**Introduction**

In a technologically advanced society, Medical Dosimetry is a field which encourages advancements in treatment planning. The purpose of this clinical study is to investigate and compare manually generated prostate Volumetric Modulated Arc Therapy (VMAT) plans versus automated generated VMAT plans utilizing Pinnacle 9.10. The variables measured throughout this study are dose constraints, coverage of target structures, and planning time.

**Methods**

- Twenty previously irradiated prostate cancer patients
- Sample size included intact prostate and prostatectomy cases
- Prescription dose was 7800 cGy over 39 fractions to the PTV, which included the prostate and seminal vesicles.
- Constraints for PTV, bladder, rectum, and femoral heads contours that were previously defined by the physician were input into the template for optimization.
- All patients were optimized using VMAT SmartArc algorithm. 6 MV photon beams with two partial arcs had an initial clockwise gantry angle of 148-212, and a second counter-clockwise gantry angle of 210-150.

**Results**

The following figures illustrate differences between auto-planning and manual planning for isodose distribution, mean percent differences of OARs, target homogeneity, monitor units, and planning time.

**Conclusions**

The results demonstrated there was not a substantial increase in treatment planning time efficiency utilizing the auto-planning technique. Furthermore, there was a negligible difference in the dose to organs at risk and target homogeneity between both treatment techniques.

Although the auto-planning technique provided an optimal starting point, it required planner intervention to accomplish 100% dose to target structures while maintaining the ALARA principle. Future studies could include manipulation of the advanced tools within the auto-planning algorithm to determine possible advantages over manual planning.

**References**