ARTICLES OF INTEREST – March 2019

Pharmacological treatments for neonatal abstinence syndrome a systematic review and network meta-analysis

In this meta-analysis of 18 randomized clinical trials (N=1072), pharmacologic therapies for neonatal abstinence syndrome were compared for the primary outcome of length of treatment. Length of hospital stay, additional therapies, and adverse events were secondary outcomes. Therapies included buprenorphine, clonidine, diluted tincture of opium and clonidine, diluted tincture of opium, morphine, methadone, and phenobarbital. Sublingual buprenorphine was associated with the shortest length of treatment and length of stay. Monotherapy with either morphine or phenobarbital was associated with the longest length of treatment and the longest length of stay.

Epidemiology of invasive early-onset and late-onset group B Streptococcal disease in the United States, 2006 to 2015 multistate laboratory and population-based surveillance

The authors used the Active Bacterial Core surveillance program to describe the incidence rates, case characteristics, antimicrobial resistance, and serotype distribution of early- and late-onset GBS disease in the United States from 2006 to 2015. Early-onset GBS declined from 0.37 to 0.23 per 1000 live births (p<.001), but late-onset disease remained approximately 0.31 per 1000 live births. In early-onset disease, 48% of mothers had no indications for IAP and 22% had indications but did not receive IAP. The 6 most common serotypes (Ia, Ib, II, III, IV, and V) caused 99.3% of early-onset and 99.7% of late-onset cases. No β-lactam resistance was identified.

Neonatal Glycaemia and Neurodevelopmental Outcomes: A Systematic Review and Meta-Analysis.

The authors sought to assess the association between neonatal hypoglycaemia on neurodevelopment outcomes in childhood and adolescence. In this systematic review they found that neonatal hypoglycaemia is associated with a two- to threefold increased risk of specific cognitive deficits in early childhood (2–5 years), including visual-motor impairment and executive dysfunction, and general cognitive impairment and literacy and numeracy problems in later childhood (6–11 years). Carefully designed intervention trials are needed to determine the optimal management of neonates at risk of hypoglycaemia to improve long-term outcomes.
Successful use of an artificial placenta to support extremely preterm ovine fetuses at the border of viability

The authors utilized an ex-vivo uterine environment (EVE) therapy to support extremely preterm sheep fetuses (600-700 g / 95 d gestation; equivalent to 24 weeks of human gestation) compared to gestational controls (CON). Seven of eight EVE fetuses completed 120 h of therapy. There were no significant inter-group differences in final weight and length, brain weight, IVH, infection, inflammatory markers, or hematologic parameters compared to CON. They conclude that the use of artificial placenta technology, EVE, to support extremely preterm ovine fetuses in a stable, growth-normal state for 120 h is feasible and has the potential for clinical therapy.

Long-term ventilation for children with chronic lung disease of infancy
Baker CD. Curr Opin Pediatr.

The author reviews the current literature to assist in answering: do infants benefit from tracheostomy placement for chronic ventilation; what is the timing of tracheotomy surgery; what are the optimal strategies for mechanical ventilation; is multidisciplinary care in both the inpatient and outpatient settings feasible; and what is the appropriate time for weaning mechanical ventilation and tracheostomy decannulation? When chronic respiratory insufficiency limits a preterm infant's ability to grow and develop, chronic invasive ventilation may facilitate neurodevelopmental progress and may lead to an improved long-term outcome.

Duration of initial empirical antibiotic therapy and outcomes in very low birth weight infants

The association of mortality or any major morbidity (severe neurologic injury, retinopathy of prematurity, necrotizing enterocolitis, chronic lung disease, or hospital-acquired infection) and antibiotics was looked at in VLBW who were exposed to antibiotics in the first week of life and did not have culture proven sepsis. Antibiotic exposure for 4-7 days was associated with higher odds of the composite outcome. Each additional day of antibiotic exposure was associated with increased odds of composite outcome.

Should therapeutic hypothermia be offered to babies with mild neonatal encephalopathy in the first 6 h after birth?

This article, by an expert panel from the Neonatal Neurocritical Care Special Interest Group annual meeting, summarizes the evidence to date regarding neurodevelopmental outcomes of infants with mild neonatal encephalopathy (both treated and untreated with therapeutic hypothermia). The authors describe animal models for mild hypoxic-ischemic injury and agree that these findings as a whole suggest that early treatment of infants with milder hypoxic-ischemic encephalopathy would likely be effective. The article concludes with a proposed definition of mild neonatal encephalopathy and a framework for a randomized clinical trial.

