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Journal Articles:

1. A comparative effectiveness study of continuous positive airway pressure-related skin breakdown when using different nasal interfaces in the extremely low birth weight neonate.
   Citation: Applied Nursing Research, 01 February 2015, vol./is. 28/1(36-41), 08971897
   Author(s): Newnam, Katherine M., McGrath, Jacqueline M., Salyer, Jeanne, Estes, Tracy, Jallo, Nancy, Bass, W. Thomas
   Language: English
   Abstract: A three group prospective randomized experimental design was conducted to identify differences in frequency and severity of nasal injuries when comparing various interfaces used during continuous positive airway pressure (CPAP) and identified risk factors associated with injury. Seventy-eight neonates <1500 g were randomized into three groups: continuous nasal prongs; continuous nasal mask; or alternating mask/prongs. Repeated measures ANOVA with Bonferroni correction demonstrated that significantly less skin injury was detected in the rotation interface group when compared to both mask and prong groups. In the final stepwise regression model (\( F = 11.51; R^2 = 0.221; p = 0.006 \)) significant predictors of skin injury included number of days on nasal CPAP (\( p < 0.001 \)) and current mean post menstrual age (\( p = 0.006 \)). Reduced nasal injury was demonstrated using rotating mask/prong nasal interfaces. Future best practices must include precise selection of device size, developmental and CPAP device positioning with focused skin assessment including rapid intervention for skin injury.
   Publication type: journal article
   Source: CINAHL

2. A metronome for pacing manual ventilation in a neonatal resuscitation simulation.
   Citation: Archives of Disease in Childhood -- Fetal & Neonatal Edition, 01 January 2015, vol./is. 100/1(0-), 13592998
   Author(s): Cocucci, Cecilia, Madorno, Matías, Aguilar, Adriana, Acha, Leila, Szyló, Edgardo, Musante, Gabriel
   Language: English
   Abstract: AIM: During manual positive pressure ventilation (PPV), delivering a recommended respiratory rate (RR) is operator dependent. We tested the efficacy of a metronome as a standardised method to improve the accuracy of delivered RR during manual PPV in a neonatal resuscitation simulation. METHODS: We conducted a blinded simulation in two consecutive stages. Using a self-inflating bag, 36 CPR trained operators provided PPV to a modified neonatal manikin via an endotracheal tube. Pressure and flow signals were captured by a respiratory function monitor. In the first standard stage, participants delivered RR as they would in delivery room. Prior to the second stage, they were asked about what their target RR had been and a metronome was set to that target. Subsequently, operators repeated PPV attempting to coordinate their delivered RR with the metronome. To evaluate accuracy we generated the variable RR Gap as the absolute difference between delivered and target RR. The primary outcome was the difference in RR Gap between stages. RESULTS: Mean (SD) target RR was 50 (8.7) inflations/min. During the initial stage, median (IQR) RR Gap was 11.6 (4.7-18.3) inflations/min and 20/36 participants (55.5%) had a mean delivered RR beyond the recommended range. When paced by the metronome, RR Gap was reduced to 0.2 (0.1-0.4) inflations/min and 32/36 participants (89%) fell within the recommended range.
range. **CONCLUSIONS:** The use of a metronome improved the accuracy of delivered RR during manual PPV. Novel approaches to deliver an accurate RR during manual PPV need to be tested in more realistic scenarios.

**Publication type:** journal article  
**Source:** CINAHL  
**Full text:** Available *Highwire Press* at *Fetal and Neonatal*

