ARTICLES OF INTEREST – April, 2018

**Progesterone as a postnatal prophylactic agent for encephalopathy caused by prenatal hypoxic ischemic insult**

Progesterone (P4) plays a neuroprotective role through the actions of its metabolite, allopregnanolone (Allo), on P4 and GABA A receptors. The authors examined the therapeutic potential of P4 in a newborn rat model of HIE. HIE reduced the rats' ability in the rotarod task, which was completely reversed by P4 and Allo. Histological examination revealed that the HIE decreased neuronal and oligodendroglial cell density, axon fiber density, and myelin sheath thickness. P4 restored oligodendroglial cells followed by neuroprotective action of P4 that lasted long over the injection period suggesting that P4 protects the neonatal brain from HIE via restoration of oligodendroglial cells.

**Paracetamol (acetaminophen) for patent ductus arteriosus in preterm or low birth weight infants**
Ohlsson A & Shah PS. *Cochrane Database Syst Rev*.

The focus of this systematic review was to determine the effectiveness and safety of intravenous or oral paracetamol compared with placebo or no intervention, intravenous indomethacin, intravenous or oral ibuprofen, or with other cyclo-oxygenase inhibitors for treatment of an echocardiographically diagnosed PDA in preterm or low birth weight infants. Eight studies including 916 infants found moderate-quality evidence that paracetamol is as effective as ibuprofen; low-quality evidence that paracetamol is more effective than placebo or no intervention; and low-quality evidence that paracetamol is as effective as indomethacin in closing a PDA. There was no difference in neurodevelopmental outcome for paracetamol compared to ibuprofen, however the quality of evidence is low. Such trials are required before any recommendations for the possible routine use of paracetamol in the newborn population can be made.

**Laryngeal mask airway versus bag-mask ventilation or endotracheal intubation for neonatal resuscitation**
Qureshi MJ & Kumar M. *Cochrane Database Syst Rev*.

In newborns requiring positive pressure ventilation for cardio-pulmonary resuscitation, is LMA more effective than bag-mask ventilation (BMV) or endotracheal intubation for successful resuscitation? In 7 trails including 794 infants, the authors found that LMA can achieve effective ventilation during neonatal resuscitation in a time frame consistent with current NRP guidelines. Compared to BMV, LMA is more effective showing shorter resuscitation and ventilation times and less need for intubation (low-moderate evidence). In trials comparing LMA with BMV, over 80% of infants in both arms responded to
the allocated intervention. LMA offers an alternate airway device when attempts at inserting endotracheal intubation are unsuccessful during resuscitation in infants with >1500 g or 34 weeks' gestation.

**Outcomes of surgical ligation after unsuccessful pharmacotherapy for patent ductus arteriosus in neonates born extremely preterm**

A retrospective cohort study was conducted looking at neonates <27 weeks, with a hemodynamically significant PDA, who had an unsuccessful pharmacologic closure. Outcomes were compared between 166 surgically ligated and 142 non ligated infants. After adjustment for confounders, ligation was not associated with the composite outcome of death or neurodevelopmental impairment, neurodevelopmental impairment alone, chronic lung disease, or retinopathy of prematurity among survivors.

**Prevention of bronchopulmonary dysplasia in extremely low gestational age neonates: current evidence**
Poets CF & Lorenz L. *Arch Dis Child Fetal Neonatal Ed*.

Bronchopulmonary dysplasia (BPD) is one of the most frequent complications in extremely low gestational age neonates, but has remained largely unchanged in rate. The authors reviewed data on BPD prevention focusing on recent meta-analyses.

**Cognitive outcomes of children born extremely or very preterm since the 1990s and associated risk factors - a meta-analysis and meta-regression**

In a meta-analysis involving 71 studies, comprising of 7752 extremely preterm or very preterm infants, and 5155 controls, with a mean gestational age of 28 weeks, and mean assessment at 5 to 20 years, preterm children had a 0.86-SD lower IQ compared with controls. No improvement in cognitive outcome was observed between 1990 and 2008. Bronchopulmonary dysplasia was found to be a crucial factor for cognitive outcome. Lowering the high incidence of BPD may be key to improving long-term outcomes after EP/VP birth.

