
RADIATION THERAPY DIDACTIC AND CLINICAL COMPETENCY REQUIREMENTS



Eligibility Requirements Effective January 2011

Candidates for certification are required to meet the Professional Requirements specified in Article II of the *ARRT Rules and Regulations*. This document identifies the MINIMUM didactic and clinical competency requirements for certification referenced in the *Rules and Regulations*. Candidates who complete a formal educational program accredited by a mechanism acceptable to the ARRT will have obtained education and experience beyond the requirements specified here.

Didactic Requirements: Candidates must successfully complete coursework addressing the topics listed in the *ARRT Content Specifications for the Examination in Radiation Therapy*. These topics are presented in a format suitable for instructional planning in the *ASRT Radiation Therapy Curriculum* (2009).

Clinical Requirements: As part of their educational program, candidates must demonstrate competence in the clinical activities identified in this document. Demonstration of clinical competence means that the program director or designee has observed the candidate performing the procedure, and that the candidate performed the procedure independently, consistently, and effectively. Demonstration of competence should include variations in patient characteristics (age, gender, medical condition etc.).

Scope of Competence Assessment: For each procedure, candidates are expected to demonstrate competence in the cognitive, psychomotor, and interpersonal domains. The following is intended to offer a general guide to competence assessment in each of the three domains. It is recognized that most activities actually fall into more than one domain.

- **Cognitive Domain:** As part of providing treatment, candidates should demonstrate their understanding of concepts related to anatomy, physiology, pathology, and dose to critical structures. Candidates should also recognize complications and side-effects commonly associated with each treatment procedure.

If facilities have a limited number of treatment options, candidates should also describe alternative treatment procedures (IMRT, IGRT, stereotactic, etc.) and explain how those procedures might apply to a given case.

- **Psychomotor Domain:** Candidates should demonstrate competence performing activities such as verifying treatment parameters, setting-up the treatment unit, positioning the patient, monitoring the patient during treatment delivery, and documenting treatment delivery.
- **Interpersonal Domain:** Candidates should demonstrate ongoing sensitivity to and compassion for each patient's physical and emotional well-being, interact with members of the radiation therapy treatment team in a positive and productive manner, and maintain high ethical standards.

The duration of clinical training may not allow students to follow patients over the entire course of treatment. However, some provision should be made to permit candidates to interact with at least one patient and monitor the patient's progress over the continuum of their treatment planning and delivery.

* *Note: Candidates who complete their educational program during 2011 or 2012 may use either the previous requirements (effective 2008) or the current requirements (effective 2011). Candidates who graduate after December 2012 may no longer use the previous competency requirements.*

Radiation Therapy Clinical Competency Requirements

1. General Patient Care

Requirement: Candidates must demonstrate competence in 4 patient care activities. The activities should be performed on patients; however, procedures may be demonstrated in a clinical lab environment¹ if state or institutional regulations prohibit candidates from performing the procedures on patients.

2. Simulation Procedures (Radiographic/Fluoroscopic or CT)

Requirement: Candidates must demonstrate competence in treatment simulation for 7 anatomic regions. Either a radiographic/fluoroscopic simulator, CT simulator, or treatment machine may be used. Requirements specific to radiographic/fluoroscopic or CT simulation appear in the appendix. It is expected that the candidate will participate with appropriate personnel at one or more of the following levels of responsibility: perform, discuss, review, or observe (level of participation may depend on state or institutional requirements). All simulation procedures must be demonstrated on patients.

Demonstration of competence includes considerations related to radiation safety, equipment operation, patient and equipment monitoring, patient positioning, treatment volume localization, imaging procedures and processing, record keeping, and patient management and education.

3. Dosimetry

Requirement: Candidates must demonstrate competence calculating doses for 7 treatment set-ups. Calculations should be performed for actual patients; however, calculations may be completed in a clinical lab exercise¹ if demonstration on actual patients is not feasible.

4. Treatment Accessory Devices

Requirement: Candidates must demonstrate competence in fabricating 5 devices.

5. Participatory Procedures

Requirement: Candidates must participate in 3 procedures that may be infrequent but are high-risk procedures. Participation means that the candidate takes an active role in the procedure and understands the critical concepts vital to the success of the procedure. Participation may be performed in a clinical lab exercise¹ if necessary.

6. Radiation Treatment Procedures

Requirement: Candidates must demonstrate competence in all 15 of the mandatory procedures and 4 of the 6 elective procedures. All of the mandatory procedures must be demonstrated on patients. Two electives may be demonstrated in a clinical lab environment. Demonstration of competence does *not* require actual delivery of treatment dose. Demonstration of competence includes considerations related to radiation safety, equipment operation, patient and equipment monitoring, patient positioning, treatment volume localization, dose to critical structures, imaging procedures and processing, dose verification, record keeping, and patient management and education.

