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Title: Use of Evidence Based Practices Affects Outcome And Difference Between Swiss and US Neonatal Units

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Abstract

Background: The EPICE group associated a more comprehensive use of evidence-based practices (EBP) with a lower relative risk for adverse outcome.

Objective: To analyze the effect of adopting EBP on neonatal outcome in units from the Swiss Neonatal Network (SNN) and from US based units of the Vermont Oxford Network (VON).

Design/Methods: All infants born alive between 25-29 gestational weeks and registered by either SNN or VON in 2012-2014 were included. Delivery room deaths and infants with congenital malformations were excluded. EBP modified from the EPICE study included 1) delivery without restriction on assisted ventilation, 2) administration of antenatal steroids, 3) preference of CPAP over mechanical ventilation in the delivery room, 4) surfactant administration in intubated infants. Adverse outcome combined mortality, necrotizing enterocolitis, late onset sepsis, intraventricular hemorrhage grade 3-4, chronic lung disease or retinopathy of prematurity stages 3-4. Adjusted poisson regression modelling was performed.

Results: 72'606 infants were born at 709 units (of which 1'143 infants were born at 13 Swiss units). The adjusted risk-ratio for adverse outcome at units providing more than 50% of their patients with complete EBP care (cEBP) versus units providing less was 0.87 (95% CI, 0.84 to 0.89). 32.2% of US units provide cEBP versus 80.0% of Swiss units, respectively. The adjusted risk-ratio for adverse outcome at Swiss units vs. US units was 0.64 (95% CI, 0.57 to 0.71). After additionally adjusting for units providing cEBP, the risk-ratio for adverse outcome at Swiss units was 0.70 (95% CI, 0.63 to 0.78).

Discussion: Units providing cEBP have a lower relative risk for adverse outcome. SNN provide more cEBP and have a lower relative risk for adverse outcome than VON. Adjusting for cEBP reduces the difference between SNN and VON. Further work is needed to tease out the impact of the specific practices or other aspects of unit structure and culture on outcome.

Keywords: evidence based medicine, neonatology, optimal care, quality improvement