ARTICLES OF INTEREST – April 2024

Effect of early vs late inguinal hernia repair on serious adverse event rates in preterm infants: a randomized clinical trial

This multicenter clinical trial included preterm infants with inguinal hernia diagnosed during initial hospitalization at 39 centers who were randomized to repair prior to NICU discharge or after discharge when the infants were older than 55 weeks' postmenstrual age. Among 308 infants (91%) with complete data (159 in the early repair group and 149 in the late repair group), 44 (28%) in the early repair group versus 27 (18%) in the late repair group had at least 1 serious adverse event (risk difference, -7.9% [95% credible interval, -16.9% to 0%]; 97% bayesian posterior probability of benefit with late repair). The authors concluded that these findings support delaying inguinal hernia repair until after initial discharge from the neonatal intensive care unit.

Acetaminophen use during pregnancy and children's risk of autism, ADHD, and intellectual disability.

This nationwide cohort study included a population-based sample of 2,480,797 children born in 1995 to 2019 in Sweden, with follow-up through December 31, 2021. Of these, 185,909 children (7.49%) were exposed to acetaminophen during pregnancy. Sibling control analyses found no evidence that acetaminophen use during pregnancy was associated with autism (HR, 0.98 [95% CI, 0.93-1.04]; RD, 0.02% [95% CI, -0.14% to 0.18%]), ADHD (HR, 0.98 [95% CI, 0.94-1.02]; RD, -0.02% [95% CI, -0.21% to 0.15%]), or intellectual disability (HR, 1.01 [95% CI, 0.92-1.10]; RD, 0% [95% CI, -0.10% to 0.13%]). Similarly, there was no evidence of a dose-response pattern in sibling control analyses. The authors concluded that acetaminophen use during pregnancy was not associated with children's risk of autism, ADHD, or intellectual disability and that associations observed in other models may have been attributable to familial confounding.

Late surfactant administration after 48 hours of age in preterm neonates with respiratory insufficiency: a systematic review and meta-analysis

The authors sought to systematically review and meta-analyse the effect of late surfactant administration versus placebo in reducing the incidence of death or bronchopulmonary dysplasia (BPD) in preterm infants. Pooled analyses of four RCTs (N=850) showed no statistically significant difference between groups in the incidence of death or BPD at 36 weeks' PMA (relative risk (RR) 0.99; 95% CI 0.90
to 1.10; Grades of Recommendation, Assessment, Development and Evaluation (GRADE): moderate). Administration of late surfactant does not improve the rates of death or BPD at 36 weeks when administered to preterm infants with prolonged respiratory insufficiency. Additional adequately powered trials are needed to establish the efficacy of late surfactant therapy in preterm infants.

Association between maternal hypertension and infant neurodevelopment in extremely preterm infants

The authors sought to examine the association between maternal hypertension during pregnancy and neurodevelopmental impairment (NDI) at 24 months post-menstrual age in extremely preterm infants. Using data from two tertiary neonatal units (2011-2017) for infants born at 23 + 0 to 28 + 6 weeks, the authors investigated outcomes of NDI related to maternal hypertension and small-for-gestational-age (SGA) status. Maternal hypertension during pregnancy elevates the risk of NDI in extremely preterm infants, more so when combined with SGA.

The role of the sensory input intervention in recovery of the motor function in hypoxic ischemic encephalopathy rat model

Rats underwent left common carotid artery ligation to induce hypoxic-ischemia encephalopathy. Environmental enrichment (EE) was achieved by enhancing the recreational and stress-relief items within the cage, increasing the duration of sunlight, colorful items exposure, and introducing background music. JZL184 (JZL) was administered as a neuroprotective drugs. EE was performed 21 days postoperatively and the rats were randomly assigned to the standard environment and EE groups, the two groups were redivided into control, JZL, and vehicle injection subgroups. The western blotting and behavior test indicated that EE and JZL injections were efficacious in promoting cognitive function in rats following HIE. Additionally, the motor function performance in the EE-alone intervention group and the JZL-alone group after HIE was significantly improved compared to the control group. The combined EE and JZL intervention group exhibited even more pronounced improvements in these performances. EE may enhance motor function through sensory input different from the direct neuroprotective effect of pharmacological treatment.

