

## AbstractID: 10983 Title: Calculation of delivered dose from Calypso tracking data: and subsequent evaluation of reasonable treatment interruption Tolerance Limits

**Purpose:** Calypso is a recently introduced prostate positioning technique which can be used to localize and track prostate position during radiation therapy. In this study the composite delivered dose based on daily Calypso tracking-data-stream and different tolerance limits were calculated.

**Method and Materials:** All IMRT treatment plans were calculated using Corvus treatment planning system. Two IMRT plans which have PTV margins of 5mm and 3 mm were computed for a prostate cancer patient. Composite doses for 22 fractions were computed based on daily Calypso tracking-data for both plans. Composite doses based on Calypso tolerance shifts were computed for two tolerance levels: 5mm and 3mm. For each level, composite doses for eight combinations of tolerance shifts were computed. The maximum, mean, minimum doses for CTV, PTV, bladder and rectum were recorded. The volumetric coverage of CTV, PTV, bladder, and rectum for 100% and 95% prescription dose were calculated, along with that of bladder and rectum for 65Gy and 40Gy.

**Results:** Composite doses based on Calypso tracking-data-stream for both 5mm and 3mm PTV margins were similar to the original plan. The difference of maximum, mean, and minimum doses for CTV, PTV, bladder, and rectum was less than 1.3%. The volumetric coverage difference of CTV, PTV, bladder, and rectum for 100% and 95% prescription dose was less than 1.1%, as was of bladder and rectum for 65Gy and 40Gy. For 5mm PTV margin, the prescription dose coverage of CTV volume for composite dose of eight combinations of tolerance shifts for both 3mm and 5mm was over 99.5%. For 3mm PTV margin, that coverage was 98.6% and 88.6% for 3mm and 5mm composite shifts respectively.

**Conclusion:** A realistic prediction of delivered composite dose can be calculated using tracking-data-stream provided by Calypso. Calculated composite doses were agreed with the planed doses.