ARTICLES OF INTEREST – September 2022

Clinical practice guideline revision: management of hyperbilirubinemia in the newborn infant 35 or more weeks of gestation

This clinical practice guideline updates and replaces the 2004 AAP clinical practice guideline for the management and prevention of hyperbilirubinemia in the newborn infant 35 or more weeks gestation. Updates include new treatment threshold curves, screening of DAT positive infants, transcutaneous bilirubin evaluation (including post-phototherapy), evaluation of infants requiring phototherapy, length of phototherapy, and timing of bilirubin rebound evaluation and follow-up.

Two-year neurodevelopmental outcome in children born extremely preterm: the EPI-DAF study

The nationwide Extremely Preterm Infants – Dutch Analysis on Follow-up Study reports two-year neurodevelopmental outcomes after the Dutch practice regarding initiation of active treatment in extremely preterm infants was lowered from 25 completed weeks to 24 completed weeks gestation in 2010. This study included all Dutch live-born infants, born between 24 0/7 weeks and 26 6/7 weeks GA, who were 2 years corrected age (CA) in 2018–2020. 651 of 991 live born infants (66%) survived to 2 years’ CA and overall, 62% had no impairment, 29% mild impairment and 9% moderate-to-severe impairment (NDI). While there were differences in survival, the percentage of surviving children with NDI was comparable between 24 weeks, 25 weeks and 26 weeks gestation (around 9%). NDI-free survival was 48%, 67% and 75% in NICU-admitted infants at 24 weeks, 25 weeks and 26 weeks gestation, respectively. After multivariable analysis, severe brain injury and low maternal education were associated with higher odds of NDI.

Blood pressure, organ dysfunction, and mortality in preterm neonates with late-onset sepsis

This two-center retrospective study over 6 years examined 147 neonates <35 weeks gestational age to investigate the association between systolic, diastolic, and mean blood pressures (SBP, DBP, and MBP) and adverse outcomes with late-onset sepsis (LOS) in this population. Outcome measures were organ dysfunction (ODF) using the predefined criteria and post-ODF mortality (≤7 days from LOS onset). 147 neonates with blood ± cerebrospinal fluid culture positive for organisms other than coagulase-negative Staphylococcus at >72 h age were included for analyses. The mean GA and weight at birth and at LOS were 25.9 ± 1.9 and 829 ± 258 and 29.2 ± 3.6 weeks and 1045 ± 529 g, respectively. 70 (48%) neonates fulfilled the predefined criteria for ODF, of which 20 (29%) died. The median (interquartile range [IQR]) time to ODF from LOS onset was 3.4 (0.8, 9.5) h; 28 had ODF at presentation. ODF was more frequently associated with gram-negative bacteremia and meningitis. While baseline BPs were similar between
groups, the ODF group demonstrated significantly lower SBP, MBP, and DBP, starting within the first 12-h period after LOS onset ($p < 0.01$ for all). Mortality was associated with a greater reduction in SBP $[-13 (-19, -8)]$ vs. $-4 (-8, 0); p < 0.01$] and MBP $[-9 (-13, -5)]$ vs. $+1 (-1, +4); p = 0.03$] 0–12 h post-LOS onset.

**The administration of amnion-derived multipotent cell secretome ST266 protects against necrotizing enterocolitis in mice and piglets**

This work reveals that the secreted product of amniotic progenitor cells (called ST266) can prevent or treat NEC in mice, piglet, and “NEC-in-a-dish” models of this disease. Mechanistically, ST266 prevented bacterial signaling, and a detailed transcriptomic analysis revealed effects on gut differentiation, immunity, and metabolism. Thus, an amniotic secretome may offer novel approaches for NEC.

**The effects of caffeine following hypoxic-ischemic encephalopathy: A systematic review of animal Studies**

Seven studies met inclusion criteria for this systematic review with meta-analysis assessing the effects of caffeine on the prevention and treatment of neurological morbidity caused by hypoxic-ischemic encephalopathy (HIE) in preclinical studies. Caffeine had a positive effect on overall functional outcome (SDM 0.92(95%CI 0.25 to 1.59)). Animals treated with caffeine performed better on Morris water maze and rotarod tests (SDM -1.39(95%CI -0.36 to -2.41)) and (SDM 1.03(95%CI 0.03 to 2.04)), respectively. Caffeine treated animals performed worse on open field test compared to the controls (SDM -1.11(95%CI -3.01 to 0.80)). Early caffeine exposure in preclinical rodent models of HIE is associated with improved selective functional and neurological outcomes, although the certainty of the evidence is limited.

