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Section on Neonatal-Perinatal Medicine

ARTICLES OF INTEREST – July 2020

COVID-19 in neonates and infants: progression and recovery
Ng KF, Bandi S, Bird PW, et al. Pediatr Infect Dis J.

In this case series of COVID-19 positive infants (age range: 5d-12mo), the authors report 8 infants in the United Kingdom who were admitted with this infection. Symptoms ranged from asymptomatic to moderately severe fever, cough and coryza being most common. Only one needed PICU admission for respiratory support—most likely due to a combination of prematurity and SARS-CoV-2 infection. Three patients were also co-infected with other seasonal respiratory viruses. All cases recovered relatively quickly and were asymptomatic by discharge.

Intrauterine transmission of Sars-Cov-2 infection in a preterm infant
Sisman J, Jaleel MA, Moreno W, et al. Pediatr Infect Dis J.

In this case report, the authors describe the clinical course and diagnosis of a preterm 34 week infant with congenital SARS-CoV-2 infection. Infant was born via vaginal delivery to a mother with COVID-19 presenting with gastrointestinal manifestations and presented with respiratory symptoms on day 2 after birth, making it unlikely due to prematurity itself. Both placental tissue and nasopharyngeal samples were positive for this infection, with exclusion of bacterial and other viral neonatal infections. The presence of cytoplasmic staining for the SARS-CoV-2 nucleocapsid protein by immunohistochemistry and demonstration of viral particles by electron microscopy in the syncytiotrophoblastic cells strongly suggest in utero transmission. The authors postulate that transmission could have occurred either due to ascending infection with premature rupture of membranes and primary involvement of the maternal gastrointestinal tract, or by hematogenous during maternal viremia.

Effect of blood transfusions on intermittent hypoxic episodes in a prospective study of very low birth weight infants
Kovatis KZ, Di Fiore JM, Martin RJ, et al. J Pediatr.

The authors compared the number of intermittent hypoxia events before and after packed red blood cell (pRBC) and non-pRBC transfusions in 41 very low birth weight infants. The mean number of intermittent hypoxia events per hour decreased after pRBC transfusions while intermittent hypoxia events did not change after non-RBC transfusions. In very low birth weight infants with a hematocrit of 20%-42%, pRBC transfusions are associated with decreased frequency of intermittent hypoxia. This finding suggests that the observed beneficial effects of RBC transfusions on apnea and its clinical manifestations of intermittent hypoxia are mediated through an enhanced oxygen carrying capacity.
Outcomes of neonates born at <26 weeks gestational age who receive extensive cardiopulmonary resuscitation compared with airway and breathing support

Clonidine versus phenobarbital as adjunctive therapy for neonatal abstinence syndrome
Brusseau C, Burnette T, Heidel RE, et al. J Perinatol.

This is a single-center prospective, randomized, open-label study of 25 infants ≥ 35 weeks gestation with neonatal abstinence syndrome comparing clonidine versus phenobarbital as adjunctive therapy in infants who failed morphine monotherapy (morphine dose > 0.16 mg every 3h or failed two weaning attempts after initial stabilization). Infants in clonidine group (n=14) had significantly longer mean morphine treatment days (34.4 days, SD = 10.6) compared with phenobarbital group (n=11; 25.5 days, SD = 7.3, p = 0.026). The authors concluded that adjunctive therapy with phenobarbital resulted in shorter duration of morphine therapy, lesser inpatient adjunctive therapy days, and length of stay compared to clonidine.

Incidence of necrotising enterocolitis before and after introducing routine prophylactic Lactobacillus and Bifidobacterium probiotics (PDF)
Robertson C, Savva GM, Clapuci R, et al. Arch Dis Child Fetal Neonatal

This is a single-center retrospective pre-post study of routine daily probiotics use in high-risk neonates (<32 wk, or at 32–36 wk VLBW infants). No probiotics were used in the pre-implementation period. Dual-species (Lactobacillus acidophilus and Bifidobacterium bifidum) and triple-species probiotics (L. acidophilus, B. bifidum, and B. longum subspecies infantis) were used in the post-implementation period. Results showed reduced rates of NEC [3.1% (16/513) from 7.5% (35/469); p=0.014], and late-onset sepsis [11.5% (59/513) from 22.6% (106/469); p<0.0001]. Mortality decreased from 14.3% to 9.2% (not statistically significant). The authors concluded that the use of multispecies probiotics was associated with a significantly reduction in NEC and late-onset sepsis without safety issues.

