ARTICLES OF INTEREST – January, 2016

**Dopamine treatment during acute hypoxia is neuroprotective in the developing sheep brain**

Premature infants are at risk of developing brain injury due to impaired autoregulation and cerebral hypoperfusion. The authors hypothesize that pretreatment of preterm sheep with dopamine would protect the immature brain from injury caused by cerebral hypoxia. They found that dopamine possesses neuroprotective properties which decrease apoptosis, oxidative stress and neuroinflammation in the cerebral white matter and decrease neuroinflammation in the caudate nucleus.

**Nebulization of Poractant alfa via a vibrating membrane nebulizer in spontaneously breathing preterm lambs with binasal continuous positive pressure ventilation**

In this first of a kind study using nasal prongs, 16 spontaneously breathing preterm lambs were operatively delivered, connected to CPAP and administered Poractant alfa (Curosurf) via a vibrating perforated membrane nebulizer (eFlow Neonatal Nebulizer). Lambs administered surfactant for 3 hours with humidified air were noted to have significantly higher partial pressure of oxygen, lung gas volumes and surfactant pool size compared to control. These positive effects were found to be dependent on surfactant dose, treatment duration and air humidity.

**Intravenous paracetamol decreases requirements of morphine in very preterm infants**

This is a single-center cohort study evaluating the use of intravenous paracetamol for pain/sedation in neonates less than 32 weeks gestation. Compared to infants treated with morphine alone, the infants treated with paracetamol received significantly less morphine without any difference in pain assessment scores, frequency of apnea, or ventilation days, and without evidence of hepatic toxicity.
Neurodevelopmental outcome at 2 years of age after general anaesthesia and awake-regional anaesthesia in infancy (GAS): an international multicentre, randomised controlled trial

This prospective trial randomized 722 infants from 28 hospitals to receive either sevoflurane-based general anesthesia or awake-regional anesthesia for inguinal herniorrhaphy. In this analysis, there was no difference in cognitive outcome (Bayley-III) between groups at 2 years of age. The 5-year outcome remains pending.

Cause of preterm birth as a prognostic factor for mortality

This multicenter analysis included a cohort of 3,138 singleton live births from 24 to 34 weeks of gestation. Among neonates born alive before 34 weeks of gestation, only those born because of suspected fetal growth restriction had a higher mortality risk (versus preterm delivery complicated by PPROM, placental abruption, or maternal hypertensive disorders without fetal growth restriction).

Neurodevelopmental outcome at 2 years of age according to patent ductus arteriosus management in very preterm infants

The authors conducted an observational multicentric cohort study to examine the neurodevelopmental outcome of PDA treatment on preterm infants born between 24+0 and 28+6 weeks of gestation. Three groups of patients were compared according to their PDA treatment strategy: medical treatment with ibuprofen, surgical ligation, and no treatment. Neurodevelopmental outcome was assessed with a physical examination and cognitive function evaluation at 2 years of age. The authors found an association between PDA surgical ligation and a nonoptimal neurodevelopmental outcome at 2 years of age for preterm infants born before 29 weeks of gestation.

-----------------------------

**OTHER NOTEWORTHY PUBLICATIONS – January, 2016**

**Pediatrics**
Randomized trial of late surfactant treatment in ventilated preterm infants receiving inhaled nitric oxide

Weight status in the first 2 years of life and neurodevelopmental impairment in extremely low gestational age newborns

Impact of continuous capnography in ventilated neonates: a randomized, multicenter study

Endotracheal intubation in neonates: a prospective study of adverse safety events in 162 infants

Fetal and neonatal effects of n-acetylcysteine when used for neuroprotection in maternal chorioamnionitis

Screening for hyperbilirubinemia in Japanese very low birthweight infants using transcutaneous bilirubinometry
Prospective surveillance of extreme neonatal hyperbilirubinemia in Australia

Growth asymmetry, head circumference, and neurodevelopmental outcomes in infants with single ventricles

