Reducing Alarm Fatigue in the NICU

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Purpose:
- Reduce the number of patient alarms in the NICU & reduce alarm fatigue

Background:
- Advances in neonatal care have resulted in an increase in sophisticated medical equipment. While this equipment has improved NICU outcomes, it has also resulted in a staggering number of alarms, requiring intervention by staff.
- Frequent alarms have been shown to result in alarm fatigue, which can result in slowed or no response to critical notifications and increased morbidity and mortality. With proper staff education & intervention strategies, the number of alarms can be greatly reduced, reducing alarm fatigue & improving patient outcomes.

Methods:
- 63-bed Metropolitan Level IV NICU
- 15-minute pre/post implementation audits in 4 NICU pods:
  - Number of patients in NICU pod
  - Accuracy of alarm parameters
  - Number of audible alarms heard
- Implementation:
  - Staff education- PowerPoint presentation on alarm fatigue & reduction strategies
  - Bedside tip sheets by all monitors with alarm reduction techniques
  - Post implementation staff survey

Results:
- Pre-implementation:
  - 3.15 alarms/patient/hour
  - 65% alarm parameter accuracy
- Post-implementation:
  - 0.67 alarms/patient/hour
  - 93% alarm parameter accuracy

Discussion:
- Staff education is essential to reduce alarm fatigue
- Readily available resources reinforce compliance
- Unit standards for alarm parameters necessary for consistency & safety
- Heart rate- based on gestational age
- Pulse oximetry- based on gestational age & respiratory needs
- False alarms= majority of alarms
- Appropriate prep & placement of ECG leads
- Proper placement & covering of pulse oximeter
- Replace/Maintain equipment as needed

Conclusion:
- By providing staff education and bedside resources, the number of alarms was significantly reduced. This can result in less alarm fatigue and improved patient outcomes.

References:

NICU Alarm Reduction Tip Sheet:

Heart Rate Alarm Parameters:
- 100-200: GA less than 34 weeks
- 90-200: GA 34-37 weeks
- 80-200: GA greater than 37 weeks

Pulse Oximetry Alarm Parameters:
- 89-95%: If FiO2 greater than 21% & GA less than 27 weeks
- 89-98%: If FiO2 greater than 21% & GA greater than 27 0/7 weeks
- 89-100%: If no respiratory support and FiO2 21% (any GA)
- 92-100%: If no respiratory support (any GA)

ECG Leads:
- Verify correct alarm parameters
- Check lead placement
- Clean skin in areas of lead placement with alcohol wipe
- Replace all leads

Pulse Oximeter:
- Verify correct alarm parameters
- Check pulse oximeter placement
- Cover pulse oximeter with foam band
- Replace pulse oximeter
- Provide containment to minimize movement

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