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Section on Neonatal-Perinatal Medicine

ARTICLES OF INTEREST – January 2022

Effect of minimally invasive surfactant therapy vs sham treatment on death or bronchopulmonary dysplasia in preterm infants with respiratory distress syndrome
Peter A Dargaville, C Omar F Kamlin, Francesca Orsini, et al. *JAMA.*

This multicenter randomized controlled trial included 485 infants with a gestational age of 25 to 28 weeks who received continuous positive airway pressure (CPAP) and required a fraction of inspired oxygen of 0.30 or greater within 6 hours of birth. Infants were randomized to receive surfactant via a thin catheter (n = 241) or sham control treatment (n = 244). The authors found no significant difference in the composite outcome of death prior to 36 weeks postmenstrual age and BPD at 36 weeks' postmenstrual age but found a decreased incidence of BPD in survivors at 36 weeks' postmenstrual age in the treatment group (81/217 [37.3%] treatment vs 102/225 [45.3%] control; RD, -7.8% [95% CI, -14.9% to -0.7%]; RR, 0.83 [95% CI, 0.70 to 0.98]; p=0.03.

Prenatal nicotine or cannabis exposure and offspring neurobehavioral outcomes
Marcela C Smid, Torri D Metz, Gwen A McMillin, et al. *Obstet Gynecol.*

This study was a secondary analysis of two parallel multicenter randomized controlled trials for treatment of hypothyroidism in pregnant women. As part of this study, maternal urine toxicology samples were sent and infant developmental outcomes were assessed at 12, 24, 36, and 48 months. The authors found that neither prenatal nicotine nor cannabis exposure was associated with a difference in IQ but that cannabis exposure was associated with poorer attention scores on the Connors Comprehensive Behavior Rating Scale at 48 months of age.

Surgery-associated infections among infants born extremely preterm
Andi L Shane, Nellie I Hansen, Mohannad Moallem, et al. *J Pediatr.*

This is a multicenter observational, prospective study investigating surgery-associated infections (SAI, bacteremia, fungemia or meningitis) in extreme preterm infants (22-28wks GA) from the NIH-NICHD neonatal research network. Infants who underwent surgery (n=1154/6573, 18%) were younger GA, smaller birth weight and more likely to have a major birth defect. Eighty-five (7%) infants had 90 SAIs ≤14 days after surgery, with Coagulase-negative staphylococci in 36 (40%) cases. Gastrointestinal surgeries (n=873, 76%) were followed by higher risk of SAI or death ≤14 days compared to central nervous system procedures (n=150, 13%). The authors concluded that surgical procedures were associated with bacteremia, fungemia, or meningitis in 7% of infants and that epidemiology of infections described may inform empirical antibiotic choices.

Which inotropic drug, Dobutamine or Milrinone, is clinically more effective in the treatment of post ligation cardiac syndrome in preterm infants?
Levent Korkmaz, Ahmet Ozdemir, Özge Pamukçu, et al. *Am J Perinatol.*

The authors describe a single-center retrospective study comparing milrinone and dobutamine in the management of post-ligation cardiac syndrome (PLCS). Respiratory, cardiac, echocardiography, and perfusion parameters of the cases were assessed before and after ligation. Twenty nine (34%) of 85 PDA ligation cases developed PLCS. Of these 13 (44.8%) were treated with dobutamine and 16 (55.2%) with milrinone. Both medications were more effective on systolic BP than diastolic BP without any difference between the two medications. The study concluded that both medications can be used to treat PLCS with similar therapeutic effects.

Associations of body composition with regional brain volumes and white matter microstructure in very preterm infants
Katherine Ann Bell, Lillian G Matthews, Sara Cherkerzian, et al. *Arch Dis Child Fetal Neonatal Ed.*

To assess associations between body composition and brain development the authors compared air displacement derived lean mass with tissue-specific brain volumes and white matter microstructure in preterm infants at term equivalent age. They found that lean mass was associated with larger brain volume and more mature white matter microstructure. The investigators speculate that lean mass accrual is an indicator of improved brain growth and development.

