ARTICLES OF INTEREST – March 2020

Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records

The authors present a retrospective cohort of nine pregnant women with COVID-19 pneumonia admitted to Zhongnan Hospital, Wuhan, China, in January 2020. These patients presented with fever (7 of 9), and had cough (4 of 9), myalgia (3 of 9), sore throat, malaise and fetal distress (2 of 9). Laboratory findings include lymphopenia (5 of 9), and increased aminotransferase levels (3 of 9). All nine patients had a cesarean section in the third trimester with livebirths. Amniotic fluid, cord blood, neonatal throat swabs, and breastmilk samples from six patients tested negative for SARS-CoV-2. This small cohort of patients shows no evidence of vertical transmission in women who developed COVID-19 in late pregnancy.

Tracheostomy in very low birth weight infants: A prospective multicenter study

This prospective study included 458,624 VLBW infants at 796 North American centers from 2006 to 2016, of which 3442 infants received tracheostomy. The authors found that VLBW infants receiving tracheostomy had a mortality rate twice as high (18.8% with tracheostomy versus 8.3% without tracheostomy) and an initial length of stay (LOS) nearly 4 time longer than those without tracheostomy (Median LOS=226 days (168-304 days interquartile range) with tracheostomy versus LOS=58 (39-86 days interquartile range) without tracheostomy). Chronic lung disease and congenital anomalies were the strongest predictors of tracheostomy placement and mortality.

Milrinone use in persistent pulmonary hypertension of the newborn
Qasim A and Jain S.K. Neoreviews.

While inotropic and vasoactive agents are commonly initiated early in the treatment of persistent pulmonary hypertension, there is scant evidence on choice, timing of initiation, dosing, monitoring, and titrating of these agents in the newborn population. This review article discusses the pathophysiology of persistent pulmonary hypertension of the newborn and reviews the use of inotropic, lusitropic (myocardial relaxing), and vasoactive agents in the management of pulmonary hypertension, with particular attention to milrinone.

Outcomes of neonates born at <26 weeks gestational age who receive extensive cardiopulmonary resuscitation compared with airway and breathing support
This is a retrospective of Canadian Neonatal Network data (2010-2016) comparing the outcomes of preterm infants <26 weeks gestation that required extensive post-delivery cardiopulmonary resuscitation (ECPR) versus airway and breathing support (ABS). The results show that out of 3633 infants, 433 (11.9%) received ECPR. Death or severe morbidity (IVH ≥grade 3, PVL, ROP ≥stage 3, BPD, or NEC) was higher in ECPR versus ABS group (adjusted OR 2.26) which included increased mortality in the first week of life. The authors conclude that this study provides valuable prognostic information.

**Longer duration of kangaroo care improves neurobehavioral performance and feeding in preterm infants: a randomized controlled trial**  

In a randomized control, the authors randomized 120 preterm infants to receive either conventional care (controls) or KC (kangaroo care) for 60 or 120 min. Outcomes measured were changes in vital signs, salivary cortisol levels and measures evaluated by Neonatal Intensive Care Unit Network Neurobehavioral Scale (NNNS). Preterm neonates who received KC for long durations reached full enteral feeds faster, had better breastfeeding success, neurobehavioral performance, thermal control, and tissue oxygenation. Salivary cortisol decreased in both KC groups compared with controls after 7 days.

**Intermittent CPAP limits hyperoxia induced lung damage in a rabbit model of bronchopulmonary dysplasia.**  

The authors sought to identify the functional and structural effects of CPAP in the preterm hyperoxia rabbit model of BPD. They found that just 4 hours of CPAP daily increased alveolar recruitment and limited the structural effect of hyperoxia in the respiratory epithelium and pulmonary arteries while improving lung function and mitigating hyperoxia-associated changes to respiratory resistance, tissue damping, and tissue elastance.

**Factors associated with neurodevelopmental impairment in bronchopulmonary dysplasia**  

The authors sought to identify factors associated with neurodevelopmental impairment (NDI) in patients with bronchopulmonary dysplasia (BPD). They identified 151 patients with moderate to severe BPD from 2010 to 2014 with complete Bayley Scales of Infant Development (BSID) scores at 24 months corrected age (NDI was defined as any diagnosis of cerebral palsy or ≥1 BSID composite scores of <80). They found that the majority of their patients had no NDI and that low birth weight and length of hospital stay were associated with increased risk of developing NDI. This finding suggests that there are potentially modifiable factors associated with better neurodevelopmental outcomes in patients with BPD that deserve further study.

