

"Am I X-Ray ready?": How a multidisciplinary radiology project supports the sustainability ethos of a quaternary neonatal intensive care unit.

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Background: Advanced neonatal care has increased the survival rate of extremely premature, complex cardiac and surgical babies; however, during their prolonged stay in intensive care they are exposed to unavoidable, repeated radiation. Unfortunately, poor quality images or knowledge gap of the relative indications for neonatal imaging can lead to further radiation exposure.

Method: In liaison with the local lead radiographers and radiologists, we decided on a technical protocol prior to imaging to ensure good quality. We agreed on reviewing X-Rays taken for Central Venous Catheters position (CVC), Endotracheal Tube confirmation (ETT) and suspected Abdominal pathology; these cases had the most repeat images. We reviewed 50 X-Rays of each category which were taken in different days. We implemented quality improvement interventions: bedside and formal teaching sessions in both departments, posters and a neonatal radiology guide.

Results:

799 repeat images were taken from July- September 2022 in 55 admitted infants with long term stay (mean: 14.5/ infant).

Group A (CVC group): 46% of images were correctly aligned.

Group B (ETT): 44% of images had head in neutral position.

Group C (Abdominal images): 36% were correctly aligned.

Total of 56% of images had artefacts.

After implementation of changes, 522 repeat images were taken between January- March 2023 in 48 infants (mean 10.8/ infant).

Group A: 62% of images were correctly aligned.

Group B: 60% of images had head in neutral position.

Group C: 60% were correctly aligned.

Artefacts dropped in 42% of images.

Conclusion: Radiation exposure and cost were significantly reduced with a 34.6% drop in repeat images.

CVC related repeat X-Rays and cost remained unchanged (approximately 40% of all radiographs), highlighting the importance of considering education on point of care ultrasound (POCUS) in the confirmation and monitoring of line tip position. The team's work will be included in the Unit's guidelines.