ARTICLES OF INTEREST – June, 2016

**Protective effect of vitamin D against hyperoxia-induced lung injury in newborn rats**

To evaluate the impact of vitamin D on a model of BPD, the authors studied full term rat pups randomly assigned to receive either normoxia or hyperoxia with and without vitamin D supplementation (3 different dosages). They found that vitamin D reduced the mean linear intercept and reduced the apoptotic cell index compared to hyperoxia alone. The two highest doses of vitamin D also increased the proliferating cell nuclear antigen index. These results indicate that vitamin D protects the lung from oxygen toxicity by increasing alveolar surface area possibly by enhancing cell proliferation and minimizing cell death.

**High-dose erythropoietin and hypothermia for hypoxic-ischemic encephalopathy: a phase II trial**

This multicenter, phase II trial evaluated 50 newborns being treated with therapeutic hypothermia for moderate/severe hypoxic-ischemic encephalopathy who were randomized to receive erythropoietin or placebo on days of life 1, 2, 3, 5, and 7. The authors found that the erythropoietin group had significantly less moderate/severe brain injury, subcortical injury, and cerebellar injury in addition to improved motor performance at 12 months.

**High flow nasal cannula use is associated with increased morbidity and length of hospitalization in extremely low birth weight infants**

In order to determine differences in the incidence of BPD or death in ELBW infants managed on HFNC vs CPAP, the authors retrospectively analyzed data from the Alere Neonatal Database for ELBW infants born between January 2008 and July 2013 who received HFNC or CPAP. Baseline demographics, clinical characteristics, and neonatal outcomes were compared between the infants who received CPAP and HFNC, or HFNC ± CPAP. The use of HFNC in ELBW infants was associated with a higher risk of death or BPD, increased respiratory morbidities, delayed oral feeding, and prolonged hospitalization. A large clinical trial is needed to evaluate long-term safety and efficacy of HFNC in preterm infants.
Nasal continuous positive airway pressure versus nasal intermittent positive-pressure ventilation within the minimally invasive surfactant therapy approach in preterm infants: a randomised controlled trial

In this randomized, controlled trial, 200 preterm infants (GA 26-32 weeks) were enrolled. In preterm infants treated with minimally invasive surfactant therapy, initial and post-surfactant therapy support with nasal intermittent positive-pressure ventilation compared with nasal continuous positive airway pressure decreased the use of invasive mechanical ventilation within 72 h of age (13% vs. 29%) and surfactant treatment (38% vs. 60%).

Early conventional MRI for prediction of neurodevelopmental impairment in extremely-low-birth-weight infants

Early conventional MRI at term-equivalent age in 122 ELBW (<1000 g BW) exhibited high specificity in predicting neurodevelopmental outcomes at 18-24 months’ corrected age. However, sensitivity was suboptimal, suggesting additional clinical factors and biomarkers are needed to enable accurate prognostication. White or gray matter scores, determined using a commonly cited scoring system, did not show significant association with neurodevelopmental impairment.

Obstetric care consensus no. 4 summary: periviable birth
Obstet Gynecol.

This consensus statement provides neonatal outcomes after periviable birth and provides current evidence and recommendations regarding interventions and counseling. Periviable birth is defined as delivery occurring from 20 0/7 weeks to 25 6/7 weeks of gestation. Nonmodifiable factors (eg, fetal sex, weight, plurality), potentially modifiable antepartum and intrapartum factors (eg, location of delivery, intent to intervene by cesarean delivery or induction for delivery, administration of antenatal corticosteroids and magnesium sulfate), and postnatal management (eg, starting or withholding and continuing or withdrawing intensive care after birth) were found to be associated with short and long term neonatal outcomes. Recommendations include delivery of periviable births for which maternal or neonatal intervention is planned in centers that offer expertise in maternal and neonatal care. Antepartum and intrapartum management options vary depending upon the specific circumstances but may include short-term tocolytic therapy for preterm labor to allow time for administration of antenatal steroids, antibiotics to prolong latency after preterm premature rupture of membranes or for intrapartum group B streptococci prophylaxis, and delivery, including cesarean delivery, for concern regarding fetal well-being or fetal malpresentation.

Contributory factors and potentially avoidable neonatal encephalopathy associated with perinatal asphyxia

In this study in New Zealand, cases of neonatal encephalopathy following the onset of labor in the absence of acute peripartum events were ascertained from a national reporting system. Cases were evaluated to identify contributory factors to help guide quality improvement. Among 83 cases that were identified and reviewed, contributory factors were identified in 84% and personnel factors were the most commonly identified contributory factor. After review, 55% of cases were determined to be
potentially avoidable and the most common factors were related to the interpretation of fetal heartbeat and uterine contractions.

