

## AbstractID: 6905 Title: EPID Portal Dosimetry for IMRT Validation

### **Purpose:**

To evaluate portal dosimetry using EPID as an alternative method for patient specific IMRT pre-treatment verification. Dose profiles obtained using EPID and EDR2 film are compared and analyzed.

### **Method and Materials:**

A total of 40 fields from patients' IMRT plans were retrospectively analyzed. 35 of which were planned with 23MV and 5 fields with 6MV. Hybrid plan was created using Eclipse TPS for each patient. All fields were measured using EPID and EDR2 film at gantry angle of 0°. Film was placed transversely into a solid water phantom at the depth of 10.3cm. EPID imager was set to 105cm.

Dose profiles for all fields were compared.  $\gamma$  index proposed by Low D.A. *et al* was used to quantify the disagreement between measured and planned dose distributions. Criteria used for  $\gamma$  index was set at 3%/3mm. To exclude the data outside of treatment fields, only dose higher than 20% of maximum dose was included for calculation.  $\gamma$  values were grouped with different dose ranges and averaged for both and EPID and EDR2 film.

### **Results:**

Both EPID and EDR2 film data show good correlation between measured and planned dose. Average  $\gamma$  value was  $0.63 \pm 0.03$  for EPID and  $0.61 \pm 0.03$  for film dosimetry. It is statistically insignificant between the results from EPID and EDR2 film using 6MV and 23MV. However, a significant difference of  $\gamma$  index for the dose less than 40% of maximum dose ( $p < 0.05$ ) is observed using EPID and EDR2 film.

### **Conclusion:**

Use of EPID to measure IMRT pre-treatment QA appears a comparable result to film dosimetry. In advent of digital imaging, EPID dosimetry would be a quick and easy alternative for IMRT planning verification.