the quality management technologist is impractical because clinical activities vary by practice needs and expertise of the quality management technologist. As quality management technologists gain more experience, knowledge and clinical competence, the activities for the quality management technologist may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A quality management technologist should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the quality management procedures.

## Quality Management Technologist Scope of Practice

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Performing venipuncture as prescribed by a licensed independent practitioner.
- Starting, maintaining and/or removing intravenous access as prescribed by a licensed independent practitioner.
- Identifying, preparing and/or administering medications as prescribed by a licensed independent practitioner.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the quality management technologist also includes:

1. Coordinating, performing and monitoring quality control procedures for all types of equipment.

2. Determining and monitoring exposure factors and/or procedural protocols in accordance with ALARA principles.
3. Ensuring adherence to federal, state and local regulatory requirements.
4. Ensuring adherence to accreditation requirements.
5. Providing input for equipment and software purchase and supply decisions when appropriate or requested.
6. Facilitating performance improvement processes.
7. Providing practical information regarding quality management topics.
8. Facilitating the department's quality assessment and improvement plan.
9. Performing physics surveys independently on general radiographic and fluoroscopic equipment. Medical physicist oversight is required.
10. Supporting and assisting a medical physicist for special modality physics surveys such as CT, Mammography, MRI, Nuclear Medicine, Radiation Therapy and PET.
11. Providing assistance to staff for image optimization, including patient positioning, proper equipment use and image critique.
12. Creating policies and procedures to meet regulatory and accreditation requirements.
13. Serving as a resource regarding regulatory and accreditation requirements.

# Quality Management Clinical Performance Standards

## Standard One – Assessment

The quality management technologist collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The quality management technologist:

1. Identifies the customers served by medical imaging and radiation therapy.
2. Identifies the processes used in customer service.
3. Monitors compliance with universal precautions and standard precautions.

# Quality Management Clinical Performance Standards

## Standard Two – Analysis/Determination

The quality management technologist analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The quality management technologist:

1. Assesses and prioritizes the current processes to improve quality while focusing on issues needing immediate response.
2. Collects and analyzes data using the standard tools associated with quality management.
3. Creates an effective action plan after reviewing all pertinent data while assessing possible options, costs and ease of implementation.

4. Clarifies current steps in a process to minimize redundancy, reordering and improving service flow.
5. Develops methods for minimizing hazards associated with medical imaging and radiation therapy procedures.
6. Develops monitoring metrics.
7. Assesses proposed changes to minimize organizational disruption during implementation.

# Quality Management Clinical Performance Standards

## Standard Three – Education

The quality management technologist provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The quality management technologist:

4. Develops educational programs.

# Quality Management Clinical Performance Standards

## Standard Four – Performance

The quality management technologist performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

### *Specific Criteria*

The quality management technologist:

1. Reviews all data for completeness and accuracy.



# Quality Management Clinical Performance Standards

## Standard Five – Evaluation

The quality management technologist determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

The quality management technologist:

1. Evaluates process flow.
2. Evaluates sentinel events and continuously monitors measurements to minimize patient risk.
3. Evaluates measured processes against established policies, protocols and benchmarks.

# Quality Management Clinical Performance Standards

## Standard Six – Implementation

The quality management technologist implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

The quality management technologist:

1. Develops protocols.

# Quality Management Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The quality management technologist reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the quality management technologist compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

The quality management technologist:

1. Evaluates the effectiveness and supports changes to processes.
2. Performs procedural analysis.

# Quality Management Clinical Performance Standards

## Standard Eight – Documentation

The quality management technologist documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The quality management technologist:

1. Documents steps used in improving processes.
2. Documents goals and outcomes based on data analysis.
3. Provides reports as required by institutional policy, accrediting bodies and state and federal regulations.

# Quality Management Quality Performance Standards

## Standard One – Assessment

The quality management technologist collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The quality management technologist:

1. Uses consistent and appropriate techniques to gather relevant information.
2. Assesses protocols to improve safety, efficiency and patient care.
3. Identifies the facility's loss potential.

# Quality Management Quality Performance Standards

## Standard Two – Analysis/Determination

The quality management technologist analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

The quality management technologist:

1. Monitors and develops methods for improving customer satisfaction.
2. Monitors federal and state laws and accreditation standards affect quality management in medical imaging and radiation therapy.
3. Establishes benchmarks and quality indicators for assessing quality management issues.
4. Performs repeat analysis.

# Quality Management Quality Performance Standards

## Standard Three – Education

The quality management technologist informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

The quality management technologist:

1. Addresses questions and concerns regarding quality management.
2. Provides educational programs to improve understanding of quality management in medical imaging and radiation therapy.

# Quality Management Quality Performance Standards

## Standard Four – Performance

The quality management technologist performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The quality management technologist:

1. Identifies variables and implements changes to improve quality.



# Quality Management Quality Performance Standards

## Standard Five – Evaluation

The quality management technologist evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

The quality management technologist:

1. Evaluates customer satisfaction.

# Quality Management Quality Performance Standards

## Standard Six – Implementation

The quality management technologist implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

None added.

# Quality Management Quality Performance Standards

## Standard Seven – Outcomes Measurement

The quality management technologist assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

The quality management technologist:

1. Assesses implemented changes for improvement.
2. Assesses differences between expected and actual outcomes.
3. Revises action plan to meet customer needs.
4. Develops strategies for maintaining improvement.
5. Develops methods to demonstrate continuous improvement.

# Quality Management Quality Performance Standards

## Standard Eight – Documentation

The quality management technologist documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

The quality management technologist:

1. Maintains institutional policies by continuously evaluating compliance issues.
2. Documents process flow variances and justifies exceptions.
3. Provides reports as required by institutional policy, accrediting bodies and state and federal regulations.

# Quality Management Professional Performance Standards

## Standard One – Quality

The quality management technologist strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

The quality management technologist:

1. Verifies achievement of goals and identifies exceptions.

# Quality Management Professional Performance Standards

## Standard Two – Self-Assessment

The quality management technologist evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.

# Quality Management Professional Performance Standards

## Standard Three – Education

The quality management technologist acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

The quality management technologist:

1. Promotes practices enhancing patient safety.
2. Modifies current practices based upon customer input and data analysis.

# Quality Management Professional Performance Standards

## Standard Four – Collaboration and Collegiality

The quality management technologist promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

The quality management technologist:

1. Uses team concepts to interact with clinicians, administration, support staff, customers and others.



# Quality Management Professional Performance Standards

## Standard Five – Ethics

The quality management technologist adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

The quality management technologist:

1. Advocates for the medical imaging and radiation therapy departments.
2. Monitors adherence to ALARA.

# Quality Management Professional Performance Standards

## Standard Six – Research and Innovation

The quality management technologist participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The quality management technologist:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None added.

## **Quality Management Advisory Opinion Statements**

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication Injection Through Existing Vascular Access

Medication Injections by Radiologic Technologists

Placement of Personal Radiation Monitoring Devices

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

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## Radiation Therapy Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic, and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance, and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards, and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both criteria should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# Introduction to Radiation Therapy Practice Standards

## Definition

The practice of radiation therapy is performed by health care professionals responsible for the administration of ionizing radiation for the purpose of treating diseases, primarily cancer.

