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Section on Neonatal-Perinatal Medicine

ARTICLES OF INTEREST – March 2021

Effect of blue LED phototherapy centered at 478 nm versus 459 nm in hyperbilirubinemic neonates: a randomized study
Ebbesen F, Rodrigo-Domingo M, Moeller AM, et al. *Pediatr Res.*

In this randomized, non-blinded trial, the authors compared the bilirubin-reducing effect of two light qualities with equal irradiance- blue LED light centered at 459 nm vs 478 nm- in healthy hyperbilirubinemic neonates ≥33 weeks gestation at birth. Forty-nine neonates included in each group received overhead phototherapy for 24 h. The authors concluded that blue LED light centered at 478 nm had a greater bilirubin-reducing effect than that centered at 459 nm with equal irradiance. They also suggest that using this, the risk of potential side effects might be minimized, and the duration of phototherapy potentially reduced.

Acute brain injury in infant venoarterial extracorporeal membrane oxygenation: an autopsy study
Caturegli G, Cho SM, White B, et al. *Pediatr Crit Care Med.*

This single center retrospective cohort study characterized the types and timing of acute brain injury in 24 infant autopsy patients after venoarterial extracorporeal membrane oxygenation. Median age at ECMO initiation was 82 days, median age at time of death was 20 weeks and median ECMO support duration was 108 hours. Hypoxic-ischemic brain injury (58%) followed by intracranial hemorrhage (29%), specifically intracerebral (17%), subarachnoid (17%), and subdural (8%) were the common brain injuries found at autopsy in all except five infants (21%) who did not have acute brain injury. Low pre ECMO oxygen saturation as well as elevated liver enzymes, total bilirubin, and lactate on days 1 and 3 of ECMO correlated with acute brain injury.

Outcomes of infants with hypoxic ischemic encephalopathy and persistent pulmonary hypertension of the newborn: results from three NICHD studies
Agarwal P, Shankaran S, Laptook AR, et al. *J Perinatol.*

To determine the association of persistent pulmonary hypertension of the newborn (PPHN) with death or disability among infants with moderate or severe hypoxic ischemic encephalopathy (HIE) treated with therapeutic hypothermia, the authors compared 67 infants with and 213 without PPHN enrolled in the hypothermia arm from three randomized controlled trials (RCTs). Among RCT participants treated with hypothermia for HIE, PPHN was associated with an increased risk of death or moderate or severe disability at 18–22 months when compared to those without PPHN; however, the difference was no longer statistically significant after adjustment for the severity of HIE, center, and specific RCT. Among infants with moderate encephalopathy at study entry, PPHN was associated with significantly higher

death or moderate or severe disability. These results should be interpreted with caution as the limited sample size may preclude the possibility of detecting statistically significant group differences.

Percutaneous closure of patent ductus arteriosus in infants 1.5 kg or less: a meta-analysis
Bischoff AR, Jasani B, Sathanandam SK, et al. *J Pediatr.*

This is a systematic review and meta-analysis investigating technical success and safety of percutaneous patent ductus arteriosus (PDA) closure in infants ≤1.5 kg using data sources from inception to April 2020. The analysis included 28 studies with 373 infants ≤1.5 kg. Technical success was 96% (95% CI, 93%-98%; P = .16; I2 = 23%) with the probability of technical failures inversely related to age at the time of the procedure. Adverse effects were reported in 27% (95% CI, 17%-38%; P < .001; I2 = 70%). Four of 5 total deaths related to the procedure occurred in infants <0.8 kg. The authors conclude that PDA closure is feasible in infants ≤1.5 kg with a high success rate and few major adverse effects.

