ARTICLES OF INTEREST – September, 2015

Outcomes of preterm infants following the introduction of room air resuscitation

Given that after 2006 most NICUs in Canada stopped initiating newborn resuscitation with 100% O2, the authors conducted a retrospective cohort study to examine the outcomes outcomes of ≤27 weeks infants resuscitated with 100% O2 with those resuscitated with 21–40% O2. Analysis of data from 17 NICUs (2326 infants) found adjusted odds ratios for the primary outcome of severe neurologic injury or death was higher in the room air or 40% O2 groups than for those receiving 100% O2. This suggest that using either room air or an intermediate oxygen concentration is associated with a higher risk of severe neurologic injury or death among preterm infants of ≤27 weeks gestation.

Impact of volume guarantee on high-frequency oscillatory ventilation in preterm infants: a randomized crossover clinical trial

High-frequency oscillatory ventilation (HFOV) with volume guarantee (VG) is a new ventilation mode that allows a set mean tidal volume to be delivered. This study investigated whether HFOV with a VG option resulted in constant tidal volume delivery and less fluctuant CO2 levels compared to HFOV alone in 20 premature infants less than 32 weeks of gestation with respiratory distress syndrome (RDS). Patients were randomized to receive HFOV + VG or HFOV alone as the initial ventilator mode and then crossed over to the other mode. The incidence of hypocarbia and hypercarbia were lower in HFOV with VG than HFOV alone. HFOV combined with VG seems to be feasible for preterm infants, however, the results should be interpreted with caution due to the small sample size and short-term crossover design of the study.

Thermal blanket to improve thermoregulation in preterm infants: a randomized controlled trial

In this randomized trial, 80 VLBW infants were assigned to either standard radiant warmer use (control) or radiant warmer plus thermal blanket use during resuscitation. Infants assigned to the thermal blanket group demonstrated less hypothermia (<36deg Celsius) and less hypotension at 60, 90, and 120 minutes of life (mean arterial pressure less than gestational age in weeks) compared to the control group, with decreased use of dopamine in the experimental group noted as well.

Trends in care practices, morbidity, and mortality of extremely preterm neonates, 1993-2012
Stoll BJ, Hansen NI, Bell EF, et al. *JAMA.*

This study reviewed 34,636 infants who were born between 22 and 28 weeks gestation with birth weights of 401 to 1500g at 26 NICHD Neonatal Research Network centers from 1993 and 2012. The authors observed modest reductions in several morbidities, although bronchopulmonary dysplasia
increased. Survival increased most markedly for infants born at 23 and 24 weeks gestation and survival without major morbidity increased for infants aged 25 to 28 weeks.

**Outcome of patients initiating chronic peritoneal dialysis during the first year of life**
Carey WA, Martz KL, & Warady BA. *Pediatrics*.

This cohort study describes the outcome of a large cohort of children enrolled in the North American Pediatric Renal Trials and Collaborative Studies database who were treated with peritoneal dialysis prior to 1 year of age secondary to end stage renal disease. Overall survival at 3 years after initiation of dialysis was higher in infants started after 30 days of life (84.6%), but notably was just under 80% for the subgroup of infants initiated at <30 days. Transplant outcomes and graft survival are also described.

**Antenatal counseling regarding resuscitation and intensive care before 25 weeks of gestation**
Cummings J; Committee On Fetus And Newborn. *Pediatrics*.

This AAP Clinical Report provides contemporary recommendations regarding antenatal counseling and decision making around resuscitation and provision of intensive care at <25 weeks of gestation. This report includes a review of the most recent outcome data, including an extensive discussion of the limitations of gestational age as a sole predictor and the importance of other factors such as gender, plurality, and antenatal steroids. The report also includes a discussion of the potential influence of attitudes of parents and of providers, as well as the importance of communication skill and of providing a consistent institutional approach.

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**OTHER NOTEWORTHY PUBLICATIONS – September, 2015**

*Pediatrics*

Prenatal decision-making for myelomeningocele: can we minimize bias and variability?

