AbstractID: 14022 Title: A Tracking Database for Clinical Implementation of Microdosimeters

A Tracking Database for Clinical Implementation of Microdosimeters

Purpose: To develop a database tracking tool to facilitate clinical implementation of a patient microdosimetry system with Optically Stimulated Luminescent Dosimeters. The database allows day to day tracking of treatment dose verification and long term analysis of microdosimeter efficacy and accuracy for all patients treated in a multi-site department.

Methods and Materials: The nanodot microdosimeters (Landauer, Inc., Glenwood, IL) are irradiated for one field per patient, once a week, at three hospital sites. The volume of data produced creates the need for an organized and systematic way of monitoring weekly dose reading results. It also provides a substantial base of information for evaluating the processes involved in the planning, placement, and reading of the nanodots.

A nanodots tracking database package was created for this purpose using Microsoft Access. For each nanodot irradiated, parameters regarding the individual dosimeter, patient, staff involved and treatment site are recorded, along with the expected and measured doses.

Results: Nanodot data has been collected in a tracking database composed of thousands of readings. This data is followed by the physicist and approved by the physician to verify dose delivery for a given patient's treatment. Examples are given illustrating how the nanodot data can presented graphically to evaluate results over time, and filtered for quality assurance evaluation of patient treatments within a multi-machine multi-site department.

Conclusion: An organized database is essential for the management of a large scale implementation of patient microdosimetry use. The study of long term trends in microdosimeter data can be used to point to areas in which processes can be optimized and quality of care improved.