Efficacy and safety of pulmonary application of corticosteroids in preterm infants with respiratory distress syndrome: a systematic review and meta-analysis

In a systematic review and meta-analysis, the authors identified 873 potential citations and 12 RCTs evaluating the efficacy and safety of pulmonary application of corticosteroids in preterm infants with RDS. Pulmonary corticosteroid therapy was associated with a significant reduction in the composite outcome of BPD or death (relative risk (RR) 0.85, 95% CI 0.76 to 0.96), incidence of patent ductus
arteriosus (PDA) (RR 0.82, 95% CI 0.74 to 0.92) and pneumonia (RR 0.57, 95% CI 0.35 to 0.92). The authors concluded that pulmonary administration of corticosteroids reduced the incidence of BPD or death, pneumonia, PDA without causing any major side effects in preterm infants with RDS.

**Cord milking versus immediate clamping in preterm infants: a randomized controlled trial**


In a single center randomized clinical trial on 73 preterm infants (24-31 weeks GA), the authors evaluated the effect of umbilical cord milking (UCM-3 times) vs immediate cord clamping (ICC). The primary outcome was systemic blood flow as represented by superior vena cava (SVC) flow at 4–6 hrs after birth. Secondary outcomes included cardiac output, neonatal morbidities and mortality. While infants with UCM had higher hemoglobin on admission, there were no differences in primary or other secondary outcomes between the groups. The study concluded that UCM at birth did not result in any adverse outcomes but did not reduce morbidity or mortality in their study population.

**OTHER NOTEWORTHY PUBLICATIONS – March, 2019**

**Pediatrics**

Infant regulation and child mental health concerns: a longitudinal study

Duration of initial empirical antibiotic therapy and outcomes in very low birth weight infants

Public health surveillance of prenatal opioid exposure in mothers and infants

Antibiotic stewardship in the neonatal intensive care unit: lessons from oxygen

Reducing invasive care for low-risk febrile infants through implementation of a clinical pathway

Congenital methemoglobinemia identified by pulse oximetry screening

Response from the neonatal resuscitation program (NRP) steering committee

**Journal of Pediatrics**

rhIGF-1/rhIGFBP-3 in preterm infants: a phase 2 randomized controlled trial
https://www.ncbi.nlm.nih.gov/pmc/articles/pmc6389415/

The metabolic costs 30 years after preterm birth

Genetic disorders of lung development

Thirteen-year outcomes in very preterm children associated with diffuse excessive high signal intensity on neonatal magnetic resonance imaging

Cardiovascular autonomic control is altered in children born preterm with sleep disordered breathing

Pediatricians advocating breastfeeding: let's start with supporting our fellow pediatricians first

Detrimental impact of low birth weight on circulating number and functional capacity of endothelial progenitor cells in healthy children: role of angiogenic factors

50 years ago in the journal of pediatrics: a chromosome survey of 2400 normal newborn infants
Sleep, autonomic control, and preterm birth—complex interrelationships with important health consequences

A pilot study of soluble form of lox-1 as a novel biomarker for neonatal hypoxic-ischemic encephalopathy

Parental cannabis use is associated with cannabis initiation and use in offspring

50 years ago in the journal of pediatrics: normal inner-canthal and outer orbital dimensions

Metabolic syndrome in very low birth weight young adults and controls: the New Zealand 1986 VLBW study

Exposure to diabetes in utero is associated with earlier pubertal timing and faster pubertal growth in the offspring: the EPOCH study

50 years ago in the journal of pediatrics: serum immunoglobulin levels in newborn infants: evaluation of a radial diffusion plate method

The association of Mediterranean diet during pregnancy with longitudinal body mass index trajectories and cardio metabolic risk in early childhood


Different growth patterns persist at 24 months of age in formula-fed infants randomized to consume a meat- or dairy-based complementary diet from 5 to 12 months of age

Assessment of hemodynamic parameters in the assessment of a patent ductus arteriosus: it is still a puzzle

Reply (to Assessment of hemodynamic parameters in the assessment of a patent ductus arteriosus: it is still a puzzle)

Future research in the immune system of human milk

Time versus treatment: interpreting longitudinal data analysis of Treprostinil

Reply (to Time versus treatment: interpreting longitudinal data analysis of Treprostinil)