Early Influences of Microbiota on White Matter Development in Germ-Free Piglets
Sadia Ahmed, Sierrah D Travis, Francisca V Díaz-Bahamonde, et al. *Front Cell Neurosci.*

Using a neonatal germ-free swine model, the investigators evaluated the influence of microorganisms on brain development. They found significant region-specific reductions, and sexually dimorphic trends, in white matter volume, oligodendrogenesis, and mature oligodendrocyte numbers during postnatal myelination. These findings indicate that microbiota plays a role in promoting white matter development in early life when the brain is vulnerable to environmental insults.

Strict glycaemic control in very low birthweight infants using a continuous glucose monitoring system: a randomised controlled trial
Alessandro Perri, Eloisa Tiberi, Lucia Giordano, et al. *Arch Dis Child Fetal Neonatal Ed.*

In this randomised controlled trial the authors sought to evaluate the efficacy of a strict glycaemic control protocol using a continuous glucose monitoring (CGM) system in VLBW infants at high risk of dysglycaemia with the aim of reducing the number of dysglycaemic episodes. The primary outcome was the number of severe dysglycaemic episodes (<2.61 mmol/L (47 mg/dL) or >10 mmol/L (180 mg/dL)) in the intervention group versus the control group, during the monitoring time. The authors concluded that CGM, combined with a protocol for adjusting glucose infusion, can effectively reduce the episodes of dysglycaemia and increase the percentage of time spent in euglycaemia in very low birthweight infants receiving PN in the first week of life.

Amniotic fluid stem cell administration can prevent epithelial injury from necrotizing enterocolitis
Bo Li, Carol Lee, Marissa Cadete, et al. *Pediatr Res.*

In a mouse model of NEC, amniotic fluid stem cells or bone marrow-derived mesenchymal stem cells were administered prior to NEC induction. Stem cells were harvested from rats and prepared for intraperitoneal injection in mouse pups. When grown in culture, amniotic stem cells grew faster and secreted proteins related to cell growth, cell size, biological adhesion, and cell reproduction. Mesenchymal stem cells secreted proteins primarily involved with immune system processes. After intraperitoneal injection and NEC induction, the mesenchymal stem cells had no effect on ideal

histopathology. However, amniotic stem cells decreased NEC severity and reduced mucosal inflammation. Amniotic fluid stem cells may be a potential preventive measure against the development of NEC.

Physiological dead space and alveolar ventilation in ventilated infants
Emma Williams, Theodore Dassios, Paul Dixon, et al. *Pediatr Res.*

Expiratory tidal volume and capnography were used to calculate physiologic dead space in 81 ventilated infants. 20 infants on mechanical ventilation without underlying lung disease were used as controls (median GA 38.4 weeks). These were compared to 35 infants with acute RDS (GA 29.1 weeks) and 26 infants with developing BPD (GA 25.8 weeks), defined as requiring mechanical ventilation longer than 1 week. Control infants had expired tidal volumes of 6.4 (5.4-7.6) mL/kg. RDS infants had tidal volumes of 8.5 (6.6-9.6) mL/kg, and BPD infants had tidal volumes of 8.2 (7.5-10.3) mL/kg. Physiologic dead space in control infants was 3.5 (2.8-4.3) mL/kg. It was higher in RDS infants [5.7 (5.1-7.0)] and in BPD infants [6.4 (5.1-7.5)]. The authors conclude these results should influence tidal volume selection for infants on volume-targeted ventilation.

Safety of sildenafil in extremely premature infants: a phase I trial
Wesley Jackson, Daniel Gonzalez, P Brian Smith, et al. *J Perinatol.*

Both enteral and IV sildenafil were well tolerated in extremely premature infants. Drug administration times and flush rates require careful attention to prevent infusion-related hypotension associated with faster infusions of IV sildenafil in premature infants. There were no AEs related to elevated transaminases.