MRI score ability to detect abnormalities in mild hypoxic-ischemic encephalopathy
Machie M, Weeke L, de Vries LS, et al. *Pediatr Neurol.*

This is a single-center prospective cohort study of infants ≥36 weeks' gestation with HIE born at a level III neonatal intensive care unit from 2017 to 2019 using MRI on day of life 5. Three MRI scores (Barkovich, NICHD NRN and Weeke scores) were reported by two readers. Of 42 infants with varying HIE severity, abnormalities were reported in three (7%) using Barkovich score, in 10 (24%) using the NICHD NRN, and in 24 (57%) using the Weeke score with excellent inter-rater agreement. The authors conclude that subtle MRI in mild HIE was more frequently detected using the Weeke score, highlighting the importance of detailed scoring systems in such infants.

Human breast milk-derived exosomes may help maintain intestinal epithelial barrier integrity
He S, Liu G, Zhu X, et al. *Pediatr Res.*

To assess the functions of exosomes derived from human breast milk (HBM) the authors studied HBM-derived exosomes from healthy lactating mothers using in vitro studies and an in vivo animal model of NEC. They found that HBM-derived exosomes help protect the epithelial tight-junction proteins from inflammatory attack and prevent NEC by reducing inflammation and injury to the intestinal epithelium.

Respiratory effects of prolonged prednisolone use in infants with evolving and established Bronchopulmonary dysplasia.
Liviskie C, Vesoulis Z, Zeller B, et al. *Early Hum Dev.*

The authors chose to delineate the characteristics and outcomes of premature infants treated with an extended course of prednisolone course and determine the effect on respiratory and anthropometric outcomes over time in a single-retrospective study. They found that infants receiving > 30 days of prednisolone or methylprednisolone for treatment of respiratory complications following preterm birth had lower pulmonary severity score over time without alternations anthropometric outcomes.

Long-term impact of systematic pain and sedation management on cognitive, motor, and behavioral outcomes of extremely preterm infants at preschool age.
Steinbauer P, Deindl P, Fuiko R, et al. *Pediatr Res.*

100 extremely preterm infants were studied to assess long-term neurodevelopmental outcomes before and after implementation of a pain and sedation protocol. Infants were assessed using the Neonatal Pain, Agitation and Sedation Scale (N-PASS) and treated using the Vienna Protocol for Neonatal Pain and Sedatation (V-PNPS). Infants treated in the year prior to and in the year after implementation were

assess at preschool age and compared. Use of the protocol led to an increase in total opioid dose exposure. There were no significant differences in cognitive or motor outcomes. Increased opioid exposure was associated with increased risk of autism spectrum features and withdrawn behavior. The authors conclude that increased opioid exposure in preterm neonates may be a risk factor for autism spectrum and withdrawn behavior.

The predictive value of procalcitonin and high-sensitivity c-reactive protein for early bacterial infections in preterm neonates
Naramura T, Imamura H, Yoshimatsu H, et al. Neonatology.

In a single-center retrospective study, preterm neonates were split into 3 groups: reference, infection-unlikely respiratory failure, and probable bacterial infection. Procalcitonin (PCT) and high sensitivity C-reactive protein (hsCRP) levels were measured at specific time points in the first 72 hours after birth. PCT was more sensitive for predicting bacterial infection during each period. The authors conclude PCT has better predictive value than hsCRP for early-onset bacterial infections in preterm neonates.

A randomized controlled trial of intact cord milking versus immediate cord clamping in term infants born by elective cesarean section
Zanardo V, Guerrini P, Severino L, et al. Am J Perinatol.

This trial randomized term infants to receive either immediate cord clamping (ICC) or umbilical cord milking (UCM) immediately following cesarean delivery. There was no significant difference between cord blood hematocrits between groups. At 48 hours of age, the UCM group had significantly higher heel hematocrit values (UCM: 53.7 +/- 5.9 versus ICC: 49.8 +/- 4.6%, $p<0.001$). The authors concluded that umbilical cord milking is an efficacious and safe procedure to enhance placental transfusion to neonates born via elective cesarean delivery.

