Abstract

The ITC has been successfully processing and reviewing digital data submissions for support (QA) and analysis of advanced technology protocols for the past 10 years. Over 4400 case data sets have been submitted and processed for review by the ITC. Often data are not complete to the ITC in a reviewable form, and the ITC must intervene and require that data be corrected before they can be evaluated. The processing, reprocessing, and re-submission of data is associated with additional review time and cost to the study chairs.

The overall goal of the ITCA is to create a robust QA process to collect/review image-based planning/verification data for study patients. The ITC's Automatic Targeting and Dosimetry (ATC) Method 1 is currently used for all RTOG ATC-supported protocols (Protocol ID: RTOG-ATC-01). Outcomes for the first year (2002-2003) of the RTOG ATC pilot study are reported. As of 2003, 15 TPS vendors have implemented ATC-compliant RTOG/DICOM export software.

ITC’s Remote Review Tool: Validation of the Digital Data

The ITC's Remote Review Tool (RRT) provides an improved and efficient way to review volumetric data. The tool is being used as a QA test-bed for RTOG ATC methods. Data are currently submitted via RTOG's Technical Support (TPS) and Internet Targeting and Dosimetry (ITD) websites. The RRT is a web-based tool that provides interactive direct data review and feedback by a QA analyst.

Digital Data Integrity QA

Results: Digital Data Submitted to ITC

ITC’s Clinical Trials Remote Review System (ATC Method 1) (Currently In use for all RTOG ATC-supported protocols.)

Question: What are the special requirements of advanced-technology radiotherapy clinical trials?

Answer: Digital Data Submission and Remote Review

1) Patients' Volumetric CT Data Set
2) Dose calculation and optimization
3) Volumetric dose distribution (for each fraction)
4) Beam geometry – orientation and shape
5) CT images (zoom, window)
6) Automatic Data Import
7) Less radiation information in DTV
8) DTV may not be adequate for developing dosimetry models.

DTH Analysis: Consequences for QA of Clinical Trials

Graphs for DTH illustrate discrepancies between structure volumes computed by ITC and those submitted by vendors for 5 commercial DCDT TPSs and 2 non-commercial (Pinnacle, Helax, Pinnacle, Eclipse, Nucitogen Helax TMS, and Philips Pinnacle) TPSs.

Comparison of submitted vs. calculated DTHs for non-commercial TPSs demonstrates a significant misalignment between TPSs. With these results, the ITC plans to develop a new DTH protocol to improve the consistency of DTH data.

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