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**3. A research protocol for testing relationships between nurse workload, missed nursing care and neonatal outcomes: the neonatal nursing care quality study.**  
**Citation:** Journal of Advanced Nursing, 01 March 2015, vol./is. 71/3(632-641), 03092402  
**Author(s):** Tubbs-Cooley, Heather L., Pickler, Rita H., Mark, Barbara A., Carle, Adam C.  
**Language:** English  
**Abstract:** **Aim** We describe an innovative research protocol to test the role of missed nursing care as a mediator of the association between nurse workload and patient outcomes in the neonatal intensive care unit. **Background** Increases in nurses’ workloads are associated with adverse patient outcomes in neonatal intensive care settings. Missed nursing care is a frequently hypothesized explanation for the association between workload and outcomes. Few studies to date have tested missed care as a variable that mediates the workload-outcomes relationship. **Design** We use a longitudinal, observational study design. **Methods** We will recruit approximately 125 nurses (80% of target population) providing direct patient care in one neonatal intensive care unit. Four, 6-week data collection cycles occur over 1 year. At the end of every shift, nurses report on their workloads and the frequency with which specific patient care activities were missed for each infant cared for during the shift. Infant-specific nurse reports of missed care are linked to shift-level infant outcomes data extracted from the electronic health record. Funding for the study began in July 2012; Research Ethics Committee approval was granted in December 2012. **Discussion** Missed care may explain the effects of nurse workload on patient outcomes. This research will generate preliminary evidence regarding the causal relationships among nurses' workloads, missed care and infant outcomes that we will confirm in a future multi-site study.

**Publication type:** journal article  
**Source:** CINAHL  
**Full text:** Available EBSCOhost EJS at *Journal of Advanced Nursing*

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**4. Antenatal exposure to sulindac and risk of necrotizing enterocolitis.**  
**Citation:** American Journal of Obstetrics & Gynecology, 01 January 2015, vol./is. 212/1(0-), 00029378  
**Author(s):** Kamath-Rayne, Beena D, Habli, Mounira, Rodriguez, Zahidee, Wu, Malcolm, Gresh, James, DeFranco, Emily A  
**Language:** English  
**Abstract:** **OBJECTIVE:** Most studies of tocolytics are underpowered to assess drug effects on rare adverse neonatal outcomes. Our aim was to optimize statistical power to assess the influence of sulindac on the rare but severe outcome of necrotizing enterocolitis (NEC) by performing a case-control study. **STUDY DESIGN:** A priori sample size of 78 in each group was estimated to detect a 2.5-fold increase in nonsteroidal antiinflammatory drug exposure in NEC cases. Maternal-neonatal charts were reviewed from 2007 through 2012 to yield 110 NEC cases: 68 patients with confirmed NEC by Bell's stage II criteria, and 42 with suspected NEC. Cases and controls (N = 131, matched according to gestational age at delivery, plurality, and delivery date) were compared in rates of antenatal exposures to nonsteroidal antiinflammatory drugs, other tocolytics, and maternal-neonatal characteristics and complications. **RESULTS:** Cases and controls were delivered at a mean of 28 weeks. Approximately 52% of the total cohort received tocolytics (26% indomethacin, 15% sulindac, 32% calcium channel blockers, 32% beta-sympathomimetics), with no differences in frequency of use between cases and controls. While there was no difference in indomethacin exposure between cases and controls, antenatal exposure to sulindac was independently associated with increased risk of NEC (adjusted odds ratio, 5.33; 95% confidence interval, 1.38-20.57; P = .02), even after adjustment for other factors significantly associated with NEC. **CONCLUSION:** Our data demonstrate an adverse association of sulindac with NEC. These findings deserve further investigation and using sulindac as a tocolytic agent requires caution.

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

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**5. Antenatal magnesium sulfate exposure and acute cardiorespiratory events in preterm infants.**  
**Citation:** American Journal of Obstetrics & Gynecology, 01 January 2015, vol./is. 212/1(0-), 00029378
Abstract: OBJECTIVE: Antenatal magnesium (anteMg) is used for various obstetric indications including fetal neuroprotection. Infants exposed to anteMg may be at risk for respiratory depression and delivery room (DR) resuscitation. The study objective was to compare the risk of acute cardiorespiratory events among preterm infants who were and were not exposed to anteMg. STUDY DESIGN: This was a retrospective analysis of prospective data collected in the Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network’s Generic Database from April 1, 2011, through March 31, 2012. The primary outcome was DR intubation or respiratory support at birth or on day 1 of life. Secondary outcomes were invasive mechanical ventilation, hypotension treatment, neonatal morbidities, and mortality. Logistic regression analysis evaluated the risk of primary outcome after adjustment for covariates. RESULTS: We evaluated 1544 infants <29 weeks’ gestational age (1091 in anteMg group and 453 in nonexposed group). Mothers in the anteMg group were more likely to have higher education, pregnancy-induced hypertension, and antenatal corticosteroids, while their infants were younger in gestation and weighed less (P < .05). The primary outcome (odds ratio [OR], 1.2; 95% confidence interval [CI], 0.88-1.65) was similar between groups. Hypotension treatment (OR, 0.70; 95% CI, 0.51-0.97) and invasive mechanical ventilation (OR, 0.54; 95% CI, 0.41-0.72) were significantly less in the anteMg group. CONCLUSION: Among preterm infants age <29 weeks’ gestation, anteMg exposure was not associated with an increase in cardiorespiratory events in the early newborn period. The safety of anteMg as measured by the need for DR intubation or respiratory support on day 1 of life was comparable between groups.