OTHER NOTEWORTHY PUBLICATIONS – June, 2016

**Pediatrics**
- Neonatal phototherapy and infantile cancer
- Retrospective cohort study of phototherapy and childhood cancer in Northern California
- Unconditional prenatal income supplement and birth outcomes
- Prenatal fish oil supplementation and allergy: 6-year follow-up of a randomized controlled trial
- Breastfeeding and risk of Kawasaki disease: a nationwide longitudinal survey in Japan
- Using newborn screening bloodspots for research: public preferences for policy options
- Influenza in infants born to women vaccinated during pregnancy
- Outcomes of extremely preterm infants born to insulin-dependent diabetic mothers
- Timing of return to work and breastfeeding in Australia
- Asphyxia, neurologic morbidity, and perinatal mortality in early-term and postterm birth
- Neurocognitive development after pediatric heart surgery
- Swaddling and the risk of sudden infant death syndrome: a meta-analysis
- Sudden unexpected death in fetal life through early childhood
- Rooming-in to treat neonatal abstinence syndrome: improved family-centered care at lower cost
- Reducing perinatal mortality in Nepal using helping babies breathe

**Journal of Pediatrics**
- Math at work: a new neonatal calculator to predict weight loss
- Thyroid screening in trisomy 21
- When should we predict outcomes for extreme prematurity?
- Are neonatal stroke and hypoxic-ischemic encephalopathy related?
- The Barker hypothesis revisited
Measurement of circulating unbound bilirubin: will it ever be a part of routine neonatal care?

Executive function in patients with congenital heart disease: only the tip of the iceberg?

Do we need to correct age for prematurity when assessing children?

Understanding outliers and defining value in neonatal healthcare

Continuous positive airway pressure to prevent neonatal lung injury: how did we get here, and how do we improve?

Genetics of hypoplastic left heart syndrome

Risk factors and in-hospital outcomes following tracheostomy in infants

Extubating extremely preterm infants: predictors of success and outcomes following failure

Development and validation of the neonatal risk estimate score for children using extracorporeal respiratory support

Risk factors for neonatal arterial ischemic stroke: the importance of the intrapartum period

Girls and boys born before 28 weeks gestation: risks of cognitive, behavioral, and neurologic outcomes at age 10 years

Intercenter cost variation for perinatal hypoxic-ischemic encephalopathy in the era of therapeutic hypothermia

Unbound bilirubin and auditory neuropathy spectrum disorder in late preterm and term infants with severe jaundice

Consequences of correcting intelligence quotient for prematurity at age 5 years

A comparison of prenatal and postnatal models to predict outcomes at the border of viability

Characterizing and forecasting individual weight changes in term neonates

Greater early gains in fat-free mass, but not fat mass, are associated with improved neurodevelopment at 1 year corrected age for prematurity in very low birth weight preterm infants

Changes in brown adipose tissue and muscle development during infancy

Birth size, early life weight gain, and midchildhood cardiometabolic health

Executive functioning and school performance among pediatric survivors of complex congenital heart disease

Thyroxine-based screening for congenital hypothyroidism in neonates with Down syndrome
Unresolved issues in the wake of newborn screening for congenital hypothyroidism

Cytomegalovirus meningitis in an infant with severe combined immunodeficiency

High-sensitivity troponin T and N-terminal pro-brain natriuretic peptide in prediction of outcome in congenital diaphragmatic hernia: results from a multicenter, randomized controlled trial

Tinea faciei in a 14-day-old girl

Pediatric Research

Recurrent copy number variants associated with bronchopulmonary dysplasia

Evaluation of novel urinary tract infection biomarkers in children

Selenium status during pregnancy and child psychomotor development-Polish Mother and Child Cohort study (PDF)

Cytokine responses in primary and secondary respiratory syncytial virus infections

Higher protein intake increases cardiac function parameters in healthy children: metabolic programming by infant nutrition-secondary analysis from a clinical trial

Comparing apples with apples: it is time for standardized reporting of neonatal nutrition and growth studies

Iron is prioritized to red blood cells over the brain in phlebotomized anemic newborn lambs

The interrelationship of recruitment maneuver at birth, antenatal steroids, and exogenous surfactant on compliance and oxygenation in preterm lambs