The complex nature of cancer frequently requires the use of multiple treatment specialties. Radiation therapy is one such specialty. It requires an interdisciplinary team of radiation oncologists, radiation therapists, medical radiation physicists, medical dosimetrists and nurses. It is typically the radiation therapist who administers the radiation to the patient throughout the course of treatment.

Radiation therapy integrates scientific knowledge, technical competence and patient interaction skills to provide safe and accurate treatment with compassion. A radiation therapist recognizes patient conditions essential for the successful completion of simulation and treatment.

Radiation therapists must demonstrate an understanding of human anatomy, human physiology, pathology and medical terminology. In addition, comprehension of oncology, radiobiology, radiation physics, radiation oncology techniques, radiation safety and the psychosocial aspects of cancer are required. They must maintain a high degree of accuracy in positioning and treatment techniques. Radiation therapists must possess, use and maintain knowledge about radiation protection and safety. Radiation therapists assist the radiation oncologist to localize the treatment area, participate in treatment planning and deliver high doses of ionizing radiation as prescribed by the radiation oncologist.

Radiation therapists are the primary liaison between patients and other members of the radiation oncology team. They also provide a link to other health care providers, such as social workers and dietitians. Radiation therapists must remain sensitive to the needs of the patient through good communication, patient assessment, patient monitoring, and patient care skills. Radiation therapy often involves daily treatments extending over several weeks using highly sophisticated equipment. It requires thorough initial planning as well as constant patient care and monitoring. As members of the health care team, radiation therapists participate in quality improvement processes and continually assess their professional performance.

Radiation therapists think critically and use independent, professional and ethical judgments in all aspects of their work. They engage in continuing education, to include their area of practice, to enhance patient care, radiation safety, public education, knowledge and technical competence.

## Education and Certification

Radiation therapists prepare for their roles on the interdisciplinary team by successfully completing a program in radiation therapy that is programmatically accredited or part of an institution that is regionally accredited and by attaining appropriate primary certification from the American Registry of Radiologic Technologists.

To maintain ARRT certification, radiation therapists must complete appropriate continuing education requirements to sustain a level of expertise and awareness of changes and advances in practice.

## **Overview**

An interdisciplinary team of radiation oncologists, radiation therapists, medical dosimetrists, medical physicists and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for radiation therapy treatment procedures evolve. A comprehensive procedure list for the radiation therapist is impractical because clinical activities vary by the practice needs and expertise of the radiation therapist. As radiation therapists gain more experience, knowledge and clinical competence, the clinical activities for the radiation therapist may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A radiation therapist should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.



## **Radiation Therapist Scope of Practice**

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Performing venipuncture as prescribed by a licensed independent practitioner.
- Starting, maintaining and/or removing intravenous access as prescribed by a licensed independent practitioner.
- Identifying, preparing and/or administering medications as prescribed by a licensed independent practitioner.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the radiation therapist also includes:

1. Delivering radiation therapy treatments as prescribed by a radiation oncologist.
2. Performing simulation, treatment planning procedures and dosimetric calculations as prescribed by a radiation oncologist.

3. Using imaging technologies for the explicit purpose of simulation, treatment planning and treatment delivery as prescribed by a radiation oncologist.
4. Detecting and reporting significant changes in patients' conditions and determining when to withhold treatment until the radiation oncologist is consulted.
5. Monitoring doses to normal tissues within the irradiated volume to ensure tolerance levels are not exceeded.
6. Constructing/preparing immobilization, beam directional and beam modification devices.
7. Participating in brachytherapy procedures.

# Radiation Therapy Clinical Performance Standards

## Standard One – Assessment

The radiation therapist collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The radiation therapist:

1. Assesses the patient's risk for allergic reaction to medication prior to administration.
2. Assesses the patient's need for information and reassurance.
3. Monitors side effects and reactions to treatment.
4. Reviews treatment record prior to treatment or simulation.
5. Monitors doses to normal tissues.

6. Recognizes the patient's need for referral to other care providers such as a social worker, nurse or dietitian.
7. Monitors and assesses patients throughout the treatment course and follow-up visits.
8. Reviews treatment protocol criteria and assesses conditions affecting treatment delivery.
9. Identifies and/or removes objects that could interfere with prescribed treatment.

# Radiation Therapy Clinical Performance Standards

## Standard Two – Analysis/Determination

The radiation therapist analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The radiation therapist:

1. Participates in decisions about appropriate simulation techniques and treatment positions.
2. Reviews patient treatment records prior to each treatment for prescription or treatment procedure changes.-
3. Reviews doses daily to ensure that treatment does not exceed prescribed dose, normal tissue tolerance or treatment protocol constraints.
4. Ensures the appropriate imaging technique is chosen for image guided radiation therapy procedures.

5. Reviews verification images prior to treatment.
6. Determines when to contact the radiation oncologist or licensed independent practitioner regarding patient side effects or questions.
7. Determines when to withhold treatment until a radiation oncologist is contacted.
8. Reviews patient treatment plan and prescription prior to initial treatment delivery.

# Radiation Therapy Clinical Performance Standards

## Standard Three – Education

The radiation therapist provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The radiation therapist:

1. Provides information regarding risks and benefits of radiation.
2. Instructs patient in the maintenance of treatment markings.
3. Provides information and instruction on proper skin care, diet and self-care procedures.
4. Anticipates a patient's need for information and provides it throughout the treatment course.

# Radiation Therapy Clinical Performance Standards

## Standard Four – Performance

The radiation therapist performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

### *Specific Criteria*

The radiation therapist:



1. Fabricates individualized immobilization, custom blocks and other beam-modifying devices.
2. Assists the radiation oncologist in determining the optimum treatment field to cover the target volume.
3. Prepares and positions patient for simulation and treatment.
4. Achieves precision patient alignment using imaging and external markings.
5. Creates and manages simulation and verification images.
6. Obtains radiation oncologist's approval of simulation images prior to initiation of treatment.
7. Plans and delivers the treatment as directed and prescribed by the radiation oncologist.
8. Calculates monitor units and treatment times.
9. Performs clinically indicated pretreatment imaging.
10. Monitors the patient visually and aurally during treatment.
11. Prepares or assists in preparing brachytherapy sources and equipment.
12. Monitors the treatment console during treatment.
13. Uses knowledge of biological effects of ionizing radiation on tissue to minimize radiation dose to normal tissues.

# Radiation Therapy Clinical Performance Standards

## Standard Five – Evaluation

The radiation therapist determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

The radiation therapist:

1. Checks treatment calculations and/or treatment plan.
2. Verifies the accuracy of the patient setup prior to treatment delivery.
3. Compares verification images to simulation images using anatomical landmarks or fiducial markers.
4. Verifies treatment console readouts and settings prior to initiating treatment and upon termination of treatment.
5. Evaluates the patient daily for any side effects, reactions and therapeutic responses.

