

**Purpose:**

Beam penumbra, symmetry, flatness and surface dose have been measured for the Equinox cobalt-60 external beam therapy system using both source to surface distance (SSD) and source to axes distance (SAD) setups.

**Method and Materials:**

All data were measured using a 100 cm Equinox teletherapy unit manufactured by MDS Nordion. This newly designed unit features asymmetric jaw capability and has a source to diaphragm distance of 50 cm. The unit was installed with a 2.0 cm diameter C-146 source. Beam data were measured using a Scanidtronix / Wellhofer Blue Phantom water tank equipped with a p-type Silicon detector (PFD3G) or a CC13 ion chamber. OmniPro Accept software, version 6.2, was used to manipulate the data and to calculate penumbra, flatness and symmetry according to IEC 976 definitions. Surface dose measurements were independently confirmed with GafChromic film and MOSFETs.

**Results:**

Percent depth dose measurements were compared to BJR Supplement 25 data with good agreement for field sizes up to 12x12 cm and reasonable agreement for larger field sizes and depths. Relative surface dose measurements indicated that the IEC 60601-2-11 criteria of 90% for the maximum field size may be exceeded when an 80 cm SSD setup is used. Beam flatness, symmetry and penumbra parameters have changed little from previously manufactured units and are reported for square field sizes ranging from 1 cm to 40 cm.

**Conclusion:**

This investigation demonstrates that the beam characteristics of the Equinox unit do not differ significantly from previous units. In order to reduce surface dose to IEC stated levels; it is recommended that an electron filter be utilized on the 80 cm machine for field sizes exceeding 900 square cm.

**Conflict of Interest (only if applicable):**

MDS Nordion provided financial support for this project.