

AbstractID: 10782 Title: Patient Exposure vs. Scattered Radiation to the Operator of Fluoroscopy

Purpose: To evaluate and identify which of the two following conditions is better for the patient and the fluoroscopist. **Circumstance:** During radiation safety in-services, various questions are raised by the fluoroscopists pertaining to the radiation received by both the patient and the physician. One such question; "is it better to employ a large field of view (FOV) with collimated radiation field? Or, is it better to use the magnified mode FOV". The underlying question here is "what is the patient entrance exposure" as opposed to "how much scattered radiation dose the fluoroscopist receives" under these two different operating conditions while the irradiation geometry is the same. The answer to this question is actually a lot more complex than it appears. There are few factors involved, as will be shown, namely; (1) "better" to whom, (2) dependent on whether it is equipped with an image intensifier or a flat panel image receptor and (3) the automatic dose rate control logic of the equipment. **Method and Materials:** In this study, three different types of fluoroscopy systems were selected for investigation of patient entrance exposure and scattered radiation to the fluoroscopist. They are; a cardiovascular angiography system, a conventional fluoroscopy system and a mobile C-arm fluoroscopy system. The patient entrance exposure and the scattered radiation at the location where the fluoroscopist stands are measured as functions of varying phantom thickness under the same irradiation geometry. While the irradiation geometry may be the same, the fluoroscopic automatic dose rate control logic may not respond in the same manner under the conditions of (a) the large FOV with collimated radiation field, and (b) the magnified mode FOV. **Conclusions:** The preliminary data showed both expected and unexpected results. The findings should of great interests to the fluoroscopists and medical physicists alike. Detailed analysis will be presented.