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Use of a modern cardiac catheterisation laboratory greatly reduces radiation dose during structural interventions

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Objectives: To compare the radiation dose incurred during common cardiac structural interventions between an old cardiac catheterisation laboratory and its replacement in the same institution. To provide guide values for radiation emitted during common structural interventions.

Methods: A retrospective review of common structural interventions in patients aged up to 18 years at a large congenital cardiac centre between 2000 and 2009. The radiation emitted for each common structural intervention as a group was compared between an old catheterisation laboratory (era one) and its state-of-the-art replacement (era two). Radiation dose was controlled for operator seniority, fluoroscopy time, patient age and study year. Natural log transformations were applied to radiation dose and fluoroscopy time.

Results: The total number of structural interventions was 760. The latter era was associated with a dramatic decrease in unadjusted radiation dose for all interventions, this finding persisting after multivariate adjustment. All procedures showed a reduction in radiation dose of at least 71% ($p < 0.001$). There was no decrease in fluoroscopy time between the eras.

Conclusions: Use of up-to-date hardware in the catheterisation laboratory plays a vital role in minimising radiation dose. We provide guide values for the radiation dose for common interventions.