Neonatal lung disease associated with tbx4 mutations

Diaper rash in an infant with seizures

Pediatric Research

Spontaneous premature birth as a target of genomic research

Preventing bronchopulmonary dysplasia: new tools for an old challenge
Should therapeutic hypothermia be offered to babies with mild neonatal encephalopathy in the first 6 h after birth?
Continuous pulse oximetry and respiratory rate trends predict short-term respiratory and growth outcomes in premature infants
Osteopontin in human milk and infant formula affects infant plasma osteopontin concentrations
Galectin-3 expression and effect of supplementation in neonatal mice with disseminated Candida albicans infection
aEEG and neurologic exam findings correlate with hypoxic–ischemic brain damage severity in a piglet survival model
Effect of polyunsaturated fatty acids on postnatal ileum development using the fat-1 transgenic mouse model
Maternal folic acid supplementation reduces the severity of cleft palate in Tgf-β3 null mutant mice
Absence of gut microbial colonization attenuates the sympathoadrenal response to hypoglycemic stress in mice: implications for human neonates

**Neonatologist Performed Echocardiography (NPE) Special Edition**
Education, training, and accreditation of neonatologist performed echocardiography in Europe-framework for practice
Introduction to neonatologist-performed echocardiography
The role of neonatologist performed echocardiography in the assessment and management of neonatal shock
Tissue doppler velocity imaging and event timings in neonates: a guide to image acquisition, measurement, interpretation, and reference values
Application of neonatologist performed echocardiography in the assessment and management of persistent pulmonary hypertension of the newborn
Deformation imaging and rotational mechanics in neonates: a guide to image acquisition, measurement, interpretation, and reference values
Application of NPE in the assessment of a patent ductus arteriosus
Application of neonatologist performed echocardiography in the assessment and management of neonatal heart failure unrelated to congenital heart disease
Role of neonatologist-performed echocardiography in the assessment and management of patent ductus arteriosus physiology in the newborn
**Archives of Disease in Childhood - Fetal & Neonatal Edition**

- T-piece resuscitators: how do they compare?  
- Human milk as a protective factor for bronchopulmonary dysplasia: a systematic review and meta-analysis  
- Efficacy and safety of pulmonary application of corticosteroids in preterm infants with respiratory distress syndrome: a systematic review and meta-analysis  
- Cord milking versus immediate clamping in preterm infants: a randomized controlled trial  
- Breastfeeding outcomes in European NICUs: impact of parental visiting policies  
- Dose-interval study of a dual probiotic in preterm infants  
- Accuracy of five formulae to determine the insertion length of umbilical venous catheters  
- Safety of meningococcal group B vaccination in hospitalized premature infants  
- Estimating neonatal length of stay for babies born very preterm  
- Detection of exhaled carbon dioxide following intubation during resuscitation at delivery  
- Adverse effects of small for gestational age differ by gestational week among very preterm infants  
- Nutritional role of amniotic fluid: clues from infants with congenital obstruction of the digestive tract  
- Learning from claims: hyperbilirubinemia and kernicterus  
- Safe and effective glycemic control in premature infants: observational clinical results from the computerized STAR-GRYPHON protocol  
- Pulseless electrical activity: a misdiagnosed entity during asphyxia in newborn infants?  
- Does the use of an iodine-containing contrast agent to visualize the PICC tip in preterm babies cause hypothyroidism? A randomized controlled trial  
- Time interval for preterm infant weight gain velocity calculation precision  
- Postnatal cardiovascular adaptation  

**Journal of Perinatology**

- To transfuse or not transfuse a premature infant: the new complex question  
- Neonatologist salary: factors, equity and gender  
- Vascular changes in fetal growth restriction: clinical relevance and future therapeutics  
- Reducing parental trauma and stress in neonatal intensive care: systematic review and meta-analysis of hospital interventions  
Platelet-neutrophil interactions are lower in cord blood of premature newborns

A randomized controlled trial of immediate versus delayed umbilical cord clamping in multiple-birth infants born preterm

The impact of late onset arterial hypotension on respiratory outcome in extremely premature infants

The tubular damage markers: neutrophil gelatinase-associated lipocalin and kidney injury molecule-1 in newborns with intrauterine growth restriction

Nasal high-flow therapy as primary respiratory support for preterm infants without the need for rescue with nasal continuous positive airway pressure

Early-stage translational research in perinatal medicine

American Journal of Perinatology
Risk of cesarean delivery among nulliparous Asian-Indian women with term singleton pregnancies

Time to delivery after scheduled Shirodkar cerclage removal in singleton gestations based on the original indication for cerclage placement

Modern neonatal transport: sound and vibration levels and their impact on physiological stability

Function, exercise capacity, and exhaled nitric oxide levels: outcomes following neonatal treatment with inhaled nitric oxide to prevent bronchopulmonary dysplasia

