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**What’s New in Neonatology**

[Valganciclovir for treatment of symptomatic congenital CMV infections (April 2015)](#)

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**Journal Articles**

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Table of Contents:

1. A descriptive study of nurse-reported missed care in neonatal intensive care units
2. A Review of neonatal and infantile rashes
4. Bloodstream infections: Epidemiology and resistance
5. Breast milk and its impact on maturation of the neonatal immune system.
6. Cerebral oxygenation with different nasal continuous positive airway pressure levels in preterm infants
7. Chorioamnionitis: implications for the neonate.
8. Clinically stable very low birthweight infants are at risk for recurrent tissue glucose fluctuations even after fully established enteral nutrition
10. Does aetiology of neonatal encephalopathy and hypoxic-ischaemic encephalopathy influence the outcome of treatment?
11. Evaluating eosin-5-maleimide binding as a diagnostic test for hereditary spherocytosis in newborn infants.
12. Identifying and assessing the substance-exposed infant
13. Impact of hypothermia on predictors of poor outcome: How do we decide to redirect care?
14. Improvement in Long-Term Breastfeeding for Very Preterm Infants
15. Interpretation of clotting tests in the neonate
16. Intraoperative hypotension in neonates: when and how should we intervene?
17. Late-onset neonatal sepsis: Recent developments
18. Late-onset sepsis in preterm infants: Update on strategies for therapy and prevention
19. Management of common neonatal problems
20. Management of neonatal morbidities during hypothermia treatment
21. Managing the jaundiced newborn: a persistent challenge

23. MRI evaluation and safety in the developing brain

24. Neonatal Pressure Ulcer Prevention

25. New antifungal and antiviral dosing.


27. Opioid Analgesics for Sedation and Analgesia During Mechanical Ventilation


30. Prevention of healthcare-associated infections in neonates: room for improvement

31. Probiotics for Preterm Infants: A Premature or Overdue Necrotizing Enterocolitis Prevention Strategy?

32. Screening for cardiopulmonary events in neonates: a review of the infant car seat challenge.

33. Seizures and hypothermia: Importance of electroencephalographic monitoring and considerations for treatment

34. Successful reduction in central line-associated bloodstream infections in a Chinese neonatal intensive care unit

35. The clinical, operational, and financial worlds of neonatal palliative care: A focused ethnography.

36. The diagnosis of neonatal pulmonary atelectasis using lung ultrasonography.

Full text articles from Infant and Infant Grapevine may be available here.

Journal Articles:

1. A descriptive study of nurse-reported missed care in neonatal intensive care units

Citation: Journal of Advanced Nursing, Apr 2015, vol. 71, no. 4, p. 813-824, 0309-2402 (April 2015)

Author(s): Tubbs-Cooley, Heather L., Pickler, Rita H., Younger, Janet B., Mark, Barbara A.

Abstract: Aims. The aims of this study are to describe: (1) the frequency of nurse-reported missed care in neonatal intensive care units; and (2) nurses’ reports of factors contributing to missed care on their last shift worked. Background. Missed nursing care, or necessary care that is not delivered, is increasingly cited as a contributor to adverse patient outcomes. Previous studies highlight the frequency of missed nursing care in adult settings; the occurrence of missed nursing care in neonatal intensive care units is unknown. Design. A descriptive analysis of neonatal nurses’ self-reports of missed care using data collected through a cross-sectional web-based survey. Methods. A random sample of certified neonatal intensive care nurses in seven states was invited to participate in the survey in April 2012. Data were collected from nurses who provide direct patient care in a neonatal intensive care unit (n = 230). Descriptive statistics constituted the primary analytic approach. Results.
Nurses reported missing a range of patient care activities on their last shift worked. Nurses most frequently missed rounds, oral care for ventilated infants, educating and involving parents in care and oral feedings. Hand hygiene, safety and physical assessment and medication administration were missed least often. The most common reasons for missed care included frequent interruptions, urgent patient situations and an unexpected rise in patient volume and/or acuity on the unit. Conclusion. We find that basic nursing care in the neonatal intensive care unit is missed and that system factors may contribute to missed care in this setting. [PUBLICATION]

Source: BNI

2. A Review of neonatal and infantile rashes

Citation: Journal of Drugs in Dermatology, March 2015, vol./is. 14/3(308-314), 1545-9616 (01 Mar 2015)

Author(s): Ogunmakin K., Carroll B., Woolfolk D.

Language: English

Abstract: Patients under two years old comprise a small fraction of the population of patients seen in general dermatology clinics. Newborns and infants have immature skin barriers and immune systems, and as a result may be afflicted with different cutaneous diseases than adults. Additionally, common conditions may present differently in this population and may not be as easily recognized. This may make evaluation and diagnosis challenging for dermatologists. We provide a comprehensive review of rashes seen in neonatal and infantile patients to aid with proper diagnosis and treatment of this population. This review may also serve as a useful reference for board preparation.

Publication type: Journal: Review

Source: EMBASE


Citation: Newborn & Infant Nursing Reviews, 01 March 2015, vol./is. 15/1(17-20), 15273369

Author(s): Febre, Aprille, Merritt, T. Allen, Terry, Michael, Tong, Carter, Goldstein, Mitchell

Language: English

Abstract: Background: The use of high flow nasal cannula has increased dramatically in the neonatal intensive care setting. High flow nasal cannula (HFNC) simulates a continuous positive airway pressure despite unpredictable leak by way of using a higher flow to “overwhelm” the resistive capacity of the nares and create a NCPAP like effect. There is no absolute way to assure that the transmitted pressures do not exceed what might be considered a safe range for the neonate. The ADINA (Adaptive Dynamic Inspiratory Nasal Apparatus) introduces an additional safety mechanism designed to adaptively restrict the amount of pressure that can be delivered to the nasal interface. Although flows can be entrained up to 4 LPM, airway pressure is limited by an adaptive pop off valve set at 10 cm H 2 O. Even if the pop off mechanisms were to fail to actuate, the device would continue to provide high flow nasal cannula delivery at levels that are already in wide clinical use.

