

AbstractID: 13934 Title: Comparison of two different implementations for Volumetric Modulated Arc Therapy

## **Purpose**

Volumetric Modulated Arc Therapy (VMAT) is an efficient and effective way to plan and deliver IMRT treatment. There are different implementations of this technique depending primarily on the equipment capabilities. In this investigation, we explore the differences and the equivalence of two such implementations, namely the Rapidarc and the Smartarc from Varian and Philips respectively.

## **Material and Methods**

In this study we report on the treatment planning differences between two VMAT implementations for several patients that were planned with two different RTP systems. The plans included several different anatomical sites and were developed for a Novalis TX machine with the high definition MLC as well as a Varian 2100C/D with the millennium 120MLC. Pinnacle version 9.0 with smartarc and Eclipse version 8.6 were used for this planning study.

## **Results**

Twelve patients were planned with both planning systems for either the Novalis or the 2100C/D linac, depending on the anatomy treated and the size of the target volume. The plans were evaluated based on a comparison of region of interest dose statistics, including the min, max and mean dose as well as dose volume histograms and adherence to prescribed dose volume objectives. In most cases, the plans produced from each RTP system were equivalent both in dosimetry as well as in total treatment planning time and time to deliver the plans.

## **Conclusions**

Two popular implementations of VMAT were compared in this planning study. Based on our findings, there is no significant difference between the quality of plans produced by either planning system in terms of ease of planning, time required to develop a plan and dosimetric equivalence of the plans we developed.