AbstractID: 1051 Title: IMRT Dose Validation with MapCheck and IMRT Check Program

Intensity modulated radiation therapy (IMRT) allows greater conformity of the dose distribution to target volume compared to most state-of-the-art 3D treatment techniques by modulating the radiation fluence intensity. IMRT is a complex procedure that requires extensive quality control tests in each step of treatment simulation, planning and delivery. ACR IMRT guidelines state that prior to start of treatment, accuracy of the dose delivery should be documented by irradiating a phantom containing either a film to sample the dose distribution or an equivalent measurement system to verify that the dose delivered is the dose planned. We present results of a dose verification program for prostate IMRT that uses a two dimensional diode array (MapCheck) to measure point doses and dose distribution in a plane perpendicular to the beam central axis. In addition, dose delivered by the IMRT beam is calculated using a commercially available dose calculation program (IMRT Check) as a second independent check. IMRT treatment planning was performed with Varian Eclipse/Helios planning system using sliding window technique. A five field technique was used to deliver 77.4 Gy in 43 fractions. Measured dose distribution of each field, using a 3% difference and 3 mm DTA criteria, compares favorably with calculated dose distribution (98.8% agreement). In addition, measured dose at prescription point agrees to within 1% of the planned dose. The dose calculated with IMRT Check program that uses DMLC files, jaw settings, MU and calculation depth agrees within $\pm$ 0.9% to dose computed by Eclipse/Helios algorithm.