Methods: Patients were randomized to receive either “standard” nasal CPAP with Hudson prongs or high flow nasal cannula with the ADINA. Hudson prongs NCPAP pressure was started at 4–8 cm H 2 O. High flow nasal cannula was started at 2–4 L/min of flow. Oxygen requirement, level of pressure or flow support, radiologic changes, blood gas measurement, time to wean off protocol, and failure to wean/necessity for endotracheal intubation were monitored. 19 subjects were enrolled. Objectives: 1. Real-time device actuation—Can high flow nasal cannula be delivered with the additional safety of a pop off that actuates in real time? 2. Comfort of interface—Can this novel device provide a high flow nasal cannula effect simulating CPAP at the same comfort levels as those provided by conventional nasal cannula? Results: See Table below. There were two parents who refused to consent out of concern that their child would randomize to CPAP. Discussion: Although there was significant difference apparent in days on ADINA versus NCPAP (p < 0.01) (9.8 ± 8.6 vs. 1.4 ± 0.7), a significant bias towards the ADINA cannula was evident (both towards selection and continuation). No patient failed within a week of starting ADINA, although several patients failed to tolerate NCPAP. Patients randomized to ADINA trended towards lower birthweight and post-conceptual age at the time of the study. No complications of air leak, hypotension, or barotrauma were evident in either group. Conclusion: ADINA appears to be at equivalent to NCPAP in providing non-invasive ventilation.

Publication type: journal article

Source: CINAHL
4. Bloodstream infections: Epidemiology and resistance

**Citation:** Clinics in Perinatology, March 2015, vol./is. 42/1(1-16), 0095-5108;1557-9840 (01 Mar 2015)

**Author(s):** Cantey J.B., Milstone A.M.

**Language:** English

**Abstract:** Bloodstream infections in the neonatal intensive care unit (NICU) are associated with many adverse outcomes in infants, including increased length of stay and cost, poor neurodevelopmental outcomes, and death. Attention to the insertion and maintenance of central lines, along with careful review of when the catheters can be safely discontinued, can minimize central-line-associated bloodstream infections rates. Good antibiotic stewardship can further decrease the incidence of bloodstream infections, minimize the emergence of drug-resistant organisms or Candida as pathogens in the NICU, and safeguard the use of currently available antibiotics for future infants.

**Publication type:** Journal: Review

**Source:** EMBASE

5. Breast milk and its impact on maturation of the neonatal immune system.

**Citation:** Current Opinion in Infectious Diseases, 01 June 2015, vol./is. 28/3(199-206), 09517375

**Author(s):** Turfkruyer, Mathilde, Verhasselt, Valerie

**Language:** English

**Abstract:** PURPOSE OF REVIEW: This article aims to review the evidence that breast milk can actively shape neonate gut immune system development toward a mature immune system capable of responding appropriately to encountered antigens. RECENT FINDINGS: Recent findings in the adult have demonstrated the critical role of the interaction between diet, gut microflora, gut epithelial cells and gut-associated lymphoid tissue in the development of immune responses. Here, we will review what is known in this field in the neonate, compare these data to those obtained in the adult and review how milk factors impact gut immune function in the short and long term. SUMMARY: We propose that the neonate immune system and maternal milk represent an entity necessary to ensure not only appropriate function in early life but also long term immune homeostasis.

**Publication type:** journal article

**Source:** CINAHL

6. Cerebral oxygenation with different nasal continuous positive airway pressure levels in preterm infants

**Citation:** Archives of Disease in Childhood. Fetal and Neonatal Edition, Mar 2015, vol. 100, no. 2, p. F165., 1359-2998 (March 2015)

**Author(s):** Bembich, Stefano, Travan, Laura, Cont, Gabriele, Bua, Jenny, Strajn, Tamara, Demarini, Sergio

**Abstract:** Objectives: This study evaluates the effect of varying nasal continuous positive airway pressure (NCPAP) level on cerebral blood flow (CBF) and oxygenation in preterm infants. Methods: Oxy-haemoglobin (HbO2) and total haemoglobin (HbTot), as CBF estimates, and the ratio between HbO2 and HbTot (HbO2/HbTot), as cerebral oxygenation estimate, were assessed by near-infrared spectroscopy in 26 stable preterm newborns at a postmenstrual age between 26 and 33 weeks. Baseline HbO2, HbTot and HbO2/HbTot values were initially collected with NCPAP at 5 cm H2O and then compared with values obtained with NCPAP levels at both 3 and 8 cm H2O. Results: Compared with 5 cm H2O, cerebral HbO2, HbTot and HbO2/HbTot remained unchanged both after increasing (to 8 cm H2O) and decreasing (to 3 cm H2O) the NCPAP level. This result was observed both in regional areas (24 sites) and in the overall monitored area (frontal and parietal cortex). Compared with 8 cm H2O, peripheral oxygen saturation significantly decreased at 3 cm H2O (p=0.021). Heart rate did not change. Conclusions: No differences in CBF and cerebral oxygenation were observed with NCPAP levels in the range 3-8 cm H2O despite a decrease in peripheral oxygenation with 3 cm H2O. [PUBLICATION] 17 references

**Source:** BNI

**Full text:** Available Highwire Press at Fetal and Neonatal

7. Chorioamnionitis: implications for the neonate.

**Citation:** Clinics in Perinatology, 01 March 2015, vol./is. 42/1(155-166), 00955108

**Author(s):** Ericson, Jessica E, Laughon, Matthew M

**Language:** English

**Abstract:** Chorioamnionitis (CA) is characterized by inflammation of the fetal membranes. The incidence
increases with decreasing gestational age at birth. When suspected on clinical criteria, pathologic assessment of the placenta should be performed. Although the mechanisms are not entirely clear, CA predisposes to premature birth, neonatal sepsis, and intraventricular hemorrhage. Its role in respiratory distress syndrome, bronchopulmonary dysplasia, and neurodevelopmental impairment is mixed. Prevention and treatment are ill-defined; antibiotics for preterm premature rupture of membranes reduce the incidence and increase the length of time to delivery. Antibiotics are recommended for infants exposed to CA while laboratory studies are being performed.

**Publication type:** journal article  
**Source:** CINAHL

8. Clinically stable very low birthweight infants are at risk for recurrent tissue glucose fluctuations even after fully established enteral nutrition

**Citation:** Archives of Disease in Childhood. Fetal and Neonatal Edition, Mar 2015, vol. 100, no. 2, p. F126., 1359-2998 (March 2015)


**Abstract:** Objective: In previous cases, we have observed occasional hypoglycaemic episodes in preterm infants after initial intensive care. In this prospective study, we determined the frequency and severity of abnormal tissue glucose (TG) in clinically stable preterm infants on full enteral nutrition. Methods: Preterm infants born at

**Source:** BNI

**Full text:** Available Highwire Press at Fetal and Neonatal


**Citation:** American Journal of Obstetrics & Gynecology, 01 March 2015, vol./is. 212/3(0-), 00029378

**Author(s):** Krueger, Margaret S, Eyal, Fabien G, Peevy, Keith J, Hamm, Charles R, Whitehurst, Richard M, Lewis, David F