Preterm birth and poor fetal growth as risk factors of attention-deficit/hyperactivity disorder

Sensitivity of the automated auditory brainstem response in neonatal hearing screening

Preterm cognitive function into adulthood

Late preterm infants and neurodevelopmental outcomes at kindergarten

Risk of sensorineural hearing loss and bilirubin exchange transfusion thresholds

Safety and efficacy of high-flow nasal cannula therapy in preterm infants: a meta-analysis

Management of congenital tracheal stenosis

Skin-to-skin care for term and preterm infants in the newborn icu

*Journal of Pediatrics*

Accuracy of the diagnosis of bronchopulmonary dysplasia in a referral-based health care system
Automated versus manual oxygen control with different saturation targets and modes of respiratory support in preterm infants
Association of rewarming rate on neonatal outcomes in extremely low birth weight infants with hypothermia
Early detection of necrotizing enterocolitis by fecal volatile organic compounds analysis
Impact of surgery for neonatal gastrointestinal diseases on weight and fat mass
Randomized, placebo-controlled trial of dobutamine for low superior vena cava flow in infants
Pediatric Research (Current articles covered in previous month’s content)

Archives of Disease in Childhood - Fetal and Neonatal Edition (No new content; please repost last month’s material)

Journal of Perinatology
Editorial: Optimizing parental involvement in caring for preterm infants
Special feature: Sister Jean Ward, phototherapy, and jaundice: a unique human and photochemical interaction
Commentary: Unplanned extubation in NICU patients: are we speaking the same language?
Effect of gestational subclinical hypothyroidism on early neurodevelopment of offspring
Weight-related risk perception among healthy and overweight pregnant women: a cross-sectional study
The impact of altitude on birth weight depends on further mother- and infant-related factors: a population-based study in an altitude range up to 1600 m in Austria between 1984 and 2013
Maternal and fetal outcomes following unplanned conversion to general anesthetic at elective cesarean section
Genetic association of AKAP10 gene polymorphism with reduced risk of preterm birth
Perinatal factors associated with active intensive treatment at the border of viability: a population-based study
Early hypophosphatemia in preterm infants receiving aggressive parenteral nutrition
Neonatal nasal intermittent positive pressure ventilation efficacy and lung pressure transmission
Comparison of three types of intervention to enhance placental redistribution in term newborns: randomized control trial
The association between multisite near-infrared spectroscopy and routine hemodynamic measurements in relation to short-term outcome in preterms with clinical sepsis

American Journal of Perinatology

Receipt of palivizumab before birth hospitalization discharge among preterm infants in the United States

Definitions of cardiovascular insufficiency and relation to outcomes in critically ill newborn infants

CRIB scores as a tool for assessing risk for the development of pulmonary hypertension in extremely preterm infants with bronchopulmonary dysplasia

Short-term outcomes and medical and surgical interventions in infants with congenital diaphragmatic hernia

B-type natriuretic peptide: biomarker of persistent pulmonary hypertension of the newborn?

Beat-to-beat heart rate and blood pressure variability and hypertensive disease in pregnancy

Unplanned extubation and subsequent trial of noninvasive ventilation in the neonatal intensive care unit

Effects of antenatal magnesium exposure on intestinal blood flow and outcome in preterm neonates

Efficacy of antenatal corticosteroids according to maternal and perinatal factors: a retrospective cohort study

Maternal methadone treatment and neonatal abstinence syndrome

Patent ductus arteriosus management and outcomes in Japan and Canada: comparison of proactive and selective approaches

Journal of Neonatal-Perinatal Medicine

Transient tachypnea of the newborn: Is empiric antimicrobial therapy needed?

