ARTICLES OF INTEREST – July, 2023

Palivizumab prophylaxis in infants and young children at increased risk of hospitalization for respiratory syncytial virus infection

Mary T Caserta, Sean T O’Leary, Flor M Munoz, et al. Pediatrics. This technical report summarizes the literature review by the Committee on Infectious Diseases, supporting the reaffirmation of the 2014 AAP policy statement on palivizumab prophylaxis among infants and young children at increased risk of hospitalization for RSV infection. Since the last update in 2014, which refined prophylaxis guidance to focus on those children at greatest risk, data have become available regarding the seasonality of RSV circulation, the incidence and risk factors associated with bronchiolitis hospitalizations, and the potential effects of the implementation of prophylaxis recommendations on hospitalization rates of children with RSV infection. Review of publications since 2014 did not support a change in recommendations for palivizumab prophylaxis and continues to endorse the guidance provided in the 2021 Red Book.

Viral infections and neonatal necrotizing enterocolitis: a meta-analysis

Srinivasan Mani, Snehashis Hazra, Joseph Hagan, et al. Pediatrics. This meta-analysis included observational studies that examined the association between viral infections and NEC in newborn infants. A significant association was noted between viral infections and NEC (odds ratio [OR], 3.81, 95% confidence interval: 1.99-7.30, 24 studies). In subgroup analysis based on specific viruses, infection with rotavirus (OR, 3.96 [1.12-13.95], 10 studies), cytomegalovirus (OR, 3.50 [1.60-7.65], 5 studies), norovirus (OR, 11.95 [2.05-69.84], 2 studies), and astrovirus (OR, 6.32 [2.49-16.02], 2 studies) was significantly associated with NEC.

Construction of a synthetic colostrum substitute and its protection of intestinal cells against inflammation in an in vitro model of necrotizing enterocolitis

Syaza Y Binte Abu Bakar, Malinda Salim, Andrew J Clulow, et al. ACS Appl Mater Interfaces. Colostrum provides bioactive components that are essential for the colonization of microbiota in the infant gut, while preventing infectious diseases such as necrotizing enterocolitis. This study is aimed at the rational design of an appropriate lipid component for a colostrum substitute and determining the ability of this formulation to reduce inflammation in intestinal cells. Gas chromatography was utilized to map lipid composition. The self-assembly of lipid components occurring during digestion of colostrum was monitored using small-angle X-ray scattering for comparison with substitute mixtures containing pure triglyceride lipids based on their abundance in colostrum. Subtle differences in lipid self-assembly were evident, with the substitute mixtures exhibiting additional non-lamellar phases, which were not seen for human colostrum. The biological markers of necrotizing enterocolitis were modulated in cells that were treated with bifidobacteria cultured on colostrum substitute mixtures, compared to those
treated with infant formula. These findings provide an insight into a colostrum substitute mixture that resembles human colostrum in terms of composition and structural behavior during digestion and potentially reduces some of the characteristics associated with necrotizing enterocolitis.

**Thresholds for surfactant use in preterm neonates: a network meta-analysis**

This is a network meta-analysis of randomized controlled trials of different surfactant treatment strategies for respiratory distress syndrome (RDS) to assess if a certain fraction of inspired oxygen (FiO(2)) is optimal for selective surfactant therapy. The primary outcome was neonatal mortality, compared between groups treated with selective surfactant therapy at different thresholds of FiO(2). Secondary outcomes included respiratory morbidity and major complications of prematurity. There was no statistically significant differences between 30%, 40% and 50% FiO(2) thresholds. A sensitivity analysis of infants treated in the era of high antenatal steroid use and nasal continuous positive airway pressure as initial mode of respiratory support showed no difference in mortality, RDS or intraventricular haemorrhage alone but suggested an increase in the combined outcome of major morbidities in the 60% threshold. These results do not show a clear benefit of surfactant treatment at any threshold of FiO(2). The 60% threshold was suggestive of increased morbidity. There was no advantage seen with prophylactic treatment.