**Language:** English

**Abstract:** OBJECTIVE: Autologous blood transfusion from the placenta to the neonate at birth has been proven beneficial. Transfusion can be accomplished by either delayed cord clamping or cord stripping. Both are equally effective in previous randomized trials. We hypothesized that combining these 2 techniques would further improve outcomes in preterm neonates. STUDY DESIGN: This was a prospective randomized trial for singleton deliveries with estimated gestational ages between 22 and 31 6/7 weeks. The control protocol required a 30-second delayed cord clamping, whereas the test protocol instructed a concurrent cord stripping during the delay. The primary outcome was initial fetal hematocrit. We also examined secondary outcomes of neonatal mortality, length of time on the ventilator, days to discharge, peak bilirubin, number of phototherapy days, and neonatal complication rates. RESULTS: Of the 67 patients analyzed, 32 were randomized to the control arm and 35 were randomized to the test arm. The gestational ages and fetal weights were similar between the arms. Mean hematocrit of the control arm was 47.75%, and the mean hematocrit for the test arm was 47.71% (P = .98). These results were stratified by gestational age, revealing the infants less than 28 weeks had an average hematocrit of 41.2% in the control arm and 44.7% in the test arm (P = .12). In the infants with gestational ages of 28 weeks or longer, the control arm had an average hematocrit of 52.9%, which was higher than the test arm, which averaged 49.5% (P = .04). The control arm received an average of 1.53 blood transfusions, whereas the test arm received 0.97 (P = .33). The control arm had 3 neonatal deaths, and the test arm had none (P = .10). The average number of days until discharge was 71.2 for the control arm and 67.8 for the test arm (P = .66). The average number of days on the ventilator was 4.86 for the control arm and 3.06 for the test arm (P = .34). CONCLUSION: Adding cord stripping to the delayed cord clamp does not result in an increased hematocrit. Data suggest trends in lower mortality and higher hematocrit in neonates born less than 28 weeks, but these were not statistically significant.

**Publication type:** journal article  
**Source:** CINAHL

10. Does aetiology of neonatal encephalopathy and hypoxic-ischaemic encephalopathy influence the outcome of treatment?

**Citation:** Developmental Medicine & Child Neurology, 03 April 2015, vol./is. 57/(2-7), 00121622
Neonatal encephalopathy, a clinical syndrome affecting term-born and late preterm newborn infants, increases the risk of perinatal death and long-term neurological morbidity, especially cerebral palsy. With the advent of therapeutic hypothermia, a treatment designed for hypoxic or ischaemic injury, associated mortality and morbidity rates have decreased. Unfortunately, only about one in eight neonates (95% confidence interval) who meet eligibility criteria for therapeutic cooling apparently benefit from the treatment. Studies of infants in representative populations indicate that neonatal encephalopathy is a potential result of a variety of antecedents and that asphyxial complications at birth account for only a small percentage of neonatal encephalopathy. In contrast, clinical case series suggest that a large proportion of neonatal encephalopathy is hypoxic or ischaemic, and trials of therapeutic hypothermia are specifically designed to include only infants exposed to hypoxia or ischaemia. This review addresses the differences, definitional and methodological, between infants studied and investigations undertaken, in population studies compared with cooling trials. It raises the question if there may be subgroups of infants with a clinical diagnosis of hypoxic-ischaemic encephalopathy (HIE) in whom the pathobiology of neonatal neurological depression is not fundamentally hypoxic or ischaemic and, therefore, for whom cooling may not be beneficial. In addition, it suggests approaches to future trials of cooling plus adjuvant therapy that may contribute to further improvement of care for these vulnerable neonates.

Evaluating eosin-5-maleimide binding as a diagnostic test for hereditary spherocytosis in newborn infants.

Objective: Neonates with undiagnosed hereditary spherocytosis (HS) are at risk for developing hazardous hyperbilirubinemia and anemia. Making an early diagnosis of HS in a neonate can prompt anticipatory guidance to prevent these adverse outcomes. A recent comparison study showed that a relatively new diagnostic test for HS, eosin-5-maleimide (EMA)-flow cytometry, performs better than other available tests in confirming HS. However, reports have not specifically examined the performance of this test among neonates.

Study design: We compared EMA-flow cytometry from blood samples of healthy control neonates vs samples from neonates suspected of having HS on the basis of severe Coombs-negative jaundice and spherocytes on blood film. The diagnosis of HS was later either confirmed or excluded based on clinical findings and next generation sequencing (NGS) after which we correlated the EMA-flow results with the diagnosis.

Result: EMA-flow was performed on the blood of 31 neonates; 20 healthy term newborns and 11 who were suspected of having HS. Eight of the 11 were later confirmed positive for HS and one was confirmed positive for hereditary elliptocytosis (HE). All nine had persistently abnormal erythroid morphology, reticulocytosis and anemia, and eight of the nine had relevant mutations discovered using NGS. The other was confirmed positive for HS on the basis that a parent had HS, and the neonate's spherocytosis, reticulocytosis and anemia persisted. The 20 healthy controls and the 2 in whom HS was initially suspected but later excluded all had EMA-flow results in the range reported in healthy children and adults. In contrast, all nine in whom HS or HE was confirmed had abnormal EMA-flow results consistent with previous reports in older children and adults with HS.

Conclusion: Although our sample size is small, our findings are consistent with the literature in older children and adults suggesting that EMA-flow cytometric testing performs well in supporting the diagnosis of HS/HE during the early neonatal period.

Identifying and assessing the substance-exposed infant.

As the rate of opioid prescription grows, so does fetal exposure to opioids during pregnancy. With increasing fetal exposure to both prescription and nonprescription drugs, there has been a concurrent increase in identification of Neonatal Withdrawal Syndrome (NWS) and adaptation difficulties after birth. In addition, extended use of opioids, barbiturates, and benzodiazepines in neonatal intensive care has resulted in iatrogenic
withdrawal syndromes. There is a lack of evidence to support the use of any one specific evaluation strategy to identify NWS. Clinicians caring for infants must use a multimethod approach to diagnosis, including interview and toxicology screening. Signs of NWS are widely variable, and reflect dysfunction in autonomic regulation, state control, and sensory and motor functioning. Several assessment tools have been developed for assessing severity of withdrawal in term neonates. These tools assist in determining need and duration of pharmacologic therapy and help in titration of these therapies. Considerable variability exists in the pharmacologic and nonpharmacologic approaches to affected babies across settings. An evidence-based protocol for identification, evaluation, and management of NWS should be in place in every nursery. This article provides an overview of identification and assessment considerations for providers who care for babies at risk for or who are experiencing alterations in state, behavior, and responses after prenatal or iatrogenic exposure to agents associated with the spectrum of withdrawal.

