

AbstractID: 9659 Title: A linear source table for determination of treatment times for cylindrical applicators used for high dose rate brachytherapy

It is a good practice for quality assurance purposes to check the high dose rate brachytherapy (HDRBT) source dwell times obtained from the computerized treatment planning system by independent hand calculations. The purpose of this project was to create a table for the determination of total dwell times for cylindrical applicators used for HDRBT for gynecological cancer. The results of an earlier investigation¹ by Monte Carlo simulations of dose rate per unit source strength at different distances from the microSelectron-HDR Ir-192 source were used to prepare this table. The relative weights for dwell times were taken from optimized plans from the PLATO Brachytherapy Planning System from Nucletron Corporation. This table gives the product of source strength and total dwell times to deliver 1000 cGy at various distances. The table was prepared for applicator lengths ranging from 1 to 8 cm and for prescribed distances of 1 to 2.25 cm. One can use this table to determine the total dwell time necessary to deliver the prescribed dose at a specific distance for the source strength at the time of treatment. This can be compared with the total dwell time calculated by the computerized treatment planning system. This table makes the determination of total dwell time very easy, and would help the clinical physicist to double-check the accuracy of results of the treatment planning system quickly.

¹ G. M. Dasklov, E. Loffler, and J. F. Williamson, "Monte-Carlo aided dosimetry of a new high dose – rate brachytherapy source", *Medical Physics*, 25, 2200-2208 (1998).