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Section on Neonatal-Perinatal Medicine

ARTICLES OF INTEREST – June 2021

Differential alveolar and systemic oxygenation during preterm resuscitation with 100% oxygen during delayed cord clamping

Satyan Lakshminrusimha, Payam Vali, Praveen Chandrasekharan, et al. *Am J Perinatol.*
Using a preterm lamb model, the authors investigated if 100% or 30% O2 during delayed cord clamping (DCC) or Immediate CC (ICC) alters pulmonary blood flow (Qp). They found that DCC + 100% O2 for 60 seconds increased Qp. They speculate the effect to be secondary to transient alveolar hyperoxia with systemic normoxia due to "dilution" by umbilical venous return.

A retrospective review following the addition of clonidine to a neonatal abstinence syndrome treatment algorithm

Mohammad Y Bader, Nahla Zaghloul , Ashley Repholz, et al. *Front Pediatr.*
To investigate the outcomes associated with the implementation of a NAS treatment algorithm utilizing morphine sulfate and clonidine in a group ≥35 weeks gestation infants admitted to a single NICU. They found that the combined therapy reduced hospital stay, decreased duration of morphine exposure as well as cumulative dose of morphine required to treat.

Use of probiotics in preterm infants (AAP Clinical Report)

Brenda Poindexter, COMMITTEE ON FETUS AND NEWBORN. *Pediatrics.*
This Clinical Report from the AAP Committee on Fetus and Newborn (1) highlights differences among commercially available probiotic preparations and the current (lack of) regulatory standards in the United States; (2) outlines potential risks associated with the use of probiotics, supporting a cautionary approach with their routine use in preterm infants; (3) reviews the current evidence evaluating the use of probiotics in both prevention and treatment of NEC, late-onset sepsis, and mortality; and (4) highlights the need for pharmaceutical-grade probiotics that have been rigorously evaluated for safety and efficacy.

It's all in the milk: chondroitin sulfate as potential preventative therapy for necrotizing enterocolitis

Thomas A Knowles, Brian D Hosfield, Anthony R Pecoraro, et al. *Pediatr Res.*
Chondroitin sulfate (CS) holds the potential to prevent the onset of NEC through its anti-inflammatory properties and protective effect on the gut microbiome. In this review, the authors outline the many properties of CS and highlight its potential use in high-risk infants, especially in attenuating the severity of NEC. They describe the purposes of this review as (1) discuss the interaction of CS with the infant microbiome, (2) review the anti-inflammatory properties of CS, and (3) postulate on the potential role of CS in preventing NEC. One of the potential roles mentioned is in infants without access to breast milk and its protective effects, since CS can be added to formula.

Hydrocortisone for preventing mortality and bronchopulmonary dysplasia in preterm infants with or without chorioamnionitis exposure: a meta-analysis of randomized trials

Jianguo Zhou, Zhuowen Yu and Chao Chen. *Am J Perinatol.*
This was a meta-analysis to discover the efficacy of hydrocortisone in preterm infants with and without chorioamnionitis. The authors sought to assess whether infants exposed to chorioamnionitis were the optimal population to benefit the most from early postnatal hydrocortisone therapy in preventing bronchopulmonary dysplasia (BPD). They reviewed articles published in PubMed Ovid and Web of Science until March 2018 and included all Randomized controlled trials comparing hydrocortisone with placebo/no intervention in preterm infants with a known status of chorioamnionitis exposure. Early postpartum low-dose hydrocortisone prevented the combined outcome of neonatal BPD or death in infants weighing < 1,000 g with chorioamnionitis exposure (odds ratio [95% confidence interval]: 0.52 [0.32-0.79]), however there was no significant difference in individual outcomes of BPD or death.