Sevoflurane for short painful procedures in the neonatal intensive care unit

Cross-generational contributors to preterm birth in California: singletons based on race/ethnicity

Tele monitoring of neonatal intensive care units: preliminary experience in the state of Minas Gerais, Brazil

Cervical ripening using foley balloon with or without oxytocin: a systematic review and meta-analysis

Prenatal diagnosis of vasa previa: outpatient versus inpatient management

Infants born to mothers with clinical chorioamnionitis: a cross-sectional survey on the use of early-onset sepsis risk calculator and prolonged use of antibiotics

Journal of Neonatal-Perinatal Medicine
The relationship of cervical microbiota diversity with race and disparities in preterm birth
Maternal Health, Neonatology and Perinatology
Maternal infections during pregnancy and offspring midlife inflammation (PDF)

Does the safe childbirth checklist (SCC) program save newborn lives? Evidence from a realistic quasi-experimental study, Rajasthan, India (PDF)

Neoreviews
Historical perspectives: telemedicine in neonatology
https://neoreviews.aappublications.org/content/20/3/e113

When to include a lumbar puncture in the evaluation for neonatal sepsis
https://neoreviews.aappublications.org/content/20/3/e124

***Antibiotic resistance in the neonatal intensive care unit
https://neoreviews.aappublications.org/content/20/3/e135

Challenging the “culture” of the tracheal aspirate
https://neoreviews.aappublications.org/content/20/3/e145

Case 1: a neonate with severe pallor
https://neoreviews.aappublications.org/content/20/3/e152

Case 2: recurrent hypoglycemia in early neonatal period
https://neoreviews.aappublications.org/content/20/3/e155

Case 3: an abnormal nose mass
https://neoreviews.aappublications.org/content/20/3/e158

Strip of the month: intrauterine growth restriction with abnormal umbilical artery doppler studies
https://neoreviews.aappublications.org/content/20/3/e161

Microcephalic newborn with forehead nevus flammeus, bulging eyes, and clenched fists
https://neoreviews.aappublications.org/content/20/3/e170

Delayed umbilical cord clamping in preterm infants
https://neoreviews.aappublications.org/content/20/3/e174

JAMA Pediatrics
Carelessness about surfactant dose—a cultural problem, a legal issue, or an open research question?

When is death in a child’s best interest?: examining decisions following severe brain injury

Epidemiology of invasive early-onset and late-onset group B Streptococcal disease in the United States, 2006 to 2015 multistate laboratory and population-based surveillance

Preventing neonatal group B Streptococcus disease the limits of success

Pharmacological treatments for neonatal abstinence syndrome a systematic review and network meta-analysis

Pharmacologic treatment for neonatal abstinence syndrome which medication is best?

Association of rates of smoking during pregnancy with corporate tobacco sales policies

Association of maternal probiotic supplementation with human milk oligosaccharide composition
Fish consumption during pregnancy
Fish consumption during pregnancy—reply
https://www.ncbi.nlm.nih.gov/pubmed/30640387
Extending antenatal pertussis immunization to second trimester or at-birth pertussis immunization of premature infants?
Extending antenatal pertussis immunization to second trimester or at-birth pertussis immunization of premature infants?—reply
Protecting infants from pertussis disease

**BMC Pediatrics**
Congenital emphysematous lung disease associated with a novel Filamin A mutation. Case report and literature review (PDF)
Randomized controlled trial protocol to improve multisensory neural processing, language and motor outcomes in preterm infants (PDF)
Case report: A newborn with seizures born to a mother diagnosed with primary carnitine deficiency (PDF)
Case report: Cholecystoduodenostomy for cholestatic liver disease in a premature infant with cystic fibrosis and short gut syndrome (PDF)
A case report of a challenging diagnosis of biliary atresia in a patient receiving total parenteral nutrition (PDF)
Impact of birthweight on health-care utilization during early childhood – a birth cohort study (PDF)
Practice variation in anti-epileptic drug use for neonatal hypoxic-ischemic encephalopathy among regional NICUs (PDF)

**Pediatric Critical Care Medicine**
Procalcitonin and other common biomarkers do not reliably identify patients at risk for bacterial infection after congenital heart surgery
Catecholaminergic polymorphic ventricular tachycardia: The cardiac arrest where epinephrine is contraindicated

**New England Journal of Medicine**
Preventing preeclampsia by silencing solubleflt-1?
**Lancet**
Association of adverse perinatal outcomes of intrahepatic cholestasis of pregnancy with biochemical markers: results of aggregate and individual patient data meta-analyses
Medically assisted reproduction and birth outcomes: a within-family analysis using Finnish population registers

