AbstractID: 9574 Title: Intercomparison between Nucleatron Plato and Simuplan systems for HDR brachytherapy treatment planning

Purpose: To compare two commercial TPS systems for 2D HDR planning. **Materials and Methods:** The Nucletron Plato System (NPS) version BPS13.7 is a well established TPS for Brachytherapy procedures and has been used clinically for more than 20 years. New softwares have been released for 2D and 3D calculation using new optimization methods. In this work we intercompare the dose at prescription points calculated by the NPS and by Simuplan Planning System (SPS) version 8.2d, with the same dwell position times. The input data for both systems was done minimizing the geometric error in the final reconstruction. Plannings were done in both systems for several configurations, varying the length of active path (point source, 2, 3, 4 and 5 cm). For each active path calculation distances were changed from 10 to 30 mm from the catheter). The same prescription points were defined in both systems. The optimized plans were generated with the SPS system, adjusting the dwell times aiming a maximum dose difference around ±2% among the prescription points. The total treatment time was verified by manual calculation. The dwell times obtained by SPS system were input into NPS system, to compare the dose at the prescription points. The error at the source and points coordinate positions was evaluated for both systems. **Results and Discussion:** The dose difference at the prescription points, changing the active length ranged from 0.24% to 0.66%. Keeping the length fixed and varying the treatment distances, these differences ranged from 0.25% to 0.65%. The overall average difference was 0.45%±0.19%. The error in positioning the source and the points was 0.21 mm for SPS and 0.61mm for NPS. All the manual calculations were within ±5% difference.