AbstractID: 12083 Title: Practical Aspects (and Pitfalls) of External Beam Photon Calibrations using TG-51

Purpose:
Since its publication in September, 1999 (*Medical Physics* 26(9), pp 1847-90), the TG-51 calibration protocol has been implemented in most US institutions. This presentation, one part of a workshop session on practical aspects of treatment unit calibrations, will review the basics of TG-51 calibrations for conventional linear accelerator beams.

Methods and Materials:
Using the TG-51 publication as a guide, practical aspects of performing a TG-51 calibration of a treatment unit will be described. Relevant definitions of the key parameters to be acquired, either through measurement or calculation, will be reviewed. Starting from the acquisition of valid absorbed-dose to water calibration factor, methods for determining each of the parameters used in the TG-51 calculation will be reviewed. Common techniques will be illustrated and some common mistakes will be discussed. Publicly available resources will be described. Methods for verifying the results of calibrations, particularly when spreadsheets or other calculations aids are utilized, will also be discussed.

Learning Objectives:
1. Review the basic implementation of TG-51 for conventional external beam measurements.
2. Discuss practical aspects of the selection of ion chamber, electrometer and measurement conditions for TG-51 calibrations.
3. Demonstrate some techniques for determining TG-51 parameters such as P_{ion}, P_{pol}, and k_Q
4. Discuss some common mistakes and how to avoid them.