Publication type: journal article
Source: CINAHL

6. Aspiration and Evaluation of Gastric Residuals in the Neonatal Intensive Care Unit.
Citation: Journal of Perinatal & Neonatal Nursing, 01 January 2015, vol./is. 29/1(51-), 08932190
Author(s): Parker, Leslie, Murgas Torrazza, Roberto, Yuefeng Li, Talaga, Elizabeth, Shuster, Jonathan, Neu, Josef
Language: English
Abstract: The routine aspiration of gastric residuals (GR) is considered standard care for critically ill infants in the neonatal intensive care unit (NICU). Unfortunately, scant information exists regarding the risks and benefits associated with this common procedure. This article provides the state of the science regarding what is known about the routine aspiration and evaluation of GRs in the NICU focusing on the following issues: (1) the use of GRs for verification of feeding tube placement, (2) GRs as an indicator of gastric contents, (3) GRs as an indicator of feeding intolerance or necrotizing enterocolitis, (4) the association between GR volume and ventilator-associated pneumonia, (5) whether GRs should be discarded or refed, (6) the definition of an abnormal GR, and (7) the potential risks associated with aspiration and evaluation of GRs. Recommendations for further research and practice guidelines are also provided.
Publication type: journal article
Source: CINAHL

7. Balancing the risks and benefits of parenteral nutrition for preterm infants: can we define the optimal composition?
Citation: Archives of Disease in Childhood -- Fetal & Neonatal Edition, 01 January 2015, vol./is. 100/1(0-), 13592998
Author(s): Embleton, Nicholas D, Morgan, Colin, King, Caroline
Language: English
Abstract: Nutrient intakes in preterm infants are frequently inadequate and are associated with worse neuro-developmental outcome. Preterm infants take time to establish enteral intakes, and parenteral nutrition (PN) is now an integral component of care. Despite this, the evidence base for PN intakes is extremely limited. There remains uncertainty over safe initial and maximum amounts of macronutrients, and the optimal amino acid and lipid composition. Studies have tended to focus on short-term growth measures and there are few studies with long-term follow-up. There may be a trade off between improving cognitive outcomes while minimising metabolic harm that means determining the optimal regimen will require long-term follow-up. Given the importance of appropriate nutrition for long-term metabolic and cognitive health, and the associated healthcare costs, optimising the composition of PN deserves to be seen as a research priority in neonatal medicine.
8. Communication Intervention in the Neonatal Intensive Care Unit: Can It Backfire?

**Citation:** Journal of Palliative Medicine, 01 February 2015, vol./is. 18/2(157-161), 10966218

**Author(s):** Clarke-Pounder, Jessica P., Boss, Renee D., Roter, Debra L., Hutton, Nancy, Larson, Susan, Donohue, Pamela K.

**Language:** English

**Abstract:** Background: For parents of a critically ill infant, good communication may help alleviate stress and anxiety. To improve communication, physicians must be responsive to families' needs and values surrounding the care of their hospitalized infant. Objective: We adapted a Decision-Making Tool for the Neonatal Intensive Care Unit (N-DMT) to encourage consideration of family concerns and preferences in daily care planning. Design: This was a randomized controlled design. Setting/Subjects: Parents and providers of critically ill neonates were eligible. Parents were randomized to an intervention group (using the N-DMT) or standard of care. N-DMT information was shared through the electronic medical record and communicated directly to the primary provider. Measurements: Daily rounds on all infants were audio recorded. Parents completed the State-Trait Anxiety Inventory at the first interview and 2 weeks later. Parents completed the Family Inventory of Needs-Pediatrics (FIN-PED) survey and an N-DMT-specific survey 2 weeks postenrollment. Results: Complete data were obtained on 10 control and 9 intervention families. Groups did not differ on demographics or mean infant Score of Neonatal Acute Physiology (SNAP) scores (36 versus 37). FIN-PED scores were similar for both groups. The control group showed decreased anxiety over time. The content of rounds did not differ between groups. The intervention group reported lower satisfaction with care, specifically in questions regarding communication. Conclusions: In this pilot study, we found that families in the intervention group were less satisfied with communication. Families who are primed to expect better communication, such as those participating in a communication intervention, may be less satisfied with standard care.

