

AbstractID:9596 Title : Comparison of the efficacy of MapCHECK and Portal Dosimetry in the pretreatment QA of IMRT treatment plans

**Purpose:** To compare the efficacy of MapCHECK and Portal Dosimetry in the pretreatment QA of IMRT treatment plans

**Method and Materials:**

MapCHECK contains a 2D array of 445 diodes arranged in a grid of 22 cm x 22 cm to measure and compare pretreatment IMRT dose plans. An Isocentric MapCHECK Fixture holds the MapCHECK with 3 cm of solid water buildup securely in the accessory tray and at precisely 100 cm SDD.

Varian Portal Dosimetry compares an electronic relative dose image acquired from Varian's Portal Vision by IMRT irradiation to a predicted portal dose image calculated by Varian's Eclipse treatment planning system.

3 IMRT treatment fields were selected for this study. The IMRT plans were generated with Eclipse for sliding-window IMRT dose delivery. For every field, the verification dose computations in Eclipse and the delivered dose measurements on Trilogy unit were made at 0° gantry and 0° collimator angle. The evaluation used gamma criteria of 3%/3mm.

**Results:**

The pass rate of each measurement was calculated and compared for both the MapCHECK and Portal Dosimetry. Results show that the field 3 has similar pass rate, but the fields 1 and 2 have differences with the maximum variation of up to 6.5%. Both systems give the pass rate within clinical acceptable limitation (>90%).

**Conclusion:**

This study demonstrates that both systems are effective in the accurate pretreatment QA of IMRT in a clinical environment. But the pass rates don't show the same trend between them.