

AbstractID: 3413 Title: CORVUS IMRT Film Dosimetry Using Novel GafChromic EBT Film

**Purpose:** To evaluate the new EBT GafChromic film for IMRT relative and absolute film dosimetry and to investigate its application for IMRT QA.

**Method and Materials:** EBT GafChromic film (ISP, Wayne, NJ) was compared with EDR2 (Eastman Kodak, Rochester, NY) for IMRT treatment planning QA. The IMRT QA procedure was described previously (1). The IMRT treatment plans were generated on a Corvus (Nomos, NAS, Cranberry Township, PA) treatment planning system for a 25 cm x 25cm x 25cm phantom, using a 23MV photon beam (Siemens, Primus 23). The planning isodose distribution was compared with the measured isodose distribution in the transverse plane that included the isocenter. Film dosimetry was performed using a Vidar VXR-16 Dosimetry Pro scanner (Vidar, Herndon, VA) and RIT 113 (Colorado Springs, CO) software. Contour MSKCC software was used for dose overlays.

**Results:** The EBT film scanning intensity on the Vidar scanner depends on film scanning direction. The intensity difference is 13%-20% between scans of the same film rotated by 90°. For film dosimetry this requires the H&D curve films and QA films to be scanned in the same direction. The isocenter dose difference between dosimetry in each direction is up to 2%, mixing scanning directions can cause a dose difference of 30%. The difference in dose value at the isocenter between the plan and EBT film was 1.6%-5.1%.

**Conclusion:** The EBT provides quantitative 2D dose measurements in high gradient rapidly changing IMRT fields and has dosimetry accuracy comparable with EDR2. The film scanning direction is critical for absolute dose evaluation.

**Conflict of Interest:** The EBT film for this research was provided by ISP Corporation.

1. M Kao *et al.* Using Conventional Solid Water Phantom for IMRT Patient Treatment Quality Assurance, Med. Phys. 30, 1495 (2003) (Abstr.)