AbstractID: 11966 Title: Fluoroscopic Imaging Equipment: Guidelines for Detector Input Dose Settings and Image Optimization

Abstract
Modern fluoroscopy imaging equipment is designed to simultaneously monitor x-ray generator parameters, detector exposure rate, contrast-to-noise ratio, and x-ray tube loading. Under programmed control, fluoroscopy systems automatically make adjustments to the parameters controlling x-ray production, beam filtration, detector signal output, digital image processing, and image presentation. Any means intended to reduce patient dose should be implemented in a way that preserves image quality.

For the clinical medical physicist, optimization of fluoroscopic equipment performance begins with an understanding of the variable system parameters, and the identification of the trigger points for changes in these parameters. Secondly, an understanding of how system parameters affect each other, affect image quality, and affect patient dose can lead to better choices in how the system should be set up for specific applications.

A necessary requirement is an understanding of what detector input dose one should expect with an image intensifier fluoroscopy system, and how the detector dose should change when a flat panel detector is utilized. It is also necessary to understand how operational settings on the equipment can obviate superior detector performance as determined by detector type and metrics. This presentation will use imaging examples from installed systems to explore these issues. Also, a clear, concise guideline for determining the appropriate fluoroscopy detector input dose rate for both image intensifier and flat panel detectors will be presented.

Educational Objectives:

1. Provide an understanding of modern fluoroscopic imaging system component design and functionality
2. Determine the appropriate fluoroscopy detector input dose rate for image intensifier and flat panel detectors
3. Describe specific ways in which equipment settings can enhance or detract from optimum performance.