**Publication type:** journal article

**Source:** CINAHL

13. **Impact of hypothermia on predictors of poor outcome: How do we decide to redirect care?**

**Citation:** Seminars in Fetal and Neonatal Medicine, April 2015, vol./is. 20/2(122-127), 1744-165X;1878-0946 (01 Apr 2015)

**Author(s):** Bonifacio S.L., deVries L.S., Groenendaal F.

**Language:** English

**Abstract:** Therapeutic hypothermia is now considered the standard of care for neonates with neonatal encephalopathy due to perinatal asphyxia. Outcomes following hypothermia treatment are favorable, as demonstrated in recent meta-analyses, but 45-50% of these neonates still suffer major disability or die due to global multi-organ injury or after redirection of care from life support due to severe brain injury. The ability to determine which patients are at highest risk of severe neurologic impairment and death and those in whom redirection of care should be considered is limited. This is especially true in the first few days after birth and in situations where the brain might be more significantly affected than other organ systems, making it difficult to discuss redirection of care. Clinical history, neurologic examination, serum biomarkers, neurophysiology [amplitude-integrated electroencephalography (aEEG) or EEG], near-infrared spectroscopy, and magnetic resonance imaging have all been studied as predictors of severe neurologic injury and poor outcome, although none is 100% predictive. Serial evaluation over time seems to be an important element to facilitate discussion regarding anticipated poor prognosis and decision-making for transition to comfort care. Thus far, brain monitoring in the form of aEEG and conventional EEG seem to be the best objective tools to identify the highest-risk patients. A delay or lack of recovery of the aEEG background during hypothermia treatment is an established important predictor of poor outcome (death or disability). This paper highlights the prognostic indicators that have been considered and focuses on aEEG as an important predictor of death or severe disability, which may facilitate conversations regarding redirection of care.

**Publication type:** Journal: Review

**Source:** EMBASE

14. **Improvement in Long-Term Breastfeeding for Very Preterm Infants**

**Citation:** Breastfeeding Medicine, Apr 2015, vol. 10, no. 3, p. 145-149, 1556-8253 (April 2015)

**Author(s):** Sharp, Mary, Campbell, Catherine, Chiffings, Debbie, Simmer, Karen, French, Noel

**Abstract:** Introduction: The extensive health benefits of breastfeeding preterm infants for both mother and infant have been widely reported. However, establishing and maintaining breastfeeding for very preterm (VP) infants remain challenging. The aim of this study was to examine changes in breastfeeding of VP infants over time. Subjects and Methods: Breastfeeding questionnaires were administered to two cohorts of parents of VP infants.

**Source:** BNI

15. **Interpretation of clotting tests in the neonate**

**Citation:** Archives of Disease in Childhood: Fetal and Neonatal Edition, May 2015, vol./is. 100/3(F270-F274), 1359-2998;1468-2052 (01 May 2015)

**Author(s):** Pal S., Curley A., Stanworth S.J.

**Language:** English

**Abstract:** There are significant differences between the coagulation system in neonates compared with children and adults. Abnormalities of standard coagulation tests are common within the neonatal population. The
laboratory tests of activated partial thromboplastin time (aPTT) and prothrombin time (PT) were developed to investigate coagulation factor deficiencies in patients with a known bleeding history, and their significance and applied clinical value in predicting bleeding (or thrombotic) risk in critically ill patients is weak. Routine screening of coagulation on admission to the neonatal intensive care unit leads to increased use of plasma for transfusion. Fresh frozen plasma (FFP) is a human donor plasma frozen within a short specified time period after collection (often 8 h) and then stored at -30°C. FFP has little effect on correcting abnormal coagulation tests when mild and moderate abnormalities of PT are documented in neonates. There is little evidence of effectiveness of FFP in neonates. A large trial by the Northern Neonatal Nursing Initiative assessed the use of prophylactic FFP in preterm infants and reported no improvement in clinical outcomes in terms of mortality or severe disability. An appropriate FFP transfusion strategy in neonates should be one that emphasises the therapeutic use in the face of bleeding rather than prophylactic use in association with abnormalities of standard coagulation tests that have very limited predictive value for bleeding.

**Publication type:** Journal: Review  
**Source:** EMBASE  
**Full text:** Available Highwire Press at [Fetal and Neonatal](https://www.fetalandneonatal.com)

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16. **Intraoperative hypotension in neonates: when and how should we intervene?**  
**Citation:** Current Opinion in Anesthesiology, 01 June 2015, vol./is. 28/3(308-313), 09527907  
**Author(s):** Turner, Nigel McBeth  
**Language:** English  
**Abstract:** PURPOSE OF REVIEW: Organ hypoperfusion remains an important cause of postoperative morbidity in neonates. Blood pressure (BP) is frequently mistakenly used as a surrogate of organ perfusion and the predictive value of BP for outcome is unclear. The current article will focus on the role of BP in the optimization of organ perfusion during anaesthesia in neonates. RECENT FINDINGS: Population studies show a range of normal values for BP in neonates and there is no consensus on the definition of hypotension in neonates undergoing anaesthesia. The relationship between BP and outcome is unclear. Unnecessary treatment of low BP in neonates can be harmful. A theoretical approach to the definition of hypotension and increasing knowledge of neonatal cardiovascular pathophysiology can give insights to improve anaesthetic management. Near-infrared spectroscopy as a measure of organ perfusion can help to determine the need for treatment. SUMMARY: Anaesthetic management should focus on optimizing organ perfusion and not merely on maintaining a particular BP. A collaborative approach is recommended. The carbon dioxide tension is crucial to perfusion in the presence of cardiovascular shunts.  
**Publication type:** journal article  
**Source:** CINAHL

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17. **Late-onset neonatal sepsis: Recent developments**  
**Citation:** Archives of Disease in Childhood: Fetal and Neonatal Edition, May 2015, vol./is. 100/3(F257-F263), 1359-2998;1468-2052 (01 May 2015)  
**Author(s):** Dong Y., Speer C.P.  
**Language:** English  
**Abstract:** The incidence of neonatal late-onset sepsis (LOS) is inversely related to the degree of maturity and varies geographically from 0.61% to 14.2% among hospitalised newborns. Epidemiological data on very low birth weight infants shows that the predominant pathogens of neonatal LOS are coagulase-negative staphylococci, followed by Gram-negative bacilli and fungi. Due to the difficulties in a prompt diagnosis of LOS and LOS-associated high risk of mortality and longterm neurodevelopmental sequelae, empirical antibiotic treatment is initiated on suspicion of LOS. However, empirical therapy is often inappropriately used with unnecessary broad-spectrum antibiotics and a prolonged duration of treatment. The increasing number of multidrug-resistant Gram-negative micro-organisms in neonatal intensive care units (NICU) worldwide is a serious concern, which requires thorough and efficient surveillance strategies and appropriate treatment regimens. Immunological strategies for preventing neonatal LOS are not supported by current evidence, and approaches, such as a strict hygiene protocol and the minimisation of invasive procedures in NICUs represent the cornerstone to reduce the burden of neonatal LOS.  
**Publication type:** Journal: Review  
**Source:** EMBASE
18. Late-onset sepsis in preterm infants: Update on strategies for therapy and prevention

Citation: Expert Review of Anti-Infective Therapy, April 2015, vol./is. 13/4(487-504), 1478-7210;1744-8336 (01 Apr 2015)

Author(s): Pammi M., Weisman L.E.

