Abstract ID: 18168   Title: A Study to Compare Operator Dosimeter Exposure Versus Fluoroscopic Time and Air Kerma in Fluoroscopically Guided Interventional Procedures

Purpose: The total effective dose equivalent limit for occupationally radiation exposed persons has remained at 50 millisieverts per year since the 1960s. There is ongoing discussion whether this limit should be lowered. Whether or not it is lowered, all facilities have to adhere to the principle of ALARA (as low as reasonably achievable). In a hospital environment, the workers who typically have exposures which result in ALARA investigations having to be performed include interventional radiologists, cardiologists, and mobile C-arm operators. At our institution there are a limited number of interventional radiologists with one person being responsible for performing the majority of the procedures and sometimes exceeding the ALARA investigational levels.

Methods: A limited study was performed to compare the number, type of studies, cumulative air kerma, and fluoroscopic time versus the exposure measured by the personnel dosimeters worn by the radiologists. This was also related to the type of angiographic equipment in use.

Results: The length of fluoroscopic time and cumulative air kerma and cumulative DAP appeared to be related to the higher exposures received by the operator. The number of procedures performed did not correlate with the personnel dosimeter exposure; rather it was the type and complexity of a study and the length of fluoroscopic time that was related.

Conclusion: The number of ALARA investigations required has decreased gradually. This could be attributed to several factors. These include increased use of available safety items. With an increase in the number of interventionalists the work load is distributed more equitably. The purchase of new angiographic equipment has resulted in better image quality and more shielding options for the operators. The operators are periodically reminded to keep fluoroscopic time to a minimum and use appropriate settings on the equipment. The equipment is calibrated to provide adequate image quality at mid-dose settings.