**Bronchopulmonary dysplasia prediction models: a systematic review and meta-analysis with Validation**

This systematic review identified 64 studies that developed and/or validated 53 BPD prediction models with meta-analysis carried out on 22 models. The authors identified published prediction models and conducted external validation on a population-based retrospective cohort study from the UK National Neonatal Research Database (NNRD). Only 6 out of the 53 identified prediction models could be validated with this cohort with C-statistics between 0.70 and 0.90 but with poor calibration. Laughon 2011 showed the best performance in predicting the BPD/death composite outcome using predictors at day 1 of age with a C-statistic of 0.76 (95% CI 0.70–0.81) and O:E ratio of 0.96 (95% CI 0.85–0.99).

**Potential for maternally administered vaccine for infant group b streptococcus**

Newborns with anti-capsular polysaccharide (CPS) IgG have a reduced risk of GBS disease. A hexavalent CPS maternal vaccine (GBS6) is being developed and currently in an ongoing phase 2, placebo-controlled trial. This involves administration of vaccine to pregnant women to prevent invasive GBS in infants. Analysis of maternal transfer of antibodies and anti-CPS IgG concentrations in association with a reduced risk of invasive disease among newborns through 89 days of age. The results showed 57 to 97% of the infants having a seroresponse to the most immunogenic formulation which is associated with a reduced risk of invasive GBS.

**Systematic review and meta-analysis of neonatal outcomes of COVID-19 vaccination in Pregnancy**

This study addressed the safety of COVID-19 vaccine in relation to neonatal outcomes after maternal vaccination of COVID-19 during pregnancy. The analysis included a total of 15 studies. The results showed protective effects on some outcomes such as reduction rates of preterm birth, SGA, and APGAR score <7 at 5 minutes of life. The vaccination in pregnant women does not raise significant adverse effects on neonatal such as NICU admission and congenital
Early predictors of neurodevelopment after perinatal arterial ischemic stroke: a systematic review and meta-analysis

This study is a systematic review of early predictors for various long-term outcome categories after perinatal arterial ischemic stroke (PAIS), including a meta-analysis for the outcome unilateral spastic cerebral palsy. Corticospinal tract assessment on MRI and standardized motor assessments were found to be best to predict cerebral palsy after PAIS, while bedside techniques such as (a)EEG and NIRS was shown to improve cognitive outcome prediction. They determined that future research should be focused on improving outcome prediction for non-motor outcomes.

Safety of high dose erythropoietin used with therapeutic hypothermia as treatment for newborn hypoxic-ischemic encephalopathy: secondary analysis of the HEAL randomized controlled trial

Five hundred infants born at ≥36 weeks of gestation with moderate or severe hypoxic ischemic encephalopathy undergoing therapeutic hypothermia were randomized to Epo or placebo on days 1, 2, 3, 4, and 7. Pretreatment and posttreatment SAEs (serious adverse events) were compared with adjusted generalized linear models, with posttreatment models adjusted for the presence of a pretreatment SAE. A small increased risk of major thrombotic events was identified in the Epo treatment group.

Additional value of 3-month cranial magnetic resonance imaging in infants with neonatal encephalopathy following perinatal asphyxia

This was a retrospective, single-center study including 63 infants with perinatal asphyxia and NE (neonatal encephalopathy) (n = 28 cooled) with cranial MRI <2 weeks and 2-4 months after birth. Both scans were assessed using biometrics, a validated injury score for neonatal MRI, and a new score for 3-month MRI, with a white matter (WM), deep gray matter (DGM), and cerebellum subscore. The evolution of brain lesions was assessed, and both scans were related to 18- to 24-month composite outcome. Adverse outcome included cerebral palsy, neurodevelopmental delay, hearing/visual impairment, and epilepsy. In particular, DGM abnormalities on 3-month MRI, preceded by DGM abnormalities on the neonatal MRI, were associated with 18- to 24-month outcome, indicating the utility of 3-month MRI for treatment evaluation in neuroprotective trials. However, the clinical usefulness of 3-month MRI seems limited compared with neonatal MRI.

