

AbstractID: 12814 Title: Therapeutic Electron Beams: Clinical Dosimetry and AAPM TG-70

The absolute calibration of clinical electron beams is increasingly based on TG-51 protocol. In addition, recently published dosimetry data on electrons beams bring up the question of how would one need to modify the widely used TG-25 that originally was based on TG-21 calibration protocol?

The answer to the question is given by the recently published TG-70. This new protocol operates as supplement and update to TG-25 on issues that need to be modified because of TG-51 approach to electron dosimetry and because of newer data on clinical electron beams. It describes in detail the procedure of converting measured depth-ionization curves with ion chambers into depth-dose curves, making use of recently published stopping-power ratios and other conversion factors. It also describes the use of water equivalent phantoms to perform relative electron dosimetry based on recently published conversions factors. The report discusses small and irregularly shaped electron field dosimetry using the concept of lateral buildup ratio (LBR) as an avenue to evaluate electronic equilibrium and compute dose per MU for those fields. Finally, it gives some common clinical examples where electron beam dosimetry are applied.

This presentation will try to provide assistance to better understanding the methods and recommendations in TG-70. In addition, how to link the absolute dose calibration recommendations of TG-51 to the relative dose measurements of TG-71.

Educational Objectives:

1. Understand how TG-70 is a modification of TG-25.
2. Understand the methodologies presented in TG-70 for relative electron beam dosimetry.
3. Understand the practical use of clinical electron beams via clinical examples.
4. Outline the major recommendations of TG-70.