AbstractID: 4991 Title: ITC Assists Developers of ATC Compliant DICOM Export for Clinical Trials

Purpose: The Image-guided Therapy QA Center (ITC) as part of the Advanced Technology QA Consortium (ATC) has played a key role in assisting treatment planning system (TPS) developers in verifying that their DICOM implementations (CT, RT Structure Set, RT Dose, RT Plan, and RT Image) match ATC's conformance statement. This presentation will review lessons learned in this important effort.

Methods and Materials: ITC hosted a series of DICOM Implementers' Workshops to assist TPS vendors in implementing RT objects needed for clinical trials. A system of software ("ATC Method 1") developed at ITC to receive, process, and review volumetric treatment planning data for advanced technology clinical trials was used to assist vendors in their implementation of DICOM export. ATC's DICOM conformance statement specifies requirements for using DICOM RT objects in these clinical trials. ITC's DICOM fileset reader converts incoming data to an internal format for efficient display and review using the ITC web-based Remote Review Tool (RRT). The RRT was used by TPS developers to visualize/compare submitted images, structure sets, and dose distributions, thus greatly facilitating their DICOM implementations.

Results: Interactions with developers have exposed several problems in interpretation and implementation of the DICOM standard resulting from the complexity of DICOM RT objects and differences in design/capabilities of TPSs. Examples of problems seen include CT/Structure/Dose miss-registration and DVH-calculation discrepancies. To date, 6 TPSs have released ATC-compliant DICOM export software. ITC has received DICOM data matching the ATC conformance statement from a total of 15 TPSs. ITC has worked with 8 additional TPS developers.

Conclusions: The ITC web-based Remote Review Tool has proven to be of great help to vendors in developing and verifying implementations. More effort is needed by vendors to make digital data submission for clinical trials a simpler process.

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