AbstractID: 9431 Title: Inter-institutional comparison of IMRT plans

The widespread clinical implementation of IMRT has raised many questions concerning the quality of treatment for this modality. Numerous recent publications have elucidated the technical aspects of IMRT, but many practical questions remain unresolved. The present work reports on an inter-institutional comparison of IMRT plans obtained using the same treatment planning system (CMS Focus) at both centers. Plans were generated by operators at different institutions using the same machine data, and by all operators using different machines. The machines included one with a 0.5 cm leaf width at isocenter, and another of 1.0 cm. Studies were carried out on 10 patient data sets. As an independent test of the machine data, ion chamber measurements were carried out in a cylindrical phantom irradiated using patient fields. The results were compared to phantom doses predicted by the planning system. The quality of the patient plans was assessed by comparing dose-volume histograms for the PTV and critical structures. Average dose parameters were calculated and compared. The results showed that after a suitable period of familiarization with the new machine data, plans run by different operators did not show a significant difference in quality. Some advantage was seen in the use of the smaller leaf width, but in view of the other sources of error in IMRT dose delivery, the differences in the machines may be of limited significance. Details of these comparisons and possible means of improving the results will be presented and discussed.