OTHER NOTEWORTHY PUBLICATIONS - January, 2022

COVID – 19
Scientific evidence supporting Coronavirus Disease 2019 (COVID-19) vaccine efficacy and safety in people planning to conceive or who are pregnant or lactating
https://pubmed.ncbi.nlm.nih.gov/34727554
Covid-19: Babies born during the pandemic show slight development delays
https://pubmed.ncbi.nlm.nih.gov/34996749
Variation in United States COVID-19 newborn care practices: results of an online physician survey (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-022-03129-0
Neonatal acute ethanol intoxication during the epidemic of COVID-19: a case report (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-022-03128-1
SARS-CoV-2 infection during pregnancy and risk of preeclampsia: a systematic review and meta-analysis (PDF)
https://www.ajog.org/article/S0002-9378(21)00795-X/pdf
Microvascular placental alterations in maternal COVID-19 (PDF)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8254388/pdf/main.pdf
Worsening risk profiles of out-of-hospital births during the COVID-19 pandemic (PDF)
https://www.ajog.org/article/S0002-9378(21)02544-8/pdf
Worse outcomes of pregnancy in COVID-19 infection during parturition may be due to referral bias: analysis in a prospective cohort of 963 pregnancies (PDF)
https://www.ajog.org/article/S0002-9378(21)00995-9/pdf
Increasing severity of COVID-19 in pregnancy with Delta (B.1.617.2) variant surge (PDF)
https://www.ajog.org/article/S0002-9378(21)01005-X/pdf
Preeclampsiada risk factor to get infected with COVID-19 or a selection bias? (PDF)
https://www.ajog.org/article/S0002-9378(21)00979-0/pdf
INTERCOVID prospective longitudinal study: preeclampsia and COVID-19 (PDF)
https://www.ajog.org/article/S0002-9378(21)00980-7/pdf

The link between COVID-19 and preeclampsia (PDF)
https://www.ajog.org/article/S0002-9378(21)00984-4/pdf
Adjustment is required to calculate the risk of early pregnancy loss with COVID-19 infection or vaccination (PDF)
https://www.ajog.org/article/S0002-9378(21)00861-9/pdf
Birth hospital length of stay and rehospitalization during COVID-19
https://pubmed.ncbi.nlm.nih.gov/34889449/
A closer look at the weekend effect and COVID-19 mortalities
https://pubmed.ncbi.nlm.nih.gov/33216046/

Pediatrics
See COVID section

Journal of Pediatrics
Risk of extreme, moderate, and late preterm birth by maternal race, ethnicity, and nativity
https://pubmed.ncbi.nlm.nih.gov/34592259/
Low rate of spontaneous closure in premature infants discharged with a patent ductus arteriosus: a multicenter prospective study
https://pubmed.ncbi.nlm.nih.gov/34293369/
Systemic inflammation in the first 2 weeks after birth as a determinant of physical growth outcomes in hospitalized infants with extremely low gestational age
https://pubmed.ncbi.nlm.nih.gov/34508750/
Adverse events and associated factors during intrahospital transport of newborn infants
https://pubmed.ncbi.nlm.nih.gov/34480917/
Neurodevelopmental trajectories of preterm born survivors of Twin–Twin Transfusion Syndrome: from birth to 5 years of age
https://pubmed.ncbi.nlm.nih.gov/34506853/
Surgery-associated infections among infants born extremely preterm
https://pubmed.ncbi.nlm.nih.gov/34461060/
Medication use in the neonatal intensive care unit and changes from 2010 to 2018
https://pubmed.ncbi.nlm.nih.gov/34481808/
Maternal periconceptional folic acid supplementation and risk for fetal congenital heart defects
https://pubmed.ncbi.nlm.nih.gov/34508748/
Maternal smoking and congenital heart defects, national birth defects prevention study, 1997-2011
https://pubmed.ncbi.nlm.nih.gov/34508749/
In-hospital morbidities for neonates with congenital diaphragmatic hernia: the impact of defect size and laterality
https://pubmed.ncbi.nlm.nih.gov/34506854/

