

ACKNOWLEDGEMENTS

In preparation of this handbook, associates and colleagues from our clinical affiliates have given their suggestions and criticisms as well as their encouragement. We wish to thank all the staff at the following Radiation Oncology clinical facilities, for their continued support.

Luminis Health/Doctors Regional Cancer Center - Bowie, MD
Luminis Health/Doctors Regional Cancer Center - Lanham, MD
Howard University Hospital - Washington, DC
Johns Hopkins Medicine/Sibley Memorial Hospital - Washington, DC
Johns Hopkins Medicine/Suburban Hospital – Bethesda, MD
MedStar/Georgetown University Hospital - Washington, DC
Medstar/Rad America II, LLC – Olney, MD
Medstar/Rad America II, LLC – Clinton, MD
Maryland Oncology Hematology – White Oak, MD

We especially wish to express our appreciation to the following radiation therapists, dosimetrists and physicists:

S. Tyrone Barksdale, M.Ed., R.T.(T)	Patricia Kornegay, B.S., R.T.(T)
Lana Cade, B.S., R.T.(T)	Terri Hunter, R.T. (R)(T)
Sharon Davis, B.S., R.T.(T)	Alice Mahan, B.S., R.T.(R)(T)
Erica Hawkins, M.S. R.T.(T)	Veleda Stephens, B.S., R.T.(T)
Hilda Taylor, B.S., R.T.(R)(T)*	Lloyd Campbell, R.T., DCR, (R) CMD
Kimberly Marter, M.S., R.T.(R)(T), CMD	LaVerne Moody, B.S., R.T.(T) CMD
Marlene McKetty, Ph.D.	Indravadan Patel, Ph.D.
Adrienne Harrison, M.S. R.T.(T)	Dwayne Lewis, B.S., R.T.(T)
Marquise Frazier, M.B.A., R.T.(T)	Karen D. Ljunggren, M.S. R.T.(R)(T)(CT)

Additionally, we would like to thank Dr. Mattie J. Tabron, R.T.(R)(T), FASRT, LPC for her vision to create and nurture the program and this handbook throughout the years.

A special note of thanks goes to Delores Thomas M.Ed., RN, R.T.(T) for her contribution in developing the original clinical handbook. Her knowledge of Radiation Therapy greatly helped to make the revised publication of this handbook possible.

Marquise Frazier, MBA, R.T.(T)
Chairperson & Program Director

Karen D. Ljunggren, M.S. R.T.(R)(T)(CT)
Director of Clinical Education

*First United States B.S. Degree Graduate in Radiation Therapy/ (HU – 12/17/74)

Preface

The purpose of this handbook is to provide an accurate record of the clinical procedures performed during the clinical education phase of the Radiation therapy Program.

Documentation of the clinical experiences over three distinct phases (Observatory, Participatory, and Mastery), is the basis for the evaluation of success in the clinical education component. The completeness and accuracy of this documentation is the responsibility of the student. Proper documenting of clinical experiences will help to provide clarity on situations that could arise in the clinical environment.

Guidelines for the performance and objectives for the clinical education component may be found in this document; The Clinical Handbook for Radiation Therapy.

The Clinical Experience

The clinical experience or practicum is delivered to students in three phases; observatory, participatory and mastery.

Observatory Phase I

During the observatory phase students should engage in observations only. Students should document the new patients seen during their time in the clinic. ARRT competency completion is not allowed except for the general patient care procedures section of the 2022 Radiation Therapy Competency Requirements. Under no circumstances should a student engage in competency evaluation of any other ARRT requirement during this time unless appropriate clinical theory has been delivered and proficiency achieved. All students will adhere strictly to this policy as adequate theory has not been provided to support competency participation.

Students are considered to be in Phase I from entrance into the upper division of the program until completion of the first semester.

During Phase I students are expected to complete all six objective competency requirements as defined by the ARRT regarding general patient care procedures.