**Dexmedetomidine as single continuous sedative during noninvasive ventilation: typical usage, hemodynamic effects, and withdrawal**

In this retrospective study of 382 children admitted to a PICU, the authors describe the use and adverse hemodynamic effects of dexmedetomidine as a single continuous, sedative during noninvasive ventilation (NIV). Median peak and cumulative doses with interquartile range were 1 µg/kg/hr (0.6-1.2 µg/kg/hr) and 30 µg/kg (20-50 µg/kg), respectively, and median duration was 45 hours (34-66 hr). Four hours after reaching peak dose, the authors observed a decrease in heart rate (p < 0.01) with 28% prevalence of bradycardia and an increase in systolic blood pressure (p < 0.01) with 33% prevalence of hypertension and 2% hypotension. During the escalation phase, the prevalence of bradycardia and hypotension were 75% and a 30%, respectively. Dexmedetomidine use during NIV in pediatric critical care has predictable hemodynamic effects including bradycardia and hypertension.
Opioid detoxification during pregnancy: a systematic review

This systematic review included 15 studies with 1,997 participants, of whom 1,126 underwent opioid detoxification during pregnancy. The authors concluded that the evidence does not support detoxification as a result of low detoxification completion rates, high rates of relapse, and limited data regarding the effect of detoxification on maternal and neonatal outcomes beyond delivery.

**OTHER NOTEWORTHY PUBLICATIONS – April, 2018**

*Pediatrics*
Clinical monitoring of well-appearing infants born to mothers with chorioamnionitis
Incidence and costs of neonatal abstinence syndrome among infants with Medicaid: 2004-2014
https://www.ncbi.nlm.nih.gov/pubmed/29567814
Parental adverse childhood experiences and offspring development at 2 years of age
https://www.ncbi.nlm.nih.gov/pubmed/29563236
Maternal adverse childhood experiences and infant development
https://www.ncbi.nlm.nih.gov/pubmed/29555988
ACEs and pregnancy: time to support all expectant mothers
AAP diversity and inclusion statement
The role of the microbiome in the developmental origins of health and disease
Ohio perinatal quality collaborative improves care of neonatal narcotic abstinence syndrome

*Journal of Pediatrics*
Does longer breastfeeding duration decrease the risk of asthma?
https://www.jpeds.com/article/S0022-3476(18)30191-4/pdf
Cystic periventricular leukomalacia: now you see it, now you don't?
Revisiting the use of probiotics in premature infants for the prevention of NEC
https://www.jpeds.com/article/S0022-3476(18)30194-X/pdf
The maternal nutritional milieu and neonatal outcomes: connecting the dots
https://www.jpeds.com/article/S0022-3476(17)31742-0/pdf
Risk factors for neonatal venous and arterial thromboembolism in the neonatal intensive care unit—a case control study
Delivery room resuscitation and short-term outcomes in moderately preterm infants
Placental pathology in neonatal stroke: a retrospective case-control study
Utility of early-onset sepsis risk calculator for neonates born to mothers with chorioamnionitis
Predicting extubation outcomes—a model incorporating heart rate characteristics index.
Outcome of preterm infants with transient cystic periventricular leukomalacia on serial cranial imaging up to term equivalent age

Antecedents and outcomes of abnormal cranial imaging in moderately preterm infants

Routine supplementation of lactobacillus rhamnosus GG and risk of necrotizing enterocolitis in very low birth weight infants

Proinflammatory diets during pregnancy and neonatal adiposity in the healthy start study (PDF)

Postoperative enteral nutrition guidelines reduce the risk of intestinal failure–associated liver disease in surgical infants

First trimester plasma glucose values in women without diabetes are associated with risk for congenital heart disease in offspring

Hand preference and cognitive, motor, and behavioral functioning in 10-year-old extremely preterm children

Variability in state-based recommendations for management of alpha thalassemia trait and silent carrier detected on the newborn screen

Is extracorporeal membrane oxygenation for a neonate ever ethically obligatory?

**Pediatric Research**

Elevated arterial blood pressure after superior cavo-pulmonary anastomosis is associated with elevated pulmonary artery pressure and cerebrovascular dysautoregulation

Postnatal developmental changes in the sensitivity of L-type Ca2+ channel to inhibition by verapamil in a mouse heart model

Anogenital distance as a phenotypic signature through infancy

Association between maternal hypothyroidism and autism spectrum disorders in children

Food and nutrient intakes in young adults born preterm

RSV vs. rhinovirus bronchiolitis: difference in nasal airway microRNA profiles and NFκB signaling

Fetal somatic growth trajectory differs by type of congenital heart disease

A synbiotic-containing amino-acid-based formula improves gut microbiota in non-IgE-mediated allergic infants

Human milk H2O2 content: does it benefit preterm infants?

