

## AbstractID: 1217 Title: Initial Experience Using Computed Radiograph System for Routine Clinical IMRT Verification

IMRT verification generally includes verification of intensity pattern and MLC leaf positioning accuracy using films, and phantom measurements using ion chamber and films. However, not only is film analysis cumbersome and labor intensive, the limited dynamic range of films also makes it very difficult to display together the intensity pattern with patient anatomic information. This study reported our initial experience in the use of Computed Radiography (CR) system as an alternative to films for routine clinical IMRT verification, including patient specific intensity patterns, MLC leaf positions using three regular patterns, and dosimetric measurements. Our initial experience showed that the large dynamic range of CR allowed simultaneous viewing of intensity pattern superimposed on the patient anatomy. The digital readouts also enable easy analysis of the accuracy and consistency of MLC leaf positioning. Dosimetric experiments were conducted in solid water phantom at 100 SSD, with a 10x10 field on a 6MV machine. Consistency measurements conducted within the same day showed difference of less than  $\pm 2.5\%$ , while there were bigger variations between different days' measurements. Initial results of angular dependence showed the difference between 0 and 180 degrees were less than  $\pm 3.5\%$ . The CR response was linear with  $R^2$  of 0.986 from 20 cGy up to 300 cGy, with higher doses caused CR response saturation. Further experiments are being conducted to test the stability of the calibration curve and the energy response of the CR system for IMRT dosimetric verifications purposes.

This research was partly supported by Kodak Health Imaging