**Designation of neonatal levels of care: a review of state regulatory and monitoring policies**  

The authors sought to summarize policies on levels of neonatal care designation among 50 states and District of Columbia (DC) by systematically reviewing publicly available, web-based information on levels of neonatal care designation policies for each state/DC. Information on designating authorities, designation oversight, licensure requirement, and ongoing monitoring for designated levels of care were abstracted from 2019 published rules, statutes, and regulations. Limited direct oversight influences regulation of regionalized systems, potentially impacting facility service monitoring and subsequent management of vulnerable infants.
Screening for early onset neonatal sepsis: NICE guidance-based practice versus projected application of the Kaiser Permanente sepsis risk calculator in the UK population

Eight birthing hospitals in Wales, UK, prospectively collected complete data on 3593 births ≥34 weeks over 3 months. The population was managed following NICE guidelines for early onset sepsis. Data and decisions were compared to the Kiser Permanente Sepsis Risk Calculator (SRC). Following NICE guidelines, 16% of patients were started on antibiotics while SRC recommended antibiotics in only 4.3% of infants. 99.8% of infants who avoided antibiotics with NICE would have also avoided antibiotics with SRC. 54.5% of infants who received antibiotics with NICU would have been assigned to normal care with SRC. There were no positive blood cultures among patients who got antibiotics with NICE but would not have with SRC. The authors conclude that adoption of the SRC could safely reduce early antibiotic use among neonates in the UK.

Achieved oxygen saturations and retinopathy of prematurity in extreme preterms

Secondary analysis of the SUPPORT trial compared oxygen use and actual infant saturation to severe ROP outcomes in a group of extremely premature infants. Pulse oximetry data were recorded every 10s until 36 weeks or when stable in room air. Severe ROP patients were more premature, had lower birth weight, and were more likely to have comorbidities. The authors use a logistic regression model to report the relationship between achieved saturation and severe ROP. They found risk of ROP depends on the timing and duration of supplemental oxygen. Increased time on oxygen with saturation 91-96% during weeks 1-5 was associated with increased risk of ROP for infants who used oxygen >2 weeks. There was also increased risk of ROP for infants who had saturation 97-100% and at >3 weeks of oxygen use from week 6 to 9.

COVID-19
Neonatal resuscitation and postresuscitation care of infants born to mothers with suspected or confirmed SARS-CoV-2 infection.
Neonatal management during the coronavirus disease (COVID-19) outbreak: the Chinese experience
https://neoreviews.aappublications.org/page/neo.21-5-e293
Neonatal early-onset infection with SARS-COV-2 in 33 neonates born to mothers with COVID-19 in Wuhan, China.
Clinical characteristics and intraterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records
Coronavirus disease 2019 (COVID-19) and pregnancy: What obstetricians need to know
https://www.ajog.org/article/S0002-9378(20)30197-6/fulltext
Clinical characteristics of novel coronavirus disease 2019 (COVID-19) in newborns, infants and children
Novel coronavirus infection in hospitalized infants under 1 year of age in China
SARS-CoV-2 infection in children
Epidemiology of COVID-19 among children in China
Pediatrics
Factors associated with choice of infant sleep location
https://www.ncbi.nlm.nih.gov/pubmed/32034081
Maternal drinking and child emotional and behavior problems
Tracheostomy in very low birth weight infants: A prospective multicenter study