**Routine use of cerebral magnetic resonance imaging in infants born extremely preterm**

The authors sought to describe cerebral abnormalities and their risk factors in a contemporary cohort of infants born extremely premature after the introduction of routine cerebral magnetic resonance imaging (cMRI) at term-equivalent age. After routine cMRI, without preconfirmed pathology by cranial ultrasonography, low-grade IVH, noncystic white matter disease, and cerebellar injuries were the most frequently found abnormalities. The clinical value and long-term benefit of the detection of these low-grade pathologies have yet to be confirmed.

**The impact of mode of delivery on maternal and neonatal outcomes during periviable birth (22–25 weeks)**

The authors conducted a retrospective cohort study of 230 periviable deliveries (22-25 weeks) from 2013 to 2020 at a tertiary teaching institution. Deliveries were grouped by the mode of delivery. They found that periviable birth has a high rate of maternal morbidity with a trend toward the highest risk among women undergoing cesarean delivery. Neonatal survival to discharge was not different between the groups and among the 172 neonates discharged alive, there was no difference in BPD, IVH, NEC, PDA, ROP, or intact survival.

**Association of racial disparities with in-hospital outcomes in severe bronchopulmonary dysplasia**
In a multicenter severe BPD cohort, study results suggest that infants born to Black mothers had increased likelihood of death and increased length of hospital stay compared with infants born to White mothers. Prospective studies are needed to define the sociodemographic mechanisms underlying disparate health outcomes for Black infants with severe BPD.

**Umbilical cord blood culture in neonatal early-onset sepsis: a systematic review and meta-analysis**

This systematic review shows that, compared to Peripheral Blood Culture, Umbilical Cord Blood Culture has higher sensitivity and comparable specificity for clinical Early Onset Sepsis (EOS) and might be considered as diagnostic test for EOS. Due to the limited number of studies, low incidences of EOS cases, and the imperfect reference standards for EOS, results should be interpreted cautiously.

**OTHER NOTEWORTHY PUBLICATIONS – September, 2022**

**COVID-19**
Policy Statement: COVID-19 vaccines in infants, children, and adolescents
Safety of booster doses of coronavirus disease 2019 (COVID-19) vaccine in pregnancy in the vaccine adverse event reporting system
Maternal COVID-19 infection and possible associated adverse neurological fetal outcomes, two case reports
SARS-CoV-2 in infant urine and fecal samples after in utero COVID-19 exposure
Effects of prenatal exposure to maternal COVID-19 and perinatal care on neonatal outcome: results from the INTERCOVID Multinational Cohort Study
Increase in preterm stillbirths in association with reduction in iatrogenic preterm births during COVID-19 lockdown in Australia: a multicenter cohort study
Maternal and neonatal outcomes of pregnancies with COVID-19 after medically assisted reproduction: results from the prospective COVID-19-Related Obstetrical and Neonatal Outcome Study

**Pediatrics**
Neonatal outcomes of mothers with a disability
Racism and quality of neonatal intensive care: voices of black mothers
Outcomes after positive syphilis screening
Autism risk and perinatal antibiotic use
Clinical practice guideline revision: management of hyperbilirubinemia in the newborn infant 35 or more weeks of gestation
Technical report: diagnosis and management of hyperbilirubinemia in the newborn infant 35 or more weeks of gestation
Policy statement: scope of health care benefits for neonates, infants, children, adolescents, and young adults through age 26
Research brief: predicting the need for phototherapy after discharge: update for 2022 phototherapy guidelines


Review articles: supraglottic airways compared with face masks for neonatal resuscitation: a systematic review

State-of-the-art review: retinopathy of prematurity: a global perspective and recent developments

Quality Reports: Interdisciplinary quality improvement project increases vitamin D supplementation in infants

Case report: kidney replacement therapy in low birth weight preterm newborns

Journal of Pediatrics
Evidence-based genetic testing for individuals with congenital diaphragmatic hernia

