## Verification of Transabdominal Ultrasound (BAT<sup>®</sup>) as an Effective Localization Modality in Prostate Cancer, S McNeeley, J Lattanzi, A Hanlon, T Schultheiss, G Hanks, Fox Chase Cancer Center, Philadelphia, PA

Dose escalation in localized prostate carcinoma requires precise target localization to ensure adequate tumor coverage and maintain an acceptable level of complications by protecting surrounding normal tissues. In this study we compare a daily CT localization technique with a newly developed transabdominal ultrasound localization method.

As part of a final conedown treatment, prostate-only fields were created for 35 patients using no margin. For each final conedown treatment, a repeat CT simulation and isocenter comparison was performed. Immediately following CT simulation, patients also underwent an ultrasound-based prostate localization. The ultrasound system was situated adjacent to the CT scanner facilitating direct comparison between the modalities. Transverse and sagittal suprapubic ultrasound images were then captured. Using contour and isocenter data from CT, the ultrasound system overlaid the corresponding CT information relative to the isocenter. The CT contours were maneuvered to align with the ultrasound images and couch shifts required to produce field alignment were output.

The directed discrepancies in organ location between the modalities was small; A/P mean -0.09-mm SD 2.8-mm; Lat. mean -0.16-mm SD 2.4-mm; S/I mean - 0.3-mm SD 2.36-mm.

Ultrasound localization of the prostate, correcting for daily organ motion and setup variations, has shown to be an efficient method of prostate localization. Therefore, daily localization with transabdominal ultrasound offers the potential to improve the therapeutic ratio in external beam therapy.