TG-51 the new calibration protocol for the AAPM details how to determine the dose rate at one specific point is space for both photon and electron beams. However, clinical practice requires the ability to determine the dose rate or dose at many other points in phantoms and ultimately in patients that we treat. *TG-25 – Clinical electron beam dosimetry* was originally written to address these clinical concerns after the introduction of TG-21. Specifically they intended to provide a useful set of procedures and processes for the practicing clinical physicist for the utilization of clinical electron beams ranging in energy from 5-25 MeV. That task group defined the dosimetry measurement techniques and procedures for acquiring the basic information required for treatment planning and acceptance testing of new accelerators and the utilization of that data for the determination of monitor units for patient treatments. TG-70, using TG-25 as its model, has a very similar goal. In the era of TG-51, we will update the well-established tenets of TG-25 with respect to the changes introduced by TG-51. This presentation will list the most important of these changes and some of the most common pitfalls in electron beam dosimetry associated with going to the new calibration protocol. The means by which dose is determined in a water phantom and in other media will also be presented in detail starting with the measurement of depth ionization curves and ending with depth dose curves. A comparison of data acquired with ionization chambers and solid state detectors will be given and the determination of cone factors at *dmax* from the calibration point *dref* will also be given. The use of plane parallel ionization chambers for the calibration of electron beams will be discussed with the emphasis on technique, equipment, and comparison to cylindrical chamber calibration results.

Practical clinical aspects of electron beam dosimetry will also be discussed including techniques for determining the output factors, percentage depth dose changes, and isodose curves for small, irregularly shaped electron beams. The strengths and weaknesses of modern computer algorithms for electron beam treatment planning will also be discussed.

Educational objectives:

At the conclusion of this presentation, the attendee should be able to:

1. Describe the major changes in electron beam calibration brought about by the introduction of TG-51,
2. Determine the dose at the calibration point in a water phantom and determine dose to points in media other than water,
3. Understand the difference in the TG-51 recommended realistic stopping powers for clinical electrons beams and the differences in these values compared to those used in TG-21,
4. Use a plane parallel ionization chamber to determine the dose to the reference point in a water phantom for and electron beam and describe the differences between using a plane parallel chamber for this determination and a cylindrical chamber,
5. Determine the cone factor and depth of dmax for small, irregularly shaped electron fields,
6. Describe the treatment planning algorithms currently used to calculate electron isodose curves and their limitations.