Radiation Therapy

1. Introduction

ARRT requires c~~C~~andidates applying for certification and registration ~~are required~~ to meet the Professional Education Requirements specified in the *ARRT Rules and Regulations*. ARRT's *Radiation Therapy Didactic and Clinical Competency Requirements* are one component of the Professional Education Requirements.

ARRT periodically updates the requirements based on a practice analysis, which is a systematic process to delineate the job responsibilities typically required of radiation therapists. The result of this process is a task inventory which is used to develop the clinical competency requirements (see section 4 below) and the content specifications which serve as the foundation for the didactic competency requirements (see section 3 below) and the examination.

2. Documentation of Compliance

After the candidate submits the *Application for Certification and Registration*, the program director (and authorized faculty member if required) will verify that ARRT requirements were met using the Program Verification Form on the ARRT Educator website. The verification includes confirming the applicant has completed the educational program, including the ARRT Didactic and Clinical Competency Requirements and conferment of a degree meeting ARRT requirements. Candidates who complete their educational program during 2027 or 2028 may use either the 2022 Didactic and Clinical Competency Requirements or the 2027 requirements. Candidates who complete their educational program after January 31, 2029 must use the 2027 requirements.

3. Didactic Competency Requirements

The purpose of the didactic education requirement is to document that individuals had the opportunity to develop fundamental knowledge, integrate theory into practice and hone affective and critical thinking skills required to demonstrate professional competency. Candidates must successfully complete coursework addressing the topics listed in the ARRT Content Specifications for the Radiation Therapy Examination. These topics would typically be covered in a nationally recognized curriculum published by organizations such as the ASRT. Educational programs accredited by a mechanism acceptable to ARRT generally offer education and experience beyond the minimum requirements specified in the content specifications and clinical competency documents.

4. Clinical Competency Requirements

The purpose of the clinical competency requirements is to document that individuals have demonstrated competence performing the clinical activities fundamental to a particular discipline. Competent performance of these fundamental activities, in conjunction with mastery of the cognitive knowledge and skills as documented by the examination requirement, provides the basis for the acquisition of the full range of procedures typically required in a variety of settings. Demonstration of clinical competence means that the candidate has performed the procedure independently, consistently, and effectively during the course of their formal education. The following pages identify the specific procedures for the 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.

General Requirement: Remote scanning is not acceptable for completion of ARRT Clinical Requirements. The candidate must complete the examination or procedure at the facility where the patient and equipment are located. The candidate must be physically present during the examination or procedure.

4.1 General Performance Considerations

4.1.1 Patient Diversity

Demonstration of competence should include variations in patient characteristics such as age, gender, and medical condition.

4.1.2 Simulated Performance

ARRT defines simulation of a clinical procedure routinely performed on a patient as the candidate completing all possible hands-on tasks of the procedure on a live human being using the same level of cognitive, psychomotor, and affective skills required for performing the procedure on a patient.

ARRT requires that competencies performed as a simulation must meet the same criteria as competencies demonstrated on patients. For example, the competency must be performed under the direct observation of the program director or program director's designee and be performed independently, consistently, and effectively.

Simulated performance must meet the following criteria:

- Simulation of procedures requires the use of proper equipment without activating the x-ray beam.
- A total of three radiation treatment procedures may be simulated.
- If applicable, the candidate must evaluate related images.

Examples of acceptable simulated performance include setting up another person for a treatment without activating the beam and evaluating a related portal image from a teaching file.

4.1.3 Elements of Competence

Demonstration of clinical competence requires that the program director or the program director's designee has observed the candidate performing the procedure independently, consistently, and effectively during the candidate's formal educational program. The exception is for procedures categorized as "participatory" as explained in 4.2.6.

Remote scanning is not acceptable for completion of ARRT Clinical Requirements. The candidate must complete the examination or procedure at the facility where the patient and equipment are located. The candidate must be physically present during the examination or procedure.

4.1.4 Scope of Competence Assessment

The following is intended to offer a general guide to competence assessment in each of the three domains. It is recognized that most activities 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 (e.g., IMRT, IGRT, stereotactic) 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.