Pediatric Research
Patent ductus arteriosus shunt volume in preterm neonates using pulmonary vein diastolic velocity
https://www.ncbi.nlm.nih.gov/pubmed/33731811
Mothers' smartphone use and mother-infant interactive behavior in the postpartum period
https://www.ncbi.nlm.nih.gov/pubmed/33731805
Advocating for donor milk access in Medicaid: bringing equity to the neonatal intensive care unit
https://www.ncbi.nlm.nih.gov/pubmed/34750524
How hypoxia slows fetal growth: insights from high altitude
https://www.ncbi.nlm.nih.gov/pubmed/34650197
A neonatal neuroNICU collaborative approach to neuromonitoring of posthemorrhagic ventricular dilation in preterm infants
https://www.ncbi.nlm.nih.gov/pubmed/33627823
Development of a 3D printed patient-specific neonatal brain simulation model using multimodality imaging for perioperative management

https://www.ncbi.nlm.nih.gov/pubmed/33654283
Toll-like receptor 4-mediated necroptosis in the development of necrotizing enterocolitis
https://www.nature.com/articles/s41390-021-01457-y.pdf
Low maternal vitamin A intake increases the incidence of teratogen induced congenital diaphragmatic hernia in mice
https://www.nature.com/articles/s41390-021-01409-6.pdf
Temporal brain microRNA expression changes in a mouse model of neonatal hypoxic–ischemic injury
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Amniotic fluid stem cell administration can prevent epithelial injury from necrotizing enterocolitis
https://www.ncbi.nlm.nih.gov/pubmed/34561550
Cardiovascular fetal-to-neonatal transition: an in silico model
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Lipocalin-2 and calprotectin as stool biomarkers for predicting necrotizing enterocolitis in premature neonates
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High-altitude population neonatal and maternal phenotypes associated with birthweight protection
https://www.nature.com/articles/s41390-021-01593-5.pdf
Antibiotics at birth and later antibiotic courses: effects on gut microbiota
https://www.nature.com/articles/s41390-021-01494-7.pdf
Autonomic development in preterm infants is associated with morbidity of prematurity
https://www.ncbi.nlm.nih.gov/pubmed/33654284
Randomized trial of azithromycin to eradicate Ureaplasma respiratory colonization in preterm infants: 2-year outcomes
https://www.nature.com/articles/s41390-021-01437-2.pdf
Altered brain metabolite concentration and delayed neurodevelopment in preterm neonates
https://www.nature.com/articles/s41390-021-01398-6.pdf
Physiological dead space and alveolar ventilation in ventilated infants
https://www.nature.com/articles/s41390-021-01388-8.pdf
Exposure to intrauterine inflammation and late-onset sepsis in very preterm infants
https://www.ncbi.nlm.nih.gov/pubmed/33731804