OTHER NOTEWORTHY PUBLICATIONS – July, 2023

COVID-19
Confirmed SARS-CoV-2 infection in Scottish neonates 2020-2022: a national, population-based cohort study
Systematic review and meta-analysis of neonatal outcomes of COVID-19 vaccination in pregnancy

Pediatrics
Safety and tolerability of V114 pneumococcal vaccine in infants: a phase 3 study
Palivizumab prophylaxis in infants and young children at increased risk of hospitalization for respiratory syncytial virus infection
Primary care framework to monitor preterm infants for neurodevelopmental outcomes in early childhood
Viral infections and neonatal necrotizing enterocolitis: a meta-analysis
Care coordination programs for infants with complex conditions: a systematic review
A neonate with a rash
Atypical systemic neonatal herpes diagnosed incidentally in twin infants

Journal of Pediatrics
Glucose and brain injury in neonatal encephalopathy (NE) – the chicken or the egg?
Neurodevelopmental consequences of neonatal thrombocytopenia
Understanding the clinical utility of genome sequencing in critically ill newborns
Screening for biliary atresia: large-scale implementation moving forward
Negative studies and the future of prenatal counseling at the margin of gestational viability
Accurate prediction of bronchopulmonary dysplasia: are we there yet?
Pulmonary hypertension in infants and children with vein of galen malformation and association with clinical outcomes
Increasing the percentage of neonates consuming human milk in a pediatric cardiothoracic intensive care unit: a quality improvement initiative
Preterm birth and total health care use and costs in the first 5 years of life: a population-based study
Prediction models for bronchopulmonary dysplasia in preterm infants: a systematic review and meta-analysis
Children newly diagnosed with fetal and neonatal alloimmune thrombocytopenia: neurodevelopmental outcome at school age
Safety of high dose erythropoietin used with therapeutic hypothermia as treatment for newborn hypoxic-ischemic encephalopathy: secondary analysis of the heal randomized controlled trial
Preterm neurodevelopmental trajectories from 18 months to 4.5 years
Additional value of 3-month cranial magnetic resonance imaging in infants with neonatal encephalopathy following perinatal asphyxia
Delayed-onset transient hyperinsulinism in infants with very low and extremely low birth weights: a cohort study
Penile pearls in a newborn
Brachial plexus palsy and ptosis in a newborn  

Pediatric Research
Early predictors of neurodevelopment after perinatal arterial ischemic stroke: a systematic review and meta-analysis  
Bronchopulmonary dysplasia prediction models: a systematic review and meta-analysis with validation  
Neuromonitoring in neonatal critical care part II: extremely premature infants and critically ill neonates  
Neuromonitoring in neonatal critical care part I: neonatal encephalopathy and neonates with possible seizures  
Prematurity-associated wheeze: current knowledge and opportunities for further investigation  
Critical functional lung volumes in neonatal intensive care: evidence and clinical applications  
The publication quality of laboratory values in clinical studies in neonates  
Hippocampal volume and cognitive performance in children with congenital heart disease  
Different probiotic strains alter human cord blood monocyte responses  
Red cell infusion but not saline is effective for volume expansion in preterm piglets  
CCL3 aggravates intestinal damage in NEC by promoting macrophage chemotaxis and M1 macrophage polarization  
Hemodynamic impacts of apelin-13 in a neonatal lamb model of septic peritonitis  
Associations of maternal plasma and umbilical cord plasma metabolomics profiles with birth anthropometric measures  
Prematurity blunts protein synthesis in skeletal muscle independently of body weight in neonatal pigs  
Child and family factors associated with positive outcomes among youth born extremely preterm  
Bedside tracking of functional autonomic age in preterm infants  
Left ventricular function before and after percutaneous patent ductus arteriosus closure in preterm infants  
Consequences of gestational diabetes mellitus on neonatal cardiovascular health: MySweetHeart Cohort study  
Quantification of cephalocaudal progression of jaundice in preterm infants  
Risk of seizures in neonates with hypoxic-ischemic encephalopathy receiving hypothermia plus erythropoietin or placebo  
The role of vitamin D receptor gene polymorphism in the development of necrotizing enterocolitis  
Ultrasonographic evaluation of the early brain growth pattern in very low birth weight infants
Right to left ventricular volume ratio is associated with mortality in congenital diaphragmatic hernia
Variations in care of neonates during therapeutic hypothermia: call for care practice bundle implementation
Longitudinal perturbations of plasma nuclear magnetic resonance profiles in neonatal encephalopathy
Postnatal growth of small for gestational age late preterm infants: determinants of catch-up growth
Structural racism is associated with adverse postnatal outcomes among Black preterm infants