OTHER NOTEWORTHY PUBLICATIONS – November, 2020

COVID – 19
Impact of the COVID-19 pandemic on excess perinatal mortality and morbidity in Israel
https://pubmed.ncbi.nlm.nih.gov/33302306
Neonatal emergency transport system during COVID-19 pandemic in the Veneto Region: proposal for standard operating procedures (PDF)
https://www.nature.com/articles/s41390-020-0937-z.pdf
Specialized prenatal care delivery for coronavirus disease 2019–exposed or –infected pregnant women (PDF)
https://www.ajog.org/article/S0002-9378(20)31315-6/pdf
Vertical transmission of coronavirus disease 2019 (PDF)
https://www.ajog.org/article/S0002-9378(20)31298-9/pdf
Vertical transmission of coronavirus disease 2019, a response (PDF)
https://www.ajog.org/article/S0002-9378(20)31309-0/pdf
COVID-19 vaccination in pregnant and lactating women
https://pubmed.ncbi.nlm.nih.gov/33555297
Involving pregnant individuals in clinical research on COVID-19 vaccines
https://pubmed.ncbi.nlm.nih.gov/33566088
COVID-19-related potential multisystem inflammatory syndrome in childhood in a neonate presenting as persistent pulmonary hypertension of the newborn
https://pubmed.ncbi.nlm.nih.gov/33464010
Have coronavirus disease 2019 (COVID-19) community lockdowns reduced preterm birth rates?
https://pubmed.ncbi.nlm.nih.gov/33543906

Preterm birth during the coronavirus disease 2019 (COVID-19) pandemic in a large hospital system in the United States
https://pubmed.ncbi.nlm.nih.gov/33595244
Prematurity rates during the coronavirus disease 2019 (COVID-19) pandemic lockdown in Melbourne, Australia
https://pubmed.ncbi.nlm.nih.gov/33543904

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Maternal chronic conditions and risk of cerebral palsy in offspring: a national cohort study
https://pubmed.ncbi.nlm.nih.gov/33602799
Applications of artificial intelligence for retinopathy of prematurity screening
https://pubmed.ncbi.nlm.nih.gov/33637645
Phenobarbital and clonidine as secondary medications for neonatal opioid withdrawal syndrome
https://pubmed.ncbi.nlm.nih.gov/33632932
Augmented reality–assisted video laryngoscopy and simulated neonatal intubations: a pilot study
https://pubmed.ncbi.nlm.nih.gov/33602798
Umbilical cord management for newborns <34 weeks' gestation: a meta-analysis
https://pubmed.ncbi.nlm.nih.gov/33632931
Umbilical cord management at term and late preterm birth: a meta-analysis
https://pubmed.ncbi.nlm.nih.gov/33632933
Impact of acute and chronic hypoxia-ischemia on the transitional circulation
https://pubmed.ncbi.nlm.nih.gov/33622795