Language: English

Abstract: Late-onset sepsis occurs in 15-25% of very low birth weight neonates. Early diagnosis and therapy optimize patient outcomes. Despite these efforts, mortality remains high (18-36%) and survivors suffer significant neurological and pulmonary morbidity. Although rapid diagnostics are improving, more are needed. Current therapy remains antibiotics and supportive care. Adjunctive therapies have either limited data (e.g., pentoxifylline) or have been found ineffective (e.g., granulocyte transfusions, granulocyte macrophage colony-stimulating factor/granulocyte colony-stimulating factor, and intravenous immunoglobulin). Preventive strategies that have proven beneficial include infection control measures (e.g., hand hygiene and universal precautions), early enteral feeds with human milk, early removal of central lines, catheter infection prevention bundles, antibiotic stewardship and focused quality improvement measures. Promising strategies to prevent late-onset sepsis include oral lactoferrin, and pathogen-specific monoclonal antibodies but more evidence is required to make practice recommendations.

Publication type: Journal: Review

Source: EMBASE

19. Management of common neonatal problems

Citation: British Journal of Nursing, Mar 2015, vol. 24, no. 5, p. 258-265, 0966-0461 (March 11, 2015)

Author(s): El-Radhi, A Sahib

Abstract: The important causes of neonatal mortality are congenital malformations, birth trauma, neonatal infections, and respiratory, metabolic and heart diseases. Although many of the neonatal problems are benign, self-limited and treatable, some are life-threatening and a direct cause of disability and death. Professionals who provide care for children must be aware of these problems, their natural history, their impact on children's health and their treatment. Birth marks are common and often harmless, but parents need explanation and reassurance. Follow-up appointments are often necessary to ensure the general wellbeing of the affected children. Birth trauma, such as intracranial haemorrhage or arm paralysis, may occur during delivery and treatment at a specialised unit is usually required. The prognosis of neonatal infections is generally poor, with high mortality unless treatment is started promptly and adequately. Respiratory diseases occur mainly in low birth-weight infants who may require mechanical ventilation. Metabolic and heart diseases are rare, but early detection is essential to ensure a high survival rate. [PUBLICATION] 5 references

Source: BNI

Full text: Available British journal of nursing (Mark Allen Publishing) at British Journal of Nursing

20. Management of neonatal morbidities during hypothermia treatment

Citation: Seminars in Fetal and Neonatal Medicine, April 2015, vol./is. 20/2(97-102), 1744-165X;1878-0946 (01 Apr 2015)

Author(s): Sarkar S., Barks J.

Language: English

Abstract: Although the primary goal of therapeutic hypothermia is to improve the neurodevelopmental outcome in asphyxiated infants, optimal management of the full range of multi-organ system complications typically presented by such infants during cooling treatment is necessary for improvement of the overall outcome. For this reason, adequate knowledge of how cooling affects all organ systems of asphyxiated infants with multi-organ hypoxic-ischemic injury is essential. Adequate diagnostic resources, readily available subspecialty consultant services and trained multidisciplinary staff to monitor and manage multi-organ system complications in asphyxiated infants during therapeutic cooling must be ensured during implementation of a cooling program. As therapeutic hypothermia is being used more widely, centers should consider participation in national or international benchmarking of outcomes and short-term adverse events during cooling to facilitate continuous quality improvement efforts.

Publication type: Journal: Review
21. Managing the jaundiced newborn: a persistent challenge

**Citation:** Canadian Medical Association. Journal, Mar 2015, vol. 187, no. 5, p. 335-343, 0820-3946 (March 17, 2015)

**Author(s):** Maisels, M Jeffrey

**Abstract:** Pediatricians and family physicians deal regularly with jaundiced newborn infants who emerge unscathed from their transient exposure to an elevated serum bilirubin level. Yet, despite published guidelines for the management of neonatal jaundice, there are rare infants in whom bilirubin encephalopathy develops. Canada currently reports the highest incidence in the developed world of 1 in 67 000 to 1 in 44 000 live births. In this review, I present an approach to managing the jaundiced newborn that is based on published guidelines. The aim is to help clinicians identify and manage jaundice in the newborn, intervene when appropriate and, when possible, prevent bilirubin-induced brain damage. It would be ideal if the published guidelines for the management of hyperbilirubinemia, including treatment with phototherapy and exchange transfusion, were based on estimates of when the benefit of these interventions exceeded their risks and costs. These estimates should come from randomized trials or high-quality, systematic observational studies, but such studies are rare. Guidelines must therefore rely on relatively uncertain estimates of risk and benefits, often from conflicting results. In addition, use of a single peak bilirubin level to predict long-term behavioural and developmental outcomes is not reliable and will often lead to conflicting results. Because of the lack of evidence, current guidelines are mainly based on consensus, as are the recommendations included in this article. [Publication] 51 references

**Source:** EMBASE

**Full text:** Available National Library of Medicine at Canadian Medical Association. Journal; CMAJ


**Citation:** American Journal of Infection Control, 01 May 2015, vol./is. 43/5(476-481), 01966553

**Author(s):** Giuffrè, Mario, Amodio, Emanuele, Bonura, Celestino, Geraci, Daniela M., Saporito, Laura, Ortolano, Rita, Corsello, Giovanni, Mammina, Caterina

**Language:** English

**Abstract:** Objective To describe epidemiologic features and identify risk factors for methicillin-resistant Staphylococcus aureus (MRSA) acquisition in a level III neonatal intensive care unit (NICU). Setting A prospective, cohort study in a university-affiliated NICU with an infection control program including weekly nasal cultures of all neonates. Methods Demographic, clinical, and microbiologic data were prospectively collected between June 2009 and June 2013. Molecular characterization of MRSA isolates was done by multilocus variable number tandem repeat fingerprinting, staphylococcal cassette chromosome mec typing, and on representative isolates by multilocus sequence typing and spa typing. Results Of 949 neonates, 217 (22.87%) had a culture growing MRSA, including 117 neonates testing positive at their first sampling. Of these latter infants, 96 (82.05%) were inborn and 59 (50.43%) had been transferred from the nursery. Length of stay and colonization pressure were strong independent predictors of MRSA acquisition. Among MRSA isolates, 7 sequence types were identified, with ST22-LVa, spa type t223, being the predominant strain. Conclusions In an endemic area, early MRSA acquisition and high colonization pressure, likely related to an influx of colonized infants from a well-infant nursery, can support persistence of MRSA in NICUs. Surveillance, molecular tracking of strains, and reinforcement of infection control practices, involving well-infant nurseries in a comprehensive infection control program, could be helpful in containing MRSA transmission.