Comparison of ECG-based physiological markers for hypoxia in a preterm ovine model

Intrauterine growth restriction: impact on cardiovascular development and function throughout infancy

Baroreflex dysfunction in sick newborns makes heart rate an unreliable surrogate for blood pressure changes

Smad7 interrupts TGF-β signaling in intestinal macrophages and promotes inflammatory activation of these cells during necrotizing enterocolitis

Physiological adjustment to postnatal growth trajectories in healthy preterm infants

Noninvasive assessments of oxygen delivery from the microcirculation to skin in hypothermia-treated asphyxiated newborn infants
Bacterial microbiome of breast milk and child saliva from low-income Mexican-American women and children

Archives of Disease in Childhood - Fetal & Neonatal Edition
Stabilisation of premature infants in the delivery room with nasal high flow
Retinopathy of prematurity screening criteria in Iran: new screening guidelines
Measurements from preterm infants to guide face mask size
Randomised comparison of two neonatal resuscitation bags in manikin ventilation
Evaluation of the use of a parent questionnaire to provide later health status data: the PANDA study
Pulmonary arterial response to hypoxia in survivors of chronic lung disease of prematurity
Differences in preductal and postductal arterial blood gas measurements in infants with severe congenital diaphragmatic hernia
Influence of pulmonary factors on pulse oximeter saturation in preterm infants
Heart rate characteristic index monitoring for bloodstream infection in an NICU: a 3-year experience
The SafeBoosC phase II clinical trial: an analysis of the interventions related with the oximeter readings
Elective caesarean delivery adversely affects preductal oxygen saturation during birth transition
Supporting ‘Baby Friendly’: a quality improvement initiative for the management of transitional neonatal hypoglycaemia

Journal of Perinatology
Inadequate prenatal care use among Canadian mothers: findings from the Maternity Experiences Survey
The impact of low-dose aspirin on preterm birth: secondary analysis of a randomized controlled trial
Maternal apolipoprotein E genotype as a potential risk factor for poor birth outcomes: the Bogalusa heart study
Intrapartum intervention rates and perinatal outcomes following successful external cephalic version
Sustained lung inflation in late preterm infants: a randomized controlled trial
Perinatal inflammation/infection and its association with correction of metabolic acidosis in hypoxic-ischemic encephalopathy
Response to dopamine in prematurity: a biomarker for brain injury?  

Increased asymmetric dimethylarginine levels in severe transient tachypnea of the newborn  

The impact of a dedicated patent ductus arteriosus ligation team on neonatal health-care outcomes  

Prevention of unplanned extubations in neonates through process standardization  

The spectrum of onset of acute kidney injury in premature infants less than 30 weeks gestation  

Hemodynamic reference for neonates of different age and weight: a pilot study with electrical cardiometry  

Effects of standardized acoustic stimulation in premature infants: a randomized controlled trial  

Neonatology
Respiratory stabilization after delivery in term infants after the update of the Japan resuscitation council guidelines in 2010  

Follow-Up of children with gastrointestinal malformations and postnatal surgery and anesthesia: evaluation at two years of age  

Secretoneurin serum levels in healthy term neonates and neonates with hypoxic-ischaemic encephalopathy  

Long-term neurodevelopmental outcome after doxapram for apnea of prematurity  

Serial 1- and 2-dimensional cerebral MRI measurements in full-term infants after perinatal asphyxia  

Earlier initiation of therapeutic hypothermia by non-tertiary neonatal Units in Victoria, Australia  

Short-term effects of phenobarbitone on electrographic seizures in neonates  

Meconium evacuation for facilitating feed tolerance in preterm neonates: a systematic review and meta-analysis  

Effects of phototherapy on coronary blood flow in healthy neonates: a pilot study  

American Journal of Perinatology
Zika Virus and pregnancy: a review of the literature and clinical considerations  

Insulin-like growth factor-1 levels in term newborns with hypoxic–ischemic encephalopathy  

“The more the better” paradox of antenatal ultrasound examinations in low-risk pregnancy  

Idiopathic polyhydramnios: severity and perinatal morbidity
Nonreassuring fetal status in the second stage of labor: fetal monitoring features and association with neonatal outcomes

Pulmonary vein stenosis in neonates with severe bronchopulmonary dysplasia

Protocol versus nonprotocol dosing of vancomycin in neonates: a single center evaluation of steady state trough levels

Trends and variations in the use of inhaled nitric oxide in preterm infants in canadian neonatal intensive care units