# Radiation Therapy Clinical Performance Standards

## Standard Six – Implementation

The radiation therapist implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

The radiation therapist:

1. Reports deviations from the standard or planned treatment.
2. Establishes congruence between verification images and simulation images, digitally reconstructed radiographs and/or treatment volumes as defined by the radiation oncologist.
3. Implements treatment plan or treatment field changes as indicated by the radiation oncologist.
4. Adapts procedures to equipment limitations and patient needs.
5. Collaborates with radiation oncologists, medical physicists and medical dosimetrists to compensate for treatment inaccuracies.

# Radiation Therapy Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The radiation therapist reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the radiation therapist compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

The radiation therapist:

1. Monitors patient status during procedures, throughout the treatment course and for follow-up care.

# Radiation Therapy Clinical Performance Standards

## Standard Eight – Documentation

The radiation therapist documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The radiation therapist:

1. Documents radiation exposure parameters.
2. Maintains imaging and treatment records according to institutional policy.

# Radiation Therapy Quality Performance Standards

## Standard One – Assessment

The radiation therapist collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The radiation therapist:

1. Inspects ancillary devices prior to use.
2. Monitors treatment unit operation during use.
3. Observes the environment for any potential radiation hazards.
4. Participates in radiation protection, patient and personnel safety, risk management and quality management activities.
5. Maintains restricted access to controlled areas.

# Radiation Therapy Quality Performance Standards

## Standard Two – Analysis/Determination

The radiation therapist analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

The radiation therapist:

1. Verifies the mathematical accuracy of the prescription and the daily treatment summary.
2. Reviews treatment record, calculations, and/or treatment plan for accuracy prior to treatment delivery.

# Radiation Therapy Quality Performance Standards

## Standard Three – Education

The radiation therapist informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

The radiation therapist:

1. Informs the patients, health care providers, students and the public about medical uses of radiation and corrects misconceptions.
2. Instructs other health care providers about radiation protection procedures.
3. Assists in the development and implementation of educational materials for patients, health care providers, students and the public.



# Radiation Therapy Quality Performance Standards

## Standard Four – Performance

The radiation therapist performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The radiation therapist:

1. Adheres to radiation safety rules and standards.
2. Makes the decision to discontinue patient treatment until equipment is operating properly.
3. Verifies that only the patient is in the treatment room prior to initiating treatment or any imaging procedures.
4. Demonstrates safe handling, storage and disposal of brachytherapy sources.
5. Performs quality assurance checks on simulator, treatment unit and appropriate equipment.
6. Consults with medical physicist and/or engineer in performing and documenting the quality assurance checks.

# Radiation Therapy Quality Performance Standards

## Standard Five – Evaluation

The radiation therapist evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

The radiation therapist:

1. Reviews verification images for quality and accuracy.
2. Performs treatment chart checks.
3. Reviews treatment discrepancies, determines causes and assists with the action plan.

# Radiation Therapy Quality Performance Standards

## Standard Six – Implementation

The radiation therapist implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

The radiation therapist:

1. Formulates recommendations for process improvements to minimize treatment discrepancies.

# Radiation Therapy Quality Performance Standards

## Standard Seven – Outcomes Measurement

The radiation therapist assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

The radiation therapist:

1. Reviews and evaluates quality assurance processes and tools periodically for effectiveness.

# Radiation Therapy Quality Performance Standards

## Standard Eight – Documentation

The radiation therapist documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

The radiation therapist:

1. Reports any treatment discrepancies to appropriate personnel.

# **Radiation Therapy Professional Performance Standards**

## **Standard One – Quality**

The radiation therapist strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

The radiation therapist:

1. Advocates the need for a minimum of two credentialed radiation therapists to be present for any external beam patient treatment.

# **Radiation Therapy Professional Performance Standards**

## **Standard Two – Self-Assessment**

The radiation therapist evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.

# Radiation Therapy Professional Performance Standards

## Standard Three – Education

The radiation therapist acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

None added.



# **Radiation Therapy Professional Performance Standards**

## **Standard Four – Collaboration and Collegiality**

The radiation therapist promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

The radiation therapist:

1. Informs others about radiation safety.

# Radiation Therapy Professional Performance Standards

## Standard Five – Ethics

The radiation therapist adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

None added.

# Radiation Therapy Professional Performance Standards

## Standard Six – Research and Innovation

The radiation therapist participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The radiation therapist:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information with colleagues through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None added.

## **Radiation Therapy Advisory Opinion Statements**

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication Injections by Radiologic Technologists.

Medication Injection Through Existing Vascular Access.

Placement of Personal Radiation Monitoring Devices.

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

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## Radiography Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# Introduction to Radiography Practice Standards

## Definition

The practice of radiography is performed by health care professionals responsible for the administration of ionizing radiation for diagnostic, therapeutic or research purposes. A radiographer performs radiographic procedures at the request of and for interpretation by a licensed independent practitioner.

The complex nature of disease processes involves multiple imaging modalities. Although an interdisciplinary team of clinicians, radiographers and support staff plays a critical role in the delivery of health services, it is the radiographer who performs the radiographic procedure that creates the images needed for diagnosis.

Radiography integrates scientific knowledge, technical competence and patient interaction skills to provide safe and accurate procedures with compassion. A radiographer recognizes patient conditions essential for the successful completion of the procedure.

Radiographers must demonstrate an understanding of human anatomy, physiology, pathology and medical terminology.

Radiographers must maintain a high degree of accuracy in radiographic positioning and exposure technique. They must possess, use and maintain knowledge of radiation protection and safety. Radiographers independently perform or assist the licensed independent practitioner in the completion of radiographic procedures. Radiographers prepare, administer and document activities related to medications in accordance with state and federal regulations or lawful institutional policy.

Radiographers are the primary liaison between patients, licensed independent practitioners and other members of the support team. Radiographers must remain sensitive to the needs of the patient through good communication, patient assessment, patient monitoring and patient care skills. As members of the health care team, radiographers participate in quality improvement processes and continually assess their professional performance.

Radiographers think critically and use independent, professional and ethical judgments in all aspects of their work. They engage in continuing education to include their area of practice to enhance patient care, public education, knowledge and technical competence.



## **Education and Certification**

Radiographers prepare for their roles on the interdisciplinary team by successfully completing a program in radiologic technology that is programmatically accredited or part of an institution that is regionally accredited, and by attaining appropriate primary certification from the American Registry of Radiologic Technologists.

Those passing the ARRT examination use the credential R.T.(R).

To maintain ARRT certification, radiographers must complete appropriate continuing education and meet other requirements to sustain a level of expertise and awareness of changes and advances in practice.

## **Overview**

An interdisciplinary team of radiologists, radiographers and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for imaging procedures increases. A comprehensive procedure list for the radiographer is impractical because clinical activities vary by practice needs and expertise of the radiographer. As radiographers gain more experience, knowledge and clinical competence, the clinical activities for the radiographer may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A radiographer should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.

## **Radiographer Scope of Practice**

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Performing venipuncture as prescribed by a licensed independent practitioner.
- Starting, maintaining and/or removing intravenous access as prescribed by a licensed independent practitioner.
- Identifying, preparing and/or administering medications as prescribed by a licensed independent practitioner.
- Evaluating images for technical quality, ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the radiographer also includes:

1. Performing diagnostic radiographic and noninterpretive fluoroscopic procedures as prescribed by a licensed independent practitioner.
2. Determining technical exposure factors.