Prematurity disrupts glomeruli development, whereas prematurity and hyperglycemia lead to altered nephron maturation and increased oxidative stress in newborn baboons

The effect of body position on esophageal reflexes in cats: a possible mechanism of SIDS?
Archives of Disease in Childhood - Fetal & Neonatal Edition

Closing the patent duct: context and controversy

Decision-making at the limits of viability: recognising the influence of parental factors

Transcatheter occlusion of the patent ductus arteriosus in premature infants weighing less than 1200 g

Socioeconomic inequity in survival for deliveries at 22-24 weeks of gestation

Survival of very preterm infants admitted to neonatal care in England 2008-2014: time trends and regional variation

Determining the pattern and prevalence of alcohol consumption in pregnancy by measuring biomarkers in meconium

Nasal midazolam vs ketamine for neonatal intubation in the delivery room: a randomised trial

Early surgery and neurodevelopmental outcomes of children born extremely preterm

3-lead electrocardiogram is more reliable than pulse oximetry to detect bradycardia during stabilisation at birth of very preterm infants

Magnetic resonance spectroscopy in preterm infants: association with neurodevelopmental outcomes

Neonatal management and outcome after thoracoamniotic shunt placement for fetal hydrothorax

Perinatal risk factors for neonatal encephalopathy: an unmatched case-control study

Interobserver agreement and image quality of functional cardiac ultrasound measures used in a randomised trial of delayed cord clamping in preterm infants

Birth weight trends in England and Wales (1986-2012): babies are getting heavier

How do different brands of size 1 laryngeal mask airway compare with face mask ventilation in a dedicated laryngeal mask airway teaching manikin?

Presence and pattern of scarring in children born very preterm

Ethical dilemmas of recording and reviewing neonatal resuscitation
https://www.ncbi.nlm.nih.gov/pubmed/29353257

Ankyloblepharon filiforme adnatum

Radiological feature of colonic atresia

Aplasia cutis congenita and 'vanishing twin' caused by iatrogenic fetal reduction
https://www.ncbi.nlm.nih.gov/pubmed/29353258
Journal of Perinatology
Selenium: implications for outcomes in extremely preterm infants
Are we ready to modify our definition of bronchopulmonary dysplasia (BPD) to improve prognostication?
Screening for pulmonary hypertension in preterm infants-not ready for prime time
"We want to do everything”: how parents represent their experiences with maternal-fetal surgery online
Effect of maternal iron deficiency anemia on fetal neural development
Umbilical cord milking at birth for term newborns with acidosis: neonatal outcomes
Whole blood volumes associated with milking intact and cut umbilical cords in term newborns
Effect and safety of timing of cord clamping on neonatal hematocrit values and clinical outcomes in term infants: A randomized controlled trial
Racial differences in neonatal hypoglycemia among very early preterm births
Monitoring cerebral oxygenation of preterm infants using a neonatal specific sensor
Continuous positive airway pressure delivery during less invasive surfactant administration: a physiologic study
Divergent risk factors for cerebellar and intraventricular hemorrhage
Quality improvement to reduce chronic lung disease rates in very-low birth weight infants: high compliance with a respiratory care bundle in a small NICU

Neonatology
The predictive value of amplitude-integrated electroencephalography in preterm infants for IQ and other neuropsychological outcomes at early school age
A combination of the aerosolized PPAR-y agonist pioglitazone and a synthetic surfactant protein b peptide mimic prevents hyperoxia-induced neonatal lung injury in rats
Vitamin D and its role in neonatal hypoxic-ischemic brain injury
Perfluorocarbons prevent lung injury and promote development during artificial placenta support in extremely premature lambs
Combined inhibition of C5 and CD14 attenuates systemic inflammation in a piglet model of meconium aspiration syndrome
High-dose erythropoietin for asphyxia and encephalopathy (HEAL): a randomized controlled trial - background, aims, and study protocol
Impact of xenon on CLIC4 and Bcl-2 expression in lipopolysaccharide and hypoxia-ischemia-induced periventricular white matter damage
Enteral feeding as an adjunct to hypothermia in neonates with hypoxic-ischemic encephalopathy
Newborn plasma glucose concentration nadirs by gestational-age group
The neuroprotective effects of hypothermia on bilirubin-induced neurotoxicity in vitro
Update on vitamin E and its potential role in preventing or treating bronchopulmonary dysplasia
Implementation of the neonatal sepsis calculator in an Australian tertiary perinatal centre
https://www.ncbi.nlm.nih.gov/pubmed/29514161

