

**Purpose:** Recently, two infants presented with leukemia cutis requiring total skin electron irradiation (TSEI). This work discusses the commissioning and quality assurance (QA) methods for implementing a modified Stanford technique using a rotating harness system to position sedated pediatric patients treated with electrons to the total skin.

**Method and Materials:** Commissioning consisted of absolute dose calibration, measurement of dosimetric parameters, and subsequent verification in a pediatric patient sized cylindrical phantom. The depth of dose penetration under TSEI treatment condition was evaluated using radiographic film sandwiched within the phantom. Custom made equipment, including a rotating plate and harness, was added to a standard total body irradiation stand and tested to facilitate patient setup under sedated condition. A pediatric TSEI QA program consisting of daily output, energy, flatness, and symmetry constancy measurements, and in-vivo dosimetry was developed.

**Results:** Phantom measurements demonstrated a 2 cm penetration with the maximum dose located at the phantom surface. Dosimetry measurements with the cylindrical phantom and *in-vivo* measurements from the patients demonstrated that the factor relating the skin and calibration point doses was larger for pediatric TSEI treatments when compared to adult treatments. *In-vivo* dosimetry for the first two infants demonstrated a dose of  $\pm 10\%$  of the prescription dose is achievable over the entire patient body.

**Conclusion:** Though the need for pediatric TSEI is rare, the ability to commission the technique on a modified TBI stand is appealing for clinical implementation and has been successfully used for the treatment of two pediatric patients at our institution.