RADIATION ONCOLOGY RESIDENCY
Physics Rotation

GOALS AND OBJECTIVES

Radiation Oncology residents are required to take a one month physics rotation in which the resident works with the medical physicists. The intent of this rotation will be for the resident to become intimately familiar with standard planning techniques. The resident will be introduced to dosimetry and will be required to participate in the planning of a variety of “standard” cases. Additionally the resident will also participate in the QA of radiation therapy equipment as it applies to clinical practice.

The learning objectives are referenced to the appropriate ACGME core competencies: Patient Care=PC, Medical Knowledge=MK, Professionalism=Prof, Communication Skills=CS, Practice Based learning and Improvement=PBLI, and Systems-based practice=SBP.

Upon completion of this rotation residents are expected to:

- Perform computer treatment planning including External beam radiation: photons, electrons (MK, PC, PBLI)
- Perform brachytherapy including HDR and the use of LDR for Eye Plaques (MK, PC, PBLI)
- Obtain/process patient data for computer input (contours, CT scans, MRI scans, simulator films, field outlines or targets, etc.)
- Operate computer program (MK, PC, PBLI)
- Generate treatment plans (MK, PC, PBLI)
- Calculate monitor units (MK,PC,PBLI)
- Understand the role of physicists and dosimetrists in treatment (PC, SBP, CS)
- Work effectively as a member of the treatment team (PC, Cs, SBP, Prof)
- Understand the necessary ongoing QA processes (PC, SBP)

A variety of plans will be worked on as examples, e.g., multiple fields, wedges, irregular fields, rotation, etc.

Treatment Planning; Pinnacle
- Plan Evaluation
- Plan parameters
- Dose specification
- Inhomogeneity corrections
- Plan normalization
- Dose-volume histograms (DVH)
- Using plan to calculate monitor units
- Using MUCheck to check plan monitor units
- Stereotactic planning and set-up. (Gamma Knife)
- TBI: planning and calculations
- Compensator design
- IMRT planning and physics quality assurance
- HDR brachytherapy planning/checks
- Tomotherapy planning and DQA
- Quality Assurance, linac QA, Portal Imaging, kVCT
- Daily checks: accelerator and simulator
- Monthly checks: accelerator and simulator
- Quality Management Program (QMP) for brachytherapy
- Physics chart checks

Review session: At the end of the Physics rotation, the resident will meet with physicist for about one hour to discuss the practicum done during the rotation. The resident’s comments about improving the rotation and program are also noted. The physicist’s evaluation of resident’s work will also be discussed at this time.

For this rotation, I have reviewed the Brachytherapy procedures: Curator and Checker Source Preparation, Loading, and Logging. High and Low Dose Rate Implant Emergency Procedures.