AbstractID: 14091 Title: Quality assurace for large field IMRT using EPID images

Purpose: Quality assurance of Large Field IMRT (LFIMRT) treatments present a unique problem for users of portal dosimetry because LFIMRT calculations are not currently supported in the portal dosimetry calculation module. However, EPID images of LFIMRT delivery can be acquired in the normal manner used for portal dosimetry. This study reports a technique for the dosimetric analysis of LFIMRT delivery using integrated EPID images and IMRT analysis software. **Method and Materials:** LFIMRT plans are calculated using the ECLIPSE treatment planning system from Varian Medical Systems. Treatments are delivered and images are acquired using a Varian Trilogy linear accelerator and an as1000 imager. For comparison with the acquired EPID images we use the AAA algorithm in Eclipse to calculate dose in a plane at dmax in a water phantom simulating the imager geometry. A single scaling factor is applied to the Dicom image to allow conversion to absolute dose. The calculated and measured images are then analyzed using the RIT113 IMRT analysis software. **Results:** Analysis of a 7 field Head and Neck plan was performed utilizing the gamma analysis with 3%/3mm criteria and a dose threshold of 10%. Gamma passing rates ranged from 98.6% to 99.7% with an average passing rate of 99.3% .**Conclusion:** Quality assurance of LFIMRT delivery can be performed with integrated EPID images and standard IMRT analysis software utilizing dose calculations at dmax in a water phantom with excellent results.