Disparities and early engagement associated with the 18- to 36-month high-risk infant follow-up visit among very low birthweight infants in California

Severe anemia at birth—incidence and implications

Prevalence and predictors of postpartum cosleeping practices after midwife-led births in the US

Ventricular volume in infants born very preterm: relationship with brain maturation and neurodevelopment at age 4.5 years

Cerebral sinus venous thrombosis in infants after surgery for congenital heart disease

Routine use of cerebral magnetic resonance imaging in infants born extremely preterm

Trametinib for refractory chylous effusions and systemic complications in children with noonan syndrome

The genomics of congenital diaphragmatic hernia: a 10-year retrospective review

Pediatric Research
Umbilical cord blood culture in neonatal early-onset sepsis: a systematic review and meta-analysis

Iron transport across the human placenta is regulated by hepcidin

Severe intraventricular hemorrhage causes long-lasting structural damage in a preterm rabbit pup model

Azithromycin reduces inflammation-amplified hypoxic–ischemic brain injury in neonatal rats

Exposure to high levels of oxygen in neonatal rats induce a decrease in hemoglobin levels

Glucocorticoids in a neonatal hyperoxic lung injury model: pulmonary and neurotoxic effects
Splanchnic oxygen saturation during reoxygenation with 21% or 100% O2 in newborn piglets

Irradiance footprint of phototherapy devices: a comparative study

Neonatal encephalopathy plasma metabolites are associated with neurodevelopmental outcomes

Language function following preterm birth: prediction using machine learning

Newborn screen metabolic panels reflect the impact of common disorders of pregnancy

Blood pressure, organ dysfunction, and mortality in preterm neonates with late-onset sepsis

Long-term cognitive outcomes in term newborns with watershed injury caused by neonatal encephalopathy

Ventilatory control instability as a predictor of persistent periodic breathing in preterm infants

Anti-reflux medication use in preterm infants

Preterm birth and Kawasaki disease: a nationwide Japanese population-based study

Sports participation and preterm birth: a nationwide birth cohort in Japan

Archives of Disease in Childhood - Fetal & Neonatal Edition

Neonatal and fetal therapy of congenital diaphragmatic hernia-related pulmonary hypertension

Two-year neurodevelopmental outcome in children born extremely preterm: the EPI-DAF study

Dual-site blood culture yield and time to positivity in neonatal late-onset sepsis

Impact of maternal obesity on neonatal heart rate and cardiac size

Single versus continuous sustained inflations during chest compressions and physiological-based cord clamping in asystolic lambs

Parental perspective on important health outcomes of extremely preterm infants

Effect of prophylactic dextrose gel on the neonatal gut microbiome

Effects of tactile stimulation on spontaneous breathing during face mask ventilation

Global incidence proportion of intraventricular haemorrhage of prematurity: a meta-analysis of studies published 2010–2020

MRI-based brain volumes of preterm infants at term: a systematic review and meta-analysis

Severe neonatal hyperbilirubinaemia: lessons learnt from a national perinatal audit

Associations of body composition with regional brain volumes and white matter microstructure in very preterm infants

Preliminary study of automated oxygen titration at birth for preterm infant
Predictors of anastomotic strictures following oesophageal atresia repair
Lung volume distribution in preterm infants on non-invasive high-frequency ventilation
Saliva cortisol diurnal variation and stress responses in term and preterm infant

