AbstractID: 9339 Title: Data Analysis from a Database of Tomotherapy Delivery Quality Assurance Procedures

Purpose: To create a database of information on tomotherapy patient plans and delivery quality assurance (DQA) procedures in order to streamline workflow and enable analyses to be conducted on a novel data set. **Method and Materials:** Tomotherapy DQA at our institution was formerly performed by one or two individuals and presented in independent reports. Since approximately 30-45 patients per day are treated on two Tomotherapy machines, DQA responsibilities have been distributed to a team of individuals, generating a need to manage a large amount of DQA information among many physicists. A database program has been written to store information from both patient plans and delivered DQA procedures in a format that makes data readily available in a centralized location for analysis. **Results:** While the database has already facilitated performing and reporting on DQA procedures clinically, an example of the utility such a database is presented. An unexpected relationship appears between daily output measurements and DQA procedure dose measurements on one Tomotherapy machine, where over one month daily output measurements averaged 0.76% high while DQA readings averaged 1.98% low. This database allows such an observation to be made easily, and such analyses may aid diagnosis of issues related to machines, patient plans, or dose and film measurements. **Conclusion:** Continued use of the database will increase the amount of data available as well as the statistical accuracy of observations. The database also will enable other studies of interest to both clinicians and researchers to be conducted. Trends of machine output and dose measurements can already be seen, and a preliminary analysis indicates the two may be related in an unexpected manner. Future studies will draw from a larger data set and will include more precise observations on more specific subsets of data.