

Lowering Radiation Exposure Levels in the Catheterization Laboratory

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Background: Cardiologists who work in cardiac catheterization laboratories are exposed to ionizing radiation that could pose a health hazard. The dosages that Interventional Cardiology are exposed to, are the highest ones registered among medical staff using x-rays.

Aim: To decrease this exposure using a multi-disciplinary approach.

Methods: At baseline, the individual monthly dose of all staff was retrieved and recorded in an electronic datasheet. The readings were presented to each member of the staff. In the unit's scientific meetings, a dedicated series of lectures on this topic was held, methods for protection, "how to" sessions and emphasis on the hazards of radiation. A radiation technician was positioned inside the cath and was responsible for on-line correct usage of safety protection equipments and proper X-ray utilization. To experience real-time radiation exposure, a Geiger counter was used with high volume giving audio information to the operator. Meetings dedicated to radiation practice and follow-up level exposure, were held once a month. The graphic information assisted in the comparison to previous readings and allowed information regarding trends, as well as regarding the personnel not wearing radiation exposure badges. The information and trends were discussed in the unit's scientific meetings, and points for improvement were highlighted.

Results: The highest radiation was seen among the primary operator physicians. The exposure was decreased by 10-40% according to attending [$p < 0.05$, figure]. The dosage was much smaller for non-physician personnel.

Conclusions: Interventional Cardiologists, either treating the coronaries or doing electrophysiology procedures, are likely to receive high radiation exposure that can be significantly decreased using a multi-factorial approach, which includes information, education, close follow up of exposure levels to the operator and graphic description and real time correction of X-ray protection and practice.