Journal of Perinatology
Hemodynamic consequences of respiratory interventions in preterm infants
Short and long-term outcomes of children with autoimmune congenital heart block treated with a combined maternal-neonatal therapy. A comparison study
Blood pressure values and hypotension management in extremely preterm infants: a multi-center study
Lower pass threshold (≥93%) for critical congenital heart disease screening at high altitude prevents repeat screening and reduces false positives
Being small for gestational age is not an independent risk factor for mortality in neonates with congenital diaphragmatic hernia: a multicenter study
Improved survival for infants with severe congenital diaphragmatic hernia
Image-based prenatal predictors correlate with postnatal survival, extracorporeal life support use, and defect size in left congenital diaphragmatic hernia
Image-based prenatal predictors of postnatal survival, extracorporeal life support, and defect size in right congenital diaphragmatic hernia
Does videolaryngoscopy improve tracheal intubation first attempt success in the nicus? A report from the NEAR4NEOS
Association of multiple tracheal intubation attempts with clinical outcomes in extremely preterm infants: a retrospective single-center cohort study
Impact of multiple intubation attempts on adverse tracheal intubation associated events in neonates: a report from the NEAR4NEOS
Point of care lung ultrasound service in neonatal intensive care: Five years of experience in Manitoba, Canada
Pulmonary hemorrhage in extremely low birth weight infants: Significance of the size of left to right shunting through a valve incompetent patent foramen ovale
Evaluation of three non-invasive ventilation modes after extubation in the treatment of preterm infants with severe respiratory distress syndrome
Brief Communication: Chronic lung disease-related mortality in the US from 1999–2017: trends and racial disparities
Factors associated with discontinuation of pulmonary vasodilator therapy in children with bronchopulmonary dysplasia-associated pulmonary hypertension

Brief Communication: Prevention of bronchopulmonary dysplasia: a cross-sectional survey of clinical practices in Canada

Brief Communication: Pattern of postnatal steroid use for bronchopulmonary dysplasia in extremely preterm infants

Improving management of ventilator associated tracheitis in a level IV NICU

**Neonatology**

No new content

**American Journal of Perinatology**

The impact of mode of delivery on maternal and neonatal outcomes during periviable birth (22–25 weeks)

Antimicrobial prophylaxis use in the neonatal intensive care unit: an antimicrobial stewardship target that deserves attention!

Does the head position affect neonatal lateral ventricular volume?

Umbilical cord management in late preterm and term infants: a randomized controlled trial

Nasal intermittent positive pressure ventilation versus continuous positive airway pressure and apnea of prematurity: a systematic review and meta-analysis

Role of cord blood carboxyhemoglobin in detecting significant hyperbilirubinemia in term neonates with abo alloimmunization

Effectiveness of dual medication therapy (oral acetaminophen and oral ibuprofen) for the management of patent ductus arteriosus in extremely premature infants: a feasibility trial

Antenatal steroids and acute kidney injury in preterm infants

Isolated and on guard: preparing neonatal intensive care unit families for life with hydrocephalus

Neurodevelopmental outcome in very low birth weight infants exposed to donor milk

Frequency and severity of chlorothiazide-induced hyponatremia in the neonatal intensive care unit

Prevalence, risk factors, and short-term outcomes of full-term low birth weight infants born at a tertiary academic center: a prospective case–control study

Effect of hypothermia on serum myelin basic protein and tumor necrosis factor–α in neonatal hypoxic-ischemic encephalopathy

**Journal of Neonatal-Perinatal Medicine**

No new content
Maternal Health, Neonatology and Perinatology
Case report of congenital methemoglobinemia: an uncommon cause of neonatal cyanosis (PDF)
Prenatal exposure to tobacco and adverse birth outcomes: effect modification by folic acid intake during pregnancy (PDF)
Nasolabial and distal limbs dry gangrene in newborn due to hypernatremic dehydration with disseminated intravascular coagulation: a case report (PDF)

NeoReviews
Neonatal conjunctivitis
Neonatal laryngotraceal anomalies
Use of albumin in the NICU: an evidence-based review
An uncommon diagnosis for diarrhea and failure to thrive in a 6-week-old infant
Unexpected MRI finding after whole body cooling for neonatal encephalopathy
A hypotonic neonate
Shoulder dystocia: neonatal implications
A neonatal abdominal wall defect
A neonate with unexpected external genitalia at birth

JAMA Pediatrics
Disparities in lung disease of prematurity—when does exposure to racism begin?
Association of racial disparities with in-hospital outcomes in severe bronchopulmonary dysplasia
Geographical differences and temporal improvements in forced expiratory volume in 1 second of preterm-born children: a systematic review and meta-analysis
Associations between prenatal urinary biomarkers of phthalate exposure and preterm birth: a pooled study of 16 US cohorts