Effects of daily kangaroo care on cardiorespiratory parameters in preterm infants

Methylnxanthine use for apnea of prematurity among an international cohort of neonatologists

Cord blood epidermal growth factor as a possible predictor of necrotizing enterocolitis in very low birth weight infants

Cardiogenic shock as the initial presentation of neonatal systemic hypertension

Maternal Health, Neonatology, and Perinatology

A physiologic approach to cord clamping: clinical issues (pdf)
http://www.mhnpjournal.com/content/pdf/s40748-015-0022-5.pdf

JAMA Pediatrics

Viewpoint: Logic models—tools to bridge the theory-research-practice divide
Viewpoint: Promoting informed decision making for comparative effectiveness randomized trials

Editorial: When the health care worker is sick primum non nocere

Editorial: The concern for supply-sensitive neonatal intensive care unit care if you build them, they will come

Epidemiologic trends in neonatal intensive care, 2007-2012 (PDF)

Review: Diagnosis, evaluation, and management of patent ductus arteriosus in preterm neonates

Clinical Challenge: Ulcers on an infant’s sacrum

BMC Pediatrics
Age of introduction of first complementary feeding for infants: a systematic review (PDF)
http://www.biomedcentral.com/content/pdf/s12887-015-0409-5.pdf

Nutrition practice, compliance to guidelines and postnatal growth in moderately premature babies: the NUTRIQUAL French survey (PDF)
http://www.biomedcentral.com/content/pdf/s12887-015-0426-4.pdf

Differences in perinatal and infant mortality in high-income countries: artifacts of birth registration or evidence of true differences? (PDF)
http://www.biomedcentral.com/content/pdf/s12887-015-0430-8.pdf

Factors associated with red blood cell transfusions in very-low-birth-weight preterm infants in Brazilian neonatal units (PDF)
http://www.biomedcentral.com/content/pdf/s12887-015-0432-6.pdf

Study Protocol: Randomised trial of neonatal hypoglycaemia prevention with oral dextrose gel (hPOD): study protocol (PDF)
http://www.biomedcentral.com/content/pdf/s12887-015-0440-6.pdf

Premature baby with extreme hyponatraemia (95 mmol per litre): a case report (PDF)
http://www.biomedcentral.com/content/pdf/s12887-015-0437-1.pdf

Study Protocol: PPREMO: a prospective cohort study of preterm infant brain structure and function to predict neurodevelopmental outcome (PDF)
http://www.biomedcentral.com/content/pdf/s12887-015-0439-z.pdf

Glucosuria as an early marker of late-onset sepsis in preterms: a prospective cohort study (PDF)
http://www.biomedcentral.com/content/pdf/s12887-015-0425-5.pdf

Bubble CPAP to support preterm infants in rural Rwanda: a retrospective cohort study (PDF)
http://www.biomedcentral.com/content/pdf/s12887-015-0449-x.pdf

Early BCG vaccine to low-birth-weight infants and the effects on growth in the first year of life: a randomised controlled trial (PDF)
http://www.biomedcentral.com/content/pdf/s12887-015-0452-2.pdf

Pediatric Critical Care Medicine
Postoperative hydrocortisone infusion reduces the prevalence of low cardiac output syndrome after neonatal cardiopulmonary bypass

Neuroimaging, pain sensitivity, and neuropsychological functioning in school-age neonatal extracorporeal membrane oxygenation survivors exposed to opioids and sedatives
NEJM
A randomized trial of phototherapy with filtered sunlight in African neonates
Prenatal factors in singletons with cerebral palsy born at or near term

Lancet
Oxygen saturation targets in infants with bronchiolitis (BIDS): a double-blind, randomised, equivalence trial
Comment: Oxygen saturation targets in infants with bronchiolitis
The effect of early, comprehensive genomic testing on clinical care in neonatal diabetes: an international cohort study (PDF)
Comment: Genetics and neonatal diabetes: towards precision medicine (PDF)

JAMA
Editorial: Progress in the care of extremely preterm infants
Comment: Maternal antidepressant use and persistent pulmonary hypertension of the newborn
Reply: Maternal antidepressant use and persistent pulmonary hypertension of the newborn

The Pediatric Infectious Disease Journal
Feasibility of routinely offering early combined antiretroviral therapy to HIV-infected infants in a resource-limited country: the ANRS-PediaCAM study in Cameroon