9. Comparison of neonatal transport scoring systems and transport-related mortality score for predicting neonatal mortality risk.

**Citation:** Pediatric Emergency Care, 01 February 2015, vol./is. 31/2(113-116), 07495161

**Author(s):** Sutcuoglu, Sumer, Celik, Tugce, Alkan, Senem, Ilhan, Ozkan, Ozer, Esra Arun

**Language:** English

**Abstract:** OBJECTIVES: To predict the risk of mortality of neonates, birth weight and gestational age were previously used. However, these criteria were considered inadequate; therefore, various scoring systems have been developed in the recent years. The aim of the study was to evaluate the performance of predicting mortality by Mortality Index for Neonatal Transportation (MINT), Score for Neonatal Acute Physiology-Perinatal Extension II (SNAP-PE-II), and Transport Related Mortality Score (TREMS). METHODS: All infants transferred to the neonatal intensive care unit between January 1 and December 31, 2011, were included. The scores of SNAP-PE-II, MINT, and TREMS of the all cases were calculated. TREMS is our proposed scoring system and it consists of 5 variables (hypoglycemia, hypoxia, hypercarbia, hypotension, and hypothermia). The scoring systems, SNAP-PE-II, MINT, and TREMS, were compared in terms of mortality risk. RESULTS: A total of 306 newborn infants constituted the study population. The mean gestational age was 33.1 ± 5 weeks and the mean birth weight was 2031.2 ± 1018 g, and 183 (59%) babies were male. The sensitivity of MINT score for predicting mortality was higher than SNAP-PE-II and TREMS. However, specificity was higher in TREMS score. The negative predictive value was highest in MINT score, whereas TREMS has the highest positive predictive value. CONCLUSIONS: The TREMS scoring system is a simple scoring system with a high specificity for predicting mortality. Further studies with larger sample size including more centers and newborn infants with diverse clinical problems are needed to assess the validity and reliability of the TREMS scoring system.

10. Crossover study of proportional assist versus assist control ventilation.

**Citation:** Archives of Disease in Childhood -- Fetal & Neonatal Edition, 01 January 2015, vol./is. 100/1(0-),
11. Development and preliminary validation of the Neonatal Infant Acute Pain Assessment Scale (NIAPAS)

Citation: International Journal of Nursing Studies, Dec 2014, vol. 51, no. 12, p. 1585-1594, 0020-7489 (December 2014)

Author(s): Pölkki, Tarja, Korhonen, Anne, Axelin, Anna, Saarela, Timo, Laukkala, Helena

Abstract: Several pain scales are available for neonates, but, unfortunately they are only rarely used in clinical practice. To help with the current situation of unrecognized and under-treated pain in neonatal intensive care units (NICUs), we developed an assessment tool in close collaboration with clinical staff. To develop a multidimensional scale, NIAPAS (the Neonatal Infant Acute Pain Assessment Scale), that is sensitive to the needs of infants in neonatal intensive care units, and to test the validity, reliability, feasibility and clinical utility of the scale for this population. Instrument development and psychometric analysis. Pain assessments (n = 180) were made of 34 neonates born between 23 and 42 weeks gestational age who were undergoing 60 painful procedures (heel lance 77%, tracheal suctioning 23%) in the NICU. Using bedside video recordings, each neonate was observed through three phases of the procedure: 1 min before the procedure, during the procedure (lasting from 0.6 to 11.2 min, mean 2.6), and 1 min after the procedure. In addition, an expert panel (n = 5) and nurses (n = 26) participated in the validation of the scale. A pool of 8 pain indicators (5 behavioral and 3 physiological indicators), including the gestational age of neonates as a contextual factor, was identified based on the nurses’ expertise in neonatal intensive care. Scores on the NIAPAS changed significantly across the phases (p = 0.001), indicating a good construct validity of the scale. Correlations between the NIAPAS and NIPS (the Neonatal Infant Pain Score) were high (0.751-0.873). The study also demonstrated high coefficients for inter-rater (r = 0.991-0.997) and intra-rater reliability (r = 0.992-1.00), with an internal consistency of 0.723. The content validity was very good (Mean I-CVI 1.00), as evaluated by the expert group. The nurses agreed that the scale was easy to administer and that it helped decision-making in the pain management of infants. The NIAPAS was shown to be a valid and reliable scale for assessing acute pain in preterm and full-term infants in the NICU. It allows nurses to evaluate infants’ acute pain especially during painful procedures and help to provide pain relief for the infants. [PUBLICATION] 39 references

