

Secular Trends in Patent Ductus Arteriosus Management in Preterm Infants within the NICHD Neonatal Research Network

NICHD
NEONATAL RESEARCH NETWORK



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Introduction

- Management of clinically significant patent ductus arteriosus (PDA) remains controversial.
- There are reports of a decrease in the diagnosis and medical treatment or procedural closure of the PDA.
- There are no recent data on PDA management trends specific to tertiary care academic centers in the United States.

Objective

- To evaluate changes in PDA diagnosis and treatment 2012-2021 in a network of U.S. academic hospitals.

Methods

- The study included prospectively collected data for infants born at gestational ages 22 0/7 through 28 6/7 weeks from 2012 to 2021.
- Twenty-three continually participating hospitals in the NICHD Neonatal Research Network were included.
- Annual PDA diagnosis and treatment rates were compared using the Cochran-Armitage trend test to evaluate time-related changes in proportions.
- Additional analyses were completed for gestational age-specific temporal trends.
- Multivariate logistic regression comparing PDA treatment (yes/no) over years was performed for both gestational age strata with adjustments for maternal and infant characteristics and other treatments.

Results

Entire Cohort

- 12982 infants
- Mean GA 26.2 weeks, BW 855g
- PDA diagnosis** increased 43% to 46% from 2012 to 2021
- PDA treatment** decreased 28% to 24% from 2012 to 2021

22 0/7-25 6/7 weeks subgroup (Figure 1)

- PDA diagnosis** increased 57% to 62%
- PDA treatment** unchanged 42% to 41%

26 0/7-28 6/7 weeks subgroup (Figure 2)

- PDA diagnosis** unchanged 36% to 37%
- PDA treatment** decreased 20% to 15%

PDA Treatment (Entire Cohort) (Figure 3)

- Indomethacin** use decreased 22% to 9%
- Ibuprofen** use unchanged 5% to 7%
- Acetaminophen** use increased 2% to 13%
- PDA ligation** decreased 8% to 2%
- Transcatheter PDA closure** increased 1% to 5%

Adjusted Analysis

- 22-28W: Decrease in PDA treatment with time ($p=0.0002$)
- 22-25W: Birth year had no association with treatment ($p=0.35$)
- 26-28W: Decrease in PDA treatment with time ($p=0.0004$)