American Journal of Perinatology
Prenatal and postnatal follow-up in trisomies 13 and 18: a 20-year experience in a tertiary center
Protective effects of quercetin on necrotizing enterocolitis in a neonatal rat model
Health care utilization after nicu discharge and neurodevelopmental outcome in the first 2 years of life in preterm infants
Comparative study of the effects of continuous positive airway pressure and nasal high-flow therapy on diaphragmatic dimensions in preterm infants
Cross-correlation of heart rate and oxygen saturation in very low birthweight infants: association with apnea and adverse events
Comparison of melatonin levels in the colostrum between vaginal delivery and cesarean delivery
Perianal dermatitis, its incidence, and patterns of topical therapies in a level IV neonatal intensive care unit
Neonatal outcomes differ after spontaneous and indicated preterm birth
Ultrasound-guided cannulation of the brachiocephalic vein in neonates and preterm infants: a prospective observational study
Predictors of PDA treatment in preterm neonates who had received prophylactic indomethacin
Morbidity associated with fetal macrosomia among women with diabetes mellitus
The independent contribution of uterine blood flow to birth weight and body composition in smoking mothers

Journal of Neonatal-Perinatal Medicine
Isolated neonatal MRI punctate white matter lesions in very preterm neonates and quality of life at school age
Intestinal perforation in the premature infant
The effect of meconium exposure on the expression and differentiation of amniotic fluid mesenchymal stem cells
Risk of morbidity following catheter removal among neonates with catheter associated bloodstream infection
Intravenous immunoglobulin in the management of a rare cause of hemolytic disease of the newborn: anti-SARA antibodies
Reduction in necrotizing enterocolitis and improved outcomes in preterm infants following routine supplementation with lactobacillus GG in combination with bovine lactoferrin
Preoperative metabolic acidosis in infants with gastroschisis
Cerebral oxygenation and desaturations in preterm infants - a longitudinal data analysis
Neonatal complex arrhythmias possibly related to a TTN mutation
Troponin-T as a biomarker in neonates with perinatal asphyxia
The influence of the built environment on adverse birth outcomes
Improving handover between the transport team and neonatal intensive care unit staff in neonatal transports using the plan-do-study-act tool
Transfusion-related acute lung injury following PDA ligation in a preterm neonate
Impact of prenatal diagnosis of fetus-in-fetu

Maternal Health, Neonatology and Perinatology
Implementing the World Health Organization safe childbirth checklist in a district Hospital in Rwanda: a pre- and post-intervention study (PDF)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5883338/

Neoreviews
Human milk banking: an Indian experience
http://neoreviews.aappublications.org/content/19/4/e201
Health care and societal costs of bronchopulmonary dysplasia
http://neoreviews.aappublications.org/content/19/4/e211
Control of breathing and apnea of prematurity
http://neoreviews.aappublications.org/content/19/4/e224
Screening with pulse oximetry for early detection of neonatal hypoxemia
http://neoreviews.aappublications.org/content/19/4/e235
Case 1: Neck swelling in a neonate
http://neoreviews.aappublications.org/content/19/4/e245
Case 2: Vesicular lesions of the oral mucosa
http://neoreviews.aappublications.org/content/19/4/e248
Case 3: Abdominal rash after removal of umbilical vessel catheter anchor in a preterm infant
http://neoreviews.aappublications.org/content/19/4/e250
Strip of the Month: Does antenatal steroid administration impact electronic fetal monitoring?
A pulsating chest
A preterm newborn with abnormal development of the lower abdomen and genitalia

**JAMA Pediatrics**
Initiating phototherapy at subthreshold levels - the slippery slope

**BMC Pediatrics**
Clostridium difficile stool shedding in infants hospitalized in two neonatal intensive care units is lower than previous point prevalence estimates using molecular diagnostic methods

**Pediatric Critical Care Medicine**
Low-dose epinephrine boluses for acute hypotension in the PICU

Furosemide response predicts acute kidney injury after cardiac surgery in infants and neonates

Cerebral oxygen metabolism before and after RBC transfusion in infants following major surgical procedures

Optimal insertion depth for endotracheal tubes in extremely low-birth-weight infants

Review of routes to administer medication during prolonged neonatal resuscitation

Initiating nutritional support before 72 hours is associated with favorable outcome after severe traumatic brain injury in children: a secondary analysis of a randomized, controlled trial of therapeutic hypothermia

Pediatric neurocritical care and neuromonitoring in 2018—maybe we need to go back to the basics?
New England Journal of Medicine
Placenta accreta spectrum

Lancet
Dysfunction of NaV1.4, a skeletal muscle voltage-gated sodium channel, in sudden infant death syndrome: a case-control study

JAMA
Urgency to end newborn deaths
Neonatal abstinence syndrome: advances in diagnosis and treatment
https://www.ncbi.nlm.nih.gov/pubmed/29614184