Source: BNI

12. Does diagnosis influence end-of-life decisions in the neonatal intensive care unit?

Citation: Journal of Perinatology, 01 February 2015, vol./is. 35/2(151-154), 07438346

Author(s): Weiner, J, Sharma, J, Lantos, J, Kilbride, H
Abstract: Objective: To determine the influence of physiological status and diagnosis at the time of death on end-of-life care. Study Design: Retrospective descriptive study in a regional referral level IV neonatal intensive care unit (NICU) of infants who died from 1 January 1999 to 31 December 2008. Infants were categorized based on diagnosis (very preterm, congenital anomalies or other) and level of stability. Primary outcome was level of clinical service provided at end of life (care withheld, care withdrawn or full resuscitation). Result: From 1999 to 2008, there were 414 deaths in the NICU. Congenital anomaly was the leading diagnosis at the time of death, representing 45% of all deaths. Comparing mode of death, very preterm newborns were more likely than infants with congenital anomalies to have received cardio-pulmonary resuscitation (CPR) at the time of death (26% vs 13%, P<0.01) and were significantly more unstable (75% vs 52%, P<0.01). Infants aged 22 to 24 weeks were mostly unstable and significantly more likely to receive CPR than infants with any other diagnosis. Conclusion: Over the 10-year period, very preterm infants were more likely to be physiologically unstable and to receive CPR at the time of death than infants with any other diagnosis. This finding was especially true for infants at the edge of viability (22 to 24 weeks). These differences in end-of-life care suggest that the quality of life and medical futility may be viewed differently for the least mature infants.

Publication type: journal article
Source: CINAHL

13. Effects of Saccharomyces boulardii on Neonatal Hyperbilirubinemia: A Randomized Controlled Trial.

Citation: American Journal of Perinatology, 01 February 2015, vol./is. 30/2(137-141), 07351631
Author(s): Serce, Ozge, Gursoy, Tugba, Ovali, Fahri, Karatekin, Guner
Language: English

Abstract: Objective: Since probiotics modulate intestinal functions and enterohepatic circulation; they might have an effect on neonatal hyperbilirubinemia treatment. The objective of this study was to investigate the efficacy of Saccharomyces boulardii supplementation on hyperbilirubinemia. Study Design: A prospective, double-blind, placebo controlled trial was performed on 35 to 42 gestational weeks' neonates. They were randomized either to receive feeding supplementation with S. boulardii 125 mg every 12 hours or placebo during phototherapy. Serum bilirubin levels were measured at 0, 24th, 48th, 72nd, and 96th hour of phototherapy. Results: A total of 119 infants (61 in the control group and 58 in the study group) were enrolled. The duration of phototherapy (2 [1-3] vs. 2 [1-3], p: 0.22) was not different between groups. The levels of bilirubin during phototherapy ([24th hour; 14.1 {12.8-15.7} vs. 13.5 {12.4-14.9}, p: 0.085]; [48th hour; 14.1 {12-15.3} vs. 13.4 {12.4-14.5}, p: 0.41]; [72nd hour; 13.9 {12.2-15.6} vs. 13.5 {12.5-14.5}, p: 0.41]; [96th hour; 14.7 {11.4-15.5} vs. 13.4 {10.7-14.1}, p: 0.24]) or the duration of rebound phototherapy (1 [1-1] vs. 1.5 [1-2], p: 0.40) were lower in the study group than in the controls, but none of the values were statistically significant. Conclusion: S. boulardii did not influence the clinical course of hyperbilirubinemia significantly.

