AbstractID: 8852 Title: How to Provide Comprehensive Patient Specific QA of an IMRT Program: The Important Issues

Patient specific dosimetric verification of an IMRT treatment plan is one of the most important components of a comprehensive clinical IMRT program. A patient specific QA protocol for the segmented (step-and-shoot) IMRT treatment delivery available in our center will be presented in this work. The protocol is independent of treatment site, planning system used and finally, is an integral part of the broader QA program that includes mechanical and dosimetric tests of the dynamic MLC system. The protocol is composed of three parts: Part (a) is based on a checklist that monitors the steps of the treatment planning process, the plan transfer to the RV system, its transfer to the solid water phantom (used for the entire QA process) and, on a therapist filled checklist that monitors the daily delivery of every field. Part (b) is based on chamber measurements that verify the total point dose of the transferred plan onto a solid water phantom scanned data set that includes the measuring chamber at the point of interest (d=10 cm at SAD). Part (c) is based on a relative EDR-2 film dosimetry in the same phantom that compares the measured with the calculated dose distributions. A method of automated co-registration of the two distributions[1] is used and the film calibration method based on a sensitometric curve produced by a step wedge will be described. The accuracy of the entire QA process and its agreement with indicative plans for several treatment sites and treatment geometries will be presented.

[1]J. Gibbons, D. Mihailidis and M. Lewis, Med. Phys. 29(6) (abstract), (2002).