AbstractID: 9510 Title: Commissioning IMSure 3.1 for IMRT Second Calculation Utility Program

**Purpose:** A program for IMRT QA for dose point calculation (IMSure Ver 3.1 from Standard Imaging) was commissioned for applications at our clinic. The purpose of this study was to set out acceptability criteria of IMRT plans, and to determine the percentage discrepancy range of point dose calculation between IMSure QA software and Eclipse treatment planning system from Varian Medical Systems. **Method and Materials:** This program uses the patented 3-source model algorithm for calculating a point dose in water for IMRT plans. The data for output factors and scatter factors were measured using a PinPoint ion chamber with an active volume of 0.01 cm³, and a brass cap was used for measurement in air. The 6 MV beam was commissioned with a value of 0.14 cm for the dosimetric leaf gap which gave the closest agreement with the treatment planning system. **Results:** Twenty patients planned on Eclipse with 7-field IMRT for head and neck were transferred using DICOM RT to IMSure. Dose calculation at isocentre was assessed with IMSure and compared with the treatment planning results. Percentage discrepancy in the isocentre dose calculation ranged from -2.0% to 2.0% with a standard deviation of 1%. In other words, the agreement in isocentre dose calculation for 13 patients between the treatment planning system and the IMRT QA software was within +/- 1%. Measurements with an ion chamber and a cylindrical phantom were also performed, and found to be consistent with the above results. **Conclusions:** Our investigation of the IMSure QA software for IMRT showed good agreement with Eclipse treatment planning system to within 1% for 68% of patients sampled in our study. Our results showed that IMSure software can be a reliable tool for IMRT QA with discrepancies with Eclipse not exceeding +/- 2%. 