BMC Pediatrics
Understanding the risk factors for adverse events during exchange transfusion in neonatal hyperbilirubinemia using explainable artificial intelligence (PDF)
Transplantation of maternal intestinal flora to the newborn after elective cesarean section (SECFLOR): study protocol for a double blinded randomized controlled trial (PDF)
Attitudes towards the neurological examination in an unwell neonate: a mixed methods approach (PDF)
Factors associated with 5-min APGAR score, death and survival in neonatal intensive care: a case-control study (PDF)
Reference values for diaphragm electrical activity (Edi) in newborn infants (PDF)
Outcome of neonatal hypoxic respiratory failure: a livebirth population-based retrospective survey (PDF)
Maternal preterm birth prediction in the United States: a case-control database study (PDF)
Tidal volumes during delivery room stabilization of (near) term infants (PDF)
Machine learning for prediction of bronchopulmonary dysplasia-free survival among very preterm infants
Severe neonatal hyperbilirubinemia secondary to combined RhC hemolytic disease, congenital hypothyroidism and large adrenal hematoma: a case report
Prognostic risk score development to predict birth asphyxia using maternal and fetal characteristics in South Gondar zone hospitals, north West Ethiopia

**Pediatric Critical Care Medicine**
No relevant articles

**New England Journal of Medicine**
No relevant articles

**Lancet**
No relevant articles

**JAMA**
No relevant articles

**BMJ**
No relevant articles

**Pediatric Infectious Disease Journal**
Discordant congenital toxoplasmosis and cytomegalovirus infection in dichorionic diamniotic twins
The loss of respiratory syncytial virus seasonality and the effects on palivizumab administration

**Pediatric Cardiology**
No new content

**Pediatric Neurology**
Association between early EEG background and outcomes in infants with mild hie undergoing therapeutic hypothermia
Extremity movement score in infants with all Narakas types of obstetric brachial plexus palsy

**Obstetrics and Gynecology**
Defining a cesarean delivery rate for optimizing maternal and neonatal outcomes

American Journal of Obstetrics & Gynecology
Percutaneous/mini-laparotomy fetoscopic repair of open spina bifida: a novel surgical technique
Maternal obesity during pregnancy leads to derangements in one-carbon metabolism and the gut microbiota: implications for fetal development and offspring wellbeing
Fetal reduction of triplet pregnancies to twins vs singletons: a meta-analysis of survival and pregnancy outcome
Antenatal intravenous immunoglobulins in pregnancies at risk of fetal and neonatal alloimmune thrombocytopenia: comparison of neonatal outcome in treated and nontreated pregnancies
Severity of intrapartum fever and neonatal outcomes

Hospital Pediatrics
No relevant content

BASIC SCIENCE SELECTION
A single intravenous injection of cyclosporin A-loaded lipid nanocapsules prevents retinopathy of prematurity

Immunomodulation of MiRNA-223-based nanoplatform for targeted therapy in retinopathy of prematurity

Changes of oxidative stress-related gene expression in an in vitro model of neonatal hypoxic-ischemic encephalopathy
https://www.ncbi.nlm.nih.gov/pubmed/36096109

Novel pharmacological inhibition of JMJD3 improves necrotizing enterocolitis by attenuating the inflammatory response and ameliorating intestinal injury

Targeting persistent neuroinflammation after hypoxic-ischemic encephalopathy-is exendin-4 the answer?

The administration of amnion-derived multipotent cell secretome ST266 protects against necrotizing enterocolitis in mice and piglets
The effects of caffeine following hypoxic-ischemic encephalopathy: A systematic review of animal studies

Clinical
Efficacy of empiric antibiotic treatment of late-onset neonatal sepsis caused by Enterobacteriaceae: A systematic review

Prefeeding interventions improve oral feeding in preterm infants

Neonates undergoing pyloric stenosis repair are at increased risk of difficult airway management: secondary analysis of the NEonate and Children audit of Anaesthesia pRactice IN Europe

Mild controlled hypothermia for necrotizing enterocolitis treatment to preterm neonates: low technology technique description and safety analysis

Is intravenous immunoglobulin a risk factor for necrotizing enterocolitis in neonates with haemolytic disease of the newborn? A retrospective cohort study
Jie Li, Xiao-Yun Zhong, Si-Jie Song, et al. *Vox Sang.*

Pausing TPN to decrease abnormal newborn screens: a nicu quality initiative