Lung recruitment before surfactant administration in extremely preterm neonates with respiratory distress syndrome (IN-REC-SUR-E): a randomised, unblinded, controlled trial
Vento G, Ventura ML, Pastorino R, et al. Lancet Respir Med.

To determine the importance of lung recruitment (REC) before surfactant, the authors performed a randomized, unblinded, controlled trial in 35 tertiary neonatal intensive care units in Italy on spontaneously breathing extremely preterm neonates. Of 218 infants the requirement for mechanical ventilation during the first 72 h decreased in the IN-REC-SUR-E group (40%) compared with the IN-SUR-E group (54%). They conclude that lung recruitment just before surfactant administration improved the efficacy of surfactant treatment in extremely preterm neonates.

Optimal oxygen targets in term lambs with meconium aspiration syndrome and pulmonary hypertension
Rawat M, Chandrasekharan P, Gugino SF, et al. Am J Respir Cell Mol Bio.

To determine the optimal SpO2 range in lambs with MAS/PPHN that results in the highest brain oxygen delivery (bDO2) and pulmonary blood flow (Qp), lowest pulmonary vascular resistance (PVR) and oxidative stress, the authors studied 4 groups ventilated for 6h. Lambs in the 95-99% target group had highest Qp, lowest PVR and highest bDO2 but were exposed to higher FiO2 (0.5±0.21 vs. 0.29±0.17) with higher lung 3-nitrotyrosine and lower lung NOS activity compared to 90-94% target. They conclude that SpO2 target range trials in term infants with PPHN are warranted to determine which range leads to the best overall outcomes.

Low caloric intake and high fluid intake during the first week of life are associated with the severity of bronchopulmonary dysplasia in extremely low birth weight infants
Al-Jebawi Y, Agarwal N, Wargo SG, et al. J Neonatal Perinatal
In a retrospective study of 226 ELBW infants in a single NICU 2010-2017, 1st week nutrition intake and lab values were analyzed against the development of moderate-severe BPD. All infants were NPO during the first week. Lower birthweight, earlier gestational age, longer mechanical ventilation, postnatal steroids, PDA ligation, pneumothorax, and sepsis were associated with BPD. Over the 1st week after birth, those who developed BPD had increased fluid intake (172 vs 147 mL/kg/day), lower calorie intake (49 vs 57 mL/kg/day), and lower intake of carbohydrate, protein, and lipid. After adjusting for BPD risk factors, increased daily fluid intake, lower daily caloric intake, and longer duration of mechanical ventilation remained associated with BPD.

High prevalence of iron deficiency despite standardized high-dose iron supplementation during recombinant erythropoietin therapy in extremely low gestational age newborns
Siddappa AM, Olson RM, Spector M, et al. J Pediatr.

This cohort study included 116 ELBW infants who were treated with r-HuEPO at a starting dose of 900 IU/kg week after 7 days of age and continued until 35 weeks postmenstrual age. Oral iron supplementation at 6-12 mg/kg/day was used to help maintain a transferrin saturation of >20% during treatment. The authors found that serum ferritin decreased over time and was ≤75 ng/mL in 60.2% of infants at the conclusion of r-HuEPO therapy. The authors concluded that despite a biomarker-based standardized high-dose iron supplementation, the majority of infants had evidence of iron deficiency to a degree that is associated with reduced brain function.

