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Photon dose distributions between 3D-water phantom and Profiler2 scanning system

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Abstract content
 (Max 300 words)

In this study we aim to determine whether a Profiler2 scanning system can be used as a substitute for 3D-water phantom used during commissioning of linear accelerator. All the measurements were performed with 6 and 15 MV photon beams generated by Elekta Synergy linear accelerator. Percentage depth-dose and beam profiles were measured for the 6×6, 10×10, 14×14, 20×20 and 25×25 cm² field sizes defined at 0.5, 1.0, 2.0 and 5.0 cm in 3D-water phantom and Pespex. Dose distributions compared well within recommended limits with the maximum difference in symmetry of 1.6%, flatness of 2.5 mm, penumbra of -12.11 mm, which was outside the recommended limit of 12 mm, and PDD10 of 1.69%. The results of validation of both 3D-water phantom and Profiler2 scanning system with modeling of data using XiO TPS system, showed an agreement within 1%. The results showed the suitability of the profiler2 scanning system for commission of linear accelerator.

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