3. Assisting licensed independent practitioner with fluoroscopic and specialized radiologic procedures.

# Radiography Clinical Performance Standards

## Standard One – Assessment

The radiographer collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The radiographer:

1. Assesses patient risk for allergic reaction to medication prior to administration.
2. Locates and reviews previous examinations for comparison.
3. Identifies and removes artifact-producing objects-

# Radiography Clinical Performance Standards

## Standard Two – Analysis/Determination

The radiographer analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The radiographer:

1. Reviews lab values prior to administering medication and beginning specialized radiologic procedures.
2. Determines type and dose of contrast agent to be administered, based on the patient's age, weight and medical/physical status.
3. 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.

4. Analyzes digital images to determine the use of appropriate imaging parameters.

# Radiography Clinical Performance Standards

## Standard Three – Education

The radiographer provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The radiographer:

1. Consults with other departments for patient services.
2. Instructs patients regarding preparation prior to imaging procedures, including providing information about oral or bowel preparation and allergy preparation.

# Radiography Clinical Performance Standards

## Standard Four – Performance

The radiographer performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

### *Specific Criteria*

The radiographer:

1. Employs proper radiation safety practices.



2. Uses technical factors according to equipment specifications to meet the ALARA principle.
3. Uses pre-exposure collimation and proper field-of-view selection.
4. Uses appropriate pre-exposure radiopaque markers for anatomical and procedural purposes.
5. Selects the best position for the demonstration of anatomy.
6. Injects medication into peripherally inserted central catheter lines or ports.

# Radiography Clinical Performance Standards

## Standard Five – Evaluation

The radiographer determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

The radiographer:

1. Evaluates images for positioning to demonstrate the anatomy of interest.
2. Evaluates images for optimal technical exposure factors.
3. Reviews images to determine if additional images will enhance the diagnostic value of the procedure.

# Radiography Clinical Performance Standards

## Standard Six – Implementation

The radiographer implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

The radiographer:

1. Performs additional images that will produce the expected outcomes based upon patient condition and procedural variances.

# Radiography Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The radiographer reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the radiographer compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

None added.

# Radiography Clinical Performance Standards

## Standard Eight – Documentation

The radiographer documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The radiographer:

1. Documents fluoroscopic time.
2. Documents radiation exposure.
3. Documents the use of shielding devices and proper radiation safety practices per institutional policy.

# Radiography Quality Performance Standards

## Standard One – Assessment

The radiographer collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The radiographer:

1. Maintains controlled access to restricted area during radiation exposure.
2. Follows federal and state guidelines to minimize radiation exposure levels.
3. Maintains and performs quality control on radiation safety equipment such as aprons, thyroid shields, etc.
4. Develops and maintains standardized exposure technique guidelines for all equipment.
5. Participates in radiation protection, patient safety, risk management and quality management activities.
6. Reviews digital images for the purpose of monitoring radiation exposure.

# Radiography Quality Performance Standards

## Standard Two – Analysis/Determination

The radiographer analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

None added.

# Radiography Quality Performance Standards

## Standard Three – Education

The radiographer informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

None added.



# Radiography Quality Performance Standards

## Standard Four – Performance

The radiographer performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The radiographer:

1. Consults with medical physicist when performing the quality assurance tests.
2. Monitors image production to determine technical acceptability.
3. Performs routine archiving status checks.

# Radiography Quality Performance Standards

## Standard Five – Evaluation

The radiographer evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

None added.

# Radiography Quality Performance Standards

## Standard Six – Implementation

The radiographer implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

None added.

# Radiography Quality Performance Standards

## Standard Seven – Outcomes Measurement

The radiographer assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

None added.

# Radiography Quality Performance Standards

## Standard Eight – Documentation

The radiographer documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

None added.

# Radiography Professional Performance Standards

## Standard One – Quality

The radiographer strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

None added.

# Radiography Professional Performance Standards

## Standard Two – Self-Assessment

The radiographer evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.

# Radiography Professional Performance Standards

## Standard Three – Education

The radiographer acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

None added.



# **Radiography Professional Performance Standards**

## **Standard Four – Collaboration and Collegiality**

The radiographer promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

None added.

# Radiography Professional Performance Standards

## Standard Five – Ethics

The radiographer adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Provides health care services with consideration for a diverse patient.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

None added.

# Radiography Professional Performance Standards

## Standard Six – Research and Innovation

The radiographer participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The radiographer:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None added.

## **Radiography Advisory Opinion Statements**

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication and Contrast Media Injections by Radiologic Technologists.

Medication Injection through Existing Vascular Access.

Placement of Personal Radiation Monitoring Devices.

A large, light gray graphic element consisting of a thick diagonal line that passes through a shaded sphere, extending from the top left towards the bottom right of the page.

# The Practice Standards for Medical Imaging and Radiation Therapy

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## Radiologist Assistant Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# Introduction to Radiologist Assistant Practice Standards

## Definition

A radiologist assistant is an advanced-practice radiographer who practices under the supervision of a radiologist and enhances patient care in radiology services. As a member of the radiologist-directed team, the radiologist assistant exercises independent professional judgment in:

- A. Assessing, monitoring and managing patient physiologic and psychologic status.
- B. Performing invasive and noninvasive imaging procedures as delegated by the radiologist who is licensed to practice and has privileges for the procedure being performed by the radiologist assistant.
- C. Obtaining images necessary for diagnosis and providing initial observations to the supervising radiologist.
- D. Emphasizing patient safety and verifying procedure appropriateness by analyzing and incorporating evidenced-based practices for optimal patient care.
- E. Advocating for patient and personnel radiation safety by employing the ALARA principle to minimize patient and occupational radiation dose.
- F. Participating in quality improvement activities within the radiology practice.
- G. Assisting with data collection and review for clinical trials or other research.

## Education and Certification

Radiologist assistants prepare for their roles as mid-level providers in medical imaging by attaining primary certification as a radiographer from the American Registry of Radiologic Technologists, successfully completing a recognized radiologist assistant education program, and by attaining certification from the ARRT.

Those passing the registered radiologist assistant examination use the credentials R.R.A.

To sustain a level of expertise and awareness of changes and advances in practice and to maintain certification, the R.R.A. must complete appropriate continuing education requirements, as defined by the ARRT.

## Overview

An interdisciplinary team of radiologists, radiologist assistants, radiographers and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for imaging procedures increases. *A comprehensive procedure list for the radiologist assistant is impractical because clinical activities vary by practice needs and expertise of the radiologist assistant.* As radiologist assistants gain more experience, knowledge and clinical competence, the clinical activities for the radiologist assistant may evolve. The clinical activities are delegated by the supervising radiologist in accordance with state statute or regulations and lawful institutional policies.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or*



*local statutes or regulations supersede these standards.* A radiologist assistant should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.

