

AbstractID: 13358 Title: A new technique to measure orthogonal dose distribution in phantom for IMRT QA with Gafchromic EBT2 film

Purpose: To demonstrate the feasibility of a new technique for patient specific IMRT QA. **Method and Materials:** Two prostate plans with the prescription of 76 Gy (23 initial and 15 boost fractions) were used for this study. The dynamic MLC fields planned by Eclipse 6.5 were delivered to QA phantom by Varian Clinac 21EX. To measure the dose distribution on the coronal plane, a film (Gafchromic EBT2, ISP) placed on coronal plane of isocenter in the phantom was exposed by all fields with the planned gantry angles. For sagittal plane measurement, film was still placed on the coronal plane in the phantom and irradiated by all fields with adding 90 degrees to planned gantry angle. It is because the phantom has a 90 degree rotational symmetry shape. The coronal and sagittal dose distributions in the phantom were calculated by Eclipse (AAA 7.5.18) without any modification. The exposed films were scanned by an EPSON V700 scanner. The films were analyzed using the MapCHECK software (Sun Nuclear Corporation), which uses the red channel for film analysis. Dose distributions were analyzed using 3%/3 mm criteria and 10% threshold. The planar dose distributions obtained with the film was normalized to the center of axis which is Farmer chamber dosimetry measurement was made. MapCHECK were used for each filed QA as a reference. **Results:** The average pass rate of initial and boost plan of case #1 were 98.1 % and 99.7 % by film, 94.2 % and 94.0 % by MapCHECK (MU weighted), for case #2, 95.8 % and 98.7 % by film, 92.0 % and 96.1 % by MapCHECK. **Conclusion:** These results attest to the usefulness of the new technique for patient specific IMRT QA. We are applying this QA technique to VMAT QA.