

**Purpose:** Record and verify (R&V) systems are used by most radiation oncology practices for storing the technical treatment planning and delivery data for radiation therapy patients. We have developed an automated quality assurance (QA) method with web-based dashboards and automated quality and efficiency analysis of the technical planning and treatment delivery process.

**Methods:** Custom software was developed (RTMetrix) to mine the R&V database and provide real-time analysis of treatment planning and delivery data. RTMetrix was developed using object-oriented web development software along with a relational database for storing supplemental data associated with the R&V database. It is a read-only web application system using the R&V data associated with each patient to reconstruct clinical workflows and assess quality of the treatment delivery process. Three main web-based dashboards with a notification messaging system have been initially developed in areas of treatment delivery, image-guided radiation therapy (IGRT) and physics-based QA tools.

**Results:** The workflow using RTMetrix is straightforward for physicians and physicists by providing the information in standard web browsers. Using RTMetrix, a web query is provided to calculate the real-time statistics for each physician's IGRT review status including the time taken to perform the review. Another web query in the system provides the average room time over any time period including one day to 10 years. An example of using room time review during the past year revealed that the use of breast patients and pediatric patients required more than 15-minute treatment times. The final dashboard is the automated QA of the patients treated during the clinic each day. This dashboard provides an additional daily audit of the R&V system using AAPM TG-40 chart checking rules.

**Conclusions:** RTMetrix provides a platform for easily mining the R&V system for quality and efficiency analysis of radiation oncology departments.