AbstractID: 14493 Title: TG-104: In-Room kV Imaging for IGRT

In-room kilovoltage (kV) x-ray imaging refers to radiographic imaging using kV x-ray sources in the radiation treatment room. It has been widely accepted for radiotherapy target localization and treatment intervention. Task Group 104 (TG 104) reports on the various in-room systems which are commercially available using one or more kV imaging modalities. Several distinct systems, including rail-track-mounted systems, ceiling/floor-mounted systems, and gantry-mounted systems, have been made commercially available, each with unique capabilities, limitations and levels of operational complexity. A hybrid system is also introduced, which combines two different mounting systems. In this presentation, we will provide 1) an overview of the principles and challenges for treatment verification; 2) an overview of system description, image guidance applications, and performance for in-room systems based on both projection and tomographic imaging; 3) brief description of future development. The TG-104 report also provides an overview of the issues related to effective implementation of these systems for routine clinical procedures. General guidance is made for appropriate acceptance testing and quality assurance of these systems for safety, image quality and data management.

The objectives of this session are

a) Understand the current existing kV x-ray systems used in the radiation treatment room, including system configurations, specifications, operation principles, and functionality.
b) Understand the principles and challenges for treatment verification.
c) Understand current clinical application methods about how these systems could be used to improve treatment accuracy and their limitations.
c) Understand issues related to effective implementation of IGRT in the routine clinical procedures as well as quality assurance.