

EVALUATION OF A TOTALLY INTEGRATED CT-SIMULATOR-TREATMENT PLANNING SYSTEM FOR ACCURACY AND EFFICIENCY

A totally integrated CT-simulator-treatment planning system combines the necessary CT dataset acquisition, the virtual simulation, and the 3-D treatment planning of the dataset in one singular session at the time of simulation. The accuracy and efficiency of such a system was evaluated using the recommendations of TG23 Report 55 of the AAPM. Profiles, output factors, tray factors, and transmission factors were collected for a 6 MV and 18 MV beam. Data was transferred from the 3-D Computerized Water Phantom to the ACQPLAN System. Measured data was collected as described in TG23 Report 55 of the AAPM and then compared to generated values using the system. Measured values of TMR's, percent depth doses, profiles, output factors, and monitor units were compared to computed values. Results were within 2.0% or 2mm for all values. The accuracy of the totally integrated CT-simulator-treatment planning system has been verified. The system has been found to be clinically useful and allows the possibility of patient dose evaluation during the initial patient simulation session. The efficiency of the system manifests itself in several ways. There is less dataset manipulation as all work is performed on one system. Time spent in preparation of patient data for treatment is decreased since there is no data transfer or duplication of dataset preparation processes. Purchase of an all-in-one system maintains the highest accuracy and efficiency available for patient data handling through CT Simulation combined with 3-D treatment planning.