Purpose: To evaluate the characteristics of new thin 125I source Model 9011 in prostate implants and compare the dosimetric coverage between Model 6711 and 9011 sources.

Methods: TG43 parameters of Model 9011 125I source were entered into a commercial treatment planning system to generate the new dose distributions in two patients who were originally implanted with Model 9011 thin sources but calculated with Model 6711 125I source data. Additionally, the Model 9011 source data were also used in randomly selected 16 prostate patients who were originally implanted with the model 6711 sources. The results of these calculations are compared side by side in the terms of the isodose covering 100% (D100) and 90% (D90) of prostate volume, and the percentages of volumes of prostate, bladder, rectum and urethra covered by 200% (V200), 150% (V150), 100% (V100), 50% (V50) and 20% (V20) of the prescribed dose as well.

Results: The comparisons show that with the source strength suggested by Model 6711 source data, D100 would lower by 7% if Model 9011 source data are used. The percentage of volumes covered by different percentages of prescription dose (V200, V150, V100, V50 and V20) for prostate, bladder, rectum and urethra are also found to have changed significantly, in some cases up to 80% change could be expected.

Conclusions: The differences of dosimetric characteristics between Model 9011 and 6711 sources are too large to be simply neglected. An oversimplified use of Model 6711 source data for Model 9011 source implant will create significant error in dose calculation. The source strength of Model 9011 source should be increased by 7% if the calculation is based on the 6711 source data and the same dose coverage is pursued. It is concluded that actual TG43 data of model 9011 thin seed should be used in treatment planning systems.