

AbstractID: 8414 Title: The effect of clothing on the skin dose during 6 MeV Total Skin Electron (TSE) irradiation

**Purpose:**

To determine what effect allowing the patient to wear various articles of clothing might have on the dose delivered to the patient during 6 MeV high dose rate total skin electron therapy.

**Method and Materials:**

Total skin electron (TSE) radiotherapy delivers a dose of radiation to the total body using electrons to treat the shallow region affected by mycosis fungoides, a cutaneous T-cell lymphoma, while sparing deeper tissues. A Rando phantom was placed in the treatment position. Thermoluminescent dosimeters (TLDs) were placed at strategic locations on the phantom. The phantom was dressed in various outfits and surface dose measurements were made. These outfits included (1) fully dressed: t-shirt, sweatpants, underwear and bra, (2) underwear and bra, (3) bra with underwire, (4) hospital gown, and (5) no clothing.

**Results:**

When compared with the measurements taken with no clothing, the fully dressed phantom results in a maximum difference of 22.0 cGy at the sternum, and a minimum difference of 0.1 cGy at the center back. Dressed in underwear and bra, the maximum difference from the unclothed measurements was 13.9 cGy at the underwear tag on the waistband and the minimum was 2.7 cGy at the sternum. The underwire bra resulted in a decreased dose of 12.3 cGy. Finally the hospital gown showed only 1 cGy of maximum difference at the stomach center, a difference of 0.2 cGy at the center back, and no difference in measurement under the tied knot.

**Conclusion:**

The hospital gown, made of thin cotton, had a minimal impact to the surface dose received. A patient could wear a similar garment during treatment without significant therapeutical impact. All other outfits tested resulted in a greater difference in skin dose, which may make such outfits undesirable for wear during treatment.