

AbstractID: 12951 Title: A TG-106 Compliant Linac Physics Data Management System

Purpose: Minimize errors in beam data during commissioning and throughout the clinical lifetime of a linear accelerator. **Method and Materials:** A comprehensive data management system (CDMS) was developed to provide radiation oncology physicists with a set of computerized tools to manage, acquire and report beam data and associated documentation. The entire program is written in Visual Basic and has a user-friendly front-end window with the following features and modules: (1) A documents manager to generate, edit and approve commissioning & QA reports and other regulatory documents. (2) Configure commissioning tasks. (3) Acquire Output Factors. (4) Import PDD, TMRs and OAR tables directly from the scanning software. (5) Query beam data. (6) Compare beam data. (7) Perform MU calculations. (8) Perform TG-51 & TG-142 Calibrations. (9) Import and Export treatment machines. **Results:** A total of 22 commissioning projects were analyzed from the data collection and beam modeling aspects to the clinic's feedback and satisfaction level. Out of the 22, 12 were completed without, and 10 with, the use of CDMS. Our results so far have shown that data collection errors were drastically reduced. Beam modeling errors have been all but eliminated and the overall satisfaction Level of the clinic improved by a factor of 2 **Conclusion:** The introduction of CDMS for clinical use appears to have achieved its intended goal of reducing errors in the physics data during the commissioning of linear accelerators. Data collection errors were indeed drastically reduced while beam modeling errors were entirely eliminated. CDMS has also significantly improved the confidence of the scanning physicist as well as the satisfaction of the rest of the clinical staff with the progress of the commissioning project.

Conflict of Interest: CDMS is currently marketed by D3 Radiation Planning, Inc., as a tool to minimize errors in radiation therapy.