False beeps, True alarm

Preliminary results of a project aimed at improving compliance with alarm limits on saturation monitors in a level II NICU

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Introduction and Objectives

Introduction

- Hyperoxiaemia has devasting efforts on babies, particularly preterm babies.

- EOE NOPD has provided a guideline for the neonatal units to follow to help prevent oxygen toxicity in neonates.

Objectives

- To check the compliance of oxygen saturation targets on monitors in the neonatal unit with the standard saturation targets according to gestational age.

- To demonstrate tangible improvement in compliance by running more than one PDSA cycle with an aim to achieve 100% conformity with the established criteria.

Methods

The guideline used for the purpose of this project was the East of England Neonatal ODN guideline

Data was gathered through random point checks performed on monitors in the neonatal unit.

Conclusions

- Setting the correct alarm limits on the saturation monitors will help the babies to maintain saturation in the target range and prevent hyperoxaemia.

- Maintaining correct upper and lower limits on oxygen saturation monitors can often be overlooked by both nursing and medical teams in busy neonatal units.

- Simple interventions like handover reminders, staff education, and stricter shift safety checks were seen to be effective in trying to achieve the aim of 100% compliance with standards.

- However, these measures can tend to be short-lived unless supplemented with more permanent strategies.

References

East of England Neonatal ODN guideline

BMJ, Oxygen saturation targeting in infants on the neonatal unit, Noemi Hughes, Raj Gupta, Agnieszka Nowacka, 30/9/21

Results

PDSA cycle 1

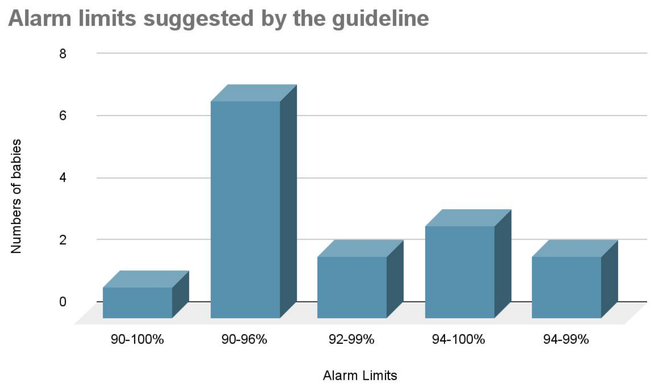
15 episodes were recorded for babies receiving care in the unit during point checks done in the months of April and May 2023.

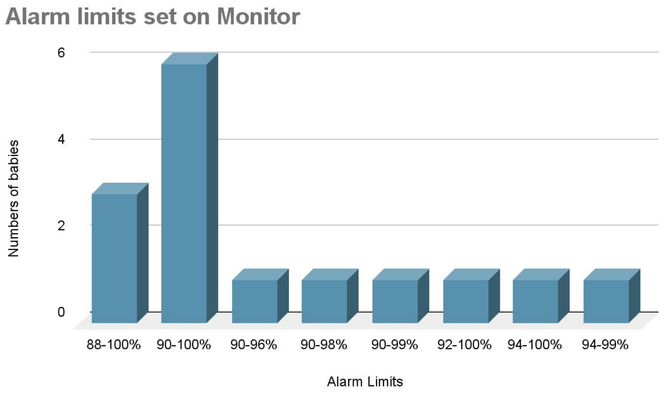
There was very low compliance seen with the EOE ODN guideline with only 19% of saturation monitors found to be adherent with the given standards.

Interestingly, this was seen to translate into a higher corresponding oxygen saturation in babies compared to the target saturation range for their gestational age.

The results were discussed locally and a practice development nurse for the neonatal service was involved.

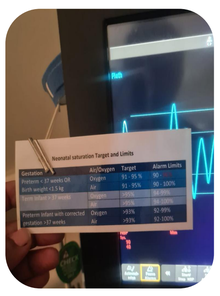
This led to the implementation of various suggested interventions including staff training, handover reminders, attaching laminated sheets of target sats on each monitor and stricter safety checks to improve the conformity standards.





