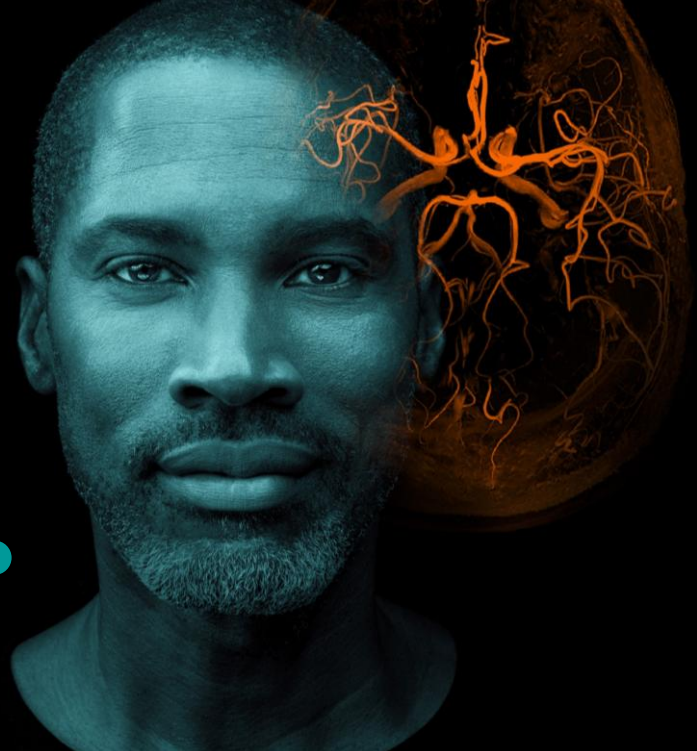
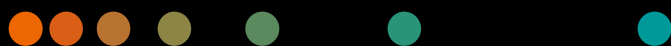


# Efficient Radiation Dose Management and Workforce Optimization in Pediatric Imaging



## The Importance of Radiation Dose, Management in Pediatric Imaging

Radiation exposure in pediatric imaging is a critical issue due to children's increased sensitivity to ionizing radiation. Unlike adults, children's developing tissues and longer life expectancy make them more susceptible to potential long-term effects, such as an increased risk of radiation-induced cancers. Therefore, optimizing radiation doses in pediatric imaging is a primary concern for healthcare providers and regulatory bodies worldwide.

A common challenge in pediatric radiology is the incorrect application of adult imaging protocols to children. These protocols often result in unnecessarily high radiation doses. Studies indicate that the use of adult protocols for pediatric patients has historically been as high as 30% in certain medical facilities. However, with the implementation of automated dose monitoring solutions, such as *teamplay Dose*<sup>2</sup> healthcare providers were able to eliminate this issue, reducing misapplied adult protocols to 0%.<sup>1</sup> This advancement highlights the significance of dose tracking technologies in ensuring compliance with pediatric imaging standards and enhancing patient safety.

Moreover, monitoring radiation dose exposure helps healthcare institutions meet safety standards set by organizations such as the International Atomic Energy Agency (IAEA). [1] These standards emphasize the "as low as reasonably achievable" (ALARA) principle, which aims to minimize radiation exposure while maintaining diagnostic image quality. Institutions that implement advanced dose tracking tools not only improve patient safety but also streamline workflow

efficiency by reducing manual dose calculations and compliance reporting efforts.



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## Challenges in Radiation Dose Adjustment in Pediatric Radiology

In pediatric radiology, it is essential to adjust radiation doses based on children's size, body proportions, and heightened sensitivity to radiation. Despite the ALARA principle, established in 1912 to minimize radiation exposure, a 2012 survey by the IAEA found that over half of pediatric CT scans fail to adequately adjust radiation doses for children. [1] This lack of proper dose adjustment increases the risk of long-term health problems, such as leukemia or brain tumors, especially after head CT scans. Additionally, children require specialized equipment, as their smaller size and different body composition require larger, faster, and more powerful machines to provide clear images. However, the closure of many pediatric radiology departments has made it increasingly difficult for professionals to receive the necessary training, limiting the

growth of specialists in this field and reducing career opportunities for those interested in pediatric radiology. [2]

## The Role of Leapfrog in Pediatric Radiation Dose Monitoring

Leapfrog [3] is an organization committed to improving the safety, quality, and affordability of U.S. health care through transparency. By collecting and reporting data, Leapfrog rates hospitals based on their performance in preventing medical errors, accidents, and infections.

The implementation of *teampay Dose* at Catawba Valley Medical Center exemplifies how hospitals can meet Leapfrog's stringent requirements in a more efficient way. **Initially, the institution found that pediatric imaging protocols were followed correctly only 70% of the time. However automated dose tracking and performance monitoring tools led to a 10–15% reduction in average patient radiation dose within three months.**<sup>1</sup> This achievement underscores the impact of structured dose monitoring programs in enhancing protocol adherence and reducing variability in radiation exposure.

Additionally, Leapfrog's standards require hospitals to submit radiation dose data regularly, ensuring transparency and continuous quality improvement. By leveraging digital tracking systems, institutions can automate data collection and reporting processes, significantly reducing administrative workload while maintaining high standards of patient care.<sup>1</sup>

## Optimizing Workforce Efficiency with Data-Driven Insights

Beyond radiation dose management, hospitals also face challenges in workforce allocation and operational efficiency. In many healthcare settings, peak imaging times are difficult to predict, leading to either understaffing during busy hours or overstaffing during slow periods.

With tools like *teampay Usage*, hospitals gain real-time insights into equipment utilization, patient flow, and imaging demand. **At Catawba Valley Medical Center, this data-driven approach enabled the CT department to increase its patient throughput by 60% per month (from 1400 to 2300 exams) over the course of three years.**<sup>1</sup>

Furthermore, this justified additional full-time equivalent (FTE) positions for peak hours between 4 PM and 6 PM, ensuring better patient access and reducing wait times.<sup>1</sup> By optimizing staff deployment based on real-time usage patterns, hospitals can improve both, operational efficiency and patient satisfaction.

## Conclusion

Implementing advanced radiation dose tracking and workforce management solutions can have a profound impact on (pediatric) imaging safety and hospital efficiency. Technologies like *teampay Dose*<sup>2</sup> can support compliance with pediatric radiation standards, significantly reducing the misapplication of adult imaging protocols. Furthermore, automated monitoring tools can simplify compliance with Leapfrog's rigorous safety standards, enhancing institutional transparency and accountability.

By integrating data-driven workforce management tools such as *teampay Usage*<sup>2</sup>, hospitals can optimize staff allocation to align with patient demand, ultimately improving both healthcare efficiency and patient care outcomes. As radiation dose management continues to evolve, adopting these innovative technologies will be key to ensuring safer and more effective imaging practices.

## Disclaimer

- <sup>(1)</sup> The results by Siemens Healthineers customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g. hospital size, case mix, level of IT adoption), it cannot be guaranteed that other customers will achieve the same results.
- <sup>(2)</sup> teamplay is not commercially available in all countries. If the services are not marketed in countries due to regulatory or other reasons, the service offering cannot be guaranteed.

## Sources

- International Atomic Energy Agency (IAEA): [IAEA Aims to Reduce Unnecessary Child Radiation Doses | IAEA](#) [1]
- Healthcare in Europe: <https://healthcare-in-europe.com/de/news/abc-der-kinderradiologie-recht-auf-bildgebung-steigt-nicht-mit-koerpergewicht.html> [2]
- The Leapfrog Group: <https://www.leapfroggroup.org/mission-history> [3]

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