*In addition, because a radiologist assistant holds radiographer credentials, specific criteria for radiographers are incorporated into these standards by reference.* Both the Radiologist Assistant and Radiography sections of the Practice Standards for Medical Imaging and Radiation Therapy should be consulted when seeking practice information for the radiologist assistant practice.

## **Radiologist Assistant Scope of Practice**

Performance of clinical activities by the radiologist assistant is defined by educational preparation, documented clinical competence with radiologist supervision and radiologist delegation in accordance with state laws, regulations and lawful institutional policy.

Preprocedure responsibilities include, but are not limited to, completing patient history and physical, determining procedure appropriateness and participating in informed patient consent. The radiologist assistant reviews variances identified through preprocedural evaluation that may influence the expected outcome with the supervising radiologist prior to the procedure.

The radiologist assistant performs or assists the radiologist with noninvasive and invasive radiology procedures using image guidance as appropriate. The radiologist assistant participates in the preparation, administration and documentation of medications. The radiologist assistant assesses, monitors and manages patient status, including patients under minimal and moderate sedation.

Postprocedural responsibilities include, but are not limited to, evaluating images for completeness and diagnostic quality, reporting initial observations to the supervising radiologist, providing follow-up patient evaluation and communicating the radiologist's report to the appropriate health care providers. The radiologist assistant does not provide an image interpretation as defined by the American College of Radiology.

Radiologist assistants act as liaisons between patients, radiographers, radiologists and other members of the health care team. Radiologist assistants remain sensitive to the physical, cultural and emotional needs of patients through good communication, comprehensive patient assessment, continuous patient monitoring and advanced patient care skills. Radiologist assistants use independent, professional, ethical judgment and critical thinking to safely perform imaging procedures. Radiologist assistants commit to continued professional development to enhance patient care, public education, knowledge and technical competence.

Radiologist assistants maintain their radiographer credentials; therefore, scopes of practice for radiographers are incorporated into these standards by reference. Both the Radiologist Assistant and Radiography sections of the Practice Standards for Medical Imaging and Radiation Therapy should be consulted when seeking practice information for the radiologist assistant practice.

# Radiologist Assistant Clinical Performance Standards

## Standard One – Assessment

The radiologist assistant collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The radiologist assistant:

1. Interviews patient to obtain, verify and update medical history.
2. Performs and documents a radiology-focused physical examination, an analysis of data (e.g., signs and symptoms, laboratory values, vital signs, and significant abnormalities) and reports findings to the supervising radiologist.
3. Observes and assesses a patient who has received minimal and moderate sedation.
4. Assesses the patient's level of anxiety and pain and informs the supervising radiologist.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Clinical Performance Standards**

## **Standard Two – Analysis/Determination**

The radiologist assistant analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The radiologist assistant:

1. Determines patient compliance, if needed, with pre-examination preparation instructions.
2. Reviews the patient's medical record and the licensed independent practitioner's request to determine optimal imaging procedure for clinical indications.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Clinical Performance Standards**

## **Standard Three – Education**

The radiologist assistant provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The radiologist assistant:

1. Explains procedure to the patient or significant others, including a description of risks, benefits, alternatives and follow-up.
2. Provides pre- and postcare instructions to the patient under the supervision of a radiologist.
3. Provides information regarding risks and benefits of radiation.
4. Refers questions about diagnosis, treatment or prognosis to the supervising radiologist.
5. Obtains informed consent.

**See also Radiography Practice Standards.**

# Radiologist Assistant Clinical Performance Standards

## Standard Four – Performance

The radiologist assistant performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

### *Specific Criteria*

The radiologist assistant:

1. Administers minimal and moderate sedation and observes and assesses the patient who

has received minimal and moderate sedation.

2. Recognizes and responds to medical emergencies, activates emergency response systems and provides advanced life support intervention.
3. Performs invasive and noninvasive procedures as delegated by the radiologist.
4. Administers medications as approved by the supervising radiologist.
5. Monitors patient's physical condition during the procedure and responds to changes in patient vital signs, hemodynamics and level of consciousness.
6. Collects and documents tissue samples.
7. Communicates the supervising radiologist's report to the appropriate health care provider consistent with the American College of Radiology Practice Guidelines for Communication of Diagnostic Imaging Findings.

**See also Radiography Practice Standards.**



# **Radiologist Assistant Clinical Performance Standards**

## **Standard Five – Evaluation**

The radiologist assistant determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

None added.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Clinical Performance Standards**

## **Standard Six – Implementation**

The radiologist assistant implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

None Added.

**See also Radiography Practice Standards.**

# Radiologist Assistant Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The radiologist assistant reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the radiologist assistant compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

The radiologist assistant:

1. Evaluates images for completeness and diagnostic quality and recommends additional images.
2. Reports clinical and imaging observations and procedure details to the supervising radiologist.
3. Performs follow-up patient evaluation and communicates findings to the supervising radiologist.

**See also Radiography Practice Standards.**

# Radiologist Assistant Clinical Performance Standards

## Standard Eight – Documentation

The radiologist assistant documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The radiologist assistant:

1. Documents use of minimal and moderate sedation.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Quality Performance Standards**

## **Standard One – Assessment**

The radiologist assistant collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The radiologist assistant:

1. Participates in radiation protection, patient safety, risk management and quality management activities.

**See also Radiography Practice Standards.**

## **Radiologist Assistant Quality Performance Standards**

### **Standard Two – Analysis/Determination**

The radiologist assistant analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

#### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

#### *General Stipulation*

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

#### *General Criteria*

The radiologist assistant:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

#### *Specific Criteria*

None added.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Quality Performance Standards**

## **Standard Three – Education**

The radiologist assistant informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

None added.

**See also Radiography Practice Standards.**

# Radiologist Assistant Quality Performance Standards

## Standard Four – Performance

The radiologist assistant performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The radiologist assistant:

1. Participates in quality improvement activities within the radiology practice.
2. Provides a safe environment for patients and staff.

**See also Radiography Practice Standards.**



# **Radiologist Assistant Quality Performance Standards**

## **Standard Five – Evaluation**

The radiologist assistant evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

The radiologist assistant:

1. Evaluates radiation safety, patient safety, risk management and quality management activities.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Quality Performance Standards**

## **Standard Six – Implementation**

The radiologist assistant implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

The radiologist assistant:

1. Implements radiation safety, patient safety, risk management and quality management decisions.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Quality Performance Standards**

## **Standard Seven – Outcomes Measurement**

The radiologist assistant assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

None added.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Quality Performance Standards**

## **Standard Eight – Documentation**

The radiologist assistant documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

None added.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Professional Performance Standards**

## **Standard One – Quality**

The radiologist assistant strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

None added.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Professional Performance Standards**

## **Standard Two – Self Assessment**

The radiologist assistant evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Professional Performance Standards**

## **Standard Three – Education**

The radiologist assistant acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

None added.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Professional Performance Standards**

## **Standard Four – Collaboration and Collegiality**

The radiologist assistant promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

The radiologist assistant:

1. Promotes understanding of procedures through in-service for other health care providers.

**See also Radiography Practice Standards.**



# **Radiologist Assistant Professional Performance Standards**

## **Standard Five – Ethics**

The radiologist assistant adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

The radiologist assistant:

1. Communicates with the supervising radiologist prior to providing final diagnosis to other health care providers.

**See also Radiography Practice Standards.**

# **Radiologist Assistant Professional Performance Standards**

## **Standard Six – Research and Innovation**

The radiologist assistant participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The radiologist assistant:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

The radiologist assistant:

1. Assists with data collection and review for clinical trials or other research.

**See also Radiography Practice Standards.**

## **Radiologist Assistant Advisory Opinion Statements**

Guidance for the Communication of Clinical and Imaging Observations and Procedure Details by Radiologist Assistants to Supervising Radiologists.

