

**AbstractID: 11510 Title: Using EPID images to verify the dose delivered from 3D conformal or step-n-shoot IMRT fields**

**Purpose:** The electronic portal imaging device (EPID) has particular advantages as a dosimeter such as high resolution, large detection area, real-time acquisition capability and linear dose response. The doses from 3D or IMRT fields can be verified by the images acquired on EPID. This study demonstrates a calibration and calculation method to verify the doses from 3D conformal or step-and-shoot IMRT fields.

**Method and Materials:** To use EPID for dosimetric purpose, a series of calibrations images would need to be acquired. The uniformity of the dose response, dose linearity, and field size dependence were measured and the results were used to correct the subsequent clinical measurements. A few 3D conformal and step-and-shoot IMRT fields were delivered directly to EPID. The pixel values were calculated to project the delivered doses and the images were processed to determine the MLC positions. The ion chamber measurements were also performed to be the benchmark of delivered dose.

**Results:** The dose accuracy of this method was investigated by comparing the ion chamber to EPID results. The MLC positions from EPID images were compared to the treatment plans.

**Conclusion:** There are some basic corrections needed when the EPID is used for dose measurements. By applying the proposed method, the MLC positions and delivered doses from 3D conformal or step-and-shoot IMRT fields can be verified with EPID images.

**Conflict of Interest (only if applicable):** None