

Quality assurance in radiation therapy delivery during patient treatments utilizing model based portal dose images from the EPID.

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There are many different aspects of quality assurance in the radiation therapy clinic, including personal responsibility, equipment, reference data, and patient specific measurements. Various AAPM task groups have set up protocols and standards for quality assurance in radiation therapy. The utilization of EMR with a record and verify systems have reduced the potential of medical errors in our daily practices. Yet the questions still arises on how do we prevent medical errors and how do we accurately measure patient's treatments? Dosimetric verification of radiation therapy is crucial when delivering complex treatments like IMRT, VMAT or SBRT. Pretreatment verification, characterized by various methods applied without the patient present and before the treatment start date is typically carried out at most centers. In-vivo dosimetric verification, characterized by methods applied with the patient present in the treatment position, is not commonly carried out in the clinic. A review of the clinical processes from commissioning, planning, treatment delivery to dosimetric verification will be presented. Focus will be on a model based EPID dosimetry method that can be used routinely in the clinic for in vivo patient treatment verification and reproducibility.