Archives of Disease in Childhood - Fetal & Neonatal Edition
Getting to health equity in NICU care in the USA and beyond
Thresholds for surfactant use in preterm neonates: a network meta-analysis
National PReCePT Programme: a before-and-after evaluation of the implementation of a national quality improvement programme to increase the uptake of magnesium sulfate in preterm deliveries
Emotional journey of Asian mothers of premature infants who received pasteurised donor human milk: a qualitative study
Birth order and morbidity and mortality to hospital discharge among inborn very low-birthweight, very preterm twin infants admitted to neonatal intensive care: a retrospective cohort study
Survey of transfusion practices in preterm infants in Europe
Effect of systemic hydrocortisone in ventilated preterm infants on parent-reported behavioural outcomes at 2 years corrected age: follow-up of a randomised clinical trial
Low dose or very low dose phenylephrine and cyclopentolate microdrops for retinopathy of prematurity eye examinations (The Little Eye Drop Study): a randomised controlled non-inferiority trial
Association of nurse staffing and unit occupancy with mortality and morbidity among very preterm infants: a multicentre study
Comparison of two automated oxygen controllers in oxygen targeting in preterm infants during admission: an observational study
Variation in hospital morbidities in an Australian neonatal intensive care unit network
Supporting all breaths versus supporting some breaths during synchronised mechanical ventilation in neonates: a systematic review and meta-analysis
Parents&#39; Experiences of Communication in Neonatal Care (PEC): a neonatal survey refined for real-time parent feedback
Antiseizure medication at discharge in infants with hypoxic-ischaemic encephalopathy: an observational study  

Journal of Perinatology  
NICU sensory experiences associated with positive outcomes: an integrative review of evidence from 2015-2020  

Early post-operative neurodevelopment and visual assessment in neonates with congenital heart disease undergoing cardiac surgery  

Early surgery in very preterm infants is associated with brain abnormalities on term MRI: a propensity score analysis  

Outcomes of congenital diaphragmatic hernia among preterm infants: inverse probability of treatment weighting analysis  

Fetal outcomes and continuity in perinatal palliative care patients at a quaternary care pediatric hospital  

Antenatal consultation and deliberation: adapting to parental preferences  

Transmission of negative biases through social commentary included in neonatal intensive care unit progress notes  

Characteristics and outcomes of neonatal opioid withdrawal syndrome in preterm infants: a retrospective cohort study in the current era  

Assessing the Eat, Sleep, Console model for neonatal abstinence syndrome management at a regional referral center  

Drivers of decision-making regarding infant sleep practices among mothers with opioid use disorder  

The Neonatal Withdrawal Assessment Tool (NWAT): pilot inter-rater reliability and content validity  

Workload In Neonatology (WORKLINE): Validation and feasibility of a system for measuring clinician workload integrated into the electronic health record  

Optimizing the hospital discharge process to facilitate family-centered care for well newborns  

Preterm congenital heart disease and neurodevelopment: the importance of looking beyond the initial hospitalization  

Role of genomic medicine and implementing equitable access for critically ill infants in neonatal intensive care units  

The patient/physician relationship in a post-Roe world: a neonatologist viewpoint  

Systemic hypertension in preterm infants and neurodevelopmental outcomes  

Exposure to maternal acetylsalicylic acid and the risk of bleeding events in extreme premature
The association between intrauterine exposure to opioids, tobacco, alcohol, and cannabis and length of birth hospitalization among neonates without NOWS

