Oxygen Management in Very Low Birth Weight Neonates

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BACKGROUND

- Oxygen is the most common drug administered to preterm infants in the NICU.
- Oxygen must be closely monitored to avoid oxygen toxicity which can lead to development of Retinopathy of Prematurity (ROP) and Chronic Lung Disease (CLD).
- If monitor alarms are not set, the high risk infant can receive too much oxygen, placing them at risk for developing oxygen toxicity and complications.
- Nurses in NICU did not consistently set the alarms and maintain oxygen saturation levels within appropriate parameters.
- No standardized care established for an infant on oxygen.
- No standardized plan established to wean a high risk neonate from oxygen.
- Frequent clinical alarms went off in the NICU.

PURPOSE

To establish and maintain standardized parameters for oxygen saturation to ensure high risk neonates receive the appropriate amount of oxygen.

The goal of this project:
- Increase NICU nurse compliance with standardized oxygen alarm parameters for very low birth weight neonates.
- Implement standardized oxygen weaning guidelines in the NICU.
- Decrease oxygen saturation alarms in the NICU to minimize alarm fatigue.

METHODS

- IRR and Performance Improvement committee approval obtained.
- Conducted NICU baseline assessment.
- Interdisciplinary team formed.
- Conducted change readiness assessment for interdisciplinary care team.
- Conducted review of literature.
- Conducted audit of appropriate compliance with alarm parameters with oxygen saturation and nursing response to alarms.
- Developed oxygen weaning guidelines.
- Intervention: Interdisciplinary team regarding importance of alarm parameters and weaning guidelines.
- Measured number of days infants spent on oxygen pre- and post intervention.

RESULTS / OUTCOMES

- Decreased clinical alarms per nurse in 12 hrs. from average 77.5 to 59 alarms.
- Decreased number of days premature infants spent on oxygen from 25/68 to 24/74.
- Implemented oxygen weaning guidelines in NICU for premature infants on oxygen.
- Monitored and maintained oxygen saturation parameters.
- Shares project and corrective feedback.

LOGIC MODEL

- Increased awareness and compliance with appropriate oxygen saturation parameters and weaning guidelines.
- Decreased number of days premature infants spent on oxygen.
- Fewer days that infants in the NICU remain on oxygen.
- Decreased amount of oxygen days.
- Fewer clinical alarms related to oxygen therapy therefore reducing alarm fatigue of caregivers.
- Fewer days that infants in the NICU remain on oxygen.
- Audits show consistent use of weaning guidelines.

SUSTAINABILITY

- Perform routine monitoring of weaning documentation for all infants on oxygen to ensure compliance with appropriate oxygen saturation parameters and weaning guidelines.
- Continue to add oxygen weaning guidelines to all charts in the NICU to facilitate compliance.
- Future plans: Work with physicians to consistently document room air challenge results prior to discharge.

DISCUSSION

This project accomplished the following:
- Developed standardized care for premature infant on oxygen therapy to diminish potential complications.
- Sustained respiratory therapy state they support setting appropriate oxygen saturation parameters and weaning guidelines.
- Fewer days that infants in the NICU remain on oxygen.
- Fewer clinical alarms related to oxygen therapy therefore reducing alarm fatigue of caregivers.
- Audits show consistent use of weaning guidelines.

BENEFICIARIES

- 153 Premature Infants ages 0-5
  - Males: n = 59
  - Females: n = 94
- 650 Neonatal Nurses – low alarm fatigue / EBP
- 52 Respiratory Therapists
- 57 Neonatologists / NNPs / PAs
  - Newborn care

PROJECT TEAM

[Diagram showing project team members and their roles]

NURSING COMPLIANCE ALARM SETTING

- Pre-Study
- Post-Study

CLINICAL ALARMS

- Pre-Study
- Post-Study

PREMATURE INFANTS OXYGEN DAYS

- Pre-Study
- Post-Study