Archives of Disease in Childhood - Fetal & Neonatal Edition
Therapeutic hypothermia for neonatal encephalopathy: importance of early management
https://pubmed.ncbi.nlm.nih.gov/34753784/
Hypothermia for neonatal encephalopathy: how do we move forward?
https://pubmed.ncbi.nlm.nih.gov/34656992/
Outcomes of neonatal hypoxic-ischaemic encephalopathy in centres with and without active therapeutic hypothermia: a nationwide propensity score-matched analysis
https://pubmed.ncbi.nlm.nih.gov/34045283/
Life-threatening bronchopulmonary dysplasia: a British Paediatric Surveillance Unit Study
https://pubmed.ncbi.nlm.nih.gov/34183433/
Comparison of two devices for automated oxygen control in preterm infants: a randomised crossover trial
https://pubmed.ncbi.nlm.nih.gov/34112721/
Strict glycaemic control in very low birthweight infants using a continuous glucose monitoring system: a randomised controlled trial
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Prediction of outcome from MRI and general movements assessment after hypoxic-ischaemic encephalopathy in low-income and middle-income countries: data from a randomised controlled trial
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Automated control of oxygen titration in preterm infants on non-invasive respiratory support
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Neonatal arterial stroke location is associated with outcome at 2 years: a voxel-based lesion-symptom mapping study
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Trial of aerosolised surfactant for preterm infants with respiratory distress syndrome
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Neuronal exosome proteins: novel biomarkers for predicting neonatal response to therapeutic hypothermia
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Effect of breathing on venous return during delayed cord clamping: an observational study
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Neurodevelopmental outcome following hypoxic ischaemic encephalopathy and therapeutic hypothermia is related to right ventricular performance at 24-hour postnatal age
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Family integrated care: very preterm neurodevelopmental outcomes at 18 months
https://pubmed.ncbi.nlm.nih.gov/34145042/
Extubation generates lung volume inhomogeneity in preterm infants
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Parent-reported health status of preterm survivors in a Canadian cohort
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Nasal expression of SARS-CoV-2 entry receptors in newborns
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Opioids and the developing brain: time to rethink perinatal care for infants of opioid-dependent mothers
https://pubmed.ncbi.nlm.nih.gov/33597225/
Decision to extubate extremely preterm infants: art, science or gamble?
https://pubmed.ncbi.nlm.nih.gov/33627331/
Follow-up after very preterm birth in Europe
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Unusual position of the umbilicus in a neonate
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Neonatal necrotising fasciitis
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Expecting equity: reimagining the delivery of racial/ethnic representation in neonatal clinical trials
https://pubmed.ncbi.nlm.nih.gov/34615981/
Care of the critically ill neonate with hypoxemic respiratory failure and acute pulmonary hypertension: framework for practice based on consensus opinion of neonatal hemodynamics working group
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Use of inhaled nitric oxide in preterm vs term/near-term neonates with pulmonary hypertension: results of the PaTTerN registry study
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Role of functional echocardiographic parameters in the diagnosis of bronchopulmonary dysplasia-associated pulmonary hypertension
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Safety of sildenafil in extremely premature infants: a phase I trial
https://pubmed.ncbi.nlm.nih.gov/34741102/
Worsened short-term clinical outcomes in a cohort of patients with iNO-unresponsive PPHN: a case for improving iNO responsiveness
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Predicting treatment of pulmonary hypertension at discharge in infants with congenital diaphragmatic hernia
https://pubmed.ncbi.nlm.nih.gov/34711937/
Respiratory management and bronchopulmonary dysplasia in extremely preterm infants: a comparison of practice between centres in Oxford and Melbourne
https://pubmed.ncbi.nlm.nih.gov/34987168/
A comparison of newer classifications of bronchopulmonary dysplasia: findings from the Children's Hospitals Neonatal Consortium Severe BPD Group
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Presumed adrenal insufficiency in neonates treated with corticosteroids for the prevention of bronchopulmonary dysplasia
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Survival and decannulation across indications for infant tracheostomy: a twelve-year single-center cohort study
https://pubmed.ncbi.nlm.nih.gov/34404923/
Racial discrepancy in pulse oximeter accuracy in preterm infants
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Are we enrolling representative cohorts of premature infants in our clinical trials?
https://pubmed.ncbi.nlm.nih.gov/34518625/
Diagnostic accuracy of Kleihauer–Betke (Kb) testing to predict fetal outcomes associated with fetomaternal hemorrhage: a retrospective cohort study
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Serum erythroferrone levels during the first month of life in premature infants
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Stannsoporfin with phototherapy to treat hyperbilirubinemia in newborn hemolytic disease
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Cortical hemodynamic activity and pain perception during insertion of feeding tubes in preterm neonates: a randomized controlled cross-over trial
https://pubmed.ncbi.nlm.nih.gov/34285360/
A predictive model for preterm babies born < 30 weeks gestational age who will not attain full oral feedings
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Standardizing premedication for non-emergent neonatal tracheal intubations improves compliance and patient outcomes
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Acute right ventricular failure associated with pulmonary hypertension in pediatrics: understanding the hemodynamic profiles
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Pulmonary hypertension associated with vein of Galen malformation. Fetal cardiac hemodynamic findings and physiological considerations
https://pubmed.ncbi.nlm.nih.gov/35022516/
Safety and efficacy of antenatal glucocorticoids in women at risk of preterm birth in low resource settings
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American Journal of Perinatology