Publication type: journal article
Source: CINAHL


Citation: Archives of Disease in Childhood -- Fetal & Neonatal Edition, 01 January 2015, vol./is. 100/1(0-), 13592998
Author(s): Wielenga, Joke M, Tume, Lyvonne N, Latour, Jos M, van den Hoogen, Agnes
Language: English

Abstract: Objective: This study aimed to identify and prioritise neonatal intensive care nursing research topics across Europe using an e-Delphi technique. DESIGN: An e-Delphi technique with three questionnaire rounds was performed. Qualitative responses of round one were analysed by content analysis and research statements were generated to be ranged on importance on a scale of 1-6 (not important to most important). SETTING: Neonatal intensive care units (NICUs) in 17 European countries. POPULATION: NICU clinical nurses, managers, educators and researchers (n=75). INTERVENTION: None. MAIN OUTCOME MEASURES: A list of 43 research statements in eight domains. RESULTS: The six highest ranking statements (>5.0 mean score) were related to prevention and reduction of pain (mean 5.49; SD 1.07), medication errors (mean 5.20; SD 1.13), end-of-life care (mean 5.05; SD 1.18), needs of parents and family (mean 5.04; SD 1.23), implementing evidence into nursing practice (mean 5.02; SD 1.03), and pain assessment (mean 5.02; SD 1.11). The research domains were prioritised and ranked: (1) pain and stress; (2) family centred care; (3) clinical nursing care practices; (4) quality and safety; (5) ethics; (6)
Factors Associated With Mode of Transport Decision Making for Pediatric-Neonatal Interfacility Transport.

Citation: Air Medical Journal, 01 January 2015, vol./is. 34/1(44-51), 1067991X
Author(s): Quinn, Janis M., Pierce, Mary Clyde, Adler, Mark
Language: English
Abstract: Objective Transport professionals must routinely engage in complex decision making. One challenging decision is the determination of mode of transport. This study explores the decisional factors involved in the determination of mobilizing ground ambulance versus helicopter for pediatric-neonatal interfacility transport. The aim was to gather initial qualitative data to aid in the development of an objective scoring tool that would be used to guide the mode of transport decision for pediatric and neonatal interfacility transport. The focus of the study was to elicit the factors that influence the mode of transport decision among professionals who are involved in this decision. Methods This study was conducted in an urban, freestanding children's hospital with a dedicated pediatric/neonatal transport team. Subjects were given written scenarios that represented a phone call requesting transport from a referring hospital. Subjects were asked to choose between 2 modes of transport: ambulance or helicopter. Decision-making factors were gathered and tallied. For group comparison, the Fisher exact, Pearson chi-square, Student t, or Wilcoxon rank sum tests for scale data was used. A multivariate logistic regression was performed to assess factors associated with the mode of transport decision. Results Responses were received from a total of 19 subjects. Nurses represented 58% (11) of the respondents, and physicians represented 42% (8). The nurses were all either currently employed on the transport team or had left the team within the past 2 years. The physicians were all critical care or emergency medicine fellows and attending physicians who serve in the medical control role for the transport team. All subjects reported a minimum of five years in their respective professions. The decision to mobilize a helicopter for interfacility transport was significantly associated with the provider's level of clinical concern in conjunction with the perceived distance and if neurovascular or respiratory status was in question in both univariate tests and the multivariate logistic regression. The decision to mobilize a helicopter did not differ significantly between professional roles (nurse vs. physician) or concerns about hemodynamic status such as blood pressure and heart rate. Physicians were significantly more likely to overestimate perceived ground travel time to the outside facility. Conclusions Health care providers responsible for directing and conducting the interfacility transport of critically ill children are more likely to mobilize a helicopter for transport in the face of neurovascular or respiratory clinical concerns in conjunction with a prolonged transport distance. When the provider's level of concern is lower, then a ground ambulance is consistently chosen even if out of hospital time is prolonged.

Health Care Providers' Perspectives of Providing Culturally Competent Care in the NICU.