Higher rates of retinopathy of prematurity after increasing oxygen saturation targets for very preterm infants: experience in a single center

Journal of Pediatrics
A comparison of strategies for retinopathy of prematurity detection

Chorioamnionitis and culture-confirmed, early-onset neonatal infections

Birth prevalence of cerebral palsy: a population-based study

Physical fitness in young adults born preterm

Outcomes of neonatal bulbar weakness

Apnea of prematurity

Patent ductus arteriosus in preterm infants

Noninvasive respiratory support

Pediatric Research - Volume 78, Issue 6 (Dec 2016)
Long-chain polyunsaturated fatty acids attenuate the IL-1β-induced proinflammatory response in human fetal intestinal epithelial cell

Lack of EC-SOD worsens alveolar and vascular development in a neonatal mouse model of bleomycin-induced bronchopulmonary dysplasia and pulmonary hypertension

Gene expression profile in newborn rat lungs after two days of recovery of mechanical ventilation

Fully automated predictive intelligent control of oxygenation (PRICO) in resuscitation and ventilation of preterm lambs

Human milk oligosaccharides in premature infants: absorption, excretion, and influence on the intestinal microbiota

Evaluation of kidney dysfunction and angiotensinogen as an early novel biomarker of intrauterine growth restricted offspring rats

Monocyte HLA-DR expression and neutrophil CD64 expression as biomarkers of infection in critically ill neonates and infants
Neonatal brain microstructure correlates of neurodevelopment and gait in preterm children 18–22 mo of age: an MRI and DTI study

Repeated autologous umbilical cord blood infusions are feasible and had no acute safety issues in young babies with congenital hydrocephalus

Archives of Disease in Childhood - Fetal & Neonatal Edition
Potential for a paradigm change in the detection of retinopathy of prematurity requiring treatment

Estimating umbilical catheter insertion depth in newborns using weight or body measurement: a randomised trial

A randomised controlled trial of flow driver and bubble continuous positive airway pressure in preterm infants in a resource-limited setting

Neonatal drug withdrawal syndrome: cross-country comparison using hospital administrative data in England, the USA, Western Australia and Ontario, Canada

The attitudes of neonatologists towards extremely preterm infants: a Q methodological study (PDF)
http://fn.bmj.com/content/101/1/31.full.pdf+html

End-of-life decision-making for newborns: a 12-year experience in Hong Kong

Lower rate of selected congenital heart defects with better maternal diet quality: a population-based study

Postnatal growth failure in very low birthweight infants born between 2005 and 2012

Antenatal factors modulate hearing screen failure risk in preterm infants

Delivery room end tidal CO2 monitoring in preterm infants <32 weeks

Review: Prenatal therapy in transient abnormal myelopoiesis: a systematic review

Review: Outbreaks of extended spectrum beta-lactamase-producing Enterobacteriaceae in neonatal intensive care units: a systematic review

Journal of Perinatology
Editorial: Delayed cord clamping: are we ready to listen to the doctor from 1796?

Providing meaningful care for families experiencing stillbirth: a meta-synthesis of qualitative evidence

Commentary: Neonatal hypoglycemia: is 60 the new 40? The questions remain the same

United States and territory policies supporting maternal and neonatal transfer: review of transport and reimbursement
Timing of umbilical cord clamping among infants born at 22 through 27 weeks’ gestation
Milk production after preterm, late preterm and term delivery; effects of different breast pump suction patterns
Pulse oximetry screening for critical congenital heart disease in the neonatal intensive care unit
Increased monocytes and bands following a red blood cell transfusion
Reference intervals for reticulocyte parameters of infants during their first 90 days after birth
To evaluate and compare the efficacy of combined sucrose and non-nutritive sucking for analgesia in newborns undergoing minor painful procedure: a randomized controlled trial