COVID-19
Vertical transmission of SARS-CoV-2 infection and preterm birth
https://www.ncbi.nlm.nih.gov/pubmed/32661809
Intrauterine transmission of Sars-Cov-2 infection in a preterm infant
https://www.ncbi.nlm.nih.gov/pubmed/32658097
Coronavirus disease 2019 (COVID-19): a systematic review of pregnancy and the possibility of vertical transmission
https://www.ncbi.nlm.nih.gov/pubmed/32685412
Association between mode of delivery among pregnant women with covid-19 and maternal and neonatal outcomes in Spain
https://pubmed.ncbi.nlm.nih.gov/32511673
Maintaining safety and service provision in human milk banking: a call to action in response to the COVID-19 pandemic
https://pubmed.ncbi.nlm.nih.gov/32573440
Horizontal transmission of severe acute respiratory syndrome coronavirus 2 to a premature infant: multiple organ injury and association with markers of inflammation
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COVID-19 in neonates and infants: progression and recovery
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Coronavirus disease 2019 in newborns and very young infants: a series of six patients in France
https://pubmed.ncbi.nlm.nih.gov/32404787
Case Report: Early neonatal SARS-CoV-2 infection manifesting with hypoxemia requiring respiratory support
https://pubmed.ncbi.nlm.nih.gov/32366612
Neonatal early-onset infection with SARS-CoV-2 in 33 neonates born to mothers with COVID-19 in Wuhan, China
https://pubmed.ncbi.nlm.nih.gov/32215598
COVID-19 and neonatal respiratory care: Current evidence and practical approach
https://pubmed.ncbi.nlm.nih.gov/32359226

Corticosteroid guidance for pregnancy during COVID-19 pandemic
https://pubmed.ncbi.nlm.nih.gov/32274772
Neonatal resuscitation and postresuscitation care of infants born to mothers with suspected or confirmed SARS-CoV-2 infection
https://pubmed.ncbi.nlm.nih.gov/32268381
Operating room guide for confirmed or suspected COVID-19 pregnant patients requiring cesarean delivery
https://pubmed.ncbi.nlm.nih.gov/32274771
COVID-19 in newborns and infants—Low risk of severe disease: Silver lining or dark cloud?
https://pubmed.ncbi.nlm.nih.gov/32380565
Editorial: COVID-19 and neonatal resuscitation
https://www.karger.com/Article/Pdf/508003
Review: Neonatal resuscitation where the mother has a suspected or confirmed novel coronavirus (SARS-CoV-2) infection: suggestion for a pragmatic action plan
https://www.karger.com/Article/Pdf/507935
Review: Management of newborns exposed to mothers with confirmed or suspected COVID-19
https://pubmed.ncbi.nlm.nih.gov/32439956

Pediatrics
Survival without major morbidity among very low birth weight infants in California
https://pubmed.ncbi.nlm.nih.gov/32554813
Commentary: Continually improving outcomes for very low birth weight infants
https://pubmed.ncbi.nlm.nih.gov/32554812
Prenatal antidepressant use and risk of adverse neonatal outcomes
https://pubmed.ncbi.nlm.nih.gov/32513841
In-hospital formula feeding and breastfeeding duration
https://pubmed.ncbi.nlm.nih.gov/32518168
Commentary: In-hospital formula feeding and breastfeeding duration
https://pubmed.ncbi.nlm.nih.gov/32518169
A core outcome set for neonatal opioid withdrawal syndrome
https://pubmed.ncbi.nlm.nih.gov/32493710
Resuscitation opportunities for fellows of very low birth weight infants in the Vermont Oxford Network
https://pubmed.ncbi.nlm.nih.gov/32532791
Commentary: The maturation of a proficient neonatologist: from the delivery room to independent practice
https://pubmed.ncbi.nlm.nih.gov/32532793
Updated strategies for pulse oximetry screening for critical congenital heart disease
https://pubmed.ncbi.nlm.nih.gov/32499387
Ethical and public health implications of targeted screening for congenital cytomegalovirus
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Factors associated with child-welfare involvement among prenatally substance-exposed infants
https://pubmed.ncbi.nlm.nih.gov/32418814
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Subclinical and overt newborn opioid exposure: Prevalence and first-year healthcare utilization
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Impact of skin-to-skin parent-infant care on preterm circulatory physiology
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High prevalence of iron deficiency despite standardized high-dose iron supplementation during recombinant erythropoietin therapy in extremely low gestational age newborns
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Neonatal sepsis: need for consensus definition, collaboration and core outcomes
https://pubmed.ncbi.nlm.nih.gov/32193517
Challenges in developing a consensus definition of neonatal sepsis
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Brain inflammation and injury at 48 h is not altered by human amnion epithelial cells in ventilated preterm lambs
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N-acetylcysteine mitigates acute opioid withdrawal behaviors and CNS oxidative stress in neonatal rats (PDF)
https://www.nature.com/articles/s41390-019-0728-6.pdf
A neonatal sequential organ failure assessment score predicts mortality to late-onset sepsis in preterm very low birth weight infants
https://pubmed.ncbi.nlm.nih.gov/31394566
Assessment of neonatal EEG background and neurodevelopment in full-term small for their gestational age infants (PDF)
https://www.nature.com/articles/s41390-019-0693-0.pdf

