

AbstractID: 14261 Title: An Infrastructure towards better and safer radiation therapy-Quality Assurance Information System (QAIS)

Purpose: To develop an infrastructure to perform digital, automatic, intelligent, process-oriented, and patient safety-oriented quality control in radiation oncology. To leverage an electronic infrastructure to use advanced information processing techniques, proactive quality control tools, employ automated and intelligent systems and facilitate standardization, data sharing & benchmarking in radiation oncology quality control program

Method: An web based centralized data management system called Mallinckrodt Institute of Radiology Quality Assurance Information System (MIR-QAIS) was developed to collect manage and analyze quality assurance data. Several tools that could leverage the electronic environment was developed such as automated quality control for patient specific IMRT delivery, electronic chart checking, workflow monitor and manager, status reporting with dashboards, calculation based quality assurance, data mining tools for data informatics, document management component, incident reporting for organizational learning etc. This infrastructure has facilitated us to go completely paperless including all quality assurance tasks. Also all the test that are in developed is to perform quality control rather than quality assurance. The infrastructure was designed for easy record keeping, auditing, and compliance and to facilitate standardization and benchmarking.

Results: We have developed a web based infrastructure to practice quality control in radiation oncology. Several tools were developed leveraging this infrastructure. Web-based QA documents for Machine QA with statistical analysis tools, alerts and warnings, Dynalog based automated patient specific QA, Electronic chart check, automatic QA plan generation through scripts, intelligent review of plan quality, technical aspects of plan and logical consistency using scripts are to name a few.

Conclusion: The electronic web based QAIS infrastructure has facilitated and would continue to aid in developing effective quality control program to practice better and safer radiation therapy.