

AbstractID: 3820 Title: A Secure Web-Based, Real-Time System for Peer-Review, Quality Assurance and Clinical Outcome Studies in Radiation Therapy

Purpose:

To develop a secure, integrated relational database and a system of web-based client applications for radiation therapy data submission, archiving, retrieval and data mining for performing peer-review, quality assurance and clinical outcome studies.

Method and Materials:

The Resource Center for Emerging Technologies (RCET) System was developed at our institution to support NCI sponsored advanced technology clinical trials. This system features multi-tiered distributed client-server architecture; content-based relational database for data storage (supports DICOM, DICOM-RT, RTOG and common electronic image formats), retrieval and data mining; web-based client applications for data submission and rapid review. The RCET System has the necessary tools for peer-review and quality assurance of radiation therapy planning data.

Clinical outcome studies are currently conducted in our research office through a labor intensive process. Data are collected manually in code sheets and entered into a simple database. Clinical data are manually retrieved and analyzed for outcomes.

We propose to automate this process by fully utilizing the RCET infrastructure. Customized web-based applications and protocol specific data forms are added. Patient and treatment records from hospital information system (HIS), facility management system (FMS) and treatment planning system (TPS) are extracted and automatically archived. Data mining, rapid review and reporting tools designed for outcome studies are added.

Results:

The RCET infrastructure has been developed and extensive field testing is underway. Electronic data entry forms have been developed with automatic upload into the RCET database. Data from HIS, FMS and TPS have been extracted. New tools are added for outcome studies.

Conclusion:

The RCET system has the necessary tools for peer-review and quality assurance of radiation therapy planning data. Extension of RCET to support clinical outcome studies is feasible and cost-effective. Proactive in addition to retrospective studies are possible.

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