

AbstractID: 8669 Title: Patient specific QA results for step and shoot and sliding window deliveries of IMRT beams as implemented by two treatment planning systems

**Purpose:** To present the patient specific QA results for step and shoot (SS) and sliding window (SW) deliveries of IMRT beams as implemented by two treatment planning systems (TPS).

**Method and Materials:** From a sample of our clinical practice 648 (108 cases) Eclipse AAA\_7\_5\_-18-SW and 464 (66 cases) Pinnacle 7.4f -SS IMRT beams were evaluated using the MapCheck diode array system. The planar dose measurements at 5 or 10 cm depth in water were compared with the predictions from both TPS. A 3% - 3mm distance to agreement (DTA) criteria was used to score the percent of passing points (PPP) for each individual field. The samples for both TPS were composed of 75% of Head and Neck cases, 15% prostates and 10% other sites.

**Results:** The distribution of the PPP showed that 83% and 85% of the evaluated beams were above the 95% PPP for Eclipse and Pinnacle respectively. Between 90 and 95% the PPP were 15% and 14% and below 90% the PPP were 1.9% and 1.7% for Eclipse and Pinnacle respectively. The passing rates for Eclipse-SW are significantly improved when the first 20 Eclipse-SW cases (130 beams) are not considered for this comparison. The Eclipse-SW PPP above 95% increases to 91.1%. The patterns of failure observed for the two TPS were distinctively different with Pinnacle-SS exhibiting clusters of hot points (measurements higher than calculations) while Eclipse-SW showed cold points aligned in the direction of the MLC leaves movement.

**Conclusion:** The results from our patient specific IMRT QA using the Eclipse-SW delivery system exhibited a better agreement when compared with our previous experience using Pinnacle-SS. A detail analysis is required in order to assess the clinical significance of the different failure patterns observed between these two TPS.