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication Injections by Radiologic Technologists.

Medication Injection Through Existing Vascular Access.

Placement of Personal Radiation Monitoring Devices.

## **References**

ARRT R.R.A. Entry Level Clinical Activities (ELCA) 2009

ARRT R.R.A. Continuing Education Requirements

ASRT Radiologist Assistant Curriculum

ARRT Content Specifications for the Registered Radiologist Assistant Examination

A decorative graphic consisting of a thick, grey diagonal line that passes through a large, grey, three-dimensional sphere, extending from the top right towards the center of the page.

# The Practice Standards for Medical Imaging and Radiation Therapy

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## Sonography Practice Standards

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## Preface to Practice Standards

A profession's practice standards serve as a guide for appropriate practice. The practice standards define the practice and establish general criteria to determine compliance. Practice standards are authoritative statements established by the profession for evaluating the quality of practice, service and education provided by individuals who practice in medical imaging and radiation therapy.

Practice Standards can be used by individual facilities to develop job descriptions and practice parameters. Those outside the imaging, therapeutic and radiation science community can use the standards as an overview of the role and responsibilities of the individual as defined by the profession.

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

### Format

The Practice Standards are divided into six sections: introduction, scope of practice, clinical performance, quality performance, professional performance and advisory opinion statements.

*Introduction.* The introduction provides definitions for the practice and the education and certification of individuals in addition to an overview of the specific practice.

*Scope of Practice.* The scope of practice delineates the parameters of the specific practice.

*Clinical Performance Standards.* The clinical performance standards define the activities of the individual responsible for the care of patients and delivery of diagnostic or therapeutic procedures. The section incorporates patient assessment and management with procedural analysis, performance and evaluation.

*Quality Performance Standards.* The quality performance standards define the activities of the individual in the technical areas of performance, such as equipment and material assessment, safety standards and total quality management.

*Professional Performance Standards.* The professional performance standards define the activities of the individual in the areas of education, interpersonal relationships, self-assessment and ethical behavior.

*Advisory Opinion Statements.* The advisory opinions are interpretations of the standards intended for clarification and guidance of specific practice issues.

Each performance standards section is subdivided into individual standards. The standards are numbered and followed by a term or set of terms that identify the standards, such as “assessment” or “analysis/determination.” The next statement is the expected performance of the individual when performing the procedure or treatment. A rationale statement follows and explains why an individual should adhere to the particular standard of performance.

*Criteria.* Criteria are used to evaluate an individual’s performance. Each set is divided into two parts: the general criteria and the specific criteria. Both should be used when evaluating performance.

*General Criteria.* General criteria are written in a style that applies to imaging and radiation science individuals. These criteria are the same in all of the practice standards, with the exception of limited x-ray machine operators and medical dosimetry, and should be used for the appropriate area of practice.

*Specific Criteria.* Specific criteria meet the needs of the individuals in the various areas of professional performance. While many areas of performance within imaging and radiation sciences are similar, others are not. The specific criteria were drafted with these differences in mind.

# **Introduction to Sonography Practice Standards**

## **Definition**

The practice of sonography is performed by a segment of health care professionals responsible for the administration of high-frequency sound waves and other diagnostic techniques for diagnostic, therapeutic or research purposes. A sonographer performs sonographic procedures at the request of and for interpretation by a licensed independent practitioner.

The complex nature of disease processes involves multiple imaging modalities. Although an interdisciplinary team of clinicians, sonographers and support staff play a critical role in the delivery of health services, it is the sonographer who performs the ultrasound examination that creates the images needed for diagnosis.

Sonography integrates scientific knowledge, technical competence and patient interaction skills to provide safe and accurate procedures with compassion. A sonographer recognizes patient conditions essential for the successful completion of the procedure.

Sonographers must demonstrate an understanding of human anatomy, physiology, pathology and medical terminology.

Sonographers must maintain a high degree of accuracy in the production, use, recognition and analysis of ultrasound images and patterns used for patient diagnosis and treatment. They must possess, use and maintain knowledge about bioeffects of high-frequency sound waves. Sonographers independently perform or assist the licensed independent practitioner in the completion of sonographic procedures. Sonographers prepare, administer and document activities related to medications in accordance with state and federal regulations or lawful institutional policy.

Sonographers are the primary liaison between patients, licensed independent practitioners, and other members of the support team. Sonographers must remain sensitive to the needs of the patient through good communication, patient assessment, patient monitoring and patient care skills. As members of the health care team, sonographers participate in quality improvement processes and continually assess their professional performance.

Sonographers think critically and use independent, professional and ethical judgments in all aspects of their work. They engage in continuing education to include their area of practice to enhance patient care, public education, knowledge and technical competence.

## **Education and Certification**

Sonographers prepare for their roles on the interdisciplinary team by successfully completing a program in sonography that is programmatically accredited or part of an institution that is regionally accredited, and by attaining appropriate primary certification from the American Registry of Radiologic Technologists or the American Registry of Diagnostic Medical



Sonographers. Those passing the ARRT examination use the credential R.T.(S). Those passing the required ARDMS examinations use the credential RDMS, RDCS and/or RVT.

Eligibility to take the postprimary examinations in sonography requires appropriate primary certification at the time of examination and documentation of clinical experience in specific procedures. Those who successfully complete these examinations may use the credentials R.T.(S), R.T.(VS) and/or R.T.(BS).

To maintain ARRT and/or ARDMS certification, sonographers must complete appropriate continuing education requirements to sustain a level of expertise and awareness of changes and advances in practice.

## **Overview**

An interdisciplinary team of radiologists, sonographers, radiographers and other support staff plays a critical role in the delivery of health services as new modalities emerge and the need for imaging procedures increases. A comprehensive procedure list for the sonographer is impractical because clinical activities vary by practice needs and expertise of the sonographer. As sonographers gain more experience, knowledge and clinical competence, the clinical activities for the sonographer may evolve.

State statute, regulation or lawful community custom may dictate practice parameters. *Wherever there is a conflict between these standards and state or local statutes or regulations, the state or local statutes or regulations supersede these standards.* A sonographer should, within the boundaries of all applicable legal requirements and restrictions, exercise individual thought, judgment and discretion in the performance of the procedure.

