

AbstractID: 4755 Title: Electron Beam Dosimetry using a Computed Radiography System

Purpose: To investigate the ability of the Kodak 2000RT computed radiography (CR) system to accurately measure electron beam isodoses.

Method and Materials: The Kodak 2000RT CR reader and Agfa MD-10 CR plate were used to measure electron beam dose distributions and the results were compared to EDR2 film. The film was scanned by a Vidar dosimetry Pro scanner. The CR plate or film was oriented either perpendicular or parallel to the electron beam. Electron energies of 6, 12, and 20 MeV were used, delivered by a Varian 2100C. Field sizes of 4x4, 10x10, and 25x25 cm square were used. Calibration of the CR plate or film was performed with perpendicular and parallel irradiation techniques for comparison. Calibration curves as a function of beam energy and field size were compared between CR and film.

Results: The CR system was able to reproduce electron beam isodoses spatially within 2mm of those from film. CR is very sensitive and easily demonstrates the x-ray contamination beyond the range of the electrons. CR dose response differences were found between parallel and perpendicular irradiation geometries but little difference as a function of energy or field size.

Conclusion: The Kodak 2000RT CR system is capable of accurately measuring dose distributions from electron beam irradiation.

Conflict of Interest (only if applicable): This work was supported by Eastman Kodak.