Journal of Pediatrics
Improving our understanding of rare neonatal diseases: Neonatal arteriovenous brain malformations with cardiac failure
Mothers' knowledge about congenital cytomegalovirus infection is associated with desire for infants' screening
Breastfeeding, baby-friendly, and safety: getting the balance right
Trends in breastfeeding interventions, skin-to-skin care, and sudden infant death in the first 6 days after birth
Outcomes from the centers for disease control and prevention 2018 breastfeeding report card: public policy implications
Factors associated with neurodevelopmental impairment in bronchopulmonary dysplasia
Prenatal exposure to tobacco and offspring neurocognitive development in the healthy start study
Reducing tobacco smoke exposure in high-risk infants: a randomized, controlled trial
Latent class analysis of low birth weight and preterm delivery among Australian women
Racial and ethnic disparities in human milk intake at neonatal intensive care unit discharge among very low birth weight infants in California
Management and outcomes of neonatal arteriovenous brain malformations with cardiac failure: A 17 years' experience in a tertiary referral center
Clinically asymptomatic sleep-disordered breathing in infants with single-ventricle physiology
A cross-sectional study of caregiver perceptions of congenital cytomegalovirus infection: knowledge and attitudes about screening
Tracheomegaly among extremely preterm infants on prolonged mechanical ventilation
Pediatric Research
Maternal hyperoxygenation for the human fetus: should studies be curtailed?
Premature birth impacts bolus size and shape through nursing in infant pigs
Mercury, lead, and cadmium exposure via red blood cell transfusions in preterm infants
Longer duration of kangaroo care improves neurobehavioral performance and feeding in preterm infants: a randomized controlled trial
Pharmacokinetics and short-term safety of the selective NOS inhibitor 2-iminobiotin in asphyxiated neonates treated with therapeutic hypothermia
Inter-rater reliability of the modified Sarnat examination in preterm infants at 32–36 weeks’ gestation
https://www.nature.com/articles/s41390-019-0562-x
Sleep macro-architecture and micro-architecture in children born preterm with sleep disordered breathing
Appearance of sleep cycling after birth in term neonates: an electro-physiologic study
Clinical quantification of SpO2 instability using a new histogram classification system: a clinical study
Psychosocial and medical adversity associated with neonatal neurobehavior in infants born before 30 weeks gestation
Bilirubin level 1 week after hepatoportoenterostomy predicts native liver survival in biliary atresia
Electrical activity of the diaphragm following a loading dose of caffeine citrate in ventilated preterm infants
Electroencephalographic functional connectivity in extreme prematurity: a pilot study based on graph theory
Assessment of adrenal function at birth using adrenal glucocorticoid precursor to product ratios to predict short-term neonatal outcomes
Cervical ribs and other abnormalities of the vertebral pattern in children with esophageal atresia and anorectal malformations

Archives of Disease in Childhood - Fetal & Neonatal Edition
Editorial- Neonatal sepsis evaluation across the pond
** Screening for early onset neonatal sepsis: NICE guidance-based practice versus projected application of the Kaiser Permanente sepsis risk calculator in the UK population
https://fn.bmj.com/content/fetalneonatal/105/2/118.full.pdf
Haemodynamic effects of premedication for neonatal intubation: an observational study
Sequential co-enrolment in randomised trials in neonatal intensive care medicine
Neuron-specific enolase is correlated with lesion topology, relative infarct volume and outcome of symptomatic NAIS
Achieved oxygen saturations and retinopathy of prematurity in extreme preterms

Improving incidence trends of severe intraventricular haemorrhages in preterm infants <32 weeks gestation: a cohort study

Methadone, Pierre Robin sequence and other congenital anomalies: case–control study

Trends in sex-specific differences in outcomes in extreme preterms: progress or natural barriers?

Neonatal lung ultrasonography to evaluate need for surfactant or mechanical ventilation: a systematic review and meta-analysis

Improving infant outcomes through implementation of a family integrated care bundle including a parent supporting mobile application

Congenital duodenal obstruction in the UK: a population-based study

Genetic background of high blood pressure is associated with reduced mortality in premature neonates

Active perinatal care of preterm infants in the German Neonatal Network

Randomised trial of estimating oral endotracheal tube insertion depth in newborns using suprasternal palpation of the tip or weight

Effect of intrapartum antibiotics on the intestinal microbiota of infants: a systematic review

Resuscitation of preterm infants in the Philippines: a national survey of resources and practice

Reporting of offspring data in diabetes, HIV infection and hypertension trials during pregnancy: a systematic review

Accuracy of real-time delivery room resuscitation documentation

Therapeutic hypothermia for mild neonatal encephalopathy: a systematic review and meta-analysis

Neonatal asymmetrical vulvar hypertrophy: a neonatal manifestation of 'classic' prepubertal vulvar fibroma?

Intrauterine foot necrosis in a preterm baby

Journal of Perinatology

Comment - Why so little progress in regionalization of perinatal care when transport of high-risk neonates remains a substantial risk?

Anomalies of the oral cavity in newborns

Designation of neonatal levels of care: a review of state regulatory and monitoring policies

Clinical deterioration during neonatal transport in California
Do transport factors increase the risk of severe brain injury in outborn infants <33 weeks gestational age?  

