



EuroSafe Imaging

CHILDREN IN FOCUS

Medical Radiation Protection of Children

www.eurosafeimaging.org

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ESR EUROPEAN SOCIETY
OF RADIOLOGY



RADIATION PROTECTION OF CHILDREN IS DIFFERENT FROM ADULT RADIATION PROTECTION – WHY?

Paediatric radiology is a subspecialty of radiology concerning the accurate and appropriate imaging of childhood disease, a key component of which is safety.

- Children are more vulnerable to x-rays than adults due mainly to increased radio-sensitivity and a longer lifespan after exposure. Thus, protection from potentially cancer inducing radiation is even more important in children.
- Sensitive organs of children are closer to each other and not easy to exclude from the x-ray field.
- Differences in body composition lead to reduced image contrast in children as compared to adults.

► **It is essential to carefully and individually plan paediatric radiological procedures.**

RADIATION PROTECTION OF CHILDREN – WHAT AND HOW?

Every effort should be made to keep the dose as low as reasonably achievable, while trying to maintain the best possible image quality when performing radiologic examinations.

- Communication about benefit and risk with paediatric patients as well as their carers is an essential component of medical care.
 - The information provided should be centred on the clinical benefit and the impact of the procedure on the patient's outcome.
 - Patients, parents and caregivers must receive the information they need in a way they can understand.
 - Tailored information is essential to support the dialogue.
 - Guidance and templates for imaging professionals are important.
- Shielding of radiosensitive organs must be ensured at all times.
- Examinations/procedures should be justified.
 - Imaging referral guidelines should be available and used for paediatric patients.
 - ESR iGuide, the European Society of Radiology's clinical decision support tool, offers separate guidance for children, including 320 indications with 2,465 scored decision rules.
- Examinations/procedures should be optimised.
 - Paediatric protocols and settings are of utmost importance for optimised examinations/procedures.

EUROSAFE IMAGING'S WORK TO IMPROVE RADIATION PROTECTION OF CHILDREN

- Paediatric protocols need to be available on the equipment in use.
- Protocols for children of different ages need to be set up.
- Dose reference levels (DRLs) should be used.
 - It should be assured that the dose used does not exceed the dose necessary for an image of adequate diagnostic quality.
 - Regular comparison of dose levels to DRLs is recommended by the European Commission and the IAEA.
- Adequate imaging equipment and modern technologies to be used.
 - New technology to reduce dose should be used in paediatric radiology, e.g. special image processing tools, modern detectors, dose management software etc.
 - The adequacy of radiological equipment for paediatric imaging has to be ensured; modifications may be necessary during the installation of the device.
 - Pre-installed protocols for standard examinations should be tailored to paediatric patients.
 - Protocol parameters should have the broadest range of settings to adapt protocol parameters to the size of the child.
- Education and training of health professionals dealing with imaging of children are essential.
 - All team members (radiologists, radiographers, medical physicists) should undergo regular training in radiological protection and the correct usage of available imaging equipment.
- Continuous monitoring of dose parameters and imaging practices through clinical audit and other monitoring practices is essential.

- Working Group on Paediatric Imaging - the mission of this group is to promote and improve radiation protection in paediatric radiology by increasing awareness of these issues amongst imaging professionals, through the production of guidance and tools.
- Ask EuroSafe Imaging - a dedicated paediatric imaging subgroup regularly produces paediatric Tips & Tricks publications to help imaging professionals with common issues concerning the radiation protection of children. Patient information is also produced.
- Research - EuroSafe Imaging is involved in research into subjects concerning paediatric radiology, such as radiation-induced cancer risk.
- EuroSafe Imaging also collaborates with WHO (World Health Organization) & IAEA (International Atomic Energy Agency) and other professional organisations.

To find out more about EuroSafe Imaging's work, visit
www.eurosafeimaging.org

If you are interested in joining our work, please email us at
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Further reading

- EuroSafe Imaging, Tips & Tricks for paediatric imaging.

Available at: <http://www.eurosafeimaging.org/ask-eurosafe-imaging/tips-tricks/paediatric-imaging>

- European Diagnostic Reference Levels for Paediatric Imaging (PiDRL).

More information available at: <http://www.eurosafeimaging.org/pidrl>

- WHO, Communicating radiation risks in paediatric imaging.

Available at: https://www.who.int/ionizing_radiation/pub_meet/radiation-risks-paediatric-imaging/en/

- IAEA RPOP, Radiation protection of children in radiology.

Available here: <https://www.iaea.org/resources/rpop/health-professionals/radiology/children>

- IAEA, Radiation Protection in Paediatric Radiology.

Available here: <https://www.iaea.org/publications/8727/radiation-protection-in-paediatric-radiology>

- The Image Gently Alliance.

More information available at: <https://www.imagegently.org/>

EuroSafe Imaging

EuroSafe Imaging is the European Society of Radiology's flagship initiative for promoting quality and safety in medical imaging. The mission of EuroSafe Imaging is to support and strengthen medical radiation protection across Europe following a holistic, inclusive approach.



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