## Sonographer Scope of Practice

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

- Providing optimal patient care.
- Receiving, relaying and documenting verbal, written and electronic orders in the patient's medical record.
- Corroborating a patient's clinical history with procedure and ensuring information is documented and available for use by a licensed independent practitioner.
- Verifying informed consent for applicable procedures.
- Assuming responsibility for patient needs during procedures.
- Preparing patients for procedures.
- Applying principles of ALARA to minimize exposure to patient, self and others.
- Performing venipuncture as prescribed by a licensed independent practitioner.
- Starting, maintaining and/or removing intravenous access as prescribed by a licensed independent practitioner.
- Identifying, preparing and/or administering medications as prescribed by a licensed independent practitioner.
- Evaluating images for technical quality and ensuring proper identification is recorded.
- Identifying and responding to emergency situations.
- Providing education.
- Educating and monitoring students and other health care providers.
- Performing ongoing quality assurance activities.
- Applying the principles of patient safety during all aspects of patient care.

The scope of practice of the sonographer also includes:

1. Performing diagnostic ultrasound procedures or examinations as prescribed by a licensed independent practitioner.
2. Optimizing equipment parameters to ensure diagnostic exams are of consistent technical and administrative quality as requested by a licensed independent practitioner.

3. Assisting a licensed independent practitioner with interventional procedures.

# Sonography Clinical Performance Standards

## Standard One – Assessment

The sonographer collects pertinent data about the patient and the procedure.

### *Rationale*

Information about the patient's health status is essential in providing appropriate imaging and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Obtains relevant information from all available resources and the release of information as needed.
2. Verifies patient identification and the procedure requested or prescribed.
3. Verifies that the patient has consented to the procedure.
4. Reviews all available patient medical record information to verify the appropriateness of the procedure requested or prescribed.
5. Verifies the patient's pregnancy status.
6. Assesses factors that may negatively affect the procedure, such as medications, patient history, insufficient patient preparation or artifact producing-objects.
7. Recognizes signs and symptoms of an emergency.

### *Specific Criteria*

The sonographer:

1. Locates and reviews previous examinations for comparison.
2. Assesses patient's need for information and reassurance.

# Sonography Clinical Performance Standards

## Standard Two – Analysis/Determination

The sonographer analyzes the information obtained during the assessment phase and develops an action plan for completing the procedure.

### *Rationale*

Determining the most appropriate action plan enhances patient safety and comfort, optimizes diagnostic and therapeutic quality and improves efficiency.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Selects the most appropriate and efficient action plan after reviewing all pertinent data and assessing the patient's abilities and condition.
2. Employs professional judgment to adapt imaging and therapeutic procedures to improve diagnostic quality and therapeutic outcomes.
3. Consults appropriate medical personnel to determine a modified action plan.
4. Determines the need for and selects supplies, accessory equipment, shielding, positioning and immobilization devices.
5. Determines the course of action for an emergent situation.
6. Determines that all procedural requirements are in place to achieve a quality diagnostic or therapeutic procedure.

### *Specific Criteria*

The sonographer:

1. Selects appropriate ultrasound system and scanning techniques to optimize the procedure.

# Sonography Clinical Performance Standards

## Standard Three – Education

The sonographer provides information about the procedure and related health issues according to protocol.

### *Rationale*

Communication and education are necessary to establish a positive relationship.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Provides an accurate explanation and instructions at an appropriate time and at a level the patient and their care providers can understand. Addresses questions and concerns regarding the procedure.
2. Refers questions about diagnosis, treatment or prognosis to a licensed independent practitioner.
3. Provides patient education.
4. Explains effects and potential side effects of medications.

### *Specific Criteria*

The sonographer:

1. Consults with other departments, such as patient transportation and anesthesia, for patient services.

# Sonography Clinical Performance Standards

## Standard Four – Performance

The sonographer performs the action plan.

### *Rationale*

Quality patient services are provided through the safe and accurate performance of a deliberate plan of action.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Performs procedural timeout.
2. Implements an action plan.
3. Explains to the patient each step of the action plan as it occurs and elicits the cooperation of the patient.
4. Uses an integrated team approach.
5. Modifies the action plan according to changes in the clinical situation.
6. Administers first aid or provides life support.
7. Uses accessory equipment.
8. Assesses and monitors the patient's physical, emotional and mental status.
9. Applies principles of sterile technique.
10. Positions patient for anatomic area of interest, respecting patient ability and comfort.
11. Immobilizes patient for procedure.
12. Monitors the patient for reactions to medications.

### *Specific Criteria*

The sonographer:

1. Recognizes sonographic appearance of normal and abnormal tissue structures and physiological data.
2. Assists in collecting and labeling of tissue samples for further processing.



# Sonography Clinical Performance Standards

## Standard Five – Evaluation

The sonographer determines whether the goals of the action plan have been achieved.

### *Rationale*

Careful examination of the procedure is important to determine that expected outcomes have been met.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Evaluates the patient and the procedure to identify variances that might affect the expected outcome.
2. Completes the evaluation process in a timely, accurate and comprehensive manner.
3. Measures the procedure against established policies, protocols and benchmarks.
4. Identifies exceptions to the expected outcome.
5. Develops a revised action plan to achieve the intended outcome.
6. Communicates the revised action plan to appropriate team members.

### *Specific Criteria*

None added.

# Sonography Clinical Performance Standards

## Standard Six – Implementation

The sonographer implements the revised action plan.

### *Rationale*

It may be necessary to make changes to the action plan to achieve the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Bases the revised plan on the patient's condition and the most appropriate means of achieving the expected outcome.
2. Takes action based on patient and procedural variances.
3. Measures and evaluates the results of the revised action plan.
4. Notifies the appropriate health care provider when immediate clinical response is necessary, based on procedural findings and patient condition.

### *Specific Criteria*

None added.

# Sonography Clinical Performance Standards

## Standard Seven – Outcomes Measurement

The sonographer reviews and evaluates the outcome of the procedure.

### *Rationale*

To evaluate the quality of care, the sonographer compares the actual outcome with the expected outcome.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Reviews all diagnostic or therapeutic data for completeness and accuracy.
2. Uses evidence-based practice to determine whether the actual outcome is within established criteria.
3. Evaluates the process and recognizes opportunities for future changes.
4. Assesses the patient's physical, emotional and mental status prior to discharge.

### *Specific Criteria*

None added.

# Sonography Clinical Performance Standards

## Standard Eight – Documentation

The sonographer documents information about patient care, the procedure and the final outcome.

### *Rationale*

Clear and precise documentation is essential for continuity of care, accuracy of care and quality assurance.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Documents diagnostic, treatment and patient data in the medical record in a timely, accurate and comprehensive manner.
2. Documents unintended outcomes or exceptions from the established criteria.
3. Provides pertinent information to authorized individual(s) involved in the patient's care.
4. Records information used for billing and coding procedures.
5. Archives images or data.
6. Verifies patient consent is documented.
7. Documents procedural timeout.

### *Specific Criteria*

The sonographer:

1. Documents initial impressions and technical data.

# Sonography Quality Performance Standards

## Standard One – Assessment

The sonographer collects pertinent information regarding equipment, procedures and the work environment.

