Reducing Pulse Oximetry Alarms in the Neonatal Intensive Care Unit
Gwinnett Medical Center, Lawrenceville, GA
Breanne Bautista, RNC-NIC, BSN and Elizabeth Timberlake, RNC-NIC, BSN, Thomas Cotto, NNP-BC, MSN
Primary author contact: Breanne Bautista, RNC-NIC; bbautista@gwinnettmedicalcenter.org; 678-312-2108
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Background: There is increasing concern for the impact of non-actionable medical device alarms. Medical device alarms have been identified as a major patient safety hazard. Staff working in units with frequent audible alarms may experience alarm fatigue which may reduce responsiveness to alarms. For the NICU, reducing alarms must be balanced with maintenance of patient saturation within the target range. Risk of morbidities such as retinopathy or prematurity and chronic lung disease with high saturations must be balanced with risk of morbidity with low saturations.

Setting: Gwinnett Medical Center’s NICU is a pod style Level III NICU with approximately 800 admissions per year. The NICU houses a transport team and about 55 outborn patients are admitted annually. Hypothermia therapy for hypoxic ischemic encephalopathy, inhaled nitric oxide, high frequency ventilation, and laser eye surgery are done in the NICU. Patients requiring other surgeries or extracorporeal membrane oxygenation are transported to a nearby children’s hospital.

Mechanisms: As part of the Vermont Oxford Network (VON) iNICQ 2015 collaborative on alarm safety we are working to reduce alarms in the NICU and improve our oxygen management. Our pod unit has historically been a “loud” NICU with frequent audible alarms. This has been a safety concern for bedside staff particularly in recent years as we have changes to cardiopulmonary monitors that use the same sound for more than one parameter. Over the last six months we have standardized and simplified pulse oximetry target orders, introduce bedside visual reminders of target ranges and alarm settings, and education staff on the morbidities associated with high and low saturations.

SMART Aim: Reduce pulse oximetry alarms by 20% while not increasing the amount of time patients spend outside of their ordered target range by changing pulse oximetry alarm settings.

Drivers of change:
Primary Driver 1: Educate staff on pulse oximetry
   Secondary Drivers: Standardize and simplify ordered saturation ranges
   Utilize bedside reminders of target range and alarm settings
   Educate staff on morbidities associated with high and low saturations

Primary Driver 2: Balance alarm reduction with compliance to ordered target range
   Secondary Drivers: Measure alarm frequency
   Measure compliance with ordered target range
   Identify pulse oximetry setting that can be modified to reduce non actionable alarms

Methods: A small test of change will be done utilizing one NICU pod that has a max capacity of 8 patients. Two potentially better practices will be implemented. We will extend the pulse oximetry alarm delay from 10 seconds to 15 seconds and set the pulse oximetry alarm limits at 1% above the upper target and 2% below the lower target.

Measures: We will determine the number of pulse oximetry alarms for the entire pod by extracting data on alarms from the central monitor. Data on individual patient saturations will be obtained by “spot check” pulse oximetry measures every 30 minutes to determine how much time patients spend within their ordered range. Baseline measures will be collected for 72 hours prior to the interventions and for 72 hours after pulse oximetry changes are implemented.

Data & Discussion: The trial is currently in process and is anticipated to be completed by Aug 30, 2015.

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