Evaluation of patient doses and lens radiation doses to interventional cardiologists in a nationwide survey in Chile

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Abstract

The objective of this study was to perform a nationwide survey in Chile to determine dose levels to patients and staff in four risk scenarios during cardiac catheterisation procedures. Different phantom thicknesses of polymethyl methacrylate (PMMA) were used to simulate adult patients. Scenario 1: 10-min fluoroscopy and 800 cine frames for 20 cm of PMMA; Scenario 2: 10-min fluoroscopy and 800 cine frames for 28 cm of PMMA; Scenario 3: 30-min fluoroscopy and 2400 cine frames for 20 cm of PMMA; Scenario 4: 30-min fluoroscopy and 2400 cine frames for 28 cm of PMMA. The average values regarding dose–area product and scattered doses at the cardiologist eye lens achieved for the four scenarios were 94, 249, 281, 747 Gy cm2 and 0.3, 0.8, 0.9 and 2.5 mSv, respectively. Large variations in radiation doses received by both patients and staff for the same type of procedure suggest that optimising procedure protocols and using the most effective types of protective devices may substantially reduce the dose values found here..