

AbstractID: 1194 Title: Dosimetric difference of two linacs for an IMRT plan - can IMRT treatment change from one linac to the other of the same vendor

We investigated the dosimetric difference of an IMRT plan delivered at a linac other than the planned one (using the Eclipse system.) Same number of MUs with exactly the same segmented treatment table (STT) was delivered for each beam in the second machine. This study is to investigate whether the IMRT treatment can be quickly switched to a different machine if the planned machine is down or other reasons. In this institution, we have seven machines for IMRT treatments: three 2100C/D machines with 80-1cm leave, three 2100EX machines with 120 leave (40-0.5cm leave plus 20-1cm leave for each bank.), and one 2100C/D machine with 52-1cm leave. This study was conducted among all seven machines. Contradicting to the intuitive that IMRT treatment can not be simply switched to a different machine, we find that the switch is allowed, at least for one or two fractions, to a machine of same MLC leaf width or thinner. The dosimetric difference (point dose, 2D dose distribution...) is less than 3%. We tested plans with different beam energies (6X, 18X, or 6+18 plans), different segmentation techniques (step and shoot, sliding window), for different treatment sites. Verification of the machine switch was also conducted by measuring the point dose, the 2D dose distribution and fluence map using films. For thinner to thicker MLC plan switch, more errors were pronounced, largely because of the interpolation to the fluence map, especially at the edge leaves.