Journal of Neonatal-Perinatal Medicine
Preeclampsia: long-term effects on pediatric disability
Significance of antenatal glucocorticoid exposure for pressure injury prevalence in neonates
Antenatal corticosteroids in the late preterm period: a prospective cohort study
Parental preferences regarding administration of an animal-derived versus a synthetic medication to newborn infants
A rock and a hard place: the selective serotonin reuptake inhibitor dilemmas in addressing perinatal mood and anxiety disorders

Maternal Health, Neonatology and Perinatology
The timing of umbilical cord clamping at birth: physiological considerations (PDF)

JAMA Pediatrics
Resuscitations that never end: originating from unresolved integrity-related moral distress
Do it yourself newborn screening
Preterm birth as a calendar event or immunologic anomaly
Laboratory accuracy in neonatal bilirubin: the search for truth in laboratory medicine
Assisted reproductive technology and birth defects among liveborn infants in Florida, Massachusetts, and Michigan, 2000-2010
Prenatal education of parents about newborn screening and residual dried blood spots: a randomized clinical trial
Association between laboratory calibration of a serum bilirubin assay, neonatal bilirubin levels, and phototherapy use
Association of antenatal corticosteroids with mortality, morbidity, and neurodevelopmental outcomes in extremely preterm multiple gestation infants

**BMC Pediatrics**
The N3RO trial: a randomised controlled trial of docosahexaenoic acid to reduce bronchopulmonary dysplasia in preterm infants < 29 weeks' gestation (PDF)

Minimising impairment: protocol for a multicentre randomised controlled trial of upper limb orthoses for children with cerebral palsy (PDF)

A qualitative study of the infant feeding beliefs and behaviours of mothers with low educational attainment (PDF)

The supplemental use of infant formula in the context of universal breastfeeding practices in Western Nepal (PDF)

**Pediatric Critical Care Medicine**
Blood volume, plasma volume, and RBC volume in polycythaemic neonates after palliative congenital heart surgery

Ventilator-associated infections need a new approach

Acute kidney injury in newborns: the evolution for optimization of diagnosis

Predicting the outcome of congenital diaphragmatic hernia in a SNAP (score for neonatal acute physiology)

Effects of surfactant lavage combined with intratracheal budesonide instillation on meconium-injured piglet lungs

Score for Neonatal Acute Physiology-II predicts outcome in congenital diaphragmatic hernia patients

**New England Journal of Medicine**
Tenofovir to prevent Hepatitis B transmission in mothers with high viral load

**Lancet**
Thailand eliminates mother-to-child transmission of HIV and syphilis

Zika: neurological and ocular findings in infant without microcephaly (PDF)

Late sexual transmission of Zika virus related to persistence in the semen (PDF)
JAMA
Maternal and neonatal mortality after cesarean delivery
Effect of dilute apple juice and preferred fluids vs electrolyte maintenance solution on treatment failure among children with mild gastroenteritis: a randomized clinical trial
Infections in early life and development of type 1 diabetes

Pediatric Infectious Disease Journal
Treatment of congenital toxoplasmosis: safety of the sulfadoxine–pyrimethamine combination in children based on a method of causality assessment
Predicting outcome of childhood bacterial meningitis with a single measurement of c-reactive protein
The hidden health and economic burden of rotavirus gastroenteritis in Malaysia: an estimation using multiple data sources
Linezolid is associated with improved early outcomes of childhood tuberculous meningitis
Infections with biofilm formation: selection of antimicrobials and role of prolonged antibiotic therapy

Pediatric Cardiology
Is pulse oximetry useful for screening neonates for critical congenital heart disease at high altitudes?
Results of a feeding protocol in patients undergoing the hybrid procedure
Hybrid palliation for ductal-dependent systemic circulation
Postnatal outcome of fetal left ventricular hypertuberculation/noncompaction
Perinatal decision making for preterm infants with congenital heart disease: determinable risk factors for mortality
Variation in antiarrhythmic management of infants hospitalized with supraventricular tachycardia: a multi-institutional analysis
Associations of NKX2-5 genetic polymorphisms with the risk of congenital heart disease: a meta-analysis

Pediatric Neurology
Eye-mouth associated movement in the human newborn and very young infant
Congenital cataract with facial dysmorphism and neuropathy: key clinical features
Pyridoxine-dependent epilepsy: an expanding clinical spectrum  

Beta blockade as treatment for intracranial infantile hemangioma: case report and literature review  

