

AbstractID: 6645 Title: Outcomes-based quality improvement: the future role of outcomes in monitoring the radiotherapy process

Purpose: Current quality assurance/improvement regimens are based on part of the radiation therapy chain of events, and typically ignore the goal, namely positive patient outcomes. We propose that the widespread implementation of Outcomes-based Quality Assurance/improvement programs ('OQA,' programs, pronounced 'OK') have the capability to fundamentally improve radiation oncology practice. Our short-term goal is: (1) to be able to routinely generate customizable reports which summarize clinical outcome rates (stratified by known risk factors), as well as (2) provide data-mining and modeling capabilities to identify outcomes correlates for further consideration.

Methods: Our institutional informatics infrastructure to support an OQA program is under development. Key components which are partially implemented include: (1) tools for routine capture of treatment planning information, (2) web-based tools to facilitate remote treatment data reviews, (3) treatment report tools which summarize dose-volume information about a treatment plan, (4) the database design, (5) interfaces to routinely enter patient followup data, customized to clinical service needs, (6) query interfaces, and (7) tools to explore outcomes data vs. extracted dose-volume data. Key future challenges include processing followup dictation, interfacing with the hospital IS system, and incorporating tools which capture IGRT data.

Results: Limited applications of this strategy have previously shown significant success in identifying important, previously unappreciated correlates to local control and toxicity (de Crevoisier et al., *IJROBP* 2005, 62:965-73; Hope et al., *IJROBP* 2006, 63:S231). Disadvantages include the cost of collecting the data and the potential for misreading results due to statistical fluctuations or changes in the patient cohort mix.

Conclusion: Adding outcomes to the analysis of treatment quality increases the validity and sensitivity of the quality improvement process in radiation oncology. Outcomes-based quality assurance should be developed and practiced on a more routine basis, with datasets available for comparison between institutions.

Research partially sponsored by the NIH and TomoTherapy, Inc.