Nasal intermittent positive pressure ventilation during less invasive surfactant administration in preterm infants: An open-label randomized controlled study

The aim of this study was to evaluate if nasal intermittent positive pressure ventilation (NIPPV) during less invasive surfactant treatment (LISA) can improve respiratory outcome compared with NCPAP. This was an open-label randomized controlled trial at tertiary neonatal intensive care units in which infants with RDS born at 25(+0)-31(+6) weeks of gestation between December 1, 2020 and October 31, 2022 were supported with NCPAP before and after surfactant administration and received NIPPV or NCPAP during LISA. The primary endpoint was the need for a second dose of surfactant or MV in the first 72 h of life. They enrolled 101 infants in the NIPPV group and 99 in the NCPAP group. The unadjusted odds ratio for the composite primary outcome was 0.873 (95% confidence interval: 0.456-1.671; p = .681). The SpO(2)/FiO(2) ratio was transiently higher in the LISA plus NIPPV than in the LISA plus NCPAP group, while adverse effects of LISA had similar occurrence in the two arms. The application of NIPPV or NCPAP during LISA in very preterm infants supported with NCPAP before and after surfactant administration had similar effects on the short-term respiratory outcome and are both
Prenatal opioid exposure and risk for adverse brain and motor outcomes in infants born premature

This is a prospective cohort study of maternal-infant dyads infants born preterm < 32 weeks gestation with and without prenatal opioid exposure. The study assessed neurodevelopment using Bayley III and brain volume and punctate white matter lesions (PWMLs) on Brain MRI (which was performed between 39- and 44-weeks PMA. The mean ± SD gestational age was 29.3 ± 2.5 weeks. Compared with unexposed infants, those with prenatal opioid exposure exhibited higher rates of severe PWML (17.1% vs 3.9%, respectively; P = .002). In addition, prenatal opioid exposure was associated with a significantly lower score by −6.2 points on the Bayley compared with unexposed infants.

Randomized noninferiority trial of expectant management versus early treatment of patent ductus arteriosus in preterm infants

This is a randomized controlled “non-inferiority” trial aimed to investigate, whether expectant management is noninferior to early PDA treatment with regard to the composite of mortality and/or incidence of BPD in very preterm infants. A total of 208 preterm infants (<32 weeks gestation <1500g, <72 hours chronological age, and PDA > 1.5mm) were enrolled; 104 in each group of treatment (ibuprofen or acetaminophen) vs expectant management. At the time of discharge, ductus was closed in 83% of treated infants and in 78% of patients who were managed expectantly (p > 0.05). Expectant management is noninferior to early PDA treatment for reducing the incidence of morbidity or improving survival rate.

CPAP versus NIPPV postextubation in preterm neonates: a comparative-effectiveness study

Nasal intermittent positive pressure ventilation (NIPPV) has been shown to be superior to nasal continuous positive airway pressure (CPAP) postextubation in preterm neonates. However, studies have not permitted high CPAP pressures or rescue with other modes. We hypothesized that if CPAP pressures >8 cmH2O and rescue with other modes were permitted, CPAP would be noninferior to NIPPV. A total of 843 infants extubated to CPAP and 974 extubated to NIPPV were included. CPAP was not noninferior to NIPPV for failure ≤72 hours postextubation; however, it was noninferior to NIPPV for reintubation ≤72 hours and ≤7 days. This suggests CPAP may be a reasonable initial postextubation mode if alternate rescue strategies are available.

OTHER NOTEWORTHY PUBLICATIONS – April 2024

Bilirubin measurement and phototherapy use after the AAP 2022 newborn hyperbilirubinemia guideline
Endotracheal tube size adjustments within seven days of neonatal intubation
CPAP versus NIPPV postextubation in preterm neonates: a comparative-effectiveness study
Rate of urinary tract infections, bacteremia, and meningitis in preterm and term infants
Efficacy of early intervention for infants with cerebral palsy in an LMIC: an RCT
Predictors of the outcome at 2 years in neonates with congenital cytomegalovirus infection
Long-term ocular outcomes in congenital toxoplasmosis treated perinatally
Neonatal ultrasound and radiographic markers of hip dysplasia in young adults
Improving accuracy for initial endotracheal tube size selection for newborns
Socioemotional and psychological outcomes of hypoxic-ischemic encephalopathy: a systematic review

