

AbstractID: 10739 Title: Changes in clinical practice due to electron Monte Carlo implementation

**Purpose:** To identify changes in target coverage when clinical practice advances from the GGPB algorithm to the electron Monte Carlo algorithm in Eclipse. **Method and Materials:** Sixteen patients were planned with electron Monte Carlo. Prescriptions were set to cover percentage of target volume, as clinically acceptable by the physicians, on a case by case basis. Dose volume histogram coverages were noted for PTV and CTV, where applicable. MUs were recorded. The same plan was run with GGPB. Prescription point and line was set to achieve similar dose volume histograms to the electron Monte Carlo plans. Dose volume histogram coverages were noted for PTV and CTV, where applicable. MUs were recorded. The MU derived from the GGPB model were used to calculate an "inverse electron Monte Carlo" plan, namely a plan using the electron Monte Carlo algorithm but calculated with fixed MUs, as they were calculated from the GGPB. Dose volume histogram coverages were noted for PTV and CTV, where applicable. MUs were recorded. **Results:** The inverse electron Monte Carlo plans give a representative image of clinical practice before the electron Monte Carlo clinical implementation. The overall target coverage was significantly less than previously thought while using the GGPB. This trend increases with the increase in angle of incidence and is more prominent for angles  $> 15$ degrees. Further study is necessary in order to evaluate the effects of inhomogeneity. **Conclusion:** The use of electron Monte Carlo leads to increasingly better tumor coverage. The MUs used are also increasing in the range of 4%-13%, in order to achieve the true desired coverage.