AbstractID: 2207 Title: Applications of EPIDs for IMRT QA

Measurements are an essential part of commissioning and routine QA for an IMRT program. Such measurements are typically done with ion chambers, film, and other detectors in water equivalent phantoms and can be very time consuming. Electronic portal imaging detectors offer the potential to replace film for some routine QA measurements and individual pre-treatment QA. EPIDs offer the advantage of a known geometry with respect to the linear accelerator. Electronic data acquisition can save time and allow for immediate comparison of measurements to calculations with appropriate software. The types of EPIDs that have been investigated for IMRT applications include CCD camera systems coupled to phosphor screens, scanning liquid ion chamber (SLICs), and active matrix flat panel imagers (AMFPIs). Initial investigations with EPIDs for dosimetry have focused on relative 2-D measurements. The methods for evaluating an acquired image with respect to other detector measurements and calculations will be discussed for each system. The role of EPIDs in a QA program will be discussed along with their limitations. For EPIDs to be used routinely at many centers, additional software must be developed and verified against standard measurement methods.

Educational Objectives:

1. To review potential applications of EPIDs as part of an IMRT QA program
2. To review advantages and disadvantages of EPIDs including energy dependence
3. To outline software needs for robust use of imaging systems for QA