Journal of Pediatrics
Early hyperoxemia and 2-year outcomes in infants with hypoxic-ischemic encephalopathy: a secondary analysis of the infant cooling evaluation trial
Prenatal opioid exposure and risk for adverse brain and motor outcomes in infants born premature
Place-based child opportunity at birth and child development from infancy to age 4
Clinical chorioamnionitis and neurodevelopment at 5 years of age in children born preterm: the epipage-2 cohort study

Pediatric Research
Neonatal sepsis and cardiovascular dysfunction I: mechanisms and pathophysiology [Review]
Neuroprotective therapies in the NICU in preterm infants: present and future (Neonatal Neurocritical Care Series) [Review]
Antenatal jaundice instruction and acute bilirubin encephalopathy in Nigeria
Impact of fetal inflammatory response on the severity of necrotizing enterocolitis in preterm infants
Body composition in adults born preterm with very low birth weight
Death of children with Down syndrome by gestational age and cause

Archives of Disease in Childhood - Fetal & Neonatal Edition
New guidelines for congenital diaphragmatic hernia: what is next?
Prophylactic cyclo-oxygenase inhibitor drugs for the prevention of morbidity and mortality in extremely preterm infants: a clinical practice guideline incorporating family values and preferences
Diagnosis and management of congenital diaphragmatic hernia: a 2023 update from the Canadian Congenital Diaphragmatic Hernia Collaborative
Parenting stress and health-related quality of life among parents of extremely preterm born early adolescents in England: a cross-sectional study
Current management of neonatal abstinence syndrome: a survey of practice in the UK and Ireland
Paediatric intensive care admissions of preterm children born <32 weeks gestation: a national retrospective cohort study using data linkage

Neurodevelopmental outcome at 5.5 years in Dutch preterm infants born at 24–26 weeks’ gestational age: the EPI-DAF study

Characteristics and outcomes of neonates hospitalised with SARS-CoV-2 infection in the UK by variant: a prospective national cohort study

Impact of cord clamping on haemodynamic transition in term newborn infants

Maternal treatment with selective serotonin reuptake inhibitors during pregnancy and delayed neonatal adaptation: a population-based cohort study

Evolution of the Sarnat exam and association with 2-year outcomes in infants with moderate or severe hypoxic-ischaemic encephalopathy: a secondary analysis of the HEAL Trial

Polyethylene bags before cord clamping in very preterm infants: a randomised controlled trial

Effect of body position on ventilation distribution in healthy newborn infants: an observational study

Bronchopulmonary dysplasia: temporal trend from 2010 to 2019 in the Brazilian Network on Neonatal Research

Treatment courses and outcomes of oesophageal atresia in patients with trisomy 18: a case series of 271 patients from a nationwide database in Japan

Journal of Perinatology
Pneumothorax in a term newborn

Less invasive surfactant administration methods: Who, what and how

Use of surfactant beyond respiratory distress syndrome, what is the evidence?

Comparison of birth outcomes of mothers covered by Medicaid versus those privately insured when accounting for social determinants of health

Advances to diminish global newborn kernicterus mortality

Assessment of diaper dermatitis using a novel electronic health record-embedded scale

A phase I trial of caffeine to evaluate safety in infants with hypoxic-ischemic encephalopathy

Impact of persistent pulmonary hypertension and oxygenation on brain injury in neonates with neonatal encephalopathy treated with therapeutic hypothermia

Prediction of outcome of hypoxic-ischemic encephalopathy in newborns undergoing therapeutic hypothermia using heart rate variability

Therapeutic hypothermia for preterm infants 34–35 weeks gestational age with neonatal encephalopathy
Factors affecting early childhood growth in hypoxic-ischemic encephalopathy treated with hypothermia
Association of epidural analgesia in labor with neurodevelopmental outcomes in premature infants born at <29 weeks of gestational age
Time to regain birthweight and association with neurodevelopmental outcomes among extremely preterm newborns
The association between antenatal corticosteroids exposure and postnatal growth in infants born between 23 and 29 weeks of gestation
Comparison of preoperative and intraoperative surgeon diagnosis and pathologic findings in spontaneous intestinal perforation vs necrotizing enterocolitis
Postnatal weight growth trajectory in infants born between 30 4/7 weeks and 34 3/7 weeks of gestation
Improving access to neurodevelopmental resources for NICU graduates
Human Parechovirus (HPeV) infections: clinical presentations, patterns, and evolution of neonatal brain injury
Persistent disparities in black infant mortality across gestational ages in the United States
A quality improvement initiative standardizing the antibiotic treatment and feeding practices in patients with medical necrotizing enterocolitis
Does early prostacyclin therapy decrease extracorporeal life support use in infants with congenital diaphragmatic hernia?
Clinical utilization of intestinal pathology in the classification of NEC vs SIP cases and prognostication