Chorioamnionitis and risk for maternal and neonatal sepsis: a systematic review and meta-analysis

Celeste Beck, Kelly Gallagher, Leigh A Taylor, et al. *Obstet Gynecol.*
This is a systematic review and meta-analysis conducted to estimate the risk of maternal and neonatal sepsis associated with chorioamnionitis. This review included 103 studies from inception until May 11, 2020, of which 55 met criteria for meta-analysis. The confirmed sepsis incidence was 7% (early-onset) and 22% (late-onset) for histologic and 6% (early-onset) and 26% (late-onset) for clinical chorioamnionitis-exposed neonates. The study concluded that both histologic and clinical chorioamnionitis were associated with early- and late-onset sepsis in neonates. There was insufficient evidence to determine the association between chorioamnionitis and maternal sepsis.

Assessment of postnatal corticosteroids for the prevention of bronchopulmonary dysplasia in preterm neonates: a systematic review and network meta-analysis

Viraraghavan Vadakkencherry Ramaswamy, Tapas Bandyopadhyay, Debasish Nanda, et al. *JAMA Pediatr.*
This is a systematic review and meta-analysis of 62 studies evaluating 14 corticosteroid regimens used to prevent BPD in preterm infants ≤32weeks, initiated within 4 weeks of age (n=5559 infants; mean GA 26±1wks): Dexamethasone (moderately early or late-initiated; low, medium or high cumulative dose; MoLdDX, MoMdDX, MoHdDX, LaLdDX, LaMdDX, LaHdDX), Early and late-initiated hydrocortisone (EHC, LHC), early and late inhaled budesonide (EIBUD, LIBUD), early and late inhaled beclomethasone (EIBEC, LIBEC), early inhaled fluticasone (EIFLUT) and intratracheal budesonide (ITBUD). Several regimens were associated with a decreased risk of BPD or mortality, and successful extubation. EHC was associated with higher risk of gastrointestinal perforation. The study concluded that MoMdDX may be the most appropriate regimen for preventing BPD or mortality at 36 weeks, but with a risk of hypertension.

Feeding infants at the breast or feeding expressed human milk: long-term cognitive, executive function, and eating behavior outcomes at age 6 years

Sarah A Keim, Jacqueline A Sullivan, Kelly Sheppard, et al. *J Pediatr.*
Objective: The authors sought to examine how expressed milk feeding diverges from feeding at the breast in its association with neurodevelopment and behavior. They hypothesized that longer and exclusive feeding at the breast only would be associated with the optimal cognitive developmental, executive function, and eating behaviors and that expressed milk feeding would be associated with less-optimal outcomes. They found that feeding at the breast may offer advantages to some aspects of executive function that expressed milk may not. They suggest that large, prospective studies exploring mechanisms could further distinguish the effect of feeding mode from that of nutrients.

Neurodevelopmental outcomes following bevacizumab treatment for retinopathy of prematurity: a systematic review and meta-analysis

Monika Kaushal, Abdul Razak, Waseemoddin Patel, et al. *J Perinatol.*
This systematic review and meta-analysis evaluated neurodevelopmental outcomes after bevacizumab treatment for retinopathy of prematurity. 13 studies were included in the systematic review and 11 were included in the meta-analysis. Bevacizumab was compared to Laser/cryotherapy for severe ROP in preterm infants. Primary outcomes at 18-30 months were cognitive impairment, neurodevelopmental impairment, or cerebral palsy. They found bevacizumab is associated with increased risk of cognitive impairment, but there were no differences in neurodevelopmental impairment or cerebral palsy. They also report an unadjusted increased odds of death in patients receiving bevacizumab. The authors caution that all but one of the studies are non-randomized, and it is likely that sicker infants were more likely to receive bevacizumab. The authors call for a large, randomized trial evaluating the safety of bevacizumab and neurodevelopmental outcomes after treatment.