4.2 Radiation Therapy Specific Requirements

4.2.1 General Patient Care

Candidates must be ~~CPR~~ BLS or ACLS certified and demonstrate competence in the remaining ~~six~~ seven patient care activities. The activities should be performed on patients whenever possible, but procedures may be demonstrated in a clinical lab environment if state or institutional regulations prohibit candidates from performing the procedures on patients.

4.2.2 Quality Control Procedures

Candidates must demonstrate competence in five quality control activities.

4.2.3 Treatment Simulation Procedures

Candidates must demonstrate competence in six treatment simulation procedures. It is expected that the candidate will participate with appropriate personnel at the following levels of responsibility*: perform, discuss, and review. All simulation procedures must be demonstrated on patients and reviewed with appropriate personnel.

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

* level of participation may depend on state or institutional requirements.

4.2.4 Dosimetry

Candidates must demonstrate competence calculating doses for six treatment plans. Calculations should be performed for actual patients; however, calculations may be completed in a clinical lab exercise if demonstration on actual patients is not feasible.

4.2.5 Treatment Accessory Devices

Candidates must demonstrate competence in fabricating three devices.

4.2.6 Participatory Procedures

Candidates must participate in ~~four~~seven ~~treatment~~ participatory procedures ~~one special treatment simulation procedure, and one treatment accessory device process~~ that may be infrequent, yet critical. 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 exercise if necessary.

4.2.7 Radiation Treatment Procedures

Candidates must demonstrate competence in 16 radiation treatment procedures. Thirteen procedures must be demonstrated on patients. Three procedures 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, image acquisition and registration (e.g., MV, kV, CBCT), dose verification, record keeping, and patient management and education.

General Patient Care Procedures	**Date Completed**	**Competence Verified By**
BLS or ACLS~~CPR~~ Certified		
Vital Signs – Blood Pressure		
Vital Signs – Pulse Rate		
Vital Signs – ~~Respiration~~ Respiratory Rate		
Vital Signs – Temperature		
Pulse Oximetry ~~O_2 Administration~~		
Assisting with O2 Administration (canula or mask)		
Patient Transfer		
Quality Control Procedures		
Linear Accelerator		
Laser Alignment		
Imaging Systems		
Beam Output and Symmetry		
Simulator		
Laser Alignment		
QC Water Phantom (e.g., CT Number)		
Simulation Procedures		
Brain		
Head and Neck		
Thorax		
Breast		
Pelvis		
Skeletal		

Dosimetry		
Single Field		
Parallel Opposed Fields		
Weighted Fields		
Wedged Fields		
Computer Generated Isodose Plan		
Electron Field		
Treatment Accessory Devices		
Custom Bolus		
Custom Immobilization Devices (e.g., Foaming Agents, ~~Vacuum Bags~~Vac-lok)		
Thermoplastic Mold		
Participatory Procedures		
Total Body Irradiation (TBI) Treatment		
Craniospinal Treatment		
Brachytherapy Treatment		
SBRT/SRS Treatment		
Motion Management (e.g., surface guidance, respiratory gating, fiducial tracking, breath hold, abdominal compression)		
Special Treatment Simulation Procedure (e.g., 4D CT, SBRT, Gating, or Brachytherapy)		
Custom Block Process (Photon or Electron)* *may or may not include actual block fabrication (e.g., third party outsourcing)		

Radiation Treatment Procedures	Date Completed	Patient or Simulated	Competence Verified By
Brain			
Primary			
Metastatic			
Head and Neck			
Multi-field			
Thorax			
Multi-field (non-IMRT)			
IMRT and/or Volumetric arc therapy			
Breast			
Tangents Only			
Tangents with Supraclavicular (Tangents with Nodal treatment e.g., Supraclavicular, Posterior Axilla Boost)			
~~Tangents with Supraclavicular and Posterior Axilla Boost~~			
IMRT/VMAT			
Special Set-up (e.g., Photon or Electron Boost, Prone, ~~IMRT~~,-DIBH~~Gating~~)			
Abdomen			
Multi-field			
Pelvis			
Multi-field Supine			
Multi-field Prone			
Skeletal			
Multi-field Spine			
Extremity			
Electron Fields			
Single			
Photon or Electron			
Abutting Fields			

Multi-field includes two or more fields, and may include 3D conformal, IMRT and/or volumetric arc therapy (unless specified otherwise).