Neonatal transport in California: findings from a qualitative investigation  

Differential effects of delivery hospital on mortality and morbidity in minority premature and low birth weight neonates  

Obstetrician–gynecologists’ practice patterns related to opioid use during pregnancy and postpartum—United States, 2017  

Obstetrician–gynecologists’ practices and attitudes on substance use screening during pregnancy  

Hypothermia among neonates admitted to the neonatal unit at a tertiary hospital in South Africa  

The effect of nuchal cord on perinatal mortality and long-term offspring morbidity  

Short-term outcomes of HIV-exposed and HIV-unexposed preterm, very low birthweight neonates: a longitudinal, hospital-based study  

Disparities in the use of antenatal corticosteroids among women with hypertension in North Carolina  

Neonatal abstinence syndrome management in California birth hospitals: results of a statewide survey  

Birth and early developmental screening outcomes associated with cannabis exposure during pregnancy  

Outcomes of neonates born at <26 weeks gestational age who receive extensive cardiopulmonary resuscitation compared with airway and breathing support  

Impact of erythrocyte long-chain omega-3 polyunsaturated fatty acid levels in early pregnancy on birth outcomes: findings from a Belgian cohort study  

Low prevalence of clinical decision support to calculate caloric and fluid intake for infants in the neonatal intensive care unit  

The importance of shared decision-making in the neonatal intensive care unit  

Echocardiographic predictors of acute kidney injury in neonates with a patent ductus arteriosus  

Effect of fluctuation of oxygenation on the development of severe retinopathy of prematurity in extremely preterm infants  

Is there a role for therapeutic hypothermia administration in term infants with mild neonatal encephalopathy?  

The Golden Hour: a quality improvement initiative for extremely premature infants in the neonatal intensive care unit  

Journal Club - Is routine evaluation of gastric residuals for premature infants safe or effective?  

Is SMOF lipid emulsion better than soy-based lipid emulsion for low birth weight preterm neonates?  
Response to Letter to the Editor from Kunal Gupta MBBS, MD: Is SMOF lipid emulsion better than soy-based lipid emulsion for low birth weight preterm neonates?

**American Journal of Perinatology**
Does prepregnancy weight or maternal BMI at betamethasone administration impact late preterm respiratory morbidity?
Immediate and sustained effect of neonatal teaching in a perinatal setting in urban Laos
Electronic fetal monitoring and neonatal outcomes when a nuchal cord is present at delivery
Maternal and infant adverse outcomes associated with mild and severe preeclampsia during the first year after delivery in the United States
Comparison of endotracheal reintubation between nasal high-frequency oscillation and continuous positive airway pressure in neonates
Use of point-of-care gastric pH testing to assess the efficacy of acid suppression therapy in the neonatal intensive care unit
Sentinel 1: two-season study of respiratory syncytial virus hospitalizations among U.S. infants born at 29 to 35 weeks' gestational age not receiving immunoprophylaxis
Achieving baby-friendly designation at a large metropolitan center

**Neoreviews**
Perspectives: The flipped classroom in graduate medical education
https://neoreviews.aappublications.org/content/21/3/e150
Inhaled nitric oxide in emergency medical transport of the newborn
https://neoreviews.aappublications.org/content/21/3/e157
Milrinone use in persistent pulmonary hypertension of the newborn
https://neoreviews.aappublications.org/content/21/3/e165
Quality improvement in congenital heart surgery
https://neoreviews.aappublications.org/content/21/3/e179
Case 1: Preterm neonate with persistent respiratory distress despite interventions
https://neoreviews.aappublications.org/content/21/3/e193
Case 2: GATA6 mutation responsible for multiple congenital anomalies in 2 siblings
https://neoreviews.aappublications.org/content/21/3/e196
Strip of the month: Early fetal growth restriction
https://neoreviews.aappublications.org/content/21/3/e203
Visual diagnosis: Neonate with hanging facial mass
https://neoreviews.aappublications.org/content/21/3/e210
Video corner: An infant with blue spells during feeding
https://neoreviews.aappublications.org/content/21/3/e213
JAMA Pediatrics
C-reactive protein testing in late-onset neonatal sepsis: hazardous waste
Neurodevelopmental abnormalities associated with in utero Zika virus infection in infants and children—the unfolding story
Assessment of C-reactive protein diagnostic test accuracy for late-onset infection in newborn infants: a systematic review and meta-analysis
Neurodevelopmental abnormalities in children with in utero Zika virus exposure without congenital Zika syndrome
Association of maternal psychological distress with in utero brain development in fetuses with congenital heart disease
Malaria antigen shedding in the breast milk of mothers from a region with endemic malaria

