AbstractID: 4938 Title: Clinical Experience Using Dynalog Files for Verification of IMRT Delivery

Purpose: Validation of IMRT field delivery and the dynamic leaf movement during treatment is an important part of the IMRT QA procedure. In the past this was done using film during treatment. In this presentation, we summarize our experience using the dynalog files to validate the delivered fluence pattern of individual IMRT fields for each patient.

Method and Materials: The DynaLog files were generated during IMRT delivery on Varian Trilogy and 21EX linear accelerators. They represent the actual leaf movement, as MLC leaf positions were recorded, during delivery, every 50 ms. Argus IMRT QA software was used to interrogate the dynalog files after delivery for evaluation. The delivered and planned fluence pattern can be displayed for comparison as well as fluence difference and Gamma function values. Maximum and average fluence difference and Gamma function values can be employed for quantitative analysis, as well as actual versus planned leaf positions and speeds. The pass/fail status of each IMRT field can be set based on pre-determined parameters.

Results: We have employed the Argus IMRT QA software in analyzing the fluence patterns and leaf motions for all IMRT fields used for patient treatment. Several hundred fluence patterns were analyzed on 100 patients treated so far. The average and maximum gamma function value of each field was analyzed to determine appropriate limits for the pass/fail criteria in accordance with our clinical data.

Conclusion: Verification of delivered fluence patterns is an important part of the IMRT QA process. It assures the accuracy of IMRT delivery on a daily basis. With the aid of Argus IMRT QA software, validation of all the fields used for IMRT treatment can be performed within minutes for qualitative and quantitative analysis. With the proper choice of limits for test parameters, this approach further ensures the quality of IMRT delivery.