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Novel Catheterization Laboratory Radiation Protection System Eliminates Need for Personal Lead Aprons

Keywords: Occupational Health and Safety, Radiation Safety

Background: Interventional Cardiologists are exposed to occupational health hazards related directly to radiation exposure and indirectly to the orthopedic burden of wearing only partially protective lead aprons. Innovations to reduce these risks are warranted.

Methods: A commercially available comprehensive lead shielding system (ProtegoTM, Image Diagnostics Inc, Fitchburg, Ma), consisting of an upper shield suspended from a floor-based pedestal, a lower shield attached to the table and interlocking soft drapes, which together achieve a complete radiation barrier (Figure 1). We recorded scatter radiation doses to the primary operator during consecutive clinical cases utilizing this lead shielding system.

Results: Pre-clinical laboratory testing by the State of Michigan certified the ProtegoTM shield provides protection sufficient to allow an Interventional Cardiologist to operate without personal lead aprons. Clinical data in 98 cases documents a mean radiation dose of 0.71 mrem per case. Extrapolating to annual exposure levels, based on these data an Interventional Cardiologist performing 400 cases per year would be exposed to only 5.7% of the maximum allowable annual radiation per the ALARA guideline (5000 mrem/annum). The umbrella of radiation shielding from this device also provides protection to ancillary staff (nurses and technicians).

Conclusions: Utilization of the ProtegoTM shield has potential to reduce direct and indirect Catheterization Laboratory occupational health hazards.

References:

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Speakers email

maher.rabah@beaumont.edu

Speakers affiliation

Department of Cardiovascular Medicine, Beaumont Hospital Royal Oak, Royal Oak, Michigan, United States of America

Name of Member State/Organization

United States

Primary author: Dr RABAH, Maher (Beaumont Hospital)

Co-authors: Dr ABBAS, Amr (Beaumont Hospital); Dr DIXON, Simon (Beaumont Hospital); ALLEN, Sorcha (Beaumont Hospital Royal Oak)

Presenter: Dr RABAH, Maher (Beaumont Hospital)

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