
Children's Environmental Health Research Findings
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Topic: Radiation exposure of children from CT scans

Title: Paediatric CT examinations in 19 developing countries: frequency and radiation dose.

Conclusion: There is a need in many developing countries to justify CT examinations in children and their optimization.

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Abstract: The aims of this study were to investigate the frequency of computed tomography (CT) examinations for paediatric patients below 15 y of age in 128 CT facilities in 28 developing countries of Africa, Asia and Eastern Europe and to assess the magnitude of CT doses. Radiation dose data were available from 101 CT facilities in 19 countries. The dose assessment was performed in terms of weighted CT dose index (CTDI(w)), volume CT index and dose length product (DLP) for chest, chest (high resolution), lumbar spine, abdomen and pelvis CT examinations using standard methods. The results show that on average the frequency of paediatric CT examinations was 20, 16 and 5 % of all CT examinations in participating centres in Africa, Asia and Eastern Europe, respectively. Eleven CT facilities in six countries were found to use adult CT exposure parameters for paediatric patients, thus indicating limited awareness and the need for optimisation. CT images were of adequate quality for diagnosis. The CTDI(w) variations ranged up to a factor of 55 (Africa), 16.3 (Asia) and 6.6 (Eastern Europe). The corresponding DLP variations ranged by a factor of 10, 20 and 8, respectively. Generally, the CTDI(w) and DLP values in Japan are lower than the corresponding values in the three regions in this study. The study has indicated a stronger need in many developing countries to justify CT examinations in children and their optimisation. Awareness, training and monitoring of radiation doses is needed as a way forwards.

Policy Implications: Need to train staff to change from adult to child exposure parameters when a child is undergoing CT in order to reduce

radiation to the child.

Keywords: radiation, computerized tomography