



JC_128_Deregionalization

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The INCUBATOR: Research Summary

Trends in Resources for Neonatal Intensive Care at Delivery Hospitals for Infants Born Younger Than 30 Weeks' Gestation, 2009-2020

Nansi S. Boghossian et. al. (JAMA NET OPEN, 🇺🇸)

Background:

- In 1976, the March of Dimes Committee on Perinatal Health published recommendations on perinatal care regionalization in the US that included the referral of mothers and infants with high risk of adverse perinatal outcomes to a hospital with a regional neonatal intensive care unit (NICU).
- A significant body of evidence demonstrates the importance of perinatal care regionalization, given the substantial reductions in mortality and morbidities for newborns at high risk of adverse outcomes, particularly infants with very low–birth weight (VLBW), delivered in hospitals with higher-level NICUs

Questions:

- They examined regionalization trends in the birthplace NICU level, incorporating NICU volume from 2009 to 2020 overall and by US region among newborns born at 22 to 29 weeks' gestation.

Study Design:

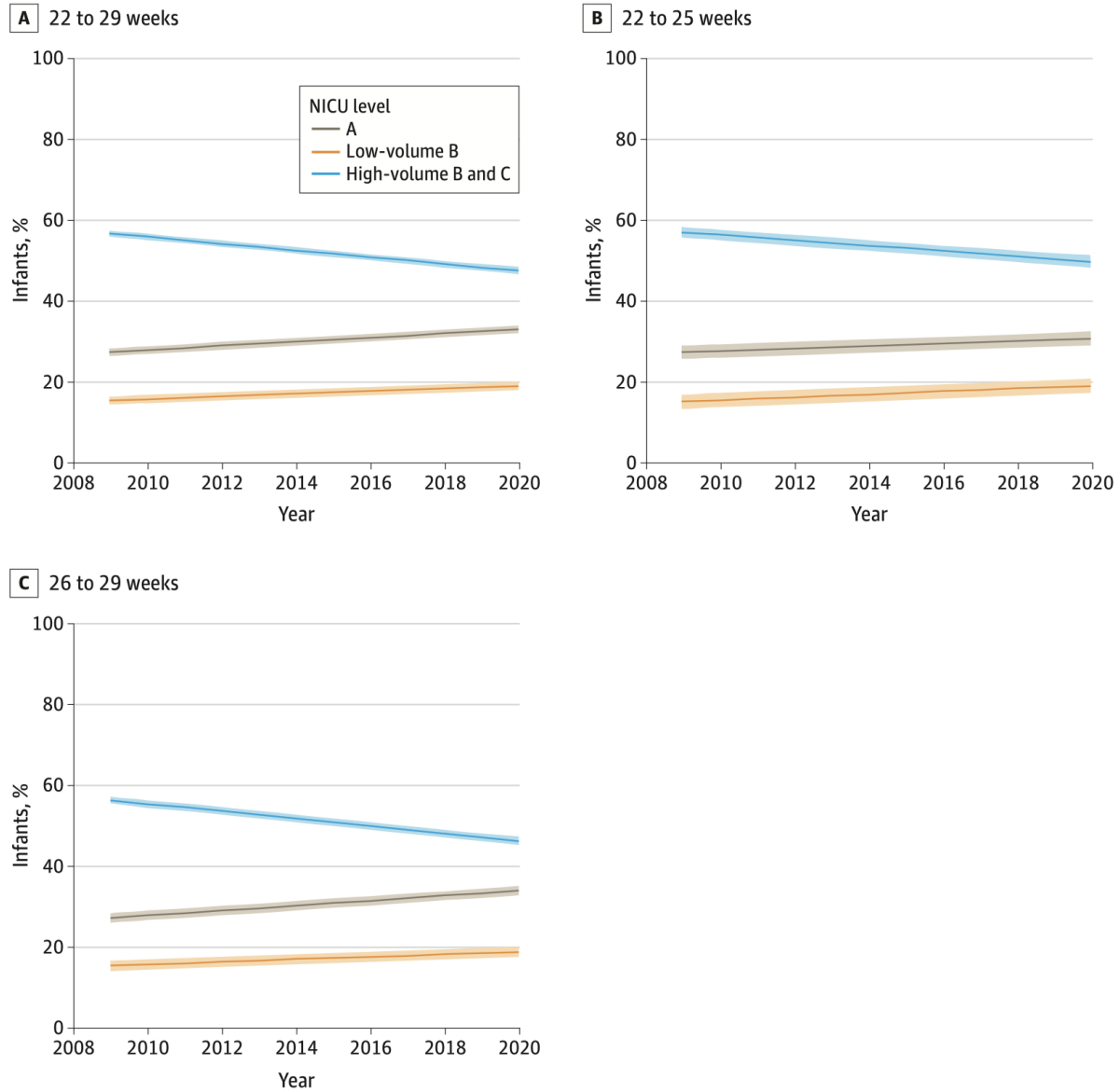
- This retrospective cohort study was conducted at 822 Vermont Oxford Network (VON) centers in the US between 2009 and 2020. Participants included infants born at 22 to 29 weeks' gestation, delivered at or transferred to centers participating in the VON. Data were analyzed from February to December 2022.
- Hospital of birth at 22 to 29 weeks' gestation.
- Birthplace neonatal intensive care unit (NICU) level was classified as
 - A, restriction on assisted ventilation or no surgery
 - B, major surgery. Level B centers were further divided into low-volume (<50 inborn infants at 22 to 29 weeks' gestation per year) and high-volume (50 inborn infants at 22 to 29 weeks' gestation per year) centers.
 - C, cardiac surgery requiring bypass.
- High-volume level B and level C centers were combined, resulting in 3 distinct NICU categories: level A, low-volume B, and high-volume B and C NICUs.
- The main outcome was the change in the percentage of births at hospitals with level A, low-volume B, and high-volume B or C NICUs overall and by US Census region.

Results:

- A total of 357 181 infants (mean [SD] gestational age, 26.4 [2.1] weeks) were included in the analysis.
- Across regions, the Pacific (20 239 births [38.3%]) had the lowest while the South Atlantic (48 348 births [62.7%]) had the highest percentage of births at a hospital with a high-volume B– or C-level NICU.

- Births at hospitals with A-level NICUs increased by 5.6% (95% CI, 4.3% to 7.0%), and births at low-volume B-level NICUs increased by 3.6% (95% CI, 2.1% to 5.0%), while births at hospitals with high-volume B- or C-level NICUs decreased by 9.2% (95% CI, -10.3% to -8.1%).
- By 2020, less than half of the births for infants at 22 to 29 weeks' gestation occurred at hospitals with high-volume B- or C-level NICUs.
- Most US Census regions followed the nationwide trends; for example, births at hospitals with high-volume B- or C-level NICUs decreased by 10.9% [95% CI, -14.0% to -7.8%) in the East North Central region and by 21.1% (95% CI, -24.0% to -18.2%) in the West South Central region.

Figure 1. National Trend of Births by NICU Level Among Newborns Born at 22 to 29 Weeks' Gestation



Conclusion:

This retrospective cohort study identified concerning deregionalization trends in birthplace hospital level of care for infants born at 22 to 29 weeks' gestation. These findings should serve to encourage policy makers to identify and enforce strategies