Dose Reduction Project “Jelly vs Foam “Intraoperative Imaging Positioning Aid Optimisation"

Initiative Type

Service Improvement

Status

Close

Added

07 February 2020

Last updated

10 October 2021

URL

https://test.clinicalexcellence.qld.gov.au/improvement-exchange/dose-reduction-project-jelly-vs-foam-intraoperative-imaging-positioning-aid

Summary

The project team managed to improving image quality and intraoperative imaging doses through the use of optimised positioning aids. Vinyl-covered foam positioning aids were implemented in the

operating theatre to replace the use of dense jellies and saline bags. The team was able to mimic the size, shape and density of the jellies with help from the surgeons to create the foam sponges.

Key dates

Jul 2017

Jun 2019

Implementation sites

Queensland Children's Hospital

Partnerships

Partnerships between departments at the Queensland Children's Hospital (Biomedical and Technology Services, Medical Imaging and Nuclear Medicine and Operating Theatres)

Key Contacts

Hannah Bonaventura

9220

william.vanheerden.ced

Radiographer

Childrens Health - Queensland Children's Hospital

07-30683012

Hannah.Bonaventura@health.qld.gov.au

Aim

To educate staff on radiation safety and basic radiation principles to improve understanding around the importance of their choices when setting up for theatre cases requiring intraoperative imaging. Through collaboration with specialities, design an alternative positioning aid which improves image quality and decreases patient doses.

Benefits

Benefit to the patient by reducing the received dose of radiation significantly.

Background

The project's foundation was to optimise image quality and reduce radiation doses to paediatric patients in the operating suite. Previous routine practice in the operating suite had staff using dense jelly positioning aids over anatomy to be imaged by medical imaging staff. These aids reduced image quality and increased the dose to the patient. By working together we were able to get the best of both worlds – an aid that held patients in the required position, did not impact image quality and had a negligible increase in dose to the patient.

Solutions Implemented

Implementation of vinyl covered foam positioning aids in the operating theatre to replace the use of dense jellies and saline bags. We were able to mimic the size, shape and density of the jellies with help from the surgeons to create the foam sponges.
Tested current positioning aids (various jellies and saline bags) to get baseline for image quality and dose rates.
Tested optimised vinyl wrapped positioning aids to replicate initial test and compared results quantitatively and qualitatively.

Evaluation and Results

Evaluated by Radiation Safety Officer and the Medical Physicist.

Lessons Learnt

What did we learn

- Non medical imaging staff had limited knowledge on how dose rates and image quality where affected by outside factors.

Challenges

- Staff on leave, different staff in different roles so didn't have one person overseeing the project and it fell by the waist side at times.
- Original sponges ordered were too soft, compressed too much so staff thought they weren't useful. They didn't communicate this to staff, just stopped using the sponges
- Surgeons needed education to understand the advantages to them and the patient. We found that after this education they were more enthusiastic to use them

Unexpected outcomes

- Multiple specialties keen to utilise and get optimised positioning aids.
- They use these positioning aids now even when not requiring intraoperative imaging
- Best health outcome and service outcomes are achieved by collaboration of partners and ongoing evaluation and improvements

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