

## APPLICATION AND DOSIMETRY FOR BILATERAL OPPOSED IRRADIATED TECHNIQUE OF TOTAL BODY IRRADIATION

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**Purpose** : In an attempt to shorten patient setup time and increase setup reproducibility, we developed a supplemental system for a bilateral opposed technique of total body irradiation. We completed the dosimetry study and beam data measurement for clinical application.

**Materials and Methods** : A small-size water phantom, (35 cm (L) × 35 cm (W) × 37 cm (H)) with a lateral Mylar window, built in a farmer type chamber, was used for this measurement. The measurement was performed with 6 MV photon at 270° gantry angle, 45° and 135° collimator angle with maximum field size, and at 400 ~ 500 cm source-phantom distance. The measured items were dose rates, beam profiles, percent depth dose, and transmission factors for both tissue compensator and beam spoiler.

**Results** : The ratio of percent depth doses at 10 cm and 20 cm depth within 400 ~ 500 cm SSD was 0.5%. The flatness of beam profiles was within (5% under the same conditions. The dose output ratios were also measured for clinical treatment. We measured the attenuation coefficient for the compensator material. Besides, we found that a 1 cm thick Lucite screen at 10 cm from the patient was enough to build up the surface dose.

**Conclusions** : Our bilateral opposed technique for total body irradiation can achieve more comfortable and reproducible levels than that of conventional anterior/posterior technique. There is an advantage of using the arms of patients to shield the lungs, and it can reduce the lung dose effectively. Although this technique is not new, it can be a choice of total body irradiation.

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Key words: Total body irradiation, Bone marrow transplant, Lung dose