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Evaluation of a Planar Diode Array for Verification of IMRT Delivery

For a busy department, efficient verification of patient deliveries is critical to the successful implementation of IMRT. The current standard for evaluation of planar dose distributions is film, such as Kodak's EDR2, usually placed horizontally in a water equivalent phantom and irradiated with the patient's planned delivery recalculated to the phantom geometry. Film dosimetry is generally time and resource inefficient, and may be subject to significant errors in departments where electronic portal imaging is commonly used.

One alternative to film dosimetry is the use of a diode array (MapCHECK, Sun Nuclear Corp., Melbourne, FL). We are investigating the use of such a device for the validation of IMRT treatments. However, use of such a device requires special techniques for planning, calculation and delivery of the surrogate treatments to a phantom in order to provide a reliable validation of the original plan. In this presentation, we will compare the use of film vs. diode array for a number of clinical cases, showing the advantages of each method.