CAN 2019

Abstract Title:

The Premie Project: Reduction in Severe Intraventricular Hemorrhage in Preterm Infants After Implementation of Practice Guidelines in a Level IV Intensive Care Nursery

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Abstract Description:

Background: Extremely premature infants are at high risk for developing intraventricular hemorrhage (IVH) which is a predictor for mortality and morbidity. There is evidence that specific bedside interventions can reduce the incidence of IVH.

Objective: Our aim was to decrease the incidence of severe IVH in extremely low birth weight infants (ELBW, <28 weeks or <1000 grams) with implementation of a care guideline called "The Premie Project" (P2) with an emphasis on evidence-based bedside neuroprotective care.

Methods: The study was set in a 58-bed level IV NICU at an academic children's hospital. A multidisciplinary team of neonatal providers, nurses, and respiratory therapists collaborated to form P2 and actively participated in its implementation. Baseline assessment included review of our unit's data submitted to the California Perinatal Quality Care Collaborative (CPQCC), specifically assessing the rate of severe IVH (grade III or IV) in inborn infants. P2 focused on ELBW babies, but for comparison to CPQCC data we included all infants < 1500 grams. The Unit-Based Leadership Team (UBLT) and P2 committee met monthly to review the rate of IVH, identify areas for improvement, update guidelines and provide bedside feedback.

Intervention: Specific recommendations included a checklist for best practices during resuscitation modeled after the CPQCC Delivery Room Toolkit, guidelines for optimal positioning, adherence to "touch times," active control of environmental stimulation, and minimizing unnecessary handling, avoiding rapid blood draws and flushes, and painful procedures. We included the family in care at all stages and encouraged skin-to-skin care within the first 72 hours.

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Results: The rate of severe IVH for inborn ELBW infants from 4 years before and 3 years after P2 (2012-18, implementation 2016) were compared to CPQCC data of similar patients. Infants with major congenital anomalies were excluded. The average yearly rate of severe IVH was reduced by over half, from 8.1% to 2.9% from 2012-15 and 2016-18, respectively. In the 2 years prior to implementation, our rate of severe IVH was 12.5% and 6.7%, compared to median CPQCC rates of 4.9% and 4.8% in the same years. In the 3 years after, our rate of severe IVH was 4.2%, 4.4%, and 0%, compared to CPQCC rates of 4.3%, 5.1% and 5%. There was no severe IVH in inborn infants in our unit in 2018, showing continued improvement following implementation.

Conclusions: Implementation of an evidence-based care guideline for neuroprotection in the ELBW infant can reduce the rate of severe IVH.