



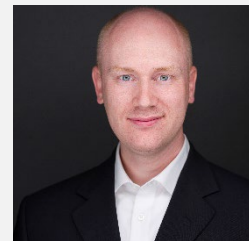
# Pediatric Medical Imaging: Why You Should Care and How We Can Do Better

**Appropriate pediatric imaging is a critical consideration, given the heightened sensitivity of children to the potential harmful effects of radiation. The fundamental mechanisms behind radiation's impact on living tissue make developing organs and tissues more sensitive to radiation. This sensitivity leads to a higher risk of DNA damage, which can result in increased cancer risk, emphasizing the need to minimize radiation exposure to "As Low As Reasonably Achievable" (ALARA).**

Several challenges persist in optimizing pediatric imaging. Both healthcare providers and parents may lack awareness of the risks associated with radiation. Providers may not account properly for the lifetime stochastic risk, leading to excessive imaging procedures, and parents may consent to tests without a full understanding of the risks. Moreover, a lack of standardized dose levels for pediatric imaging results in significant variation in the radiation doses administered, which is unacceptable given the heightened risk for children. Furthermore, protocol mapping is essential for identifying examinations that exceed dose thresholds. Incorrect mapping can result in the application of the wrong threshold, leading to both unnecessary alerts and the overlooking of examinations that should trigger alerts. This concern will be further compounded as healthcare institutions broaden their scope from dose monitoring to encompass comprehensive quality monitoring, in accordance with the recently introduced CMS quality measure. Consequently, the effectiveness of a radiology quality improvement initiative is intrinsically tied to the quality of its protocol mapping.

One reason behind these issues is that healthcare providers may have limited training and practice with pediatric imaging. Children represent a smaller portion of the patient population, leading to underrepresentation and a lack of standardized practices. This is akin to the well-documented problem of lower standards of medical care for underrepresented populations. The solution lies in raising awareness and improving education and practices specific to pediatric patients.

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To address these issues, we must focus on several key principles:

1. **Justification:** Ensure all imaging on children is necessary and clinically justified.
2. **Optimization:** Adjust radiation output appropriately with patient size and keep it as low as reasonably achievable while obtaining diagnostic images.
3. **Pediatric Protocol Standardization:** Standardize imaging protocols for pediatric patients to ensure consistent minimal radiation doses.
4. **Education and Training:** Provide healthcare providers with proper education and training in pediatric imaging and radiation safety.
5. **Collaboration and Communication:** Collaborate with radiologists and medical physicists to ensure the safest imaging procedures for children, and inform parents about radiation risks.
6. **Alternative Imaging Methods:** Using lower-dose modalities or non-radiographic imaging, such as ultrasounds, before resorting to higher-dose methods like CT scans.
7. **Tracking and Monitoring:** Establish systems for tracking radiation dose levels and monitoring exposure in children over time.

Imalogix, for example, has incorporated the Imalogix Pediatric Performance Report, which evaluates CT imaging in pediatric patients and provides insights into areas needing improvement, including technical parameters and exposure risks. By adhering to these recommendations and focusing on awareness and education, healthcare providers can reduce pediatric radiation exposure, making medical imaging procedures safer and more effective for our youngest patients. The "Image Gently" campaign offers resources and guidelines to promote radiation safety in pediatric imaging.