A practical guide to publishing a quality improvement paper

Stephen A Pearlman and Jonathan R Swanson. *J Perinatol.*
The article from the QI editor of the Journal of Perinatology is the final in a 5-year series of articles focused on QI projects. Manuscripts should be prepared following SQUIRE guidelines. Specific recommendations for items to include in the manuscript as well as a suggested outline of manuscript sections is provided. The most common errors found in QI manuscripts are: No definition of the local problem, unidentified SMART aim, no description of QI methodology or tools, using another's protocol without adaptation, lack of data charts, ignoring limitations, and implying causality. The information in this guide should help authors avoid common pitfalls and increase the chance of successful publication. A companion article in this issue address IRB approval for QI projects.

OTHER NOTEWORTHY PUBLICATIONS

COVID – 19
Assessment of maternal and neonatal cord blood SARS-COV-2 antibodies and placental transfer ratios
https://pubmed.ncbi.nlm.nih.gov/33512440
Association of preterm birth rate with COVID-19 statewide stay-at-home orders in Tennessee
https://pubmed.ncbi.nlm.nih.gov/33720307
MR imaging findings in a neonate with COVID -19-associated encephalitis
https://pubmed.ncbi.nlm.nih.gov/33895583
Mother–infant dyads with COVID-19 at an urban, safety-net hospital: clinical manifestations and birth outcomes
https://pubmed.ncbi.nlm.nih.gov/33853145
Complicated monochorionic–diamniotic twins in a pregnant woman with COVID-19 in the second trimester

https://pubmed.ncbi.nlm.nih.gov/33853148
Modest reduction in adverse birth outcomes following the COVID-19 lockdown (PDF)
https://www.ajog.org/action/showPdf?pii=S0002-9378%2820%2932574-6
Preliminary findings of mRNA Covid-19 vaccine safety in pregnant persons
https://pubmed.ncbi.nlm.nih.gov/33882218
RK Immunogenicity of COVID-19 mRNA vaccines in pregnant and lactating women
https://pubmed.ncbi.nlm.nih.gov/33983379

Pediatrics
Extremely low birth weight and accelerated biological aging
https://pubmed.ncbi.nlm.nih.gov/34001643
Trends in retinopathy of prematurity screening and treatment: 2008–2018
https://pubmed.ncbi.nlm.nih.gov/33975923
Early determination of prognosis in neonatal moderate or severe hypoxic-ischemic encephalopathy
https://pubmed.ncbi.nlm.nih.gov/33986149
Use of probiotics in preterm infants (AAP Clinical Report)
https://pediatrics.aappublications.org/content/147/6/e2021051485

Journal of Pediatrics
Magnetic resonance biomarkers in very preterm infants: relationships to perinatal factors
https://pubmed.ncbi.nlm.nih.gov/33422581
Toward a rational approach to patent ductus arteriosus trials: selecting the population of interest
https://pubmed.ncbi.nlm.nih.gov/33440205
An immature science: intensive care for infants born at ≤23 weeks of gestation
https://pubmed.ncbi.nlm.nih.gov/33691163
Variations in neonatal length of stay of babies born extremely preterm: an international comparison between INEO networks
https://pubmed.ncbi.nlm.nih.gov/33600820
RK Effect of early targeted treatment of ductus arteriosus with ibuprofen on survival without cerebral palsy at 2 years in infants with extreme prematurity: a randomized clinical trial
https://pubmed.ncbi.nlm.nih.gov/33307111
Neonatal morbidities in infants born late preterm at 35-36 weeks of gestation: a Swedish nationwide population-based study
https://pubmed.ncbi.nlm.nih.gov/33662344
Persistent racial/ethnic disparities in supine sleep positioning among US preterm infants, 2000-2015
https://pubmed.ncbi.nlm.nih.gov/33676934
Perinatal risk and protective factors in the development of diffuse white matter abnormality on term-equivalent age magnetic resonance imaging in infants born very preterm
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Feeding infants at the breast or feeding expressed human milk: long-term cognitive, executive function, and eating behavior outcomes at age 6 years
https://pubmed.ncbi.nlm.nih.gov/33592219
Longitudinal health care utilization of medicaid-insured children with a history of neonatal abstinence syndrome
https://pubmed.ncbi.nlm.nih.gov/33545189
Growth failure prevalence in neonates with gastroschisis : a statewide cohort study
https://pubmed.ncbi.nlm.nih.gov/33647253
Fetal brain magnetic resonance imaging findings predict neurodevelopment in children with tuberous sclerosis complex
https://pubmed.ncbi.nlm.nih.gov/33640330
Perinatal counseling at the margin of gestational viability: where we've been, where we're going, and how to navigate a path forward

