

AbstractID: 9451 Title: Implementation of an electronic IMRT QA process in a network comprised of independent treatment planning, R&V, and delivery systems.

**Purpose:** The purpose of our study is to implement an electronic method to perform and analyze IMRT QA using the ASi imager in a network comprised of independent treatment planning, R&V, and delivery systems.

**Method and Materials:** A verification plan was generated in the treatment planning system using the actual treatment plan of a patient. After exporting the treatment fields to the R&V system, the fields were delivered in the QA mode with the ASi imager deployed. The resulting dosimetric images are automatically stored in a DicomRT format in the treatment console PC. The grey scale images are subsequently pushed to the R&V system. The measured images are then transferred electronically to the planning system and imported into the QA plan in the dosimetry work space for further analysis. The screen shots of the gamma evaluation and isodose comparison are imported into the R&V system as a word document to be reviewed prior to initiation of patient treatment. The calculated images can also be sent as a grey scale image to the R&V system to be compared with the measured dose represented as a gray scale image.

**Results/Discussion:** Our department does not have an integrated planning, R&V, and delivery system. In spite of this, we are able to fully integrate a paperless and filmless IMRT QA mechanism. This process enables the QA process to be more efficient and the QA document can be directly attached electronically to its specific patient chart in the R&V system. The calculated and the measured grey scale images can be viewed electronically side by side to analyze the density differences and ensure proper dose delivery to patients.

**Conclusion:** In the absence of an integrated planning, verifying, and delivery system, we have shown that it is nonetheless possible to develop a completely electronic IMRT QA process.