

Purpose: To compare the accuracy of the RadCalc (LifeLine Software) IMRT plan verification module to the MapCHECK (Sun Nuclear) IMRT Treatment Plan verification system.

Methods: A group of 47 patients were randomly selected to compare the accuracy of the two methods of IMRT verification. IMRT treatment plans were created using the Eclipse treatment planning system (Varian Medical Systems) Version 8.6. For the MapCHECK, a verification plan was created in Eclipse and all beams were calculated with one gantry and collimator angle and exported to the MapCHECK software. The plan was delivered to the MapCHECK device using a Varian 21EX. The data sets were compared in the MapCHECK software with a percent difference of 3% and a distance to agreement of 3mm. For the RadCalc software a calculation point was added to the plan, the plan was approved and exported to RadCalc. The plan was then calculated within the RadCalc software Version 7.0. MU's for all fields were examined and the percent difference for the calculation point was reviewed.

Results: Both methods were utilized on all selected patients and the results then compared. The MapCHECK data sets averaged a percent difference of 1.27% from the planned dose with an average of 99.29% of the points passing. The RadCalc data sets averaged a percent difference of 1.05%.

Conclusions: It was determined that the RadCalc IMRT verification module can be directly substituted for the MapCHECK IMRT Treatment Plan verification system with no loss in verification accuracy. The RadCalc module provides equivalent plan verification for smaller plan size (i.e. under 20.0 cm x 20.0 cm), while providing superior results for large field IMRT due to the field size limits inherent to the MapCHECK device.