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Relationship between milk fat globule-epidermal growth factor 8 and intestinal cytokines in infants born preterm
https://pubmed.ncbi.nlm.nih.gov/33181195
Neurodevelopmental and growth outcomes of extremely preterm infants with short bowel syndrome
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Discontinuing nasal continuous positive airway pressure in infants ≤32 weeks of gestational age: a randomized control trial
https://pubmed.ncbi.nlm.nih.gov/33127365
Limitations of conventional magnetic resonance imaging as a predictor of death or disability following neonatal hypoxic–ischemic encephalopathy in the late hypothermia trial
https://pubmed.ncbi.nlm.nih.gov/33189747
Tidal breathing measurements in former preterm infants: a retrospective longitudinal study
https://pubmed.ncbi.nlm.nih.gov/33253731
Trends in bronchopulmonary dysplasia among extremely preterm infants in Japan, 2003-2016
https://pubmed.ncbi.nlm.nih.gov/33246013
Percent body fat content measured by plethysmography in infants randomized to high- or usual-volume feeding after very preterm birth
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https://www.ncbi.nlm.nih.gov/pubmed/33069161
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Understanding the impact of size at birth and prematurity on biological ageing: the utility and pitfalls of a life-course approach
https://www.ncbi.nlm.nih.gov/pubmed/32555538
Predicting the outcomes of preterm neonates beyond the neonatal intensive care unit: What are we missing? (PDF)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7276948/pdf/41390_2020_Article_968.pdf
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The newborn Fmr1 knockout mouse: a novel model of excess ubiquinone and closed mitochondrial permeability transition pore in the developing heart (PDF)
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Serial blood cytokine and chemokine mRNA and microRNA over 48 h are insult specific in a piglet model of inflammation-sensitized hypoxia–ischaemia
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Immunization with anti-Tn immunogen in maternal rats protects against hyperoxia-induced kidney injury in newborn offspring
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Gene expression profile in cases of infectious death in infancy
https://www.ncbi.nlm.nih.gov/pubmed/32299088
Immune profiling of breast milk from mothers with treated celiac disease
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Effects of upper airway obstruction or hypoxia on gastroesophageal reflux in newborn lambs
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Induction of fecal cholesterol excretion is not effective for the treatment of hyperbilirubinemia in Gunn rats
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Fast detection of FOXF1 variants in patients with alveolar capillary dysplasia with misalignment of pulmonary veins using targeted sequencing
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Primary immunodeficiency testing in a Massachusetts tertiary care NICU: persistent challenges in the extremely premature population
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Effects of vitamin D supplementation on circulating concentrations of growth factors and immune-mediators in healthy women during pregnancy
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Effect of blue LED phototherapy centered at 478 nm versus 459 nm in hyperbilirubinemic neonates: a randomized study
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Dramatic changes in blood protein levels during the first week of life in extremely preterm infants
https://www.ncbi.nlm.nih.gov/pubmed/32330929
Bubble bilevel ventilation facilitates gas exchange in anesthetized rabbits (PDF)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7223040/pdf/41390_2020_Article_928.pdf
Differentiating esophageal sensitivity phenotypes using pH–impedance in intensive care unit infants referred for gastroesophageal reflux symptoms (PDF)
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Role of feeding strategy bundle with acid-suppressive therapy in infants with esophageal acid reflux exposure: a randomized controlled trial (PDF)
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Endocrine-sensitive physical endpoints in newborns: ranges and predictors (PDF)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7657971/pdf/nihms-1591341.pdf

Family reflections: premature baby
https://www.ncbi.nlm.nih.gov/pubmed/33293680

Archives of Disease in Childhood - Fetal & Neonatal Edition

Parental consent and neonatal delivery room trials: walking an ethical tightrope
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Differences in demographics and outcomes based on method of consent for a randomised controlled trial on heat loss prevention in the delivery room
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Does the first hour of continuous electroencephalography predict neonatal seizures?
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Neonatal videolaryngoscopy as a teaching aid: the trainees' perspective
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Asynchronous video messaging promotes family involvement and mitigates separation in neonatal care
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Intravenous paracetamol for neonates: long-term diseases not escalated during 5 years of follow-up
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Multilevel social factors and NICU quality of care in California
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Equity for women in medicine—neonatologists identify issues
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Neonatal lymphatic flow disorders: impact of lymphatic imaging and interventions on outcomes
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Exclusive human milk diet reduces incidence of severe intraventricular hemorrhage in extremely low birth weight infants
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A preoperative standardized feeding protocol improves human milk use in infants with complex congenital heart disease
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Lactose-free infant formula does not change outcomes of neonatal abstinence syndrome (NAS): a randomized clinical trial
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Weight, length, and head circumference at 36 weeks are not predictive of later cognitive impairment in very preterm infants
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Torticollis in infants with neonatal abstinence syndrome
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Handoff standardization in the neonatal intensive care unit with an EMR-based handoff tool
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I can't breathe
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Can cord blood sampling delay the first packed red blood cell transfusion?
https://pubmed.ncbi.nlm.nih.gov/33221814