https://pubmed.ncbi.nlm.nih.gov/33567323
A masquerader of neonatal persistent pulmonary hypertension
https://pubmed.ncbi.nlm.nih.gov/33675815

Pediatric Research

Bacterial–viral filters to limit the spread of aerosolized respiratory pathogens during neonatal respiratory support in a pandemic era (correspondence) (PDF)
https://www.nature.com/articles/s41390-020-1102-4.pdf
Prenatal antidepressant exposure and neurodevelopmental problems in children: to get the right answer, we must ask the right question (comment)
https://pubmed.ncbi.nlm.nih.gov/33446925
Neonatal ventilation data: finding insight in chaos, or the new Hubble telescope (comment)
https://pubmed.ncbi.nlm.nih.gov/33654290
Post-discharge nutrition and growth : relationship to later cognition (comment)
https://pubmed.ncbi.nlm.nih.gov/33658657
It's all in the milk: chondroitin sulfate as potential preventative therapy for necrotizing enterocolitis
https://pubmed.ncbi.nlm.nih.gov/32920604
A Core Outcome Set and minimum reporting set for intervention studies in growth restriction in the NEwbOrN: the COSNEON study (PDF)
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Newborn metabolic vulnerability profile identifies preterm infants at risk for mortality and morbidity
https://pubmed.ncbi.nlm.nih.gov/33003189
Choline supplementation prevents the effects of bilirubin on cerebellar-mediated behavior in choline-restricted Gunn rat pups
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Bilirubin/albumin (B/A) ratios correlate with unbound bilirubin levels in preterm infants
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Genome-wide association study identifies a novel maternal gene × stress interaction associated with spontaneous preterm birth
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Association between pesticide usage during pregnancy and neonatal hyperbilirubinemia requiring treatment: the Japan Environment and Children's Study
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No new content

Journal of Perinatology
Do quality improvement projects require IRB approval?
https://www.ncbi.nlm.nih.gov/pubmed/33758391
Toward the use of buprenorphine in infants for neonatal opioid withdrawal syndrome: summary of an NIH workshop (PDF)
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Personalized medicine for the management of RDS in preterm neonates (PDF)
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Early, postnatal pulmonary hypertension severity predicts inpatient outcomes in congenital diaphragmatic hernia
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The evolution of the neonatal QRS axis during the first four weeks of life
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Predicting hyperoxia-induced lung injury from associated intestinal and lung dysbiosis in neonatal mice
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Early acute kidney injury in preterm and term neonates: incidence, outcome, and associated clinical features (PDF)
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Oxygen in the first minutes of life in very preterm infants
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The miracles of surfactant: less invasive surfactant administration, nebulization, and carrier of topical drugs (PDF)
https://www.karger.com/article/pdf/516106
Indications for and risks of noninvasive respiratory support (PDF)
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Postnatal corticosteroids to prevent or treat bronchopulmonary dysplasia (PDF)
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Editorial: sharing progress in neonatology (spin): oxygen and surfactant, optimal ventilation, pulmonary hypertension, diagnostic procedures and definition of bronchopulmonary dysplasia
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Abstracts: sharing progress in neonatology (spin): oxygen and surfactant, optimal ventilation, pulmonary hypertension, diagnostic procedures, and definition of bronchopulmonary dysplasia
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American Journal of Perinatology
Outcomes of monochorionic, diamniotic twin pregnancies with prenatally diagnosed intertwin weight discordance
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Cefepime dosing in neonates: what is the evidence?
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Hydrocortisone for preventing mortality and bronchopulmonary dysplasia in preterm infants with or without chorioamnionitis exposure: a meta-analysis of randomized trials
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An unknown risk factor for sepsis in very low birth weight preterms: ABO blood groups (BGAPS study)
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The association of paternal race and ethnicity with adverse pregnancy outcomes in a contemporary U.S. cohort
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RK High dose indomethacin for patent ductus arteriosus closure increases neonatal morbidity
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Is nasal septum–tragus length measurement appropriate for endotracheal tube intubation depth in neonates? a randomized controlled study
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Utilization of erythropoietin within the United States neonatal intensive care units from 2008 to 2017
https://pubmed.ncbi.nlm.nih.gov/31858498

