Purpose: In this project, the Patterson-Parker Table has been updated for Cs-137 and Ir-192 sources using their recent TG-43U1 dosimetric data. In addition, dose uniformity for the different loading schemes as a function of implant area has been verified.

Methods: The updated Paterson-Parker tables have been generated for planar implants with Cs-137 and Ir-192 sources using their published TG-43U1 dosimetric parameters. Accuracies of the updated tables were examined by two independent methods, namely, Monte Carlo simulation technique and using a commercially available treatment planning system. In addition to the dose values along the central axis of the implant, dose profiles along two orthogonal directions have been evaluated for selection of the optimum radioactivity distribution in each implant geometry.

Results: The results of these investigations show that for the same implant size the mg.hr required for delivery of a given dose with Cs-137 is not identical to that of Ir-192. In addition, some differences between the updated Table and the published Paterson-Parkers Tables have been observed. Independent Monte Carlo simulations and treatment planning data for multi-seed implant indicated the accuracy (less than ±5%) of the updated Table.

Conclusions: This work gives complete updated Paterson-Parker Tables for two of the commonly utilized brachytherapy sources. For delivery of a given dose, significant differences (approximately 35%) have been observed between the traditional Paterson-Parker Table and the updated Tables. These differences are attributed to the differences of tissue attenuation, 2D anisotropy functions as well as the availability of the new source dosimetry.