Structured Mentorship in Therapeutic Medical Physics

General Orientation: During the orientation period, the resident will learn basic radiation and biohazard safety and will be exposed to radiation oncology simulation, planning, and treatment delivery activities. The resident also will meet regularly with core members of the resident committee.

Clinical Physics Rotations: During the clinical physics service rotations, the resident will be fully trained in all clinical activities of therapeutic medical physics (including chart checks, plan checks, machine QA, and special procedures) and dosimetry (including site-specific patient planning procedures). Training requires independent interaction with the attending physicians to the maximum extent possible.

- Note: Table 1 suggests a schedule for clinical rotations that are structured around major pieces of equipment. Table 2 organizes the rotations by clinical service.
- If the rotations are structured as described in Table 1 (i.e., according to pieces of equipment), Table 2 can be used as a checklist to ensure that the resident participates in a sufficient number of clinical procedures while focusing on the different pieces of equipment. In this case, the suggested durations given in Table 2 can be ignored.
- In larger departments where the staff is organized by clinical service, the resident should be instructed to follow the schedule shown in Table 2 and to use Table 1 as a checklist to ensure that he or she gains experience with all important pieces of equipment. In this case, the durations recommended by Table 1 can be ignored.

Table 1: Suggested clinical rotations organized by major pieces of equipment

Equipment/Description	Number of Procedures Required	Duration of Each Rotation
Linac QA and QC:		6 months
Annual QA, including absolute calibration	1	
Monthly QA	6	
Patient-specific QA for IMRT, SRS, SBRT, or IGRT procedures	6	
External beam treatment planning:		6 months
Patient treatment plans (variety of cases and beam modalities)	20	
Monitor unit calculations (computerized and manual)	20	
Review of treatment plans performed by others	20	
Review of patient treatment records (weekly chart checks)	120	

Simulator (R/F or CT):		3 months
QA	3	
Supervision of simulation procedures	100	
Brachytherapy:		3 months
Source calibrations, leak tests, and other QC	4	
Treatment planning (computerized and manual calculations)	12	
Treatment supervision, QA, and radiation safety	12	
Therapeutic use of radionuclides	2	
Maintenance of physics equipment:		1 month
In-house comparison of ionization chambers	2	
Calibration and testing of dosimetry systems, such as diodes, TLD/OSLD, scanning water phantom, ion chamber, or diode array	2	
Radiation protection:		2 months
Linac shielding design	1	
Linac protection survey	1	
Other		3 months
For example, ethics and patient confidentiality training, experience with other treatment modalities, acceptance testing and commissioning of new equipment, commissioning and QA of imaging systems, etc.		

Table 2: Suggested clinical rotations organized by clinical service, with recommended activities and representative equipment

Training Rotation	Description/Equipment	Duration of Each Rotation
Breast	CT-simulation, field placement, field-in-field planning, wedged fields	2 months
GU	IMRT, IGRT, prostate implants, IMRT QA	3 months
Thoracic	3D conformal planning; IMRT; 4DCT; SBRT; IGRT	3 months
GI	IORT-HDR; GI treatment planning and IMRT; GI 4DCT, gated/breath hold treatment delivery	2 months

Head and neck	3D conformal planning, IMRT	4 months
Lymphoma/melanoma/sarcoma	TBI, TSET	1 month
QA	TPS commissioning and QA, IMRT QA.	2 months
CNS/ Peds/SRS/SRT	***CNS/ Peds:*** 3D non-coplanar planning, proton for CNS planning and delivery ***SRS/SRT:*** CT+MRI registration; SRS QA, extracranial SRT; SRS planning ***Equipment:*** accelerator, stereotactic planning, and delivery systems	3 months
Brachytherapy/GYN	Routine brachy procedures, LDR, HDR, Mammosite, T&O, COMS, Gliasite equipment: brachy applicators, remote afterloader machines, brachy planning system	3 months
Miscellaneous	Ethics, patient confidentiality training, job hunting and additional rotations in other areas as determined by the program director and the resident.	1 months

Additional requirements: The candidate must complete three PQI projects, and reports must be included in the portfolio.