Total body irradiation (TBI) techniques often include shielding placed in front of the patient to limit lung dose. It has been observed that the Transmission Factor (TF) for these shields has a dependence on the distance between the block and the patient. To study this effect, blocks of varying sizes (6x6 cm$^2$, 10x10 cm$^2$, 16x16 cm$^2$, and 22x22 cm$^2$) were placed at distances ranging from 2 to 20 cm anterior to a water phantom. Beam energies of 6 MV and 18 MV were used and data was collected in our TBI geometry with a small 0.125cm$^3$ ion chamber positioned in the water phantom. It was found that for a 6 MV beam and a 6x6 cm$^2$ block, a 6% decrease in the TF results when the block is moved from 2cm to 20cm from the front of the phantom. A 10% decrease was found using a 22x22 cm$^2$ block. Furthermore, in an identical analysis, the changes in TF when using an 18 MV beam were 7% and 10%, respectively. Results of this work demonstrate the importance of consistent block/patient setup for TBI, as well as consideration of patient thorax thickness since the distance from the attenuator to thorax surface may vary from patient to patient. Further investigation will include studies of the dependence of TF on field size, as well as an analysis of the above mentioned effects in the dose build up region.