Pediatric Cardiology
Fetal ventricular hypertrabeculation/noncompaction: clinical presentation, genetics, associated cardiac and extracardiac abnormalities and outcome
Comment: Consider a nongenetic pathogenesis of noncompaction
Repair of Tetralogy of Fallot in children less than 4 kg body weight
Right ventricular enlargement in utero: is it coarctation?
Association between sequence variations in RCAN1 promoter and the risk of sporadic congenital heart disease in a Chinese population
A novel TBX1 loss-of-function mutation associated with congenital heart disease
Maternal hypertension during pregnancy and the risk of congenital heart defects in offspring: a systematic review and meta-analysis

Association of TGFBR2 rs6785358 polymorphism with increased risk of congenital ventricular septal defect in a Chinese population

The impact of oral intake of dydrogesterone on fetal heart development during early pregnancy

Pediatric Neurology
Aberrant executive and frontoparietal functional connectivity in very preterm infants with diffuse white matter abnormalities

Brain injury in the preterm infant: new horizons for pathogenesis and prevention

The role of sleep in the modulation of gastroesophageal reflux and symptoms in NICU neonates

Obstetrics and Gynecology
Prenatal testing in the genomic age: clinical outcomes, quality of life, and costs

Detection rates for aneuploidy by first-trimester and sequential screening (PDF)
http://journals.lww.com/greenjournal/Fulltext/2015/10000/Detection_Rates_for_Aneuploidy_by_First_Trimester.10.aspx

Association of isolated single umbilical artery with small for gestational age and preterm birth

Multistate collaboration to confidentially review unanticipated perinatal outcomes: lessons learned

Letter: Association between antenatal corticosteroid administration-to-birth interval and outcomes of preterm neonates

Committee Opinion No. 644: The APGAR score (PDF)
http://journals.lww.com/greenjournal/Fulltext/2015/09000/Committee_Opinion_No__644___The_Apgar_Score.54.aspx

Maternal and neonatal morbidity after attempted operative vaginal delivery according to fetal head station

Evaluation of a transcervical foley catheter as a source of infection: a systematic review and meta-analysis

Case: Fetoscopic repair of meningomyelocele

Committee Opinion No. 640: Cell-free DNA screening for fetal aneuploidy (PDF)
http://journals.lww.com/greenjournal/Fulltext/2015/09000/Committee_Opinion_No__640___Cell_Free_Dna.51.aspx

Third-trimester prenatal syphilis screening: a cost-effectiveness analysis
American Journal of Obstetrics & Gynecology
Racial/ethnic standards for fetal growth: the NICHD fetal growth studies
Vaginal progesterone for maintenance tocolysis: a systematic review and metaanalysis of randomized trials
Progesterone inhibits in vitro fetal membrane weakening (PDF)
http://www.ajog.org/article/S0002-9378(15)00597-9/pdf
Congenital diaphragmatic hernia: does gestational age at diagnosis matter when evaluating morbidity and mortality?
The association between cervical dysplasia, a short cervix, and preterm birth
Trends in timing of prenatal diagnosis and abortion for fetal chromosomal abnormalities
Timing of treatment initiation for mild gestational diabetes mellitus and perinatal outcomes
Predictors of adverse neonatal outcomes in intrahepatic cholestasis of pregnancy
Mode of delivery at periviability and early childhood neurodevelopment
Outcomes in twin pregnancies reduced to singleton pregnancies compared with ongoing twin pregnancies

BASIC SCIENCE SELECTIONS

Sex differences in cell genesis, hippocampal volume and behavioral outcomes in a rat model of neonatal HI

Shielding parenteral nutrition from light improves survival rate in premature infants: a meta-analysis

Bioluminescent imaging reveals novel patterns of colonization and invasion in systemic escherichia coli k1 experimental infection in the neonatal rat

Duration of cord clamping and neonatal outcomes in very preterm infants

Parenteral MCT/ω-3 polyunsaturated fatty acid-enriched intravenous fat emulsion is associated with cytokine and fatty acid profiles consistent with attenuated inflammatory response in preterm neonates: a randomized, double-blind clinical trial
http://www.ncbi.nlm.nih.gov/pubmed/26378118

Brain injury and development in preterm infants exposed to fentanyl

Maternal PUFA ω-3 supplementation prevents neonatal lung injuries induced by hyperoxia in newborn rats