BMJ
Dangers of valproate in pregnancy
Weighing the risks of valproate in women who could become pregnant
Death of baby from hyperinsulinaemic hypoglycaemia prompts safety upgrade at Barts Trust

Pediatric Infectious Disease Journal
Acquired infection and antimicrobial utilization during initial NICU hospitalization in infants with congenital diaphragmatic hernia

Pediatric Cardiology
Prediction of therapeutic response to cyclooxygenase inhibitors in preterm infants with patent ductus arteriosus
Correlation of symptoms with bronchoscopic findings in children with a prenatal diagnosis of a right aortic arch and left arterial duct
Persistent pulmonary hypertension and histologic chorioamnionitis in preterm infants: controlled study
Prolonged PR interval at birth predicting the high occurrence of fatal atroventricular block in hypoplastic left heart syndrome
Necrotizing enterocolitis in infants with hypoplastic left heart syndrome following stage 1 palliation or heart transplant
A novel mef2c loss-of-function mutation associated with congenital double outlet right ventricle
Restoring fetal circulation as a means of bridging treatment prior to surgical repair of anomalous origin of the right pulmonary artery from the ascending aorta with persistent pulmonary hypertension of the newborn
**Pediatric Neurology**
Neonatal SIRPIDs, a confusing EEG finding
Perinatal case fatality rate related to congenital Zika syndrome in Brazil: a cross-sectional study

**Obstetrics and Gynecology**
Perinatal outcomes in women with a history of chronic hypertension but normal blood pressures before 20 weeks of gestation
A comparison of methods for the diagnosis of fetal growth restriction between the Royal College of Obstetricians and Gynaecologists and the American College of Obstetricians and Gynecologists
Changing patterns and factors associated with mode of delivery among pregnant women with human immunodeficiency virus infection in the United States
Reduction of peripartum racial and ethnic disparities: a conceptual framework and maternal safety consensus bundle

**American Journal of Obstetrics & Gynecology**
Gottesfeld–Hohler Memorial Foundation Zika virus think tank summary
A unique institutional response to the Zika virus epidemic
Statewide quality improvement initiative to reduce early elective deliveries and improve birth registry accuracy
Dos and don'ts in pregnancy: truths and myths
Early second-trimester fetal growth restriction and adverse perinatal outcomes
Epidural analgesia during the second stage of labor: a randomized controlled trial
Placental alpha microglobulin-1 compared with fetal fibronectin to predict preterm delivery in symptomatic women

**Seminars in Pediatric Surgery**
Preface: The NEC Society
Necrotizing enterocolitis: pathophysiology from a historical context
Enhancing NICU parent engagement and empowerment
Changing the paradigm of defining, detecting, and diagnosing NEC: perspectives on Bell's stages and biomarkers for NEC
The science and necessity of using animal models in the study of necrotizing enterocolitis
Development of the necrotizing enterocolitis society registry and biorepository
Human milk and necrotizing enterocolitis

Probiotics and necrotizing enterocolitis

Anemia, red blood cell transfusions, and necrotizing enterocolitis

Neurodevelopmental considerations in surgical necrotizing enterocolitis

Stem cell therapy in necrotizing enterocolitis: current state and future directions

Basic science selections
Effects of intestinal microbiota on brain development in humanized gnotobiotic mice

Effects of budesonide and surfactant in preterm, fetal sheep

Neonatal inflammation induces reorganization in dendritic morphology of retinal ganglion cells but not their retinogeniculate projection in mice

Loss of endothelial nitric oxide synthase exacerbates intestinal and lung injury in experimental necrotizing enterocolitis

Effect of prenatal administration of low dose antibiotics on gut microbiota and body fat composition of newborn mice

Deactivation of mitochondrial complex I after hypoxia-ischemia in the immature brain

Protection of oligodendrocytes through neuronal overexpression of the small GTPase Ras in hyperoxia-induced neonatal brain injury

Activation of the NFkB pathway alters the phenotype of MSCs in the tracheal aspirates of preterm infants with severe BPD
Lymphocytes contribute to the pathophysiology of neonatal brain injury

Efficacy and safety of antenatal steroids

A novel model to study neonatal Escherichia coli sepsis and the effect of treatment on the human immune system using humanized mice

**ADDITIONAL JOURNAL SELECTIONS**
Source and quality of enteral nutrition influences oxidative stress in preterm infants: a prospective cohort study

The impact of hypoxemia on the development of retinopathy of prematurity in infants less than 29 weeks of gestation

Does fortification of pasteurized donor human milk increase the incidence of necrotizing enterocolitis among preterm neonates? A randomized controlled trial