Journal of Neonatal-Perinatal Medicine
No new content

Maternal Health, Neonatology and Perinatology
The risk of diabetes after giving birth to a macrosomic infant: data from the NHANES cohort
https://mhnpjournal.biomedcentral.com/track/pdf/10.1186/s40748-021-00132-8

Neoreviews

Powdered to liquid human milk fortifiers in the preterm infant
https://pubmed.ncbi.nlm.nih.gov/34074641
Lipid intake and neurodevelopment in preterm infants
https://pubmed.ncbi.nlm.nih.gov/34074642
Nutrition considerations in neonatal extracorporeal life support
https://pubmed.ncbi.nlm.nih.gov/34074643
Remote lactation support in the COVID-19 era
https://pubmed.ncbi.nlm.nih.gov/34074644
Case 1: A newborn with hydrops
https://pubmed.ncbi.nlm.nih.gov/34074645
Case 2: Early-onset neonatal sepsis in a term neonate
https://pubmed.ncbi.nlm.nih.gov/34074646
Case 3: Abdominal distention, shock, and neonatal encephalopathy
https://pubmed.ncbi.nlm.nih.gov/34074647
Strip of the month: A diagnosis of maternal hyperthyroidism
https://pubmed.ncbi.nlm.nih.gov/34074648
Visual diagnosis: Congenital neck mass
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Complex fetal care: Delivery planning and emergent neonatal intervention in transposition of the great arteries
https://pubmed.ncbi.nlm.nih.gov/34074650

JAMA Pediatrics

Can we protect pregnant women and young infants from covid-19 through maternal immunization?
https://pubmed.ncbi.nlm.nih.gov/33512398
The swinging pendulum of postnatal corticosteroid use
https://pubmed.ncbi.nlm.nih.gov/33720286
Association between hypertensive disorders of pregnancy and neurodevelopmental outcomes among offspring
https://pubmed.ncbi.nlm.nih.gov/33749704
Assessment of postnatal corticosteroids for the prevention of bronchopulmonary dysplasia in preterm neonates: a systematic review and network meta-analysis
https://pubmed.ncbi.nlm.nih.gov/33720274
Persistence of δ-9-tetrahydrocannabinol in human breast milk
https://pubmed.ncbi.nlm.nih.gov/33683306

BMC Pediatrics

Early combined rehabilitation intervention to improve the short-term prognosis of premature infants (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-021-02727-8.pdf
Neonatal hypoxic-ischemic encephalopathy diagnosis and treatment: a National Survey in China (PDF)
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Anticoagulation and transfusion management during neonatal and pediatric extracorporeal membrane oxygenation: a survey of medical directors in the United States
https://pubmed.ncbi.nlm.nih.gov/33750092

New England Journal of Medicine

See COVID section

Lancet
No relevant articles

JAMA
See COVID section

BMJ
No relevant articles

Pediatric Infectious Disease Journal
Antibiotic safety and effectiveness in premature infants with complicated intraabdominal infections
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