

AbstractID: 2209 Title: Novel Dosimetry systems for IMRT and complex radiation treatments.

The clinical implementation of a new complex radiation technique is generally tackled as a two-stage process. In the first 'commissioning' stage an exhaustive program of measurements is required that fully verifies the dosimetry of the technique across the spectrum of clinical conditions for which it is to be applied. These measurements include accurate, high-resolution, three dimensional (3D) 'whole process' phantom irradiation studies, which tend to be labor intensive, and difficult to perform comprehensively with conventional dosimeters. A significant need therefore arises for novel dosimetry systems that can measure the dose in 3D with high spatial resolution and high accuracy. Here we review novel 3D dosimetry techniques with potential to address this need. In the second stage, 'routine QA', a more modest and less labor-intensive QA process is generally sufficient for routine individual treatment plan verification. Two dimensional array detectors are an example of a detector system that has found application for routine IMRT verification.

In this presentation we review the role of novel dosimetry techniques for the commissioning and routine QA of IMRT and other complex radiation treatments.

Educational Objectives

- 1 Brief review of the role of point dosimeters in commissioning and verification of complex radiation treatments.
- 2 Review the role of 2D array detectors (non-film or EPID) in commissioning and verification of complex radiation treatments.
- 3 Review the role of novel 2D and 3D dosimetry systems with potential for more comprehensive verification of complex radiation treatments.