

WENNBERG INTERNATIONAL COLLABORATIVE SPRING POLICY MEETING 2018

Use of Evidence Based Practices Affects Outcome And Difference Between Swiss and US Neonatal Units Mark Adams





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Disclosure

- I am the Network Coordinator of the Swiss Neonatal Network
- I declare no personal conflict of interest

Setting

- Swiss Neonatal Network (**SNN** = 13 units).
- US units of Vermont Oxford Network (**US-VON** = 696 units).
- Extremely preterm infants (22 – 29 weeks gestation) from 2012 – 2014, N >72'000.
- All live births excluding delivery room deaths and congenital malformations.

- Both networks robust and representative:
 - SNN 95% of all Swiss births [Federal Statistical Office]
 - US-VON 84% of all US births [CDC vital statistics report]

Background

- Risk for “death or major morbidity” is lower in SNN units than in US VON units: RR 0.56 (95% CI: 0.51-0.62). [1]
 - RR was adjusted for case-mix, prenatal care and unit level factors (such as size, staffing, and hospital ownership).
 - RR was confirmed using propensity score matching.
 - Restricting the analysis to infants receiving intensive care excluded survival bias.
 - Swiss units followed established evidence closer for some perinatal practices.
- The EPICE group associated a more comprehensive use of evidence-based practices (EBP) with a lower relative risk for adverse outcome. [2]

1. Adams et al. 2018. Pediatrics; 2. Zeitlin et al. 2016, BMJ.

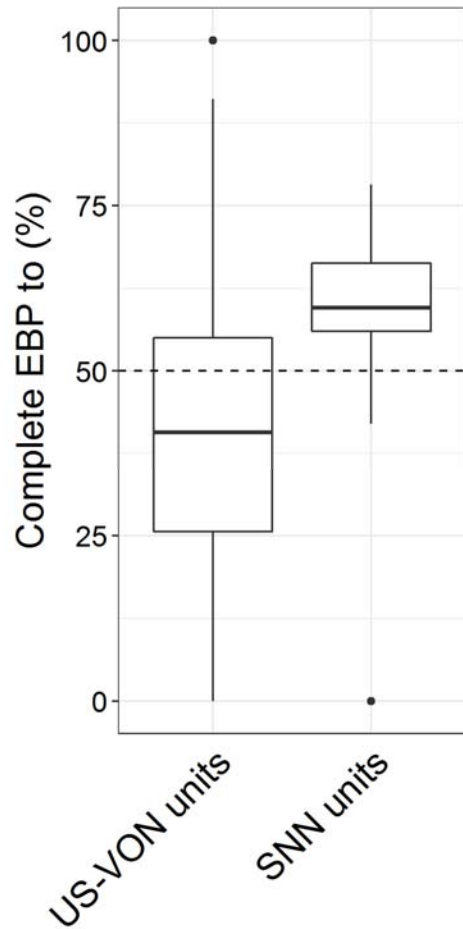
Objective

- Variability of **outcome** between units ~ variability of **evidence based practices** (EBP) ?
 - Outcome: a composite of mortality with severe morbidities (necrotizing enterocolitis, late onset sepsis, intraventricular hemorrhage grade 3-4, chronic lung disease or retinopathy of prematurity stages 3-4)
 - EBP:
 1. delivery in unit without restriction on assisted ventilation,
 2. administration of antenatal steroids,
 3. preference of non-invasive ventilation in the delivery room,
 4. surfactant administration in intubated infants

Methods

- Multivariable Poisson regression adjusting for
 - on patient-level: case-mix and ethnicity
 - on unit-level: hospital ownership, NICU type (A, B, C), availability of single rooms, pediatric resident, or neonatal fellow, and unit size.

Results



- Figure: Provision of complete EBP
 - US VON median provision: 40% of patients
 - SNN median provision: 60% of patients.
- aRR for adverse outcome in units providing complete EBP to majority:
 - aRR 0.87 (95% CI, 0.84 to 0.89)
- aRR for adverse outcome in SNN units vs. US-VON units:
 - aRR 0.64 (95% CI, 0.57 to 0.71)
- aRR additionally adjusting for “complete EBP” care:
 - aRR 0.70 (95% CI, 0.63 to 0.78)

Conclusion

- Units providing cEBP to a majority 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.

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