Neonatology (Vol. 109, No. 2, 2016 Issue release date: Published online first)
Reference ranges for neonatal basal ganglia perfusion as measured by fractional moving blood volume
Revisiting the criteria for exchange transfusion for severe neonatal hyperbilirubinemia in resource-limited settings
Prophylactic probiotics for preterm infants: a systematic review and meta-analysis of observational studies
Neurodevelopmental outcomes at 2 and 3.5 years for very preterm babies enrolled in a randomized trial of milking the umbilical cord versus delayed cord clamping
UGT1A1*28 genotypes and respiratory disease in very preterm infants: a cohort study
Heart rate assessment immediately after birth
Abortion and infant mortality on the first day of life
Increased urinary cystatin-c levels correlate with reduced renal volumes in neonates with intrauterine growth restriction

American Journal of Perinatology - Issue 01, Volume 33, Jan 2016
The role of surfactant therapy in nonrespiratory distress syndrome conditions in neonates
Variation in enteral feeding practices and growth outcomes among very premature infants: a report from the New York State Perinatal Quality Collaborative
Predicting the need for home oxygen therapy in preterm infants born before 28 weeks' gestation
Identifying barriers to initiating minimal enteral feedings in very low-birth-weight infants: a mixed methods approach
Differences in eccentricity index and systolic–diastolic ratio in extremely low-birth-weight infants with bronchopulmonary dysplasia at risk of pulmonary hypertension  

The impact of twin birth on early neonatal outcomes  

Neonatal biomarkers of inflammation: correlates of early neurodevelopment and gait in very-low-birth-weight preterm children  

Impact of prophylactic continuous positive airway pressure on transient tachypnea of the newborn and neonatal intensive care admission in newborns delivered by elective Cesarean section  

Determinants of severe metabolic bone disease in very low-birth-weight infants with severe bronchopulmonary dysplasia admitted to a tertiary referral center  

Journal of Neonatal-Perinatal Medicine
Neonatal intensive care unit discharge of infants with cardiorespiratory events: tri-country comparison of academic centers  
http://www.jnpm.org/content/neonatal-intensive-care-unit-discharge-infants-cardiorespiratory-events-tri-country

Pulmonary hypertension predicts mortality in infants with omphalocele  
http://www.jnpm.org/content/pulmonary-hypertension-predicts-mortality-infants-omphalocele

Evaluation of caffeine and the development of necrotizing enterocolitis  
http://www.jnpm.org/content/evaluation-caffeine-and-development-necrotizing-enterocolitis

Acute kidney injury in ELBW infants (< 750 grams) and its associated risk factors  

Weight gain and hypertension at three years of age and older in extremely low birth weight infants  
http://www.jnpm.org/content/weight-gain-and-hypertension-three-years-age-and-older-extremely-low-birth-weight-infants

Assessment of the severity of visible blood in the stool using a cluster of neonatal cases – a quality improvement study  

Safety and efficacy of delayed umbilical cord clamping in multiple and singleton premature infants - A quality improvement study  

Resting energy expenditure, macronutrient utilization, and body composition in term infants after corrective surgery of major congenital anomalies: a case-study  

Maternal Health, Neonatology, and Perinatology
Neuroprotective potential of erythropoietin in neonates; design of a randomized trial (PDF)  
JAMA Pediatrics
Editorial: Role of serum procalcitonin in identifying young febrile infants with invasive bacterial infections. one step closer to the holy grail?
Use of procalcitonin assays to predict serious bacterial infection in young febrile infants
Association of newborn Apgar score with maternal admission to the intensive care unit

BMC Pediatrics
Social and behavioral factors in non-suspicious unexpected death in infancy; experience from Metropolitan Police project indigo investigation
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4711179

Pediatric Critical Care Medicine - Issue 1, Volume 17, Jan 2016
Chronic hypoxemia in children with congenital heart defect impairs airway epithelial sodium transport
Intraoperative steroid use and outcomes following the norwood procedure: an analysis of the pediatric heart network’s public database