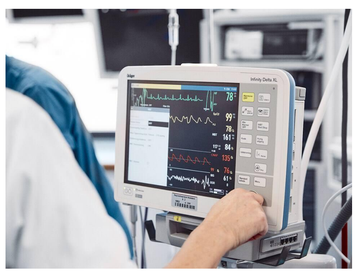
DATA COLLECTION - 1ST CYCLE

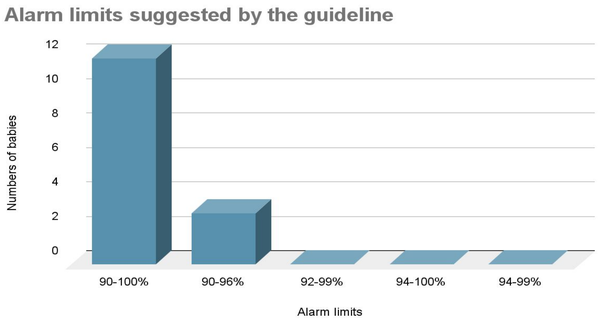
	Alarm limits set on monitor	Alarm limits suggested by the guideline
Baby 1	92-100%	90-96%
Baby 2	90-100%	90-96%
Baby 3	90-100%	90-96%
Baby 4	90-100%	90-96%
Baby 5	90-99%	90-96%
Baby 6	88-100%	90-96%
Baby 7	90-96%	90-96%
Baby 8	90-98%	92-99%
Baby 9	90-100%	92-99%
Baby 10	90-100%	94-99%
Baby 11	94-99%	94-99%
Baby 12	88-100	90-100%
Baby 13	90-100%	94-100%
Baby 14	88-100%	94-100%
Baby 15	94-100%	94-100%

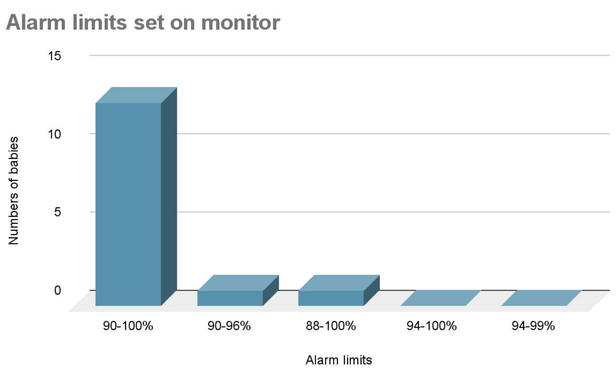


SUGGESTED INTERVENTIONS

1. Staff education
2. Laminated sheets of suggested alarm target in ITU, HDU, and every side room
3. Nursing staff to check the alarm limits at the beginning of the shift
4. Additional checks by medical teams especially in preterm and high risk babies
5. Periodic audits and quality assessments to measure change







DATA COLLECTION - 2ND CYCLE

	Alarm limits set on monitor	Alarm limits suggested by the guideline
Baby 1	90-100%	90-100%
Baby 2	90-100%	90-100%
Baby 3	90-100%	90-100%
Baby 4	90-100%	90-100%
Baby 5	90-100%	90-100%
Baby 6	90-100%	90-100%
Baby 7	90-100%	90-100%
Baby 8	90-100%	90-100%
Baby 9	90-100%	90-100%
Baby 10	90-100%	90-100%
Baby 11	90-100%	90-100%
Baby 12	90-100%	90-96%
Baby 13	90-100%	90-96%
Baby 14	88-100%	90-100%
Baby 15	90-96%	90-96%

PDSA cycle 2

A repeat PDSA cycle was run in 4 months' time to assess the effectiveness of remedial actions taken and to measure changes from the previous practice, if any.

Data was again collected from 15 baby episodes. There was a marked improvement in the compliance seen with 80% of saturation monitors meeting the EOE ODN standards.

However, due to the turnover of the trainee cohort, continuity of these measures could not be ensured. This was reflected in initial results from the data collected for 3rd PDSA cycle which demonstrated a fall in compliance rates to 50%