AbstractID: 9730 Title: Informatics Needs in Radiation Oncology Research: Challenges and Potential Solutions

Radiation oncology research faces an explosion of data collection, analysis, and management issues. Clinical trials research requires interfacing multiple vendor systems, storage of large-scale, multi-type data in systems that provide convenient, and secure access for analyses, quality assurance/improvement, and monitoring. HIPPA concerns are making multi-institutional datasharing and clinical trial cooperation more challenging. Relevant datatypes now span the spectrum of multiple types of imaging, traditional radiotherapy data objects, image-guidance data, physician-reported, or patient-reported outcomes, and new biological datasets and tissue/fluid samples along with their various bioprofiles and '-omics.' Effective management schemes must preserve the context, storyline, and linkage amongst related data. Effective utilization and learning based on all the available data will require new informatics tools and a more open approach to realizing the extent of the challenge and how ineffctively it has been addressed to date. In this presentation I will discuss these challenges that vendors, physicians, physicists, and informaticists face in helping to build out effective tools to support radiation oncology research in the next ten years. I will particularly focus on the emerging informatics needs of clinical trial groups (such as RTOG), as well as academic research centers, who want to fully utilize and learn from modern image-guided, adaptive, biologically-stratified, treatment paradigms. We will discuss approaches to problems associated with collecting outcomes data, utilizing complex datasets within the clinical workflow, and effectively learning from clinical, imaging, and biological data.