

Purpose: Implementing the AAPM TG-43 protocol for ^{125}I dosimetry parameters including anisotropic function $F(r,\theta)$ on a commercial and an in-house developed treatment planning systems.

Materials and Methods: Point calculations were performed for a single ^{125}I (Model 6711) seed at different locations along the source axis and its bisector using the two treatment planning systems with TG-43 and in-house measured dosimetry parameters. Intercomparisons were also made using hand calculations.

Results: Intercomparisons of TG-43 and in-house system indicate a difference of 18% to 15% between 1 cm to 5 cm from the source along its bisector and 13% to 0% between 1.5 cm to 5 cm from the center of source along its axis. Anisotropic correction using TG-43's anisotropic function $F(r,\theta)$ and anisotropic constant (ϕ_{an}) results in a difference of 166% to 62% between 1 cm to 5 cm along the source axis and 7% along the bisector of the source.

Conclusion: After implementing the TG-43 protocol, we recommend to lower the prescription dose by 14% (i.e. from 150 Gy to 130 Gy minimum peripheral dose) in order to maintain the continuity and consistency with previous prescriptions at our institution. Since the vast majority of the seeds maintained the same orientation as the needles for prostate implants with preloaded needles, the anisotropic function $F(r,\theta)$ (instead of ϕ_{an}) should be used for dosimetry evaluations.