Severe unexpected complications in term newborns as an obstetric quality metric

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Objective
- To examine the distribution and variation of severe unexpected complication rates in term newborns across the United States
- To determine potential sources of variation and risk factors for these complications

Methods
- Design: observational, 2015-2017
- Population: term, non-anomalous, liveborn, singleton neonates born in counties with 1 obstetric hospital
- Outcome: hospital-level rates of severe unexpected complications (death, transfer, 5 min Apgar ≤3, assisted ventilation for ≥6 hours, seizures or neurologic injury)
- Data sources: NVSS birth certificate and AHA Annual Hospital Survey data

Results
- Sample size: 1,754,852 neonates from 576 hospitals
- Severe unexpected complication rates: Range: 0.6 to 89.9 per 1,000 newborns
- Hospital-level variation in unexpected newborn complication rates: Adjusted ICC: 8.8% (95% CI 7.8-9.9%)
- The lack of NICU beds was associated with unexpected newborn complications: Adjusted OR: 1.55 (95% CI 1.38-1.75)
- No difference in complication rates among hospitals with and without NICUs when transfer is excluded from the metric: Median: 5.1 vs 4.8 per 1,000 births

Conclusions
- Neonatal transfer is the primary driver of complications when using this definition
- This metric may disincentivize appropriate transfers and disproportionately affect hospitals without NICUs

Severe unexpected newborn complications vary widely among hospitals. This quality metric may disproportionately affect hospitals without a NICU if transfer is considered a severe complication.