

AAP DISTRICT VIII SECTION ON NEONATAL PERINATAL MEDICINE

**2021 ANNUAL CONFERENCE ORIGINAL RESEARCH (BASIC SCIENCE or CLINICAL)
ABSTRACT SUBMISSION FORM**

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Title: Pulmonary Hypertension Associated with Bronchopulmonary Dysplasia and Neurodevelopmental Outcomes: A Systematic

Review and Meta-Analysis

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Background: Pulmonary Hypertension (PH) is estimated to occur in 1 in 4 infants with Bronchopulmonary Dysplasia (BPD). The impact of PH in infants with BPD on their neurodevelopmental (ND) outcomes is uncertain.

Objective: This systematic review aims to evaluate whether PH in infants with BPD is associated with ND delay.

Methods: A systematic literature search was performed to identify studies that reported ND outcomes of infants with BPD (based on NIH definition) and PH (based on echocardiographic findings of PH at 36 weeks PMA). The primary outcome was ND delay in infants with pulmonary hypertension associated with BPD compared with BPD alone. Standardized developmental tests evaluated ND outcomes at 18-24 months corrected age (CA) and three years of age. Quality assessment of the studies was done using the Newcastle-Ottawa Quality Assessment for Cohort studies

Results: 3 retrospective cohort studies met the inclusion criteria. 2 studies reported ND outcomes based on Bayley Scales of Infant and Toddler Development-III Edition in cognitive, language and motor domains at 18-24 months CA (Table 1 and Figure 1), and 1 study reported outcomes at 3 years, including overall developmental delay (Kyoto Scale of Psychological Development [KSPD] scores <70) and cerebral palsy. The quality of all 3 studies was rated between good, fair and poor. Pooled data from the 2 studies reporting outcomes at 18-24 months showed no difference between the 2 infant groups for Bayley cognitive score <85 (OR: 3.78; 95% CI 0.87-16.52), Bayley language score <85 (OR: 1.19; 95% CI 0.57-2.49) and Bayley motor score <85 (OR: 2.04; 95% CI 0.89-4.67). At 3 years of age, children in the BPD-PH group had an increased risk of developmental delay (DQ <70 in all areas) compared with the BPD group (odds ratio [OR]: 4.37; 95% CI 1.16-16.46), but no difference in the risk of cerebral palsy (OR: 0.57; 95% CI 0.03-12.39).

Conclusion: PH in BPD is not associated with a developmental delay compared to BPD alone at 18-24 months CA. However, a single study showed infants in BPD-PH had delayed development at 3 years of age. A large prospective cohort study with longer multidisciplinary follow-up is required to confirm this.