**Publication type:** journal article

**Source:** CINAHL

23. MRI evaluation and safety in the developing brain

**Citation:** Seminars in Perinatology, March 2015, vol./is. 39/2(73-104), 0146-0005;1558-075X (01 Mar 2015)

**Author(s):** Tocchio S., Kline-Fath B., Kanal E., Schmithorst V.J., Panigrahy A.

**Language:** English

**Abstract:** Magnetic resonance imaging (MRI) evaluation of the developing brain has dramatically increased over the last decade. Faster acquisitions and the development of advanced MRI sequences, such as magnetic resonance spectroscopy (MRS), diffusion tensor imaging (DTI), perfusion imaging, functional MR imaging (fMRI),
and susceptibility-weighted imaging (SWI), as well as the use of higher magnetic field strengths has made MRI an invaluable tool for detailed evaluation of the developing brain. This article will provide an overview of the use and challenges associated with 1.5-T and 3-T static magnetic fields for evaluation of the developing brain. This review will also summarize the advantages, clinical challenges, and safety concerns specifically related to MRI in the fetus and newborn, including the implications of increased magnetic field strength, logistics related to transporting and monitoring of neonates during scanning, and sedation considerations, and a discussion of current technologies such as MRI conditional neonatal incubators and dedicated small-foot print neonatal intensive care unit (NICU) scanners.

**Publication type:** Journal: Review

**Source:** EMBASE

**Full text:** Available *Seminars in perinatology* at [No link? Ask Salisbury Healthcare Library - please click here to request article.](#)

### 24. Neonatal Pressure Ulcer Prevention

**Citation:** Neonatal Network, Mar 2015, vol. 34, no. 2, p. 126-132, 0730-0832 (March 2015)

**Author(s):** Scheans, Patricia

**Abstract:** The incidence of pressure ulcers in acutely ill infants and children ranges up to 27 percent in intensive care units, with a range of 16-79 percent in NICUs. Anatomic, physiologic, and developmental factors place ill and preterm newborns at risk for skin breakdown. Two case studies illustrate these factors, and best practices for pressure ulcer prevention are described. [PUBLICATION]

**Source:** BNI

### 25. New antifungal and antiviral dosing.

**Citation:** Clinics in Perinatology, 01 March 2015, vol./is. 42/1(177-195), 00955108

**Author(s):** Wade, Kelly C, Monk, Heather M

**Language:** English

**Abstract:** Neonatal fungal and viral infections are associated with mortality and neurologic impairment among survivors. Advances in pharmacokinetics (PK) and pharmacodynamics (PD) of antimicrobial medications have led to improved dosing guidance for neonates. This article discusses the basic PK/PD properties and dosing of the most common antifungal and antiviral medications used in neonates.

**Publication type:** journal article

**Source:** CINAHL


**Citation:** Infection Control & Hospital Epidemiology, 01 March 2015, vol./is. 36/3(287-293), 0899823X

**Author(s):** Chu, Shih-Ming, Yang, Mei-Chin, Hsiao, Hsiu-Feng, Hsu, Jen-Fu, Lien, Reyin, Chiang, Ming-Chou, Fu, Ren-Huei, Huang, Hsuan-Rong, Hsu, Kuang-Hung, Tsai, Ming-Horng

**Language:** English

**Abstract:** ObjectiveTo investigate the impact of 1-week ventilator circuit change on ventilator-associated pneumonia and its cost-effectiveness compared with a 2-day change. DesignAn observational cohort study. SettingA tertiary level neonatal intensive care unit in a university-affiliated teaching hospital in Taiwan. PatientsAll neonates in the neonatal intensive care unit receiving invasive intubation for more than 1 week from July 1, 2011, through December 31, 2013. InterventionWe investigated the impact of 2 ventilator circuit change regimens, either every 2 days or 7 days, on ventilator-associated pneumonia of our cohort. Measurements and Main ResultsA total of 361 patients were maintained on mechanical ventilators for 13,981 days. The 2 groups did not differ significantly in any demographic characteristics. The rate of ventilator-associated pneumonia was comparable between the 2-day group and the 7-day group (8.2 vs 9.5 per 1,000 ventilator-days, P=.439). The durations of mechanical ventilation and hospital stay, and rates of bloodstream infection and mortality, were also comparable between the 2 groups. Switching from a 2-day to a 7-day change policy would save our neonatal intensive care unit a yearly sum of US $29,350 and 525 working hours. ConclusionDecreasing the frequency of ventilator circuit changes from every 2 days to once per week is safe and cost-effective in neonates requiring prolonged intubation for more than 1 week. Infect Control Hosp Epidemiol 2014;00(0): 1–7

**Publication type:** journal article
27. Opioid Analgesics for Sedation and Analgesia During Mechanical Ventilation  
**Citation:** Neonatal Network, Mar 2015, vol. 34, no. 2, p. 113-116, 0730-0832 (March 2015)  
**Author(s):** Zeller, Brandy, Giebe, Jeanne  
**Abstract:** Neonates are exposed to repetitive pain and stress during their stay in a NICU, which can lead to chronic complications related to their neurodevelopment and neurobehavior. Approximately 20 percent of all neonates in a NICU are intubated, mechanically ventilated, and require suctioning, which can cause both acute and chronic pain. Pain management in the neonate can be challenging. Nurses and other caregivers need to be well trained to assess pain in the neonate to effectively identify and provide appropriate pain management strategies. There is a lack of evidence to support routine administration of opiates in the neonate. As with any medication, the possibility of short- and long-term adverse reactions must be considered. Nonpharmacologic therapy should be used as much as possible. [PUBLICATION]  
**Source:** BNI

