Temporal quantification of oxygen saturation ranges: an effort to reduce hyperoxia in the neonatal intensive care unit

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Objective:
To reduce exposure to hyperoxia and its associated morbidities in preterm neonates.

Study design:
A multidisciplinary group was established to evaluate oxygen exposure in our neonatal intensive care unit. Infants were assigned target saturation ranges and signal extraction technology implemented to temporally quantify achievement of these ranges. The outcomes bronchopulmonary dysplasia/death, retinopathy of prematurity (ROP)/death, severe ROP and ROP requiring surgery were compared in a pre- versus post-intervention evaluation using multivariate analyses.

Result:
A total of 304 very low birth weight pre-initiative infants were compared with 396 post-initiative infants. Multivariate analyses revealed decreased odds of severe ROP (adjusted odds ratio (OR): 0.41; 95% confidence interval (CI): 0.24–0.72) and ROP requiring surgery (adjusted OR 0.31; 95% CI: 0.17–0.59) post-initiative. No differences in death were observed.

Conclusion:
Significant reductions in severe ROP and ROP requiring surgery were observed after staff education and implementation of new technology to quantify success in achieving targeted saturations and reinforce principles and practices.