Neonatology
No new content

American Journal of Perinatology
Trends in length of stay for neonatal intensive care unit patients who die before hospital discharge
Framework for considering abnormal heart rate characteristics and other signs of sepsis in very low birth weight infants
How do clinicians view the process of shared decision-making with parents facing extremely early deliveries? results from an online survey
Cord-blood derived chemistry reference values in preterm infants for sodium, chloride, potassium, glucose, and creatinine
Randomized noninferiority trial of expectant management versus early treatment of patent ductus arteriosus in preterm infants
A randomized controlled trial of a 30- versus a 120-second delay in cord clamping after term birth
Association of 24-hour in-house neonatologist coverage with outcomes of extremely preterm infants
Gestational age at delivery and neonatal outcomes among infants with gastroschisis in the childrens hospitals neonatal consortium (CHNC)
Risk factors for foster care placement in patients with bronchopulmonary dysplasia
Prediction of cerebral palsy or death among preterm infants who survive the neonatal period

**Maternal Health, Neonatology and Perinatology**
Perinatal dengue and Zika virus cross-sectional seroprevalence and maternal-fetal outcomes among El Salvadoran women presenting for labor-and-delivery
Assessing the agreement of chronic lung disease of prematurity diagnosis between radiologists and clinical criteria

**Neoreviews**
Safety and effectiveness of probiotics in preterm infants with necrotizing enterocolitis
The use of low-dose dopamine in the neonatal intensive care unit
A 6-day-old newborn with sudden severe respiratory distress
Respiratory distress in a 3-week-old late preterm male neonate
A rare and enigmatic cause of respiratory distress in a term infant
Myasthenia gravis in pregnancy and the newborn
Neonate with a diffuse maculopapular and nodular rash
Inequities faced by children in immigrant families in united states NICU’s

**JAMA Pediatrics**
Heat exposure, preterm birth, and the role of greenness in Australia
Survey of neonatal management after amnioinfusion for anhydramnios

**BMC Pediatrics**
Next-generation sequencing based newborn screening and comparative analysis with MS/MS
Sustained acute kidney injury as an independent risk factor for neurodevelopmental and growth outcomes in a single NICU center
Predictors of neonatal mortality among neonates admitted to the neonatal intensive care unit at Hawassa University Comprehensive Specialized Hospital, Sidama regional state, Ethiopia
Nutritional support during the first week for infants with bronchopulmonary dysplasia and respiratory distress: a multicenter cohort study in China
Antibiotic use in infants at risk of early-onset sepsis: results from a unicentric retrospective cohort study
Nomogram for predicting early hypophosphatemia in term infants

Pediatric Critical Care Medicine
No relevant articles

New England Journal of Medicine
Risk of autism after prenatal topiramate, valproate, or lamotrigine exposure

Lancet
Global disease burden of and risk factors for acute lower respiratory infections caused by respiratory syncytial virus in preterm infants and young children in 2019: a systematic review and meta-analysis of aggregated and individual participant data
Optimised prevention of postnatal HIV transmission in Zambia and Burkina Faso (PROMISE-EPI): a phase 3, open-label, randomised controlled trial

JAMA
Effect of early vs late inguinal hernia repair on serious adverse event rates in preterm infants: a randomized clinical trial
The Alabama embryo decision—the politics and reality of recognizing “extrauterine children”
The real impact of the Alabama supreme court decision in LePage v Center for Reproductive Medicine
Acetaminophen use during pregnancy and children’s risk of autism, ADHD, and intellectual disability
What is perinatal depression?