**JAMA**
High-dose vitamin D supplementation during pregnancy and asthma in offspring at the age of 6 years

**BMJ**
Learning from birthing stories on Twitter
Prenatal and infant exposure to ambient pesticides and autism spectrum disorder in children: population based case-control study
Role of maternal age and pregnancy history in risk of miscarriage: prospective register based study

**Pediatric Infectious Disease Journal**
Spinal tuberculosis in young HIV-exposed infants: two cases of probable congenital transmission
Perinatal yellow fever: a case report
Antibiotic overuse in premature low birth weight infants in a developing country
Successful treatment of a South African pediatric case of acute liver failure caused by perinatal transmission of Hepatitis B
Genetic relatedness of Staphylococcus haemolyticus in gut and skin of preterm neonates and breast milk of their mothers

**Pediatric Cardiology**
Prenatal diagnosis influences preoperative status in neonates with congenital heart disease: an analysis of the Society of Thoracic Surgeons congenital heart surgery database
A novel brain injury biomarker correlates with cyanosis in infants with congenital heart disease
Z-score reference ranges for fetal heart functional measurements in a large Brazilian pregnant women sample
Utilization of neurally adjusted ventilatory assist (NAVA) mode in infants and children undergoing congenital heart surgery: a retrospective review
School-age developmental and educational outcomes following cardiac procedures in the first year of life: a population-based record linkage study

Selective use of temporary epicardial pacing leads in early infancy following cardiac surgery: feasibility and determinants of clinical application

In utero aortic arch thrombosis masquerading as interrupted aortic arch: a case report and review of the literature

Variable treatment approaches for extracorporeal membrane oxygenation complications in neonates: a case series

**Pediatric Neurology**
Successful surgical treatment of refractory status epilepticus in a 12-day-old infant

**Obstetrics and Gynecology**
Elective induction at 39 weeks of gestation and the implications of a large, multicenter, randomized controlled trial

Contemporary trends in cesarean delivery utilization for live births between 22 0/7 and 23 6/7 weeks of gestation

Noninvasive prenatal whole genome sequencing: pregnant women’s views and preferences

Umbilical cord blood banking (PDF)
https://journals.lww.com/greenjournal/Fulltext/2019/03000/ACOG_Committee_Opinion_No__771_Summary__Umbilical.40.aspx#epub-link

**American Journal of Obstetrics & Gynecology**
Fertility treatment use and breastfeeding outcomes

Does the human placenta delivered at term have a microbiota? Results of cultivation, quantitative real-time PCR, 16S rRNA gene sequencing, and metagenomics

Computerized analysis of cardiotocograms and ST signals is associated with significant reductions in hypoxic-ischemic encephalopathy and cesarean delivery: an observational study in 38,466 deliveries

Plasma and cerebrospinal fluid inflammatory cytokines in perinatal depression

Maternal and newborn outcomes with elective induction of labor at term

A case for not adjusting birthweight customized standards for ethnicity: observations from a unique Australian cohort
BASIC SCIENCE SELECTIONS
Comprehensive preterm breast milk metabotype associated with optimal infant early growth pattern

Targeting progesterone receptors in newborn males and females: from the animal model to a new perspective for the treatment of apnea of prematurity?
Bairam A, Boukari R and Joseph V. *Respir Physiol Neurobiol.*

Surfactant plus budesonide decreases lung and systemic inflammation in mechanically ventilated preterm sheep

Antenatal betamethasone augments early rise in pulmonary perfusion at birth in preterm lambs: role of ductal shunting and right ventricular outflow distribution

Successful use of an artificial placenta to support extremely preterm ovine fetuses at the border of viability

Early neuropathological and neurobehavioral consequences of preterm birth in a rabbit model

ADDITIONAL JOURNAL SELECTIONS
Exploring clinical, echocardiographic and molecular biomarkers to predict bronchopulmonary dysplasia

Dynamic prediction of bleeding risk in thrombocytopenic preterm neonates

Postnatal nutritional deficit is an independent predictor of bronchopulmonary dysplasia among extremely premature infants born at or less than 28 weeks gestation

A feasibility study to detect neonatal hypoglycemia in infants of diabetic mothers using real-time continuous glucose monitoring
The possibility of early discharge for newborns being monitored for neonatal abstinence syndrome based on modified Finnegan score distributions

Long-term ventilation for children with chronic lung disease of infancy
Baker CD. *Curr Opin Pediatr.*

Gastroesophageal Reflux Disease in the Neonatal Intensive Care Unit Infant: Who Needs to Be Treated and What Approach Is Beneficial?