AbstractID: 6669 Title: PATIENT POSITIONING IN PROSTATE IMRT: ADVANTAGES of BAT over EPID

In the era of IMRT and dose escalation protocols patient positioning becomes more important than ever. It is known that prostate motion contributes significantly to treatment uncertainties. The conventional patient setup verification is based on checking treatment field position relative to bony anatomy on film or EPID image. This method does not take into account organ motion and relative position during CT and time of treatment. The B-Mode Acquisition and Targeting System (BAT, NOMOS Inc.) allows prostate visualization and superposition of the ultrasound images with contours from treatment planning CT images. Patient set up uncertainties were investigated by comparing set up variations obtained from EPID images and BAT ultrasound images of the abdomen daily before IMRT treatment. For 5 patients 140 EPID and BAT images were analyzed. The study shows significant differences in patients set up between both verification methods. Patient displacements range from 0.6cm right to 0.3cm left (mean $0.05cm \pm 0.14cm$) for EPID images and from 1.11cm right to 0.97 cm left (mean 0.12cm $\pm 0.34cm$) for BAT images; from 1.25cm superior to 0.50 cm inferior (mean 0.03cm $\pm$ 0.23cm) for EPID images and from 2.37cm superior to 0.79 cm inferior (mean 0.91cm $\pm$ 0.72cm) for BAT images; from 0.8cm anterior to 0.4cm posterior (mean 0.06cm $\pm$ 0.19cm) for EPID images and from 2.9 cm anterior to 1.61 cm posterior (mean 0.82cm $\pm0.91cm$) for BAT images. BAT detects significant prostate motion unrelated to position of bony anatomy.