ARTICLES OF INTEREST – March, 2018

Impact of SMOFLipid on pulmonary alveolar development in newborn guinea pigs

In animals, parenteral nutrition (PN) is associated with alveolar loss following oxidative stress such as may occur in BPD. Since SMOFLipid (SMOF) contains a lower amount of omega-6 fatty acids than Intralipid (IL), this study tested impact of PN with SMOF or IL on alveolar development in 3-day-old guinea pigs. Compared with IL, SMOF induced a greater oxidation and apoptosis, and a lower alveolarization index. In this model, SMOF appears pro-oxidant and highlights the need for further studies before introducing SMOFLipid as standard neonatal care.

Donor human milk and risk of surgical necrotizing enterocolitis: a meta-analysis

Donor milk (DM) has been reported to have a protective effect towards total cases of NEC. The authors conducted this meta-analysis to assess the risk of developing surgical cases of NEC in DM-fed preterm and/or low birth weight infants with respect to formula. The 4 papers included in the meta-analysis revealed that DM did not exert a beneficial effect on the risk of preventing surgical NEC compared to formula. Since DM feeding implies remarkable extra cost, stronger evidences is required to recommend this type of feeding to prevent surgical NEC.

Inhaled nitric oxide in extremely premature neonates with respiratory distress syndrome

Inhaled nitric oxide (iNO) is increasingly prescribed off-label during the first week of life to extremely premature neonates with RDS. The authors queried the Pediatric Medical Group Clinical Data Warehouse to identify all neonates born between 22 and 29 weeks' gestation from 2004 to 2014. Among 37 909 neonates, they identified 993 (2.6%) who received iNO. They found that off-label prescription of iNO is not associated with reduced in-hospital mortality among extremely premature neonates with RDS.
Optimizing early nutritional intake in preterm neonates may promote brain health and neurodevelopment through enhanced brain maturation. The authors sought to determine the association of energy and macronutrient intake in the first 2 weeks of life with regional and total brain growth and white matter (WM) maturation, assessed by 3 serial MRI scans; to examine how critical illness modifies this association; and to investigate the relationship with neurodevelopmental outcomes in 49 preterm neonates. In preterm neonates, greater energy and enteral feeding during the first 2 weeks of life predicted more robust brain growth and accelerated WM maturation. The long-lasting effect of early nutrition on neurodevelopment may be mediated by enhanced brain growth. Optimizing nutrition in preterm neonates may represent a potential avenue to mitigate the adverse brain health consequences of critical illness.

A randomized clinical trial of umbilical cord milking vs delayed cord clamping in preterm infants: neurodevelopmental outcomes at 22-26 months of corrected age

In this follow-up study of a clinical trial in which infants were randomized to umbilical cord milking vs. delayed cord clamping, 135 infants (74% of those eligible) were assessed at 22 to 26 months of corrected age. Infants randomized to umbilical cord milking, compared to delayed cord clamping, had higher cognitive and language composite scores on the Bayley Scales of Infant Development (3rd edition). There were no differences in the incidence of mild or moderate-to-severe neurodevelopmental impairment or pulmonary morbidities between groups.

Surgical necrotizing enterocolitis in extremely premature neonates is associated with genetic variations in an intergenic region of chromosome eight

This study explored the association between genetic factors and NEC, which have been shown to increase the risk of NEC by 50%. 751 ELBW neonates were assessed, including 30 with surgical NEC. Genetic variation in an intergenic region of chromosome 8 conferred an odds ratio of 4.72 for elevated risk of NEC. The underlying mechanism is yet to be identified. Two smaller clusters on chromosomes 11 and 14 also exhibited significant associations with surgical NEC.

2% chlorhexidine–70% isopropyl alcohol versus 10% povidone–iodine for insertion site cleaning before central line insertion in preterm infants: a randomised trial

This prospective, two-site trial randomized 304 infants with 815 central venous catheters to receive either 2% chlorhexidine gluconate-70% isopropyl alcohol or 10% aqueous povidone-iodine for central venous line insertion site cleaning. The authors found no significant difference between groups in the proportion of catheter-related blood stream infections or the rate of catheter-related blood stream infections per 1000 days. Of note, more infants in the povidone-iodine group had raised thyroid-stimulating hormone levels and were treated with thyroxine (0% versus 5%, p=0.003).
Differences in morbidity and mortality rates in black, white, and Hispanic very preterm infants among New York City hospitals

In this study of 39 New York City hospitals from 2010-2014, the investigators evaluated differences in neonatal morbidity and mortality rates among black, white and Hispanic very preterm infants and how much the birth hospital explained observed differences. Morbidity and mortality were higher among black (32%) and Hispanic infants (28%), compared to white infants (23%). The largest proportion of racial/ethnic disparity was explained by infant health risks (e.g. gestational age, birth weight). However, 40% of the black-white and 30% of the Hispanic-white disparity in outcomes was explained by the birth hospital.

