Purpose:

The focus of this project is to compare the Octavius 4D with current commercial available dose validation systems: MatriXX MultiCube and Delta4.

Methods and Materials:

Many challenges are faced with properly measuring Intensity Modulated Radiotherapy (IMRT). It has become common practice for clinics to use film, arrays, or multiple detectors to validate dose measurements pretreatment for static and dynamic treatments. IMRT QAs for various treatment sites were measured for patients using three different dose validation systems. All measurements were taken on a Varian CLinac 2100 C/D, SN-757, 80 MLC with 6MV. The treatment plans evaluated were Step-N-Shoot.

Data analysis was performed using the software provided with each dose validation system. Detailed information was gathered from each system with their perspective advantages. The latest system, Octavius 4D, allows one to calculate the Gamma Index for Coronal, Sagittal, and Transversal views for every slice included in the measurement along with the traditional data analysis provided; histograms, horizontal and vertical profiles, DTA.

Results and Discussion:

The Gamma Index values were observed using the MatriXX Multicube, Delta4, and Octavius 4D. The treatment plan included five fields at various gantry angles. Also the gamma index and profiles were calculated for various treatment sites. Delta 4 and the Octavius 4D appears to be quite comparable. Each device has the ability to allow one to verify segmented and composite fields, measure dose profiles and analysis using the Gamma Method.

Conclusions

Similar IMRT QA measurements will be made for more Step-N-Shoot cases with the addition of SmartArcs. The limitations of each system will be determined for each system using the Gamma Index as a reference while varying the Region of Interest, Threshold, and Gamma Method (local, normalization, and maximum dose), as well as the 2D-profiles for these cases.