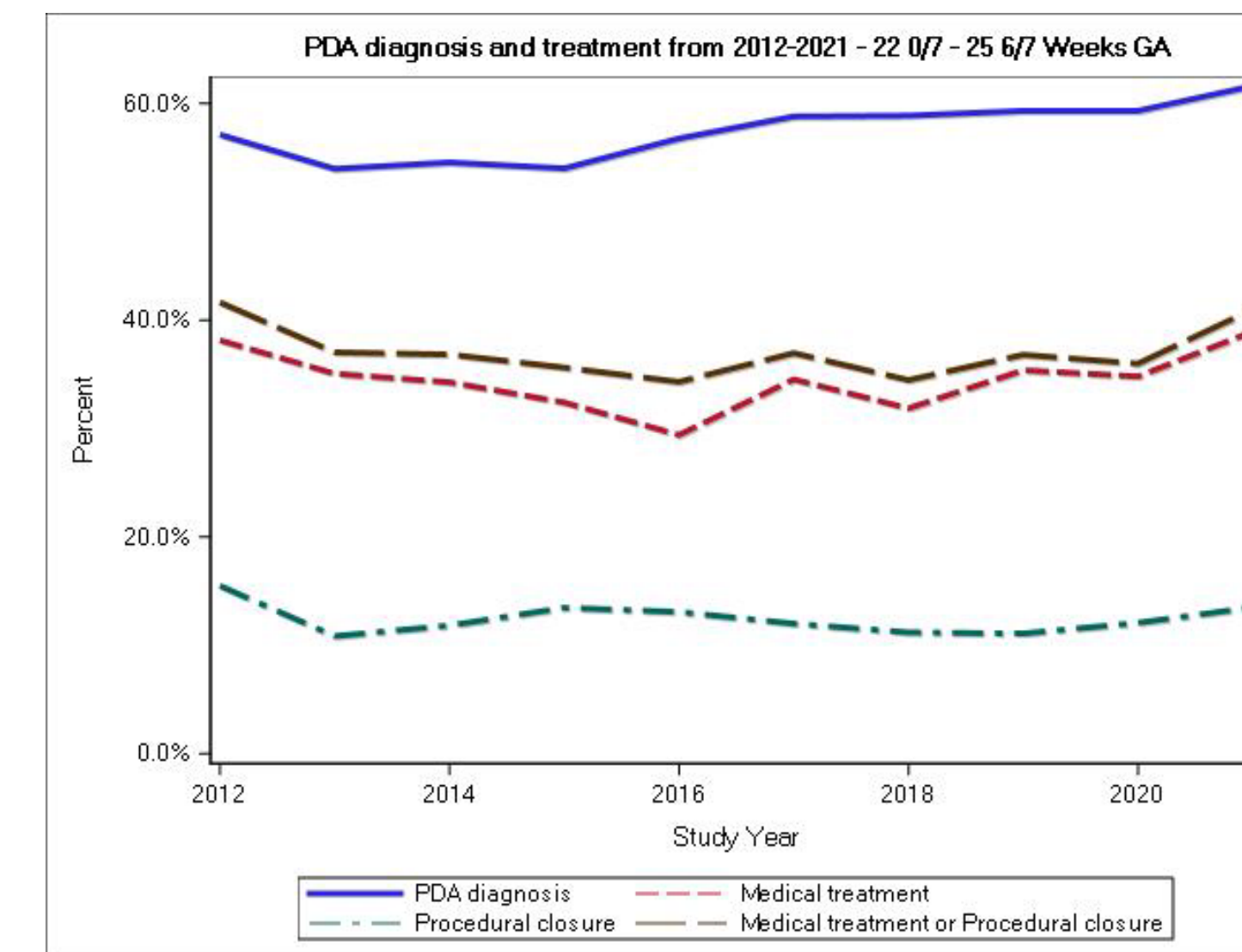


Figure 1

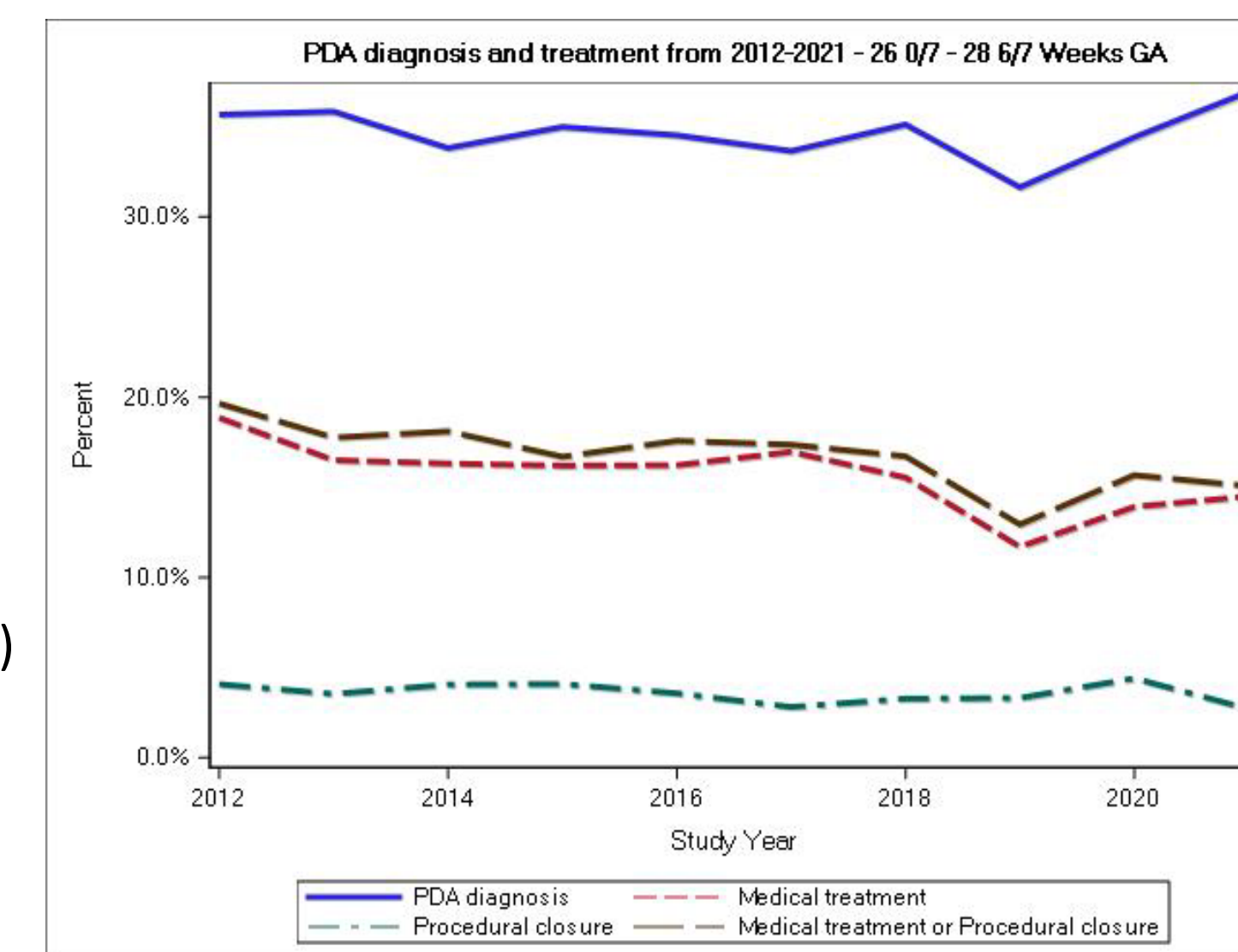


Figure 2

Results

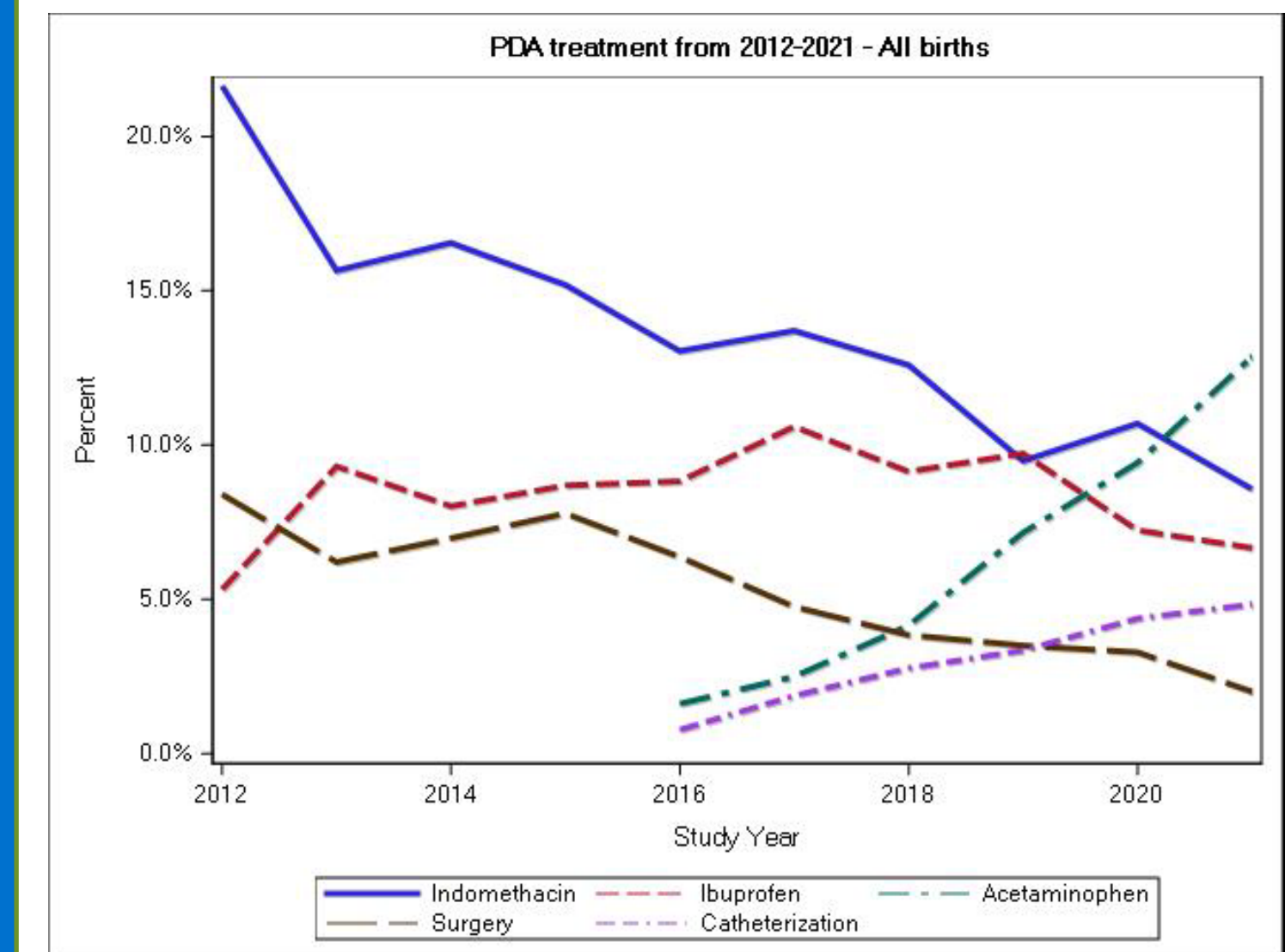


Figure 3

Conclusions

- Medical treatment or procedural closure of PDA decreased among infants born at 26 0/7- 28 6/7 weeks but not among younger infants born at 22 0/7- 25 6/7 weeks.
- Treatment with acetaminophen and transcatheter PDA closure became more common during this time period.
- The impact of these secular changes on mortality and neonatal morbidity requires investigation.

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