Reducing Intraventricular Hemorrhage Using a Care Bundle

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Background: Intraventricular hemorrhage (IVH) is a significant factor in adverse long-term developmental outcomes of very low birthweight infants. In addition the average cost of an IVH during the initial hospitalization has been estimated at $53,600. Reducing IVH will both improve outcomes and decrease costs.

Aim: Reduce IVH rates and severe IVH rates by 20% in inborn VLBW infants less than 30 weeks gestational age, compared to the rate in these infants in 2012-2013.

Setting: Swedish Medical Center NICU is a 76-bed level 4 unit with 900 admissions per year.

Mechanisms: We will focus on
- Immature germinal matrix: possibly improved by antenatal corticosteroids.
- Changes in cerebral blood flow: affected by delivery room management, early positioning, hypothermia, and rapid fluid infusions.
- Poorly understood association: magnesium neuroprotection

Methods /Interventions:
Our VON team is working to create a standardized care bundle which includes prenatal, delivery room, and NICU practices extending through the first three days after birth to reduce IVH in our NICU by:
- Education of NICU clinical staff on IVH reduction program (completed in June, 2014).
- Assure mothers receive antenatal corticosteroid and magnesium for neuroprotection.
- Delayed cord clamping and prevention of hypothermia in delivery room care.
- Midline head positioning from birth to 72h. Minimal handling and stimulation, no daily weights. Slow fluid infusions if boluses are given.

Measures:
- Outcome Measures: IVH and Severe IVH.
- Process Measures: Antenatal steroid, magnesium, delayed cord clamping, admission temperatures, compliance with neutral head positioning. Each of these is captured in clinical charting.
- Cost Surrogates: # of cranial sonograms, shunt placements, length of stay.
- Balancing Measures: hyperthermia at admission, polycythemia (hct >60).

Results/Discussion: The baseline IVH and severe IVH rates are 24.6% and 7.4% respectively for infants under 30 weeks. Data collection is currently in process after the beginning phases of implementing our IVH reduction care bundle.

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1 Bolisetty, Pediatrics 2014; 133: 55-62.
2 Malusky, Neonatal Network; 30: 381-96.