# AbstractID: 1534 Title: Utilizing electronic portal imagers for IMRT pre-treatment quality assurance

The standard technique to validate individual IMRT treatment plans is to acquire absolute dose measurements plus isodose distributions with film for each treatment field. One of the most time consuming aspects of the standard QA procedure is acquiring, developing and digitizing films. This study presents an alternative using an EPID to perform relative IMRT dosimetric verification.

A cohort of 32 patients treated with IMRT to the prostate was examined. A retrospective analysis of QA isodose distributions acquired with film and EPID were performed. Treatment plans were generated utilizing the Eclipse™ planning software (Varian Medical Systems, Palo Alto), including verification plans to compare the planned and delivered dose fluences.

A visual comparison was performed between the acquired versus predicted isodose distributions utilizing each verification modality. In addition, central axis vertical profiles were acquired and examined both visually and quantitatively. To quantitatively compare the results of the film and EPID verification technique, the relative difference between the predicted and delivered doses was calculated within the central 80% of each field.

Based on visual inspection, the portal and predicted dose images compare well for the EPID, similar to the film comparison. A slightly larger relative dose difference was observed with EPIs, which may be attributed to the spatial resolution of the detector.

Utilizing an EPID can provide a very time and cost efficient means of performing rigorous pre-treatment IMRT QA without overtaxing the clinical staff.

Supported in part by a grant from Varian Medical Systems.