**Citation:** MCN: The American Journal of Maternal Child Nursing, 01 March 2015, vol./is. 40/2(96-104), 0361929X  
**Author(s):** Gennattasio, Annmarie, Perri, Elizabeth A., Baranek, Donna, Rohan, Annie  
**Language:** English  
**Abstract:** Oral feeding readiness is a complex concept. More evidence is needed on how to approach beginning oral feedings in premature hospitalized infants. This article provides a review of literature related to oral feeding readiness in the premature infant and strategies for promoting safe and efficient progression to full oral intake. Oral feeding readiness assessment tools, clinical pathways, and feeding advancement protocols have been developed to assist with oral feeding initiation and progression. Recognition and support of oral feeding readiness may decrease length of hospital stay and have a positive impact on reducing healthcare costs. Supporting effective cue-based oral feeding through use of rigorous assessment or evidence-based care guidelines can also optimize the hospital experience for infants and caregivers, which, in turn, can promote attachment and parent satisfaction.  
**Publication type:** journal article  
**Source:** CINAHL

29. Prediction models for neonatal health care-associated sepsis: A meta-analysis  
**Citation:** Pediatrics, April 2015, vol./is. 135/4(e1002-e1014), 0031-4005;1098-4275 (01 Apr 2015)  
**Author(s):** Verstraete E.H., Blot K., Mahieu L., Vogelaers D., Blot S.  
**Language:** English  
**Abstract:** BACKGROUND AND OBJECTIVES: Blood culture is the gold standard to diagnose bloodstream infection but is usually time-consuming. Prediction models aim to facilitate early preliminary diagnosis and treatment. We systematically reviewed prediction models for health care-associated bloodstream infection (HABSI) in neonates, identified superior models, and pooled clinical predictors. Data sources: LibHub, PubMed, and Web of Science. METHODS: The studies included designed prediction models for laboratory-confirmed HABSI or sepsis. The target population was a consecutive series of neonates with suspicion of sepsis hospitalized for >48 hours. Clinical predictors had to be recorded at time of or before culturing. Methodologic quality of the studies was assessed. Data extracted included population characteristics, total suspected and laboratory-confirmed episodes and definition, clinical parameter definitions and odds ratios, and diagnostic accuracy parameters. RESULTS: The systematic search revealed 9 articles with 12 prediction models representing 1295 suspected and 434 laboratory-confirmed sepsis episodes. Models exhibit moderate-good methodologic quality, large pretest probability range, and insufficient diagnostic accuracy. Random effects meta-analysis showed that lethargy, pallor/mottling, total parenteral nutrition, lipid infusion, and postnatal corticosteroids were predictive for HABSI. Post hoc analysis with low-gestational-age neonates demonstrated that apnea/bradycardia, lethargy, pallor/mottling, and poor peripheral perfusion were predictive for HABSI. Limitations include clinical and statistical heterogeneity. CONCLUSIONS: Prediction models should be considered as guidance rather than an absolute indicator because they all have limited diagnostic accuracy. Lethargy and pallor and/or mottling for all neonates as well as apnea and/or bradycardia and poor peripheral perfusion for very low birth weight neonates are the most powerful clinical signs. However, the clinical context of the neonate should always be considered.  
**Publication type:** Journal: Review
30. Prevention of healthcare-associated infections in neonates: room for improvement

Citation: Journal of Hospital Infection, Apr 2015, vol. 89, no. 4, p. 319-323, 0195-6701 (April 2015)

Author(s): Legeay, C., Bourigault, C., Lepelletier, D., Zahar, J.R.

Abstract: Infants in neonatal intensive care units (NICUs) are highly susceptible to infection due to the immaturity of their immune systems. Healthcare-associated infections (HCAIs) are associated with prolonged hospital stay, and represent a significant risk factor for neurological development problems and death. Improving HCAI control is a priority for NICUs. Many factors contribute to the occurrence of HCAIs in neonates such as poor hand hygiene, low nurse-infant ratios, environmental contamination and unnecessary use of antibiotics. Prevention is based on improving neonatal management, avoiding unnecessary use of central venous catheters, restricting use of antibiotics and H2 blockers, and introducing antifungal prophylaxis if necessary. Quality improvement interventions to reduce HCAIs in neonates seem to be the cornerstone of infection control. [PUBLICATION] 48 references

Source: BNI

31. Probiotics for Preterm Infants: A Premature or Overdue Necrotizing Enterocolitis Prevention Strategy?


Author(s): Anderson, Sharon

Abstract: Common among preterm, very low birth weight (VLBW) and extremely low birth weight (ELBW) infants, necrotizing enterocolitis (NEC) is a gastrointestinal, infectious disease that remains a leading cause of morbidity and mortality among this high-risk population. To combat this devastating condition, research efforts have been redirected from treatment toward prevention strategies. Although there are several proposed risk-reduction strategies, one intervention gaining support is the administration of prophylactic enteral probiotics. Regardless of growing evidentiary support and a benign safety profile, neonatal providers have yet to embrace this therapy. This article provides an overview of the proposed benefits of probiotics, focusing on their role as a NEC prevention strategy. A review of several sentinel research studies targeting preterm, VLBW, and ELBW infants is provided. Considerations for ongoing research are reviewed. Finally, two evidence-based NEC prevention probiotics protocols are presented. [PUBLICATION]

Source: BNI

32. Screening for cardiopulmonary events in neonates: a review of the infant car seat challenge.

Citation: Journal of Perinatology, 01 April 2015, vol./is. 35/4(235-240), 07438346

Author(s): Davis, N L

Language: English

Abstract: The infant car seat challenge (ICSC), or period of observation in a car safety seat before discharge to monitor for episodes of apnea, bradycardia and desaturation, is one of the most common tests performed on preterm neonates in the United States. However, the utility of the ICSC to identify infants at risk for adverse cardiopulmonary events in the car seat remains unclear. Minimal evidence exists to guide clinicians in performance of this test including appropriate inclusion criteria and failure criteria. In this article, the origins of the ICSC are discussed as well as potential etiologies of desaturations and bradycardia in the car seat position. Current literature on implementation, inclusion and failure criteria, incidence of failure and data on the meaning of a ‘passed’ vs ‘failed’ ICSC are discussed. Emphasis is made on minimizing time in car seats and seated devices given concern over the risk of desaturations.