NEJM 12/24, 12/31, 1/7, 1/14, 1/21
Planned out-of-hospital birth and birth outcomes

Lancet
Comment: Should serial fetal biometry be used in all pregnancies? (PDF)
Screening for fetal growth restriction with universal third trimester ultrasonography in nulliparous women in the Pregnancy Outcome Prediction (POP) study: a prospective cohort study
Global, regional, and national levels and trends in under-5 mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Inter-agency Group for Child Mortality Estimation

JAMA 1/5, 1/12, 1/19
Association between use of oral fluconazole during pregnancy and risk of spontaneous abortion and stillbirth

The Pediatric Infectious Disease Journal
Early-onset sepsis and antibiotic exposure in term infants: a nationwide population-based study in Norway
Respiratory syncytial virus preterm (32–36 completed weeks of gestation) risk estimation measure for RSV hospitalization in Ireland: a prospective study
A prospective multicenter study of leukopenia in infants younger than ninety days with fever without source

In utero exposure to antiretroviral drugs: effect on birth weight and growth among HIV-exposed uninfected children in Brazil

Pediatric Cardiology
Exercise performance in children and young adults after complete and incomplete repair of congenital heart disease
Recombinant tissue plasminogen activator in the treatment of neonates with intracardiac and great vessels thrombosis
Quality of life of children with congenital heart diseases: a multicenter controlled cross-sectional study
Identification of copy number variations in isolated Tetralogy of Fallot
Outcomes of patients after arterial switch operation: 18 years of experience in a single medium-volume center
Total energy expenditure of infants with congenital heart disease who have undergone surgical intervention
Amino-terminal pro-B-type natriuretic peptide levels in the umbilical cord blood of neonates differ according to the type of prenatally diagnosed congenital heart disease
Case Report: Intrauterine treatment of a fetus with familial hypertrophic cardiomyopathy secondary to MYH7 mutation

Pediatric Neurology
Clinical electroencephalographic biomarker for impending epilepsy in asymptomatic tuberous sclerosis complex infants (PDF)
Neuroepidemiology of porencephaly, schizencephaly, and hydranencephaly in Miyagi prefecture, Japan
Infant motor delay and early symptomatic syndromes eliciting neurodevelopmental clinical examinations in Japan

Obstetrics and Gynecology
A core outcome set for evaluation of interventions to prevent preterm birth
Case Report: Fetal heart rate monitoring during surgical correction of spontaneous pneumothorax during pregnancy: lessons in in utero resuscitation
Practice Bulletin No. 159 Summary: Management of preterm labor
Practice Bulletin No. 160 Summary: Premature rupture of membranes
Committee Opinion No. 652 Summary: Magnesium sulfate use in obstetrics

Cervical phosphorylated insulin-like growth factor binding protein-1 test for the prediction of preterm birth: a systematic review and meta analysis
Singleton birthweight by gestational age following in vitro fertilization in the United States
Early onset preeclampsia and cerebral palsy: a double hit model?

BASIC SCIENCE SELECTIONS

Systemic interleukin-2 administration improves lung function and modulates chorioamnionitis-induced pulmonary inflammation in the ovine fetus

Neonatal bronchopulmonary dysplasia increases neuronal apoptosis in the hippocampus through the HIF-1α and p53 pathways

Oligodendrocyte precursors migrate along vasculature in the developing nervous system

Inhaled 45-50% argon augments hypothermic brain protection in a piglet model of perinatal asphyxia

Gene expression profiling in necrotizing enterocolitis reveals pathways common to those reported in Crohn's disease

Platelet-derived growth factor inhibitors: a potential therapeutic approach for ocular neovascularization

Retinopathy of prematurity: an oxidative stress neonatal disease
Stone WL, Shah D, & Hollinger SM. Front Biosci (Landmark Ed).

The effect of continuous positive airway pressure in a mouse model of hyperoxic neonatal lung injury