

AbstractID: 1761 Title: Comparison of IMRT Commissioning for Varian 2300CD/120 MLC and 6EX/80 MLC on ADAC/Pinnacle and Corvus Planning Systems

Purpose: Compare commissioning of two planning/delivery systems for IMRT. 6MVp IMRT planning was commissioned for Varian 120 leaf 2300 C/D on Pinnacle (Pinnacle/120) and 80 leaf 6EX on Corvus(Corvus/80). Phantom chamber and film dosimetry at both linacs are hypothesized equal and well predicted by both systems' planned doses.

Materials and Methods: A scanned phantom was transferred to both systems. Target structures of differing sizes, shapes and arrangement were delineated in twelve trial plans. They were optimized, exported for linac irradiation so couch was shifted to low gradient, high dose areas covering Farmer chamber to measure dose at phantom center. EDR-2 films were sandwiched in phantom coincident with target centers. Film densitometry at points in high dose areas were converted from optical density to dose. Gaussian statistics of mean, standard deviation (s.d.), t-test, variance equality, and correlation coefficient (R-squared) compared planning/delivery systems by ratios(M/P) of measured (M) to plan's predicted(P) dose.

Results: For chamber M/P (mean, s.d.) were (1.013, 0.012) for Corvus/80 and (1.013, 0.022) for Pinnacle/120 with 95% confidence limits +-2% and +- 4%, respectively. T-test for equality of means was insignificant (p=.989), but variance equality was rejected (p=0.018). Film M/P showed (1.010, 0.021) for Corvus/80 and (1.021, 0.026) for Pinnacle/120, while the R-squared correlation of M with P was 0.942 and 0.597, respectively.

Conclusions: M/P variance is larger in Pinnacle/120 leaf system than Corvus/80. Phantom study errors below 4% validate this as a clinical tolerance suitable for our patient specific hybrid/phantom QA.