

**Purpose:** To compare Rapid Arc treatment planning with current standard 3D/IMRT technique in stereotactic body radiotherapy (SBRT) and to evaluate the difference in total treatment delivery time.

**Methods:** Ten SBRT patient plans were selected, 5 treated with IMRT or 3D conformal and 5 treated with Rapid Arc. Repeat plans were performed to provide a data set of ten plans with IMRT or 3D conformal and ten plans with Rapid Arc for review. The cases studied were delivered at a standard 6MV dose rate of 600MU/min with a 999 monitor unit limit. The plans were analyzed for total monitor units, number of beams, dose conformity, dose fall off, PTV D95, PTV D5, PTV dose heterogeneity and OAR dose including mean dose, D1% and D5%. Treatments including imaging were observed to estimate treatment times. General estimations of time per Rapid Arc (coplanar/noncoplanar), IMRT/3D (coplanar/noncoplanar) and cone beam

**Results:** In all cases we were able to achieve dosimetrically comparable plans for PTV and OAR. The Rapid Arc plans required 2 to 5 arcs and the IMRT/3D conformal plans required 6 to 10 beams. Four of the IMRT/3D conformal plans were noncoplanar. One RapidArc plan was noncoplanar. Monitor units were on average 50% higher for the Rapid Arc plans. Treatment time was on average 6 minutes less for the Rapid Arc plans.

**Conclusions:** High quality Rapid Arc plans can be achieved for stereotactic cases. Based on time to deliver treatments in the standard dose rate mode, Rapid Arc shows potential for reducing treatment time. Future work to commission Rapid Arc in the stereotactic mode with an increased dose rate and an increased monitor unit limit per beam has potential for even greater treatment time efficiency.