1. The ARRT requirements specify that certain clinical procedures may be demonstrated in a clinical lab environment. The conditions must meet the following criteria: (a) the student is required to competently demonstrate skills as similar as circumstances permit to the cognitive, psychomotor, and affective skills required in the clinical setting; (b) the program director is confident that the skills required to competently perform the simulated task will generalize or transfer to the clinical setting. Examples include: demonstrating CPR on a mannequin; positioning a fellow student for a treatment or simulation without actually activating the x-ray beam, and evaluating a related image from a teaching file.

Radiation Therapy Clinical Competency Requirements (cont.)

Documentation

The following pages identify specific clinical competency requirements. Candidates may wish to use these pages, or their equivalent, to record completion of the requirements. The pages do NOT need to be sent to the ARRT.

To document that the didactic and clinical requirements have been satisfied, candidates must have the program director (and authorized faculty member if required) sign the ENDORSEMENT SECTION of the **Application for Certification** included in the *Certification Handbook*.

General Patient Care	Date Completed	Competence Verified By
1. CPR-BLS		
2. Vital Signs (BP, pulse, respiration, temperature)		
3. O ₂ Administration		
4. Patient Transfer		
Simulation Procedures		
1. Brain		
2. Head and Neck		
3. Chest		
4. Breast		
5. Abdomen		
6. Pelvis		
7. Skeletal		
Dosimetry		
1. Single Field		
2. Parallel Opposed Fields with Field Shaping		
3. Geometric Gap		
4. Weighted Fields		
5. Wedged Fields		
6. Computer Generated Isodose Plan		
7. Electron Field		
Treatment Accessory Devices		
1. Custom Block (photon)		
2. Custom Block (electron)		
3. Bolus		
4. Custom Immobilization Devices for Thorax or Abdomen/Pelvis (foaming agents, vacuum bags, etc.)		
5. Thermoplastic Mold		
Participatory Procedures		
1. Total Body Irradiation (TBI)		
2. Craniospinal		
3. Brachytherapy		

Radiation Therapy Clinical Competency Requirements (cont.)

Radiation Treatment Procedures	Mandatory	Elective	Date Completed	Competence Verified By
Brain				
1. Primary	X			
2. Metastatic	X			
Head and Neck				
3. Laterals Only		X		
4. Multiple Fields* to include Supraclavicular	X			
Chest				
5. AP/PA	X			
6. Multiple Fields*	X			
Breast				
7. Tangentials Only	X			
8. Tangentials with Supraclavicular	X			
9. Tangentials with Supraclavicular and Posterior Axilla Boost		X		
10. Tangentials with Supraclavicular and Internal Mammary		X		
Abdomen				
11. AP/PA	X			
12. Multiple Fields*	X			
13. Para-Aortic		X		
Pelvis				
14. AP/PA	X			
15. Multiple Field Supine*	X			
16. Multiple Field Prone*	X			
17. Inguinal		X		
Skeletal				
18. Spine	X			
19. Extremity	X			
Electron Fields				
20. Single	X			
21. Abutting Fields		X		

*Multiple fields may include IMRT.

Appendix

Radiographic/Fluoroscopic Simulation

Ensure that candidate follows ALARA.

Operate simulator; check lasers, ODI, field size, etc.

Explain procedure to patient; prepare supplies needed for simulation, and monitor patient and equipment during procedure.

Position and immobilize patient using available tools and instrumentation as required (lasers, radiopaque markers, etc.).

Determine potential treatment fields from simulation images and diagnostic studies.

Obtain contour and measurements used to make treatment plan.

Obtain orthogonal images.

Process exposed images.

Record patient position and other required information (gantry angles, collimator settings, etc.).

Manage patient as situation requires; including monitoring for possible contrast reactions.

Instruct patient on maintenance of skin marks.

CT Simulation

Ensure that candidate follows ALARA.

Operate CT scanner, perform daily QA as appropriate (lasers, phantom scans, etc.).

Explain procedure to patient; prepare supplies needed for simulation, and monitor patient and equipment during procedure.

Position and immobilize patient using available tools and instrumentation as required (lasers, fiducial markers, etc.).

Perform CT scan for region of interest; participate in determining treatment fields (on film or digitally).

Review and discuss CT scan and treatment plan with appropriate personnel.

Utilize preset protocols or adjust imaging parameters to obtain optimal images.

Mark isocenter and transmit network images to workstation.

Record patient position and other required information (set-up, table position, etc.).

Manage patient as situation requires, including monitoring for possible contrast reactions.

Instruct patient on maintenance of skin marks.