Association of placebo, indomethacin, ibuprofen, and acetaminophen with closure of hemodynamically significant patent ductus arteriosus in preterm infants
Mitra S, Florez ID, Tamayo ME, et al. *JAMA.*

The approach to medical management of hemodynamically significant PDA remains controversial. In this systematic review and meta-analysis of 68 randomized, controlled clinical trials including 4256 infants, the authors found an overall closure rate of 67% with different drugs, including ibuprofen, indomethacin or acetaminophen. High dose ibuprofen was defined as 15 to 20 mg/kg followed by 7.5 to 10 mg/kg given q12-24 hours for a total of 3 doses via both intravenous and oral administrations. Based on the ranking status, high dose oral ibuprofen ranked as the best pharmacotherapeutic option for PDA closure. No differences in mortality, NEC, or IVH between treated and untreated infants. The controversy regarding treatment goes on!!

OTHER NOTEWORTHY PUBLICATIONS – March, 2018

*Pediatrics*
Cerebrospinal fluid reference values for young infants undergoing lumbar puncture

Inhaled nitric oxide for preterm infants: what can change our practice?

Cost-effectiveness of supplemental donor milk versus formula for very low birth weight infants

Infant hospitalizations and mortality after maternal vaccination

Child health outcomes after presumptive infection treatment in pregnant women: a randomized trial

Beckwith-Wiedemann Syndrome: partnership in the diagnostic journey of a rare disorder

Families’ experiences with pediatric family-centered rounds: a systematic review

Neonatal jaundice: improved quality and cost savings after implementation of a standard pathway

A quality-improvement initiative to reduce NICU transfers for neonates at risk for hypoglycemia
Quality-improvement effort to reduce hypothermia among high-risk infants on a mother-infant unit

Well-appearing newborn with a vesiculobullous rash at birth

**Journal of Pediatrics**

Plasma biomarkers of brain injury in neonatal hypoxic-ischemic encephalopathy

50 years ago in the Journal of Pediatrics: alveolar arterial oxygen gradient in premature infants breathing 100% oxygen

In search of biomarkers for HIE

Phone app detects hyperbilirubinemia

Magnesium sulfate prevents cerebral palsy in premature infants

Painless scrotal hematoma as a sign of adrenal hemorrhage in newborns

The breathing effort of very preterm infants at birth

Cryptorchidism in Sweden: a nationwide study of prevalence, operative management, and complications

Variation in positive end-expiratory pressure levels for mechanically ventilated extremely low birth weight infants

A mixed lipid emulsion for prevention of parenteral nutrition associated cholestasis in extremely low birth weight infants: a randomized clinical trial

Car seat tolerance screening in the neonatal intensive care unit: failure rates, risk factors, and adverse outcomes

Heterozygous deletion impacting SMARCAD1 in the original kindred with absent dermatoglyphs and associated features (Baird, 1964)

Divergent patterns of mitochondrial and nuclear ancestry are associated with the risk for preterm birth

Deciphering extubation failure in extremely preterm infants: time to embrace complexity and move forward

Bilateral pulmonary sequestration in a preterm infant

Sleep-disordered breathing among newborns with myelomeningocele

Coming to terms with cardiovascular morbidity after early term birth

A novel in situ simulation intervention used to mitigate an outbreak of methicillin-resistant staphylococcus aureus in a neonatal intensive care unit
Zinc protoporphyrin-to-heme ratio and ferritin as measures of iron sufficiency in the neonatal intensive care unit

Diagnostic role of anal sphincter relaxation integral in high-resolution anorectal manometry for Hirschsprung disease in infants

Healthcare utilization and comorbidities associated with anorectal malformations in the United States

Infants with atypical presentations of alveolar capillary dysplasia with misalignment of the pulmonary veins who underwent bilateral lung transplantation

Impact of prolonged mechanical ventilation in very low birth weight infants: results from a national cohort study

Pediatric cardiovascular morbidity of the early term newborn

Pediatric Research
Prenatal exposure to maternal depression and anxiety on imprinted gene expression in placenta and infant neurodevelopment and growth

