AbstractID: 11250 Title: Comparison of Commercial 2D and 3D Devices for Patient-Specific IMRT QA

Purpose: To compare the pass/fail rates for intensity modulated radiotherapy (IMRT) plans using the OmniPro I'mRT MatriXX and ScandiDos Delta$^{4®}$ IMRT QA devices.
Method and Materials: Optimized IMRT plans for different anatomical sites were created using the Pinnacle^{3} v.8.0m treatment planning system for several patients. All the plans were optimized for delivery using a Varian 23EX with an 80 leaf MLC collimator. For each plan two respective QA plans were created: one for the MatriXX and one for the Delta4 device. The planar doses at the location of the detector plane of each device were then exported, and each QA plan was delivered to each of the IMRT QA devices. The measured planar doses were compared against the calculated ones from the TPS. The measured and calculated planar doses were compared using isodose overlay, vertical and horizontal profiles, and gamma index. The acceptance criteria for the gamma index were set so that 95% of the pixels should be within gamma index of 1 defined by 3% and 3mm DTA.
Results: Similar results were obtained from both measuring devices when compared to the respective planar dose distribution by the TPS. All plans in this investigation delivered to the MatriXX and Delta$^{4®}$ devices were deemed to have passed, with greater than 98% of point measurements having gamma values less than or equal to 1. It was found that there was good correlation between the gamma results from both devices for most plans.
Conclusion: Analysis of the IMRT plans with the MatriXX and Delta$^{4®}$ devices yielded very similar pass/fail results. Either of the two devices is suitable for 2D analysis of the IMRT QA plans considered.