Neonatology
Red blood cell membrane-related gene variants and clinical risk factors in Chinese neonates with hyperbilirubinemia

A small-for-gestational-age infant with mirage syndrome who developed heat stroke and rhabdomyolysis due to severe temperature instability

Interleukin-33 and soluble st2 levels in infants with hypoxic-ischemic encephalopathy

Resonance Raman spectroscopy tissue oxygenation measurements in neonates

Impact of retinopathy of prematurity on visual motor integration

Effect of fentanyl for preterm infants on mechanical ventilation: a systematic review and meta-analysis

Neonatal diagnosis of alveolar capillary dysplasia via rapid genomic sequencing: a new gold standard?

Improving the clinical interpretation of transcutaneous carbon dioxide and oxygen measurements in the neonatal intensive care unit

The delicate skin of preterm infants: barrier function, immune-microbiome interaction, and clinical implications

Biochemical and lung function test accuracy for predicting the need for surfactant therapy in preterm infants: a systematic review

A narrative review of the rationale for conducting neonatal emergency studies with a waived or deferred consent approach

Indomethacin prophylaxis is associated with reduced risk of intraventricular hemorrhage in extremely preterm infants born in the context of amniotic infection syndrome

Melatonin alters innate immune function in infants with neonatal encephalopathy

American Journal of Perinatology
Maternal and neonatal outcomes in nulliparous participants undergoing labor induction by cervical ripening method

Prediction and prevention of preterm birth: a prospective, randomized intervention trial

Predicting cardiac anatomy, physiology, and surgical management based on fetal echocardiography in heterotaxy syndrome
Early transient hypoglycemia and test performance in at-risk newborns

Radiation exposure in the neonatal intensive care unit in newborns and staff

Neonatal gastric perforation: 14-year experience from a tertiary neonatal intensive care unit

Umbilical cord blood use for admission blood tests of VLBW preterm neonates: a randomized control trial

Physician perceptions on quality of life and resuscitation preferences for extremely early newborns

Journal of Neonatal-Perinatal Medicine
No new content

Maternal Health, Neonatology and Perinatology
Benzylpenicillin concentrations in umbilical cord blood and plasma of premature neonates following intrapartum doses for group B streptococcal prophylaxis (PDF)

Neoreviews
Gastrointestinal bleeding in the neonate: updates on diagnostics, therapeutics, and management

Cystic fibrosis–associated gastrointestinal disease in neonates

Pediatric intestinal transplantation management and outcomes

Extensive brain lesions in a preterm neonate

Late-onset respiratory distress in a very preterm neonate

A term neonate with persistent respiratory distress

Sickle cell crises in pregnancy: fetal and neonatal implications

Gastrointestinal complications in infants with congenital diaphragmatic hernia

Follow-up for a preterm infant with subglottic stenosis

JAMA Pediatrics
Efficacy of a vibrating crib mattress to reduce pharmacologic treatment in opioid-exposed newborns - a randomized clinical trial

Maternal opioid use disorder and the risk of postneonatal infant mortality

Human papillomavirus transmission and persistence in pregnant women and neonates

Fetal cardiac function at midgestation in women who subsequently develop gestational diabetes

What parents should know about returning to work while breastfeeding

Effect measure modification by birth weight on the association between overweight or obesity and hypertension in children and adolescents
BMC Pediatrics
Sildenafil for congenital heart diseases induced pulmonary hypertension, a meta-analysis of randomized controlled trials
A rare cause of air-leak syndrome in a premature newborn: a case report
Clinical effect of early enteral nutrition support on critically ill neonates with extracorporeal membrane oxygenation
Changes in the patterns of respiratory support and incidence of bronchopulmonary dysplasia; a single center experience
Patent ductus arteriosus and increased conjugated bilirubin in the second week after birth are independent risk factors for necrotizing enterocolitis in preterm infants: an observational study
Congenital heart diseases with airway stenosis: a predictive nomogram to risk-stratify patients without airway intervention
Think out of the box: association of left congenital diaphragmatic hernia and abnormal origin of the right pulmonary artery
Effect of reduced versus usual lipid emulsion dosing on bilirubin neurotoxicity and neurodevelopmental impairment in extremely preterm infants: study protocol for a randomized controlled trial