### *Rationale*

The planning and provision of safe and effective medical services relies on the collection of pertinent information about equipment, procedures and the work environment.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Determines that services are performed in a safe environment, minimizing potential hazards.
2. Confirms that equipment performance, maintenance and operation comply with the manufacturer's specifications.
3. Verifies that protocol and procedure manuals include recommended criteria and are reviewed and revised.

### *Specific Criteria*

The sonographer:

1. Participates in patient safety, risk management and quality management activities.

# Sonography Quality Performance Standards

## Standard Two – Analysis/Determination

The sonographer analyzes information collected during the assessment phase to determine the need for changes to equipment, procedures or the work environment.

### *Rationale*

Determination of acceptable performance is necessary to provide safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Evaluates services, procedures and the environment to determine if they meet or exceed established guidelines, and revises the action plan.
2. Monitors equipment to meet or exceed established standards and revises the action plan.
3. Assesses and maintains the integrity of medical supplies.

### *Specific Criteria*

None added.

# Sonography Quality Performance Standards

## Standard Three – Education

The sonographer informs the patient, public and other health care providers about procedures, equipment and facilities.

### *Rationale*

Open communication promotes safe practices.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Elicits confidence and cooperation from the patient, the public and other health care providers by providing timely communication and effective instruction.
2. Presents explanations and instructions at the learner's level of understanding.
3. Educates the patient, public and other health care providers about procedures and the associated biological effects.
4. Provides information to patients, health care providers, students and the public concerning the role and responsibilities of individuals in the profession.

### *Specific Criteria*

None added.

# Sonography Quality Performance Standards

## Standard Four – Performance

The sonographer performs quality assurance activities.

### *Rationale*

Quality assurance activities provide valid and reliable information regarding the performance of equipment, materials and processes.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Maintains current information on equipment, materials and processes.
2. Performs ongoing quality assurance activities.
3. Performs quality control testing of equipment.
4. Participates in safety and risk management activities.
5. When appropriate, wears one or more personal radiation monitoring devices at the location indicated on the personal radiation monitoring device or as indicated by the radiation safety officer or designee.

### *Specific Criteria*

The sonographer:

1. Monitors image production to determine technical acceptability.
2. Performs routine archiving status checks.



# Sonography Quality Performance Standards

## Standard Five – Evaluation

The sonographer evaluates quality assurance results and establishes an appropriate action plan.

### *Rationale*

Equipment, materials and processes depend on ongoing quality assurance activities that evaluate performance based on established guidelines.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Validates quality assurance testing conditions and results.
2. Evaluates quality assurance results.
3. Formulates an action plan.

### *Specific Criteria*

None added.

# Sonography Quality Performance Standards

## Standard Six – Implementation

The sonographer implements the quality assurance action plan for equipment, materials and processes.

### *Rationale*

Implementation of a quality assurance action plan promotes safe and effective services.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Obtains assistance to support the quality assurance action plan.
2. Implements the quality assurance action plan.

### *Specific Criteria*

None added.

# Sonography Quality Performance Standards

## Standard Seven – Outcomes Measurement

The sonographer assesses the outcome of the quality management action plan for equipment, materials and processes.

### *Rationale*

Outcomes assessment is an integral part of the ongoing quality management action plan to enhance diagnostic and therapeutic services.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Reviews the implementation process for accuracy and validity.
2. Determines that actual outcomes are within established criteria.
3. Develops and implements a revised action plan.

### *Specific Criteria*

None added.

# Sonography Quality Performance Standards

## Standard Eight – Documentation

The sonographer documents quality assurance activities and results.

### *Rationale*

Documentation provides evidence of quality assurance activities designed to enhance safety.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Maintains documentation of quality assurance activities, procedures and results.
2. Documents in a timely, accurate and comprehensive manner.

### *Specific Criteria*

None added.

# Sonography Professional Performance Standards

## Standard One – Quality

The sonographer strives to provide optimal patient care.

### *Rationale*

Patients expect and deserve optimal care during diagnosis and treatment.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Collaborates with others to elevate the quality of care.
2. Participates in ongoing quality assurance programs.
3. Adheres to standards, policies and established guidelines.
4. Applies professional judgment and discretion while performing the diagnostic study or treatment.
5. Anticipates, considers and responds to the needs of a diverse patient population.

### *Specific Criteria*

The sonographer:

1. Strives to minimize patient exposure to acoustic energy.

# Sonography Professional Performance Standards

## Standard Two – Self-Assessment

The sonographer evaluates personal performance.

### *Rationale*

Self-assessment is necessary for personal growth and professional development.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Assesses personal work ethics, behaviors and attitudes.
2. Evaluates performance and recognizes opportunities for educational growth and improvement.
3. Recognizes and applies personal and professional strengths.
4. Participates in professional societies and organizations.

### *Specific Criteria*

None added.

# Sonography Professional Performance Standards

## Standard Three – Education

The sonographer acquires and maintains current knowledge in practice.

### *Rationale*

Advancements in the profession and optimal patient care require additional knowledge and skills through education.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Maintains credentials and certification related to practice.
2. Advocates for and participates in continuing education related to area of practice, to maintain and enhance clinical competency.
3. Advocates for and participates in vendor specific applications training to maintain clinical competency.

### *Specific Criteria*

None added.

# Sonography Professional Performance Standards

## Standard Four – Collaboration and Collegiality

The sonographer promotes a positive and collaborative practice atmosphere with other members of the health care team.

### *Rationale*

To provide quality patient care, all members of the health care team must communicate effectively and work together efficiently.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Shares knowledge and expertise with others.
2. Develops and maintains collaborative partnerships to enhance quality and efficiency.
3. Promotes understanding of the profession.

### *Specific Criteria*

None added.



# Sonography Professional Performance Standards

## Standard Five – Ethics

The sonographer adheres to the profession's accepted ethical standards.

### *Rationale*

Decisions made and actions taken on behalf of the patient are based on a sound ethical foundation.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Provides health care services with consideration for a diverse patient population.
2. Acts as a patient advocate.
3. Accepts accountability for decisions made and actions taken.
4. Delivers patient care and service free from bias or discrimination.
5. Respects the patient's right to privacy and confidentiality.
6. Adheres to the established practice standards of the profession.
7. Adheres to the established ethical standards of recognized certifying agencies.

### *Specific Criteria*

The sonographer:

1. Opposes participation in sonography procedures for the purpose of nonmedical entrepreneurial application or entertainment contrary to the tenets of ethical medical practice.

# Sonography Professional Performance Standards

## Standard Six – Research and Innovation

The sonographer participates in the acquisition and dissemination of knowledge and the advancement of the profession.

### *Rationale*

Scholarly activities such as research, scientific investigation, presentation and publication advance the profession.

### *General Stipulation*

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

### *General Criteria*

The sonographer:

1. Reads and evaluates research relevant to the profession.
2. Participates in data collection.
3. Investigates innovative methods for application in practice.
4. Shares information through publication, presentation and collaboration.
5. Adopts new best practices.
6. Pursues lifelong learning.

### *Specific Criteria*

None added.

## **Sonography Advisory Opinion Statements**

Injecting Medication in Peripherally Inserted Central Catheter Lines or Ports with a Power Injector.

Medication Injection Through Existing Vascular Access

Medication Injections by Radiologic Technologists