Review: Update in the treatment of retinopathy of prematurity
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Effects of umbilical cord milking on anemia in preterm infants: a multicenter randomized controlled trial
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Predictive models for very preterm birth: developing a point-of-care tool
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REVIEW: Measuring parental presence in the neonatal intensive care unit
https://pubmed.ncbi.nlm.nih.gov/32819019/

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Assessment of neonatal intensive care unit sound exposure using a smartphone application
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Which inotropic drug, Dobutamine or Milrinone, is clinically more effective in the treatment of post ligation cardiac syndrome in preterm infants?
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Evaluation of a modified SBAR report to physician tool to standardize communication on neonatal transport
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Maternal facial nerve palsy and a perinatal infection
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JAMA Pediatrics
Viewpoint: Conflating race and genetics among newborns with neonatal abstinence syndrome
https://pubmed.ncbi.nlm.nih.gov/34605887/
Noninferiority and safety of nadolol vs propranolol in infants with infantile hemangiomaa randomized clinical trial
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BMC Pediatrics
Arterial health during early childhood following abnormal fetal growth (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-021-02951-2
Study protocol for reducing disparity in receipt of mother's own milk in very low birth weight infants (ReDiMOM): a randomized trial to improve adherence to sustained maternal breast pump use (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-021-03088-y
Cue-based feeding and short-term health outcomes of premature infants in newborn intensive care units: a non-randomized trial (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-021-03077-1
Effectiveness of feeding supplementation in preterm infants: an overview of systematic reviews (PDF)
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Variability of respiratory rate measurements in neonates- every minute counts (PDF)
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Significance of the 'line sign' in the diagnosis of congenital imperforate anus on prenatal ultrasound (PDF)
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Predictive factors for the surgical treatment of necrotizing enterocolitis in preterm infants: a single-center retrospective study (PDF)
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Predictors of mortality among neonates hospitalized with neonatal sepsis: a case control study from southern Ethiopia (PDF)
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Adapted Helping Babies Breathe approach to neonatal resuscitation in Haiti: a retrospective cohort study (PDF)
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Lumbar Puncture in the prone position for Low Birth Weight Neonates (PDF)
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Intussusception in preterm neonates: A systematic review of a rare condition (PDF)
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Pediatric Critical Care Medicine
No relevant content

New England Journal of Medicine
Oocytes from stem cells
https://pubmed.ncbi.nlm.nih.gov/35020990

Lancet
No relevant content

JAMA
Mortality, in-hospital morbidity, care practices, and 2-year outcomes for extremely preterm infants in the US, 2013-2018
https://pubmed.ncbi.nlm.nih.gov/35040888
Editorial: Progress, problems, and prospects in the intensive care of extremely preterm infants
https://pubmed.ncbi.nlm.nih.gov/35040902
Effect of minimally invasive surfactant therapy vs sham treatment on death or bronchopulmonary dysplasia in preterm infants with respiratory distress syndrome
https://pubmed.ncbi.nlm.nih.gov/34902013
Editorial: Minimally invasive surfactant therapy to prevent bronchopulmonary dysplasia in extremely preterm infants
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Place of birth of extremely preterm infants in Sweden
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BMJ
Neglect of fetal alcohol spectrum disorder must end
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Pediatric Infectious Disease Journal
A case of in utero transmission of drug-resistant HIV in the United States
https://pubmed.ncbi.nlm.nih.gov/34609103
Predicting neonatal early onset sepsis: a 14-year cohort study
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Effectiveness of repair of aortic coarctation in neonates: a long-term experience
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