Prenatal, perinatal, and neonatal risk factors of autism spectrum disorder

Maternal influence on the fetal microbiome in a population-based study of the first-pass meconium

Mild cerebellar injury does not significantly affect cerebral white matter microstructural organization and neurodevelopmental outcome in a contemporary cohort of preterm infants

Archives of Disease in Childhood - Fetal & Neonatal Edition
0.2% chlorhexidine acetate as skin disinfectant prevents skin lesions in extremely preterm infants: a preliminary report

Ibuprofen exposure in early neonatal life does not affect renal function in young adolescence

Laryngeal closure impedes non-invasive ventilation at birth (PDF)
http://fn.bmj.com/content/fetalneonatal/103/2/F112.full.pdf

Volume guaranteed? Accuracy of a volume-targeted ventilation mode in infants

Prenatal markers and longitudinal follow-up in simple and complex gastroschisis

Physical stimulation of newborn infants in the delivery room

Cerebral oxygenation during skin-to-skin care in preterm infants not receiving respiratory support

Alterations of adrenal steroidomic profiles in preterm infants at birth

Are postnatal ampicillin levels actually related to the duration of intrapartum antibiotic prophylaxis prior to delivery? A pharmacokinetic study in 120 neonates
Lung ultrasound immediately after birth to describe normal neonatal transition: an observational study

C reactive protein in healthy term newborns during the first 48 hours of life

Congenital microcephaly in Quebec: baseline prevalence, risk factors and outcomes in a large cohort of neonates

Antenatal corticosteroids in impending preterm deliveries before 25 weeks’ gestation

Review: Role of ECMO in congenital diaphragmatic hernia

Review: Incidence of neonatal necrotising enterocolitis in high-income countries: a systematic review

Images: Use of clear sterile drapes for invasive procedures

Images: Skin rash in a preterm infant: when to treat?

Journal of Perinatology
Manipulating the microbiome: evolution of a strategy to prevent S. aureus disease in children

A practical approach to the evaluation and treatment of an infant with aplasia cutis congenital

Early versus 6–12 week postpartum glucose tolerance testing for women with gestational diabetes

Predicting birth weight in fetuses with gastroschisis

Hospital volume and cesarean delivery among low-risk women in a nationwide sample

Effect of maternal smoking on stress physiology in healthy neonates

Activation of toll-like receptors in meconium aspiration syndrome

Parental assessment of comfort in newborns affected by life-limiting conditions treated by a standardized neonatal comfort care program

Association of unit-wide oxygen saturation target on incidence of pulmonary hypertension in very low birthweight premature infants

Double versus single intensive phototherapy with LEDs in treatment of neonatal hyperbilirubinemia

Management of neonatal spontaneous intestinal perforation by peritoneal needle aspiration

Comparison of sprinting vs non-sprinting to wean nasal continuous positive airway pressure off in very preterm infants
Excipient exposure in very low birth weight preterm neonates
Association of nursing overtime, nurse staffing and unit occupancy with medical incidents and outcomes of very preterm infants
Pulse oximetry screening for critical congenital heart diseases at two different hospital settings in Thailand
Effects of a transition home program on preterm infant emergency room visits within 90 days of discharge
Developmental care, neonatal behavior and postnatal maternal depressive symptomatology predict internalizing problems at 18 months for very preterm children

**Neonatology**
Low- versus high-dose and early versus late parenteral amino-acid administration in very-low-birthweight infants: a systematic review and meta-analysis
https://www.ncbi.nlm.nih.gov/pubmed/29268262
Gastro-oesophageal reflux and apnoea: is there a temporal relationship?
Neonatal systemic inflammation induces inflammatory reactions and brain apoptosis in a pathogen-specific manner
Influence of pCO2 control on clinical and neurodevelopmental outcomes of extremely low birth weight infants
High-flow nasal cannula versus nasal continuous positive airway pressure for primary respiratory support in preterm infants with respiratory distress: a randomized controlled trial
Body composition following necrotising enterocolitis in preterm infants
Revived for paradise: a history of respite sanctuaries
Dose-response effects of early vitamin D supplementation on neurodevelopmental and respiratory outcomes of extremely preterm infants at 2 years of age: a randomized trial
Variation in the phototherapy: practices and irradiance of devices in a major metropolitan area
Upregulation of vascular endothelial growth factor in amniotic fluid stem cells enhances their potential to attenuate lung injury in a preterm rabbit model of bronchopulmonary dysplasia