BMC Pediatrics
Lifetime patient outcomes and healthcare utilization for Bronchopulmonary dysplasia (BPD) and extreme preterm infants: a microsimulation study (PDF)
Meconium peritonitis resulting from different etiologies in siblings: a case report (PDF)
Perinatal asphyxia and its associated factors in Ethiopia: a systematic review and meta-analysis (PDF)

Pediatric Critical Care Medicine
Necrotizing enterocolitis and associated mortality in neonates with congenital heart disease: a multi-institutional study
Nosocomial infections during extracorporeal membrane oxygenation in neonatal, pediatric, and adult patients: a comprehensive narrative review

New England Journal of Medicine
Images in clinical medicine: “Coat Hanger” appearance of the ribs

Lancet
Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records

JAMA
Diagnostic yield of newborn screening for biliary atresia using direct or conjugated bilirubin Measurements
BMJ
Covid-19: what treatments are being investigated?
https://www.bmj.com/content/bmj/368/bmj.m1252.full.pdf

Pediatric Infectious Disease Journal
Neonatal outcomes following culture-negative late-onset sepsis among preterm infants
Noma Neonatorum: A unique presentation of sepsis in neonates
Rhizopus infection in a preterm infant: A novel use of Posaconazole
Simulated comparison of a bayesian clinical decision support system versus standard of care for achieving gentamicin pharmacokinetic targets in neonates
Long-term incidence of infectious-related hospitalizations of offspring born to mothers with intrauterine device
Congenital cytomegalovirus and autoimmune neutropenia: cause or coincidence?

Pediatric Neurology
Compliance with standard therapies and remission rates after implementation of an infantile spasms management guideline

Obstetrics and Gynecology
Editorial: Fetoscopic tracheal occlusion for severe congenital diaphragmatic hernia: the state of the evidence
Single-center outcome of fetoscopic tracheal balloon occlusion for severe congenital diaphragmatic hernia
Effect of delayed cord clamping on umbilical blood gas values in term newborns: a systematic review
Maternal sense of control during childbirth and infant feeding method
Umbilical cord abnormalities and stillbirth
Placental growth factor and the risk of adverse neonatal and maternal outcomes
American Journal of Obstetrics & Gynecology
The impact of occupational activities during pregnancy on pregnancy outcomes: a systematic review and metaanalysis
Placental growth factor predicts time to delivery in women with signs or symptoms of early preterm preeclampsia: a prospective multicenter study
https://www.ajog.org/article/S0002-9378(19)31108-1/fulltext
The impact of maternal pre pregnancy impaired fasting glucose on preterm birth and large for gestational age: a large population-based cohort study
https://www.ajog.org/article/S0002-9378(19)31166-4/fulltext
Coronavirus disease 2019 (COVID-19) and pregnancy: What obstetricians need to know
https://www.ajog.org/article/S0002-9378(20)30197-6/fulltext

BASIC SCIENCE SELECTIONS
Is umbilical cord blood therapy an effective treatment for early lung injury in growth restriction?

Intermittent CPAP limits hyperoxia induced lung damage in a rabbit model of bronchopulmonary dysplasia

Early predictors of perinatal brain damage: the role of neurobiomarkers

Maternal vitamin D deficiency causes sustained impairment of lung structure and function and increases susceptibility to hyperoxia-induced lung injury in infant rats

Oxygen and mechanical ventilation impede the functional properties of resident lung mesenchymal stromal cells

Alteration in the time and/or mode of delivery differentially modulates early development in mice
Chiesa M1, Ferrari DC2 and Ben-Ari Y. Mol Brain.

Proteomic identification of early urinary-biomarkers of acute kidney injury in preterm infants
https://www.ncbi.nlm.nih.gov/pubmed/32132597
ADDITIONAL JOURNAL SELECTIONS

Is low-grade intraventricular hemorrhage in very preterm infants an innocent condition? Structural and functional evaluation of the brain reveals regional neurodevelopmental abnormalities

Neurodevelopmental outcomes following intravitreal bevacizumab injection in Japanese preterm infants with type 1 retinopathy of prematurity

Effect of synthetic vitamin A and probiotics supplementation for prevention of morbidity and mortality during the neonatal period. A systematic review and meta-analysis of studies from low- and middle-income countries

Maternal prenatal stress is associated with altered uncinate fasciculus microstructure in premature neonates

Clinical utility of echocardiography in former preterm infants with bronchopulmonary dysplasia