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How should neonatal clinicians act in the presence of moral distress? (PDF)
https://fn.bmj.com/content/fetalneonatal/105/4/348.full.pdf
EPICE cohort: two-year neurodevelopmental outcomes after very preterm birth (PDF)

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Asynchronous ventilation at 120 compared with 90 or 100 compressions per minute improves haemodynamic recovery in asphyxiated newborn piglets
https://pubmed.ncbi.nlm.nih.gov/31123054
Do commonly available round facemasks fit near-term and term infants?
https://pubmed.ncbi.nlm.nih.gov/31542729
Is faster better? A randomised crossover study comparing algorithms for closed-loop automatic oxygen control
https://pubmed.ncbi.nlm.nih.gov/31527093
Diagnostic values of the femoral pulse palpation test
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Phenotypic and genetic spectrum of alveolar capillary dysplasia: a retrospective cohort study
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Individualising care in severe bronchopulmonary dysplasia: a series of N-of-1 trials comparing transpyloric and gastric feeding
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Therapeutic hypothermia for neonatal hypoxic-ischaemic encephalopathy in India (THIN study): a randomised controlled trial
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Thromboelastographic profiles of healthy very low birthweight infants serially during their first month
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Neonatal care bundles are associated with a reduction in the incidence of intraventricular haemorrhage in preterm infants: a multicentre cohort study
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Core outcomes in neonatology: development of a core outcome set for neonatal research (PDF)
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Neurodevelopmental impairment in necrotising enterocolitis survivors: systematic review and meta-analysis
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Short report: Paediatric exhaled CO2 detector causes leaks
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Extreme preterm birth in the right place: a quality improvement project
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Perinatal stabilisation of infants born with congenital diaphragmatic hernia: a review of current concepts (PDF)
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Journal of Perinatology