BMJ
Prenatal opioid exposure and subsequent risk of neuropsychiatric disorders in children: nationwide birth cohort study in South Korea

Pediatric Infectious Disease Journal
A case of enterococcal patent ductus arteriosus-associated endarteritis in a preterm neonate
Safety and pharmacokinetics of lopinavir/ritonavir oral solution in preterm and term infants starting before 3 months of age
Epidemiology and outcomes of neonatal meningitis: results of the Turkish neo-meningitis nationwide study
Metagenomic next-generation sequencing for pathogen identification in bronchoalveolar lavage fluid from neonates receiving extracorporeal membrane oxygenation
The effect of Bacille Calmette-Guérin vaccination on the composition of the intestinal microbiome in neonates from the MIS BAIR trial

**Pediatric Cardiology**
Natural history of secundum ASD in preterm and term neonates: a comparative study
Prenatal predictors for pulmonary balloon valvuloplasty in the newborn
Quantitative analysis of morphology and function in the fetal heart with severe tricuspid regurgitation by speckle tracking imaging
Association of prenatally diagnosed isolated single left superior vena cava and postnatal development of coarctation of the aorta
Clinical outcomes and medical burdens of neonatal arrhythmias in children’s hospitals in china: a protocol for multi-center retrospective cohort study

**Pediatric Neurology**
Epilepsy incidence and developmental outcomes after early discontinuation of antiseizure medication in neonatal hypoxic-ischemic encephalopathy
A study of general movement assessment and its association with neurodevelopmental outcome at age 12 to 15 months among term neonates with hyperbilirubinemia

**Obstetrics and Gynecology**
Association between intrapartum nitrous oxide for labor analgesia and short-term neonatal outcomes
Breastfeeding initiation in people with hepatitis C virus infection in the United States
Child protection system removal and short-interval births among individuals with prenatal substance use

**American Journal of Obstetrics & Gynecology**
No relevant articles

**Hospital Pediatrics**
A quality improvement initiative to increase skin-to-skin care duration in preterm neonates

**BASIC SCIENCE SELECTIONS**
Nesfatin-1 alleviates hyperoxia-induced bronchopulmonary dysplasia (BPD) via the nuclear factor-kappaB (NF-kappaB) p65 signaling pathway
Human milk exosome-derived circDNAJB6 improves bronchopulmonary dysplasia model by promoting DNAJB6 gene transcription
Antenatal Endotoxin Induces Dysanapsis in Experimental Bronchopulmonary Dysplasia
Experimental necrotizing enterocolitis using oral lipopolysaccharide and protective role of breastmilk
The role of the sensory input intervention in recovery of the motor function in hypoxic ischemic encephalopathy rat model

Transcription factor EGR1 facilitates neovascularization in mice with retinopathy of prematurity by regulating the miR-182-5p/EFNA5 axis


Other relevant articles

Tadalafil in neonates and infants with pulmonary hypertension secondary to bronchopulmonary dysplasia
Development of a bronchopulmonary dysplasia nutrition focused physical examination tool: A modified Delphi study
Types of home respiratory support in children with bronchopulmonary dysplasia and factors determining its duration: A scoping review
Predischarge death or lung transplantation in tracheostomy and ventilator dependent grade 3 bronchopulmonary dysplasia
Nasal intermittent positive pressure ventilation during less invasive surfactant administration in preterm infants: An open-label randomized controlled study
Late surfactant administration after 48 hours of age in preterm neonates with respiratory insufficiency: a systematic review and meta-analysis
The role of an abbreviated ultrasound in the evaluation of necrotizing enterocolitis
Quality of life in long-term survivors of surgical necrotizing enterocolitis
Neurobehavioral outcomes of neonatal asymptomatic congenital cytomegalovirus infection at 12-months
Consensus recommendation for prenatal, neonatal and postnatal management of congenital cytomegalovirus infection from the European congenital infection initiative (ECCI)
Epilepsy incidence and developmental outcomes after early discontinuation of antiseizure medication in neonatal hypoxic-ischemic encephalopathy
Perinatal and neonatal risk factors for retinopathy of prematurity in very low birthweight, very preterm twins: a population-based study
Efficacy comparison of 21 interventions to prevent retinopathy of prematurity: a Bayesian network meta-analysis of randomized controlled trials
Reducing osteopenia of prematurity-related fractures in a level iv nicu: a quality improvement initiative