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Commentary on "lipid emulsions for parenterally fed preterm infants"
https://pubmed.ncbi.nlm.nih.gov/33434910
A systematic review of the influence of continuous positive airway pressure on fetal and newborn animal models: suggestions to improve neonatal respiratory care
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Validity and utility of experimental animal models in perinatal research
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The predictive value of procalcitonin and high-sensitivity c-reactive protein for early bacterial infections in preterm neonates
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Delayed maturation of the middle cerebellar peduncles at near-term age predicts abnormal neurodevelopment in preterm infants
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Population-based analysis of secular trends in age at death in trisomy 18 syndrome in Japan from 1975 to 2016
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Clinical application of postmortem magnetic resonance imaging in neonates
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Screening for retinopathy of prematurity in very preterm children: the epipage-2 cohort study
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Duration of mechanical ventilation and extubation success among extremely premature infants
https://pubmed.ncbi.nlm.nih.gov/33611319
Pulmonary gas exchange improves over the first year in preterm infants with and without bronchopulmonary dysplasia
https://pubmed.ncbi.nlm.nih.gov/33592606
The pharmacokinetics of caffeine in preterm newborns: no influence of doxapram but important maturation with age
https://pubmed.ncbi.nlm.nih.gov/33626528
Not only preterm neonates mature but also traditional dosing regimens have to mature: the role of mathematical modeling
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Improving neonatal and maternal outcome by inducing mild labor before elective cesarean section: the lacarus randomized controlled trial
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https://pubmed.ncbi.nlm.nih.gov/31683326
Quantifying medication exposure in very low birth weight neonates
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A randomized controlled trial of intact cord milking versus immediate cord clamping in term infants born by elective cesarean section
https://pubmed.ncbi.nlm.nih.gov/31600796

Journal of Neonatal-Perinatal Medicine
No new content

Maternal Health, Neonatology and Perinatology

Methods for exploring the faecal microbiome of premature infants: a review
https://pubmed.ncbi.nlm.nih.gov/33685524

Neoreviews

Neonatal encephalopathy: beyond hypoxic-ischemic encephalopathy
https://pubmed.ncbi.nlm.nih.gov/33649088
Perinatal stroke: a practical approach to diagnosis and management
https://pubmed.ncbi.nlm.nih.gov/33649089
Updated guidance: prevention and management of perinatal group b streptococcus infection
https://pubmed.ncbi.nlm.nih.gov/33649090
Case 1: A preterm neonate with polyhydramnios, polyuria, and hearing loss
https://pubmed.ncbi.nlm.nih.gov/33649091
Case 2: Hypotonia and poor feeding in a neonate
https://pubmed.ncbi.nlm.nih.gov/33649092
Case 3: Apnea in preterm neonates
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Evaluation of rooming-in practice for neonates born to mothers with severe acute respiratory syndrome coronavirus 2 infection in Italy
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https://pubmed.ncbi.nlm.nih.gov/33523119
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Exome sequencing as a potential diagnostic adjunct in sporadic congenital hydrocephalus
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Maternal toxoplasmosis and the risk of childhood autism: serological and molecular small-scale studies (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-021-02604-4
NutriBrain: protocol for a randomised, double-blind, controlled trial to evaluate the effects of a nutritional product on brain integrity in preterm infants (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-021-02570-x
Clinical characteristics of severe neonatal enterovirus infection: a systematic review (PDF)
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Neonatal mortality among neonates admitted to NICU of Hiwot Fana specialized university hospital, eastern Ethiopia, 2020: a cross-sectional study design (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-021-02598-z
Incidence of neural tube defects and their risk factors within a cohort of Moroccan newborn infants (PDF)
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Severe extensive community acquired aspergillus infection in a full-term infant accompanied with increases in white blood cell counts and C-reactive protein: a case report (PDF)
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