Pediatric Critical Care Medicine
No relevant articles

New England Journal of Medicine
Potential for maternally administered vaccine for infant group B streptococcus

Lancet
No relevant articles

JAMA
No relevant articles

BMJ
No relevant articles

Pediatric Infectious Disease Journal
No relevant articles

Pediatric Cardiology
No relevant content

Pediatric Neurology
Normal outcome with prenatal intervention for riboflavin transporter defect
Massive neonatal arterial ischemic stroke
Using neonatal magnetic resonance imaging to predict gross motor disability at four years in term-born children with neonatal encephalopathy

Utilizing international classification of diseases codes to identify shoulder dystocia and neonatal brachial plexus injury

Obstetrics and Gynecology

American Journal of Obstetrics & Gynecology
The ADENO study: ADenomyosis and its effect on neonatal and obstetric outcomes: a retrospective population-based study

Personalized stratification of pregnancy care for small for gestational age neonates from biophysical markers at midgestation

Hospital Pediatrics
Implementation of ESC QI initiative in neonatal unit setting and adaptation during the pandemic

Decreasing percentage of infants with very low 5-minute apgar scores at a safety-net level III NICU

BASIC SCIENCE SELECTIONS

ETS1 ameliorates hyperoxia-induced bronchopulmonary dysplasia in mice by activating Nrf2/HO-1 mediated ferroptosis

MicroRNA dysregulation in the heart and lung of infants with bronchopulmonary dysplasia

METTL3 promotes hyperoxia-induced pyroptosis in neonatal bronchopulmonary dysplasia by inhibiting ATG8-mediated autophagy

Type 2 innate lymphoid cell-derived amphiregulin regulates type II alveolar epithelial cell transdifferentiation in a mouse model of bronchopulmonary dysplasia

Early life surfactant protein-D levels in broncho-alveolar lavage fluids of extremely preterm neonates

Construction of a Synthetic Colostrum Substitute and Its Protection of Intestinal Cells against Inflammation in an In Vitro Model of Necrotizing Enterocolitis

Human milk oligosaccharides reduce necrotizing enterocolitis-induced neuroinflammation and cognitive impairment in mice

Ocular manifestations of congenital anomalies of the kidney and urinary tract (CAKUT)

ADDITIONAL JOURNAL SELECTIONS

Lung biopsy in infants with severe bronchopulmonary dysplasia
Predictors for invasive home mechanical ventilation duration in bronchopulmonary dysplasia
Obstructive sleep apnea is associated with use of assisted ventilation among children with bronchopulmonary dysplasia hospitalized with respiratory illness: A nationwide inpatient cohort
Thresholds for surfactant use in preterm neonates: a network meta-analysis
Fetal hemoglobin, blood transfusion, and retinopathy of prematurity in preterm infants: An observational, prospective study
https://www.ncbi.nlm.nih.gov/pubmed/37417124
Survey of transfusion practices in preterm infants in Europe
Is there room for prompt routine ophthalmic examination in neonates with congenital cytomegalovirus (CMV) infection during the neonatal period?
Using adenosine triphosphate bioluminescence level monitoring to identify bacterial reservoirs during two consecutive Enterococcus faecium and Staphylococcus capitis nosocomial infection outbreaks at a neonatal intensive care unit
The Role of Albumin in the Diagnosis of Neonatal Sepsis Over the Last 11 Years: A Retrospective Study
Role of white blood cell count, immature to total ratio and c-reactive protein in early detection of clinically suspected neonatal sepsis
Substance use before or during pregnancy and the risk of child mortality, perinatal morbidities and congenital anomalies
Respiratory outcomes in preterm infants following intravitreal bevacizumab for retinopathy of prematurity-a 10-year matched case study