Publication type: journal article

Source: CINAHL

33. Seizures and hypothermia: Importance of electroencephalographic monitoring and considerations for treatment

Citation: Seminars in Fetal and Neonatal Medicine, April 2015, vol./is. 20/2(103-108), 1744-165X;1878-0946 (01 Apr 2015)

Author(s): Boylan G.B., Kharoshankaya L., Wusthoff C.J.
Abstract: Hypoxic-ischemic encephalopathy is a common cause of seizures in neonates. Despite the introduction of therapeutic hypothermia, seizure rates are similar to those reported in the pre-therapeutic hypothermia era. However, the seizure profile has been altered resulting in a lower overall seizure burden, shorter individual seizure durations, and seizures that are harder to detect. Electroencephalographic (EEG) monitoring is the gold standard for detecting all seizures in neonates and this is even more critical in neonates who are cooled, as they are often sedated, making seizures more difficult to detect. Several studies have shown that the majority of seizures in neonates undergoing therapeutic hypothermia remain subclinical, thus requiring EEG monitoring for diagnosis. Amplitude-integrated EEG monitoring is useful but shorter duration seizures are more likely to be missed. Evidence is emerging about the pharmacokinetic profile of routinely used antiepileptic drugs during therapeutic hypothermia and some modifications have been suggested, particularly for lidocaine use.

Publication type: Journal: Review
Source: EMBASE

34. Successful reduction in central line-associated bloodstream infections in a Chinese neonatal intensive care unit

Citation: American Journal of Infection Control, Mar 2015, vol. 43, no. 3, p. 275-279, 0196-6553 (March 2015)
Author(s): Zhou, Qi, Lee, Shoo K, Hu, Xiao-jing, Jiang, Si-yuan, Chen, Chao, Wang, Chuan-qing, Cao, Yun
Abstract: Few data are available on central-line associated bloodstream infections (CLABSIs) in Chinese neonatal intensive care units (NICUs). The aims of this study were to characterize CLABSIs among neonates in a Chinese NICU and evaluate the impact of a multifaceted evidence-based practice for improving quality program to decrease CLABSI. We conducted a prospective before-after intervention study with a 1-year follow-up among patients with central lines at the NICU of the Children’s Hospital of Fudan University between January 2008 and December 2010. The study was conducted in 3 phases: before, during, and after the intervention. A multifaceted infection control program was introduced in phase 2 with successive surveillance. CLABSIs were prospectively monitored and compared. A total of 171 patients with central lines (CLs) were observed; 29 of them developed CLABSI corresponding to 7.35 per 1,000 catheter days, with a CL utilization ratio of 37.9%. Overall CLABSI rate decreased gradually from 16.7 per 1,000 CL days in phase 1 to 7.6 per 1,000 CL days in phase 2 (P = .08) to 5.2 per 1,000 CL days in phase 3 (P = .01). Gram-negative bacterium (54.5%) was the predominant pathogen in CLABSIs. A multifaceted infection control program is effective in reducing the CLABSI rate among neonates. Such interventions could be extended to other resource-limited countries. [Publication] 26 references
Source: BNI

35. The clinical, operational, and financial worlds of neonatal palliative care: A focused ethnography.

Citation: Palliative & Supportive Care, 01 April 2015, vol./is. 13/2(179-186), 14789515
Author(s): Williams-Reade, Jackie, Lamson, Angela L, Knight, Sharon M, White, Mark B, Ballard, Sharon M, Desai, Priti P
Language: English
Abstract: OBJECTIVE: Due to multiple issues, integrated interdisciplinary palliative care teams in a neonatal intensive care unit (NICU) may be difficult to access, sometimes fail to be implemented, or provide inconsistent or poorly coordinated care. When implementing an effective institution-specific neonatal palliative care program, it is critical to include stakeholders from the clinical, operational, and financial worlds of healthcare. In this study, researchers sought to gain a multidisciplinary perspective into issues that may impact the implementation of a formal neonatal palliative care program at a tertiary regional academic medical center. METHOD: In this focused ethnography, the primary researcher conducted semistructured interviews that explored the perspectives of healthcare administrators, finance officers, and clinicians about neonatal palliative care. The perspectives of 39 study participants informed the identification of institutional, financial, and clinical issues that impact the implementation of neonatal palliative care services at the medical center and the planning process for a formal palliative care program on behalf of neonates and their families. RESULTS: Healthcare professionals described experiences that influenced their views on neonatal palliative care. Key themes included: (a) uniqueness of neonatal palliative care, (b) communication and conflict among providers, (c) policy and protocol discrepancies, and (d) lack of administrative support. SIGNIFICANCE OF RESULTS: The present study highlighted several areas that are challenging in the provision of neonatal palliative care. Our findings underscored the importance of recognizing and procuring resources needed simultaneously from the clinical, operational, and financial worlds in order to implement and sustain a successful neonatal palliative care program.
36. The diagnosis of neonatal pulmonary atelectasis using lung ultrasonography.

**Citation:** CHEST, 01 April 2015, vol./is. 147/4(1013-1019), 00123692

**Author(s):** Liu, Jing, Chen, Shui-Wen, Liu, Fang, Li, Qiu-Ping, Kong, Xiang-Yong, Feng, Zhi-Chun

**Language:** English

**Abstract:** BACKGROUND: Ultrasonography has been used for the diagnosis of many kinds of lung conditions, but few studies have investigated ultrasound for the diagnosis of neonatal pulmonary atelectasis (NAP). In this study, we evaluated the usefulness of lung ultrasonography for the diagnosis of NPA. METHODS: From May 2012 to December 2013, 80 neonates with NPA and 50 neonates without lung disease were enrolled in this study. Each lung of every infant was divided into the anterior, lateral, and posterior regions by the anterior and posterior axillary lines. Each region was scanned carefully with the probe perpendicular or parallel to the ribs. The ultrasound findings were confirmed by chest radiograph (CXR) or CT scan. RESULTS: Sixty of the 80 patients with signs of NPA on lung ultrasound also had signs of NPA on CXR (termed focal-type atelectasis), and the other 20 patients had signs of NPA on chest CT scan while there were no abnormal findings on CXR (termed occult lung atelectasis). In patients with NPA, the main ultrasound findings were large areas of lung consolidation with clearly demarcated borders, air bronchograms, pleural line abnormalities, and absence of A-lines, as well as the presence of lung pulse and absence of lung sliding on real-time ultrasound. The sensitivity of lung ultrasonography for the diagnosis of NPA was 100%, whereas the sensitivity of CXR was 75%. Large areas of lung consolidation with clearly demarcated borders were only observed in patients with NPA. CONCLUSIONS: Lung ultrasonography is an accurate and reliable method for diagnosing NPA; most importantly, it can find those occult lung atelectasis that could not be detected on CXR. Routine lung ultrasonography is a useful method of diagnosing or excluding NPA in neonates.

**Publication type:** journal article

**Source:** CINAHL

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