AbstractID: 6705 Title: Comparison of A Same-patient Supine Plus Prone Boost 3D-CRT With Full Course Supine or Prone 3D Treatment Plans

Purpose: To compare the three ways of prostate 3D CRT dose plans, supine, prone, and a supine followed by prone boost position. Dose volume histograms (DVH) and normal tissue complication probability (NTCP) resulting from the three different treatment course techniques were analyzed.

Methods and Materials: A patient underwent CT scanning in both the supine and the prone positions. Then 3D conformal treatment plans were analytically simulated on each position CT data set. 18 MV conformal beam ports were set by auto-margins to 1cm. The cumulative DVHs and ensuing NTCP were then analytically determined in these three treatment positions.

Results: Although the three treatment options yielded the prostate volumes appreciably different, the ensuing target cDVH widths [+/-2.5% at 100%] and TCP values were essentially equal. Ensuing NTCP values favored the supine position for the bladder, producing NTCP ranging from 0.4 down to 0.04, compared to full prone course NTCP around 0.9. The mixed position technique produced NTCP around 0.7 to 0.79. For the rectum, the study indicated the NTCP would favor also the supine position. Rectal NTCP values ranged from 0.23 to 0.68 for the supine, and the probability values were between 0.56 to 0.68 for the mixed position technique. The prone NTCP was greater than 0.7

Conclusion: This analytical indicates a supine position technique is better in terms of bladder and rectum NTCPs. However, a mixed position course may have a dosimetric advantage that balances bowel dose volume indices against those resulting from straight prone prostate therapy.