Review: Genetic diagnosis in the fetus
https://pubmed.ncbi.nlm.nih.gov/32094481
Review: Genetic testing strategies in the newborn
https://pubmed.ncbi.nlm.nih.gov/32472107
Maternal use of selective serotonin reuptake inhibitors (SSRI) during pregnancy—neonatal outcomes in correlation with placental histopathology
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Maternal antidepressant use during pregnancy and neonatal hypoglycemia: prospective cohort study
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Development of an abbreviated symptom score for the neonatal abstinence syndrome
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Partnering with parents to improve outcomes for substance exposed newborns—a pilot program
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Clonidine versus phenobarbital as adjunctive therapy for neonatal abstinence syndrome
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Association of prenatal opiate exposure with youth outcomes assessed from infancy through adolescence
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The development of intestinal dysbiosis in anemic preterm infants
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Are single-donor red blood cell transfusions still relevant for preterm infants?
https://pubmed.ncbi.nlm.nih.gov/32346131
Epidemiology of thrombosis in Canadian neonatal intensive care units
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Estimates of healthcare spending for preterm and low-birthweight infants in a commercially insured population: 2008–2016 (PDF)
https://www.nature.com/articles/s41372-020-0635-z.pdf
Evaluation of the economic impact of modified screening criteria for retinopathy of prematurity from the Postnatal Growth and ROP (G-ROP) study
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The impact on the exclusive breastfeeding rate at 6 months of life of introducing supplementary donor milk into the level 1 newborn nursery
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Learning curves for training in ultrasonography-based examination of umbilical catheter placement: a piglet study
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Use of a mechanical ventilator with respiratory function monitoring provides more consistent ventilation during simulated neonatal resuscitation
https://pubmed.ncbi.nlm.nih.gov/31593960
Comparison of two telemedicine delivery modes for neonatal resuscitation support: A simulation-based randomized trial
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Is mother's own milk lactoferrin intake associated with reduced neonatal sepsis, necrotizing enterocolitis, and death?
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Compliance with guidelines and efficacy of heart rate monitoring during newborn resuscitation: A prospective video study
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Cerebral hemodynamics are not affected by the size of the patent ductus arteriosus
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Brief report: Ventilated infants have increased dead space and lower alveolar tidal volumes during the early versus recovery phase of respiratory distress
https://pubmed.ncbi.nlm.nih.gov/31825947
Randomized controlled trial of nonsynchronized nasal intermittent positive pressure ventilation versus nasal CPAP after extubation of VLBW infants
https://pubmed.ncbi.nlm.nih.gov/32388511
Review: Improving global newborn survival: building upon Helping Babies Breathe (PDF)
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Review: Optimal ventilation and surfactant therapy in very-low-birth-weight infants in resource-restricted regions (PDF)

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Review: Defining “haemodynamic significance” of the patent ductus arteriosus: Do we have all the answers? (PDF)
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Review: Using experimental models to identify pathogenic pathways and putative disease management targets in bronchopulmonary dysplasia (PDF)
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Review: Necrotizing enterocolitis: the future (PDF)
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American Journal of Perinatology
See COVID section

Journal of Neonatal-Perinatal Medicine
Commentary – Do the negative results of the PENUT trial close the book on erythropoietin for premature infant brain?
https://pubmed.ncbi.nlm.nih.gov/32333558
Selection criteria for resuscitation and survivability rates for neonates at the limit of viability
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Comparative safety profile of chloral hydrate versus other sedatives for procedural sedation in hospitalized infants
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Methemoglobin and the response to inhaled nitric oxide in persistent pulmonary hypertension of the newborn
https://pubmed.ncbi.nlm.nih.gov/31744017
Compared to CPAP extubation to non-invasive ventilation is associated with higher risk of bronchopulmonary dysplasia in extremely low birth weight infants
https://pubmed.ncbi.nlm.nih.gov/31658069
Correlations between oxygen and positive pressure exposure in the neonatal intensive care unit and wheezing in preterm infants without bronchopulmonary dysplasia
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Nasal CPAP complications in very low birth weight preterm infants
https://pubmed.ncbi.nlm.nih.gov/31744025
Low caloric intake and high fluid intake during the first week of life are associated with the severity of bronchopulmonary dysplasia in extremely low birth weight infants
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Early fortification of enteral feedings for infants <1250 grams birth weight receiving a human milk diet including human milk based fortifier (PDF)
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Longitudinal growth changes from birth to 8–9 years in preterm and full term births
https://pubmed.ncbi.nlm.nih.gov/31796687
Use of impregnated catheters to decrease colonization rates in neonates – A randomized controlled pilot trial
https://pubmed.ncbi.nlm.nih.gov/31609709
Improving timing of antibiotics in neonates with early onset sepsis – Quality improvement project
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The value of routine laboratory screening in the neonatal intensive care unit
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Risk factors for the development and progression of retinopathy of prematurity in preterm infants in Indonesia
https://pubmed.ncbi.nlm.nih.gov/31609708

