TG43 dose calculations require direct calculation of the geometry factor, $G(r,\theta)$, along with evaluation of radial dose and anisotropy function values by linear interpolation at each point of interest. However, because of the complexity of $G(r,\theta)$ evaluation, direct use of the TG43 scheme is too slow for clinical treatment planning. To speed up dose calculation, our implementation uses TG-43 to precalculate a 2D lookup table based upon a modified polar coordinate system. 2D linear interpolation on this grid is then used to evaluate the dose contribution of each source of a multiple-seed implant to each point in the dose distribution grid. The purpose of this work is to evaluate the errors introduced by applying linear interpolation to the precalculated array compared to direct TG-43 calculations as a function of interstitial source (125I, 103Pd, 192Ir) and array characteristics. Interpolated and directly-calculated dose rates were compared for a uniformly spaced grid of 10,000 calculation points. Maximum errors approached 3% at distances of 2 to 3 cm, near the source bisector. 90% of the grid points showed errors below 1%. Errors are most sensitive to the angular spacing of calculation points in the lookup table. The best tradeoff between 2D linear interpolation accuracy and limited precalculated array size required nonuniformly spaced polar angles and finer radial spacing near the source.

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