

**Purpose:**Accurate dose delivery is a key component in the success of radiation therapy. The dose verification is especially important in the high complexity treatments, such as Intensity Modulated Radiation Therapy (IMRT) and Volumetric Modulated Arc Therapy (VMAT). Our purpose was to evaluate the dosimetric performance of our newly installed Elekta Synergy linear accelerator and Philips Pinnacle3 Planning system.

**Methods:**The PTW Seven29 2D-ARRAY consists of 729 vented ionization chambers with a dedicated phantom called Octavius were used to acquire the 2D dose distributions for the IMRT and VMAT plans. One limitation of this 2D-ARRAY is the significant angular dependency, so we had measured the correction factors for VMAT plans. Another dosimetry system consists of a farmer type ion chamber (Wellhofer FC-65P) and solid water phantom was used to measure the selected point dose. Total of 6 IMRT and 3 VMAT plans were included in this study. IMRT plans were verified with perpendicular deliveries at 0 degree gantry angle. VMAT plans were measured with actual treatment arcs, and then the corrections were applied after the measurements. We performed gamma comparison with 3% and 3mm criteria to evaluate the results of all 2D dose maps.

**Results:**Our results showed good agreements in chamber dose validations. The differences between calculated and measured doses ranged from 0.7% to 3.1% (Mean 1.7%, SD 0.9%). The mean gamma index of 2D comparison from IMRT plans was 96.4% 2.7% (SD). The mean gamma index of 2D comparison from VMAT plans was 95.1% 2.8% (SD).

**Conclusions:**Our preliminary evaluation has given us a satisfactory result, but the number of plans we have verified is just too small to give us enough confidence for all the situations we may encounter. We shall continue to validate the dosimetric performance of our planning and delivery system.