**American Journal of Perinatology**
Polyhydramnios affecting a recipient-like twin: risk of progression to twin-twin transfusion syndrome and outcomes
Comparison of neonatal abstinence syndrome treatment with sublingual buprenorphine versus conventional opioids
A practical approach to neonatal opiate withdrawal syndrome
Evaluation of early onset sepsis, complete blood count, and antibiotic use in gastroschisis
The effect of prior term birth on risk of recurrent spontaneous preterm birth
Plasma lipoprotein particle subclasses in preterm infants
Umbilical cord oxygen content and neonatal morbidity at term
Transition to routine premedication for nonemergent intubations in a level IV neonatal intensive care unit

**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
Incidence and short term outcomes of neonates with hypoxic ischemic encephalopathy in a Peri Urban teaching hospital, Uganda: a prospective cohort study
Low level of knowledge about neonatal danger signs and its associated factors among postnatal mothers attending at Woldia general hospital, Ethiopia

Neoreviews
Understanding the limitations of fetal cardiac imaging
http://neoreviews.aappublications.org/content/19/3/e134
Selective serotonin reuptake inhibitor use in pregnancy: repercussions on the oblivious passenger
http://neoreviews.aappublications.org/content/19/3/e160
Case 1: A newborn with absence of right forearm, preauricular pit, and an infantile hemangioma
http://neoreviews.aappublications.org/content/19/3/e170
Case 2: The well-appearing cyanotic infant
http://neoreviews.aappublications.org/content/19/3/e173
Case 3: Neonate with sudden onset of hypotonia on the second day after birth
http://neoreviews.aappublications.org/content/19/3/e176
Strip of the Month: Late-term induction of labor
http://neoreviews.aappublications.org/content/19/3/e183
Female newborn with extreme hyperextension of right knee
http://neoreviews.aappublications.org/content/19/3/e196

JAMA Pediatrics
Association of National Institute of Child Health and Human Development career development awards with subsequent research project grant funding
The fragile state of the National Institutes of Health pediatric research portfolio, 1992-2015: doing more with less?
Challenges for today’s pediatric physician-scientists
Name and characteristics of National Institutes of Health R01-funded pediatric physician-scientists: hope and challenges for the vanishing pediatric physician-scientists
Physician-scientist career awards and a dilemma: National Institute of Child Health and Human Development K awards-individual, institutional, or national?
Comparing alternative ranibizumab dosages for safety and efficacy in retinopathy of prematurity: a randomized clinical trial
Association of long-term exposure to airborne particulate matter of 1 μm or less with preterm birth in China
Choice of hospital as a source of racial/ethnic disparities in neonatal mortality and morbidity rates. Core quality and outcome measures for pediatric health
BMC Pediatrics
Variations in the rancid-flavor compounds of human breastmilk under general frozen-storage conditions.
Exclusive breastfeeding practice during first six months of an infant’s life in Bangladesh: a country based cross-sectional study
Analysis of low birth weight and its co-variants in Bangladesh based on a sub-sample from nationally representative survey
Respiratory morbidity through the first decade of life in a national cohort of children born extremely preterm
Usefulness of fetal magnetic resonance imaging for postnatal management of congenital lung cysts: prediction of probability for emergency surgery
Clinical and genetic characteristics of patients with fatty acid oxidation disorders identified by newborn screening
Effect of infant feeding practices on iron status in a cohort study of Bolivian infants
Diagnosis and therapeutic monitoring of inborn errors of metabolism in 100,077 newborns from Jining city in China

Pediatric Critical Care Medicine
Enteral feeding practices in infants with congenital heart disease across European PICUs: a European Society of Pediatric and Neonatal Intensive Care survey
Understanding the impact of fluid restriction on growth outcomes in infants following cardiac surgery
Cognitive development one year after infantile critical pertussis
https://www.ncbi.nlm.nih.gov/pubmed/29117060

New England Journal of Medicine
Tenofovir versus placebo to prevent perinatal transmission of hepatitis B
A shift in thinking to reduce mother-to-infant transmission of hepatitis B
Balancing safety and innovation for cell-based regenerative medicine
Pregnancy outcomes after ZIKV infection in French territories in the Americas
Recognizing the global impact of zika virus infection during pregnancy
Favism and glucose-6-phosphate dehydrogenase deficiency
A randomized trial of high-flow oxygen therapy in infants with bronchiolitis
Meconium ileus in a neonate with cystic fibrosis
Polluting developing brains — EPA failure on chlorpyrifos

*Lancet*
Safety, tolerability, and immunogenicity of two Zika virus DNA vaccine candidates in healthy adults: randomised, open-label, phase 1 clinical trials
Preliminary aggregate safety and immunogenicity results from three trials of a purified inactivated Zika virus vaccine candidate: phase 1, randomised, double-blind, placebo-controlled clinical trials

