AbstractID: 7225 Title: Application of a new taxonomy for radiotherapy error reporting and results of a five-year review

Purpose:

We present a framework to accrue and analyze and report on radiation therapy errors and near-miss events, from decision to treat to final treatment. A systematic and quantitative analysis of this data has provided insights for the identification of program areas requiring attention and for the allocation of limited resources for quality assurance and error elimination initiatives in a large clinic.

Method and Materials:

All reported radiation therapy incidents and near-miss events from 2001 to 2006 were analyzed, under a research ethics board approval. Each report was staged according to the type (prescription or geometry), cause (location, documentation, non-compliance, laterality, prescribed change, human error, planning/dosimetry, software/hardware malfunction, accessory), and clinical impact (none, minor, moderate, severe). Furthermore, each report identified what stage of a generalized radiation therapy process (booking, scanning, planning, review, and treatment) the incident or near-miss event occurred.

Results:

863 incident and near-miss reports were analyzed. The average error rate over five years was stable at $1.8\pm0.4\%$, with a majority of errors related to prescription issues. An average of 0.66 severe error per year was observed. Over the course of five years and several technological changes, the occurrence of events due to accessories (wedges, immobilization), prescribed changes to treatment parameters, non-compliance to treatment protocols, and location have decreased, while documentation events have risen. The proportion of incidents is highest at the planning and treatment stages, with these with highest impact occurring at the latter stage.

Conclusion:

The incident rate at our clinic has remained low and stable at our clinic over several technological and process changes. The framework has allowed the assessment of trends in radiation therapy treatment incidents in a clinic that has undergone significant changes in technology and processes, including image-guidance and IMRT, over the course of five years and has identified new risk factors.