Participatory Phase II

During the participatory phase, which encompasses from the second semester of the upper division through and including the summer sessions of the upper division, students will engage in a more “hands on” approach at the discretion of their preceptor/clinical instructor. Students should continue to document each new case seen as time permits for comparison on how treatments are conducted. Students should begin readying patient for treatment on the treatment/simulation couches but should never depress the “beam on” button. Students will have completed at minimum:

- 3 ARRT required patient competencies by the close of Clinic 2
- 3 ARRT required patient competencies by the close of Clinic 3

- 3 ARRT required patient competencies by the close of Clinic 4

Mastery Phase III

During the Mastery phase (senior year of the upper division), students will begin to couple their didactic training and clinical training in order to master their ARRT Competencies. Students should continue to document each new case seen under treatment as time permits. Students will also engage in Treatment Planning/Physics rotations during this phase in an equitable rotation and will also have the opportunity to observe other treatment modalities in the clinical fleet (i.e., Cyberknife, Gamma Knife, Tomotherapy, Proton Therapy, etc.)

Students should complete at minimum:

- Half of the remaining ARRT required competencies
- Remaining ARRT requirements Must be completed prior to Spring Break of Senior Year for May graduation

Observation only rotations:

- All advanced treatment modalities (Tomotherapy, Gamma Knife, Proton, etc.), as determined by the JRCERT
- Other imaging modalities (X-ray, Nuclear Medicine, Mammogram, etc.)

Personal Monitoring Devices (PMD or film badges)

Students involved in clinical rotations at Howard University Hospital will be administered a PMD onsite by the staff at the clinical affiliate. Students at other clinical affiliates will have their badges exchanged during Clinical Theory (most often by the Program's Clinical Coordinator). Students should refer to the policy on Personal Monitoring Devices in the Radiation Therapy Student Handbook, and take their badges home each day from their clinical site.

Included in this handbook

- ARRT Primary Certification and Registration Didactic and Clinical Competency Requirements
(This document well defines within scope of practice what is permissible for clinical competency)
- Daily Patient Logs



Radiation Therapy

1. Introduction

Candidates applying for certification and registration under the primary eligibility pathway 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.

The requirements are periodically updated based upon 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

Verification of program completion, including Didactic and Clinical Competency Requirements and all degree-related requirements including conferment of the degree, will be completed on the Program Completion Verification Form on the ARRT Educator Website after the student has completed the Application for Certification and Registration.

Candidates who complete their educational program during 2022 or 2023 may use either the 2017 Didactic and Clinical Competency Requirements or the 2022 requirements. Candidates who complete their educational program after December 31, 2023 must use the 2022 requirements.

3. Didactic Competency Requirements

The purpose of the didactic competency requirements is to verify 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 such as the ASRT Radiation Therapy Curriculum. 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 verify that individuals certified by the ARRT 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 covered by the certification examination, 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 his or her 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.



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.

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 certified and demonstrate competence in the remaining six 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 treatment 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
CPR Certified		
Vital Signs – Blood Pressure		
Vital Signs – Pulse		
Vital Signs – Respiration		
Vital Signs – Temperature		
O ₂ Administration		
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)		
Thermoplastic Mold		
Participatory Procedures		
Total Body Irradiation (TBI) Treatment		
Craniospinal Treatment		
Brachytherapy Treatment		
SBRT/SRS Treatment		
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 Supraclavicular and Posterior Axilla Boost			
Special Set-up (e.g., Photon or Electron Boost, Prone, IMRT, 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).

ARRT document provided Courtesy of ARRT.org for illustrative purposes only. Students should visit the University LMS for the latest version

PATIENT LOG revised 10-1-2023

Use as much space as you need to document all requirements. Use a font of 12 or greater.1

Student name:

Clinical site:

Course: RASC_____

week #

dates for the week (Mon - Fri):

Nursing ()

Tx Unit () name:

CT Sim ()

Dosimetry ()

Record a minimum of two new patients observed or participated with in treatment delivery and/or simulation weekly. Description of procedure: include histological diagnosis, treatment area (all organs within the field), daily dose, number of fractions, total dose, patient position, critical structures that are being monitored and treatment intent (definitive including boost or palliative).

Date	Histological Diagnosis	Treatment Area	# of Fields	Description of Fields*	Description of Procedure**

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