Perinatal events predicting retinopathy of prematurity in extremely pre-term infants
https://pubmed.ncbi.nlm.nih.gov/32250325
Sotalol as an effective adjunct therapy in the management of supraventricular tachycardia induced fetal hydrops fetalis
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Addison's disease in pregnancy: Case report, management, and review of the literature
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Congenital dengue in a Saudi neonate: A case report
https://pubmed.ncbi.nlm.nih.gov/31658068
Idiopathic SIADH in the premature newborn, a case report (PDF)
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Maternal Health, Neonatology and Perinatology
No new content

Neoreviews
Educational perspectives: educational strategies to improve outcomes from neonatal resuscitation
https://neoreviews.aappublications.org/content/neoreviews/21/7/e431.full.pdf
The clinical evaluation of severe bronchopulmonary dysplasia
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Pharmacologic management of severe bronchopulmonary dysplasia
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Percutaneous closure of the patent ductus arteriosus in very-low-weight infants
https://neoreviews.aappublications.org/content/neoreviews/21/7/e469.full.pdf
Case 1: Tracheobronchial calcifications in a premature infant with respiratory distress
https://neoreviews.aappublications.org/content/neoreviews/21/7/e479.full.pdf
Case 2: Term female newborn with prenatal diagnosis of abdominal distention and ascites
https://neoreviews.aappublications.org/content/neoreviews/21/7/e483.full.pdf
Case 3: Nonimmune hydrops and acute renal failure
https://neoreviews.aappublications.org/content/neoreviews/21/7/e486.full.pdf
Fetal anomalies in a pregnant woman with a history of hirschsprung disease and a tracheal web
https://neoreviews.aappublications.org/content/neoreviews/21/7/e489.full.pdf
Visual Diagnosis: A preterm infant with a characteristic erythematous and scaly rash after birth
https://neoreviews.aappublications.org/content/neoreviews/21/7/e495.full.pdf
Video Corner: Feeding intolerance in an infant
https://neoreviews.aappublications.org/content/neoreviews/21/7/e499.full.pdf

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Cycled phototherapy dose-finding study for extremely low-birth-weight infants: A randomized clinical trial
https://pubmed.ncbi.nlm.nih.gov/32338720
Early-onset neonatal sepsis 2015 to 2017, the rise of Escherichia coli, and the need for novel prevention strategies
https://pubmed.ncbi.nlm.nih.gov/32364598
Effect of neonatal outcome estimates on decision-making preferences of mothers facing preterm birth: A randomized clinical trial
https://pubmed.ncbi.nlm.nih.gov/32310271

BMC Pediatrics

Thresholds for oximetry alarms and target range in the NICU: an observational assessment based on likely oxygen tension and maturity (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-020-02225-3
Genotype–phenotype correlation in two Polish neonates with alveolar capillary dysplasia (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-020-02200-y
Association between admission hypothermia and outcomes in very low birth weight infants in China: a multicentre prospective study (PDF)
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Congenital heart disease diagnosed with echocardiogram in newborns with asymptomatic cardiac murmurs: a systematic review (PDF)
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Screening of vitamin D and calcium concentrations in neonates of mothers at high risk of vitamin D deficiency (PDF)
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Extracerebral choroid plexus papilloma in the pharynx with airway obstruction in a newborn: a case report (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-020-02234-2
Histological demonstration of BSEP/ABCB11 inhibition in transient neonatal cholestasis: a case report (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-020-02201-x
Global incidence of necrotizing enterocolitis: a systematic review and meta-analysis (PDF)
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Quality control of bedside DR in neonatal chest radiography using a chest stabilization device and its clinical application (PDF)
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FEEding DURing red cell transfusion (FEEDUR RCT): a multi-arm randomised controlled trial (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-020-02233-3
"The right time is just after birth": acceptability of point-of-care birth testing in Eswatini: qualitative results from infant caregivers, health care workers, and policymakers (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-020-02242-2
Phenylketonuria screening in Iranian newborns: a systematic review and meta-analysis (PDF)
https://bmcpediatr.biomedcentral.com/track/pdf/10.1186/s12887-020-02230-6

Pediatric Critical Care Medicine

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