*JAMA*
Vitamin and mineral supplements: what clinicians need to know
The importance of contact precautions for endemic methicillin-resistant staphylococcus aureus and vancomycin-resistant enterococci
Zika-associated birth defects increasing
Birth defects potentially related to zika virus infection during pregnancy in the United States
Association between loss of hospital-based obstetric services and birth outcomes in rural counties in the United States
Similar IVF birth rates for frozen and fresh embryos

*BMJ*
Pregnancy in women with congenital heart disease
Reduced fetal movements
Baby with brain damage dies after parents run out of legal options
Relaxation of the one child policy and trends in caesarean section rates and birth outcomes in China between 2012 and 2016: observational study of nearly seven million health facility births

*Pediatric Infectious Disease Journal*
Higher transplacental pathogen-specific antibody transfer among pregnant women randomized to triple antiretroviral treatment versus short course zidovudine
Persistent gram-negative neurosurgical meningitis in a neonate, successfully treated with intraventricular colistin: case report and review of the literature
Perinatal tuberculosis: is it a forgotten disease?

*Perinatal tuberculosis: is it a forgotten disease?*
**Pediatric Cardiology**
Transcatheter closure of arterial duct in infants < 6 kg: Amplatzer duct occluder type I vs Amplatzer duct occluder II additional sizes  
Duplication and deletion of 22q11 associated with anomalous pulmonary venous connection  
The challenge of Hammock mitral valve during infancy: precise preoperative advanced imaging and three-dimensional modeling augments customized operative valve reconstruction  
Incidence of persistent left superior vena cava in the normal population and in patients with congenital heart diseases detected using echocardiography  
Risk factors for development of ectopic atrial tachycardia in post-operative congenital heart disease  
A comparison of anterograde versus retrograde approaches for neonatal balloon aortic valvuloplasty  

**Pediatric Neurology**
Neonatal infection in children with cerebral palsy: a registry-based cohort study  

**Obstetrics and Gynecology**
Risk of adverse pregnancy outcomes at advanced maternal age  
Twenty-week abortion bans on pregnancies with a congenital diaphragmatic hernia: a cost-effectiveness analysis  
National partnership for maternal safety: consensus bundle on safe reduction of primary cesarean births—supporting intended vaginal births  
ACOG Practice Bulletin No. 192 summary: Management of alloimmunization during pregnancy  

**American Journal of Obstetrics & Gynecology**
Aspirin for the prevention of preterm and term preeclampsia: systematic review and metaanalysis  
Spontaneous preterm birth: advances toward the discovery of genetic predisposition  
Extremely preterm fetal sheep lung responses to antenatal steroids and inflammation  
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
https://www.ncbi.nlm.nih.gov/pubmed/29275815

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
Exosomal microRNA predicts and protects against severe bronchopulmonary dysplasia in extremely premature infants

Resident alveolar macrophages are master regulators of arrested alveolarization in experimental bronchopulmonary dysplasia

Progesterone improves perinatal neuromotor outcomes in a mouse model of intrauterine inflammation via immunomodulation of the placenta

Impact of chronic neonatal intermittent hypoxia on severity of retinal damage in a rat model of oxygen-induced retinopathy

BMP7 regulates lung fibroblast proliferation in newborn rats with bronchopulmonary dysplasia
Intermittent hypoxia suppression of growth hormone and insulin-like growth factor-I in the neonatal rat liver

Identification of placental nutrient transporters associated with intrauterine growth restriction and pre-eclampsia

**ADDITIONAL JOURNAL SELECTIONS**

Respiratory syncytial virus prevention and asthma in healthy preterm infants: a randomised controlled trial

Effects of two different feeding positions on physiological characteristics and feeding performance of preterm infants: a randomized controlled trial
Girgin BA, Gözen D, & Karatekin G. *J Spec Pediatr Nurs.*

Dose-response relationship between donor human milk, mother's own milk, preterm formula, and neonatal growth outcomes

Early progressive feeding in extremely preterm infants: a randomized trial

Beta-blockers for prevention and treatment of retinopathy of prematurity in preterm infants

Higher versus lower amino acid intake in parenteral nutrition for newborn infants

Does maternal exposure to secondhand tobacco smoke during pregnancy increase the risk for preterm or small-for-gestational age birth?
Hoyt AT, Canfield MA, Romitti PA, et al. *Matern Child Health J.*