AbstractID: 1413 Title: Rethinking Total Body Irradiation (TBI) at Duke University Medical Center (DUMC)

Since 1992 we have treated > 400 TBI patients at DUMC using an opposed lateral technique with 4 MV photons, at a distance of 280 SSD for a variety of hematological malignancies and inherited disorders. The typical prescribed regimen was 13.5 Gy at midline in 9 fractions over 5 days, with a dose rate between 10 and 15 cGy/min. Brass compensators were used to homogenize the prescribed dose and limit the lung dose to 10 Gy. The remodeling of the department, which included the construction of a new accelerator vault housing a Clinac 21EX, prompted us to consider whether to continue using our existing lateral technique or switch to an AP-PA technique. Important factors considered were dose-rate, dose homogeneity, pulmonary toxicity, patient comfort, applicability for both pediatric and adult patients, set-up time and reproducibility in patient positioning. To determine the effectiveness of our lateral technique we reviewed 150 patients treated in the last 3 years. The average dose rate was 12.5 ± 1.03 cGy/min., with an average dose homogeneity of 3.8 ± 3 %. No pulmonary toxicity was reported. We decided to continue using the opposed lateral technique with 6 MV at 475 SSD, with a ½ " acrylic spoiler to increase the dose in the build-up region and allow for some skin sparing. The use of 15 MV for adult patients to improve dose homogeneity is being addressed during commissioning.