

AbstractID: 2671 Title: A Practical Method for a Community Radiation Therapy Center to Evaluate the Quality of a Prostate IMRT Program

Purpose:

To present a practical method for a community radiation therapy center to evaluate the quality of a prostate IMRT program.

Method and Materials:

The center transitioned from treating prostate cancer with 3DCRT to IMRT in January of 2004. Our quality assurance program included point dose verification via an ionization chamber measurement, planar dose distribution check with Kodak EDR2 film, and a dose calculation check with an independent monitor unit calculation program. RPC phantom measurements found agreement between planned and delivered doses of 1% and 2 mm. After treating approximately 100 patients with IMRT, we reviewed a sample of patient records that received the intermediate to high-risk dose from each technique (73.8 Gy 3DCRT, 76 Gy IMRT).

Results:

Ionization chamber measurements were within 1.1 +/-0.7% of the plans' predictions, point dose calculated by the independent MU check software agreed with the treatment plans to within 0.8 +/-0.7%, and the film measurements demonstrate a dose distribution agreement within 2.3 +/-0.8 mm for the 85% isodose line and 2.0 +/-1.3% for the 50 % line. The mean dose to the prostate increased from 75.87 Gy for 3DCRT to 80.04 Gy with IMRT ($p<0.0005$). The percent of the rectum receiving more than 65 Gy decreased from 21% to 12% with IMRT ($p<0.0005$). The percent of the bladder receiving more than 65 Gy was unchanged (16% for IMRT and 15% for 3DCRT, $p=0.2651$). The records indicate that the frequency of GI Grade II toxicity decreased from 22% for 3DCRT to 9% for IMRT. Grade II GU toxicity increased from 30% with 3DCRT to 56% with IMRT, perhaps because of the higher dose to the urethra within the prostate volume.

Conclusion:

This efficient study of patient records can provide a community center with an objective evaluation of the quality of a prostate IMRT program.