Clinical and surgical factors associated with increased epilepsy risk in children with hydrocephalus  

Transient motor asymmetry among infants with congenital torticollis—description, characterization, and results of follow-up  

Neonatal magnesium levels between 24 and 48 hours of life and outcomes for epilepsy and motor impairment in premature infants  

The effect of supplementation of long-chain polyunsaturated fatty acids during lactation on neurodevelopmental outcomes of preterm infant from infancy to school age: a systematic review and meta-analysis  

Prognostication value of descending corticospinal tract DWI signal in neonatal cerebral sinovenous thrombosis  

**Obstetrics and Gynecology**

Association of first-trimester echogenicity of the puborectalis muscle with mode of delivery  

Risk of preeclampsia in human immunodeficiency virus–infected pregnant women  

Evaluation of an electronic consultation service in obstetrics and gynecology in Ontario  

Preterm delivery and metabolic syndrome in women followed from prepregnancy through 25 years later  

Patient–health care provider conversations about prenatal genetic screening: recommendation or personal choice  

Pain and analgesia during labor and delivery between 16 0/7 and 22 6/7 weeks of gestation  

Double aneuploidy detected by cell-free DNA testing and confirmed by fetal tissue analysis  

Preterm breech presentation: a comparison of intended vaginal and intended cesarean delivery  

**American Journal of Obstetrics & Gynecology**

Risk of preterm birth by subtype among Medi-Cal participants with mental illness  

Exercise during pregnancy in normal-weight women and risk of preterm birth: a systematic review and meta-analysis of randomized controlled trials  

Primary maternal cytomegalovirus infections: accuracy of fetal ultrasound for predicting sequelae in offspring  
Predictors of shoulder dystocia at the time of operative vaginal delivery
Quantitative fetal fibronectin and cervical length to predict preterm birth in asymptomatic women with previous cervical surgery.
Marijuana use and its effects in pregnancy
Impact on family and parental stress of prenatal vs postnatal repair of myelomeningocele
A prediction model of vaginal birth after cesarean in the preterm period
The role of antenatal corticosteroids in twin pregnancies complicated by preterm birth
Prenatal screening for fetal aneuploidy: time to examine where we are and where we are going
Diagnosis and antenatal management of congenital cytomegalovirus infection
Ultrasound screening for fetal microcephaly following Zika virus exposure
Diagnosis and management of vasa previa
Posttest risk calculation following positive noninvasive prenatal screening using cell-free DNA in maternal plasma
Pharmacokinetics and placental transfer of magnesium sulfate in pregnant women
Safety and pharmacokinetics of pravastatin used for the prevention of preeclampsia in high-risk pregnant women: a pilot randomized controlled trial
Prolonged latency of preterm premature rupture of membranes and risk of neonatal sepsis
Chromosomal abnormalities not currently detected by cell-free fetal DNA: a retrospective analysis at a single center
The relationship between variations in cesarean delivery and regional health care use in the United States
Motor and cortico-striatal-thalamic connectivity alterations in intrauterine growth restriction
Cell-free DNA vs sequential screening for the detection of fetal chromosomal abnormalities
No association between periodontitis, preterm birth, or intrauterine growth restriction: experimental study in Wistar rats

BASIC SCIENCE SELECTIONS

Protective effect of dual-strain probiotics in preterm infants: a multi-center time series analysis

Histological chorioamnionitis shapes the neonatal transcriptomic immune response

Anti-inflammatory effects of budesonide in human fetal lung

Aberrant pulmonary vascular growth and remodeling in bronchopulmonary dysplasia
Alvira CM. *Front Med (Lausanne).*

Increased ADMA levels are associated with poor pulmonary outcome in preterm neonates

Newborn brain function is affected by fetal exposure to maternal serotonin reuptake inhibitors

Deferoxamine improves antioxidative protection in the brain of neonatal rats: the role of anoxia and body temperature

Normal newborn heart rate in the first five minutes of life assessed by dry-electrode electrocardiography

Dexamethasone induces cardiomyocyte terminal differentiation via epigenetic repression of cyclin D2 gene

Evaluation of etanercept treatment in newborn rat model with hyperoxic lung injury

Pulmonary epithelial TLR4 activation leads to lung injury in neonatal necrotizing enterocolitis

Oxygen sensing in early life
Caravagna C & Seaborn T. *Lung.*
Human mesenchymal stem cells attenuate pulmonary hypertension induced by prenatal lipopolysaccharide treatment in rats