Citation: JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing, 01 January 2015, vol./is. 44/1(17-27), 08842175
Author(s): Henderson, Leonora, Reis, Misty D., Nicholas, David B.
Language: English
Abstract: Objective To examine the experiences and perceptions of health care providers caring for new immigrant families in the neonatal intensive care unit (NICU). Design Qualitative design using grounded theory methodology. Setting Two tertiary-level NICUs of two large metropolitan hospitals in western Canada. Participants Fifty eight (58) health care providers from multiple disciplines. Methods Health care providers were interviewed during seven focus groups. We recorded and transcribed focus group data. We analyzed transcripts via line-by-line coding, categorization of codes, concept saturation, and theme generation assisted through NVIVO software. Results Health care providers identified the nuanced construct of fragile interactions that is embedded within care of the new immigrant family in the NICU. During crisis, decision making, differing norms and beliefs,
and language and communication are barriers that affected the fragile nature of interactions. During transition home, fragile interactions were affected by unintentional stereotyping, limited time for intangible activities, and lack of intuitive perceptions of the needs of new immigrant families. Health care providers employed caring and culturally competent strategies to overcome the fragile nature of interactions. Conclusion Within the premise of providing family-centered care is the concept of honoring cultural, ethnic, and socioeconomic diversity; it is imperative that culturally competent care be considered and implemented as a separate stand-alone aspect when caring for new immigrant families.

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

### 17. Intrapartum magnesium sulfate and need for intensive delivery room resuscitation.

**Citation:** Archives of Disease in Childhood -- Fetal & Neonatal Edition, 01 January 2015, vol./is. 100/1(0-), 13592998  
**Author(s):** Weisz, Dany E, Shivananda, Sandesh, Asztalos, Elizabeth, Yee, Wendy, Synnes, Anne, Lee, Shoo K, Shah, Prakesh S  
**Language:** English  
**Abstract:** OBJECTIVE: To evaluate the association of intrapartum magnesium sulfate for fetal neuroprotection (MgSO4-FN) with the delivery room resuscitation and neonatal outcomes of preterm infants in an era of minimisation of invasive mechanical ventilation. DESIGN: Retrospective cohort study. SETTING: Neonatal intensive care units in the Canadian Neonatal Network. PATIENTS AND INTERVENTION: Preterm infants (23(0) to 31(6) weeks gestational age) born in 2011 or 2012. Resuscitation requirements and neonatal outcomes were compared between infants exposed and unexposed to intrapartum MgSO4-FN. MAIN OUTCOME MEASURES: The primary outcome was a composite outcome of 'intensive resuscitation', defined as the need for intubation and ventilation or chest compressions or epinephrine administration in the delivery room. Secondary outcomes included mortality and major neonatal morbidities. RESULTS: Of 6015 eligible infants, 1387 (23.1%) were exposed to intrapartum MgSO4-FN. Significantly fewer MgSO4-FN infants (41.0% vs 44.6%, p=0.02) required intensive resuscitation. However, after adjustment for confounders, this difference was no longer significant (adjusted OR (AOR) 0.88; 95% CI 0.66 to 1.17). Infants exposed to MgSO4-FN had decreased odds of death (AOR 0.61; 95% CI 0.40 to 0.94), but there was no difference in neonatal morbidities compared with the unexposed infants. CONCLUSIONS: Intrapartum MgSO4 for fetal neuroprotection was not associated with an increased need for intensive delivery room resuscitation in this cohort of preterm infants.  
**Publication type:** journal article  
**Source:** CINAHL  
**Full text:** Available [Highwire Press at Fetal and Neonatal](https://www.fetal-and-neonatal.com/)

### 18. Late-preterm birth and neonatal morbidities: population-level and within-family estimates.

**Citation:** Annals of Epidemiology, 01 February 2015, vol./is. 25/2(126-132), 10472797  
**Author(s):** Reichman, Nancy E, Teitler, Julien O, Moullin, Sophie, Ostfeld, Barbara M, Hegyi, Thomas  
**Language:** English  
**Abstract:** PURPOSE: The objective of this study was to compare two salient neonatal outcomes-respiratory disorders and hyperbilirubinemia-between late-preterm (34-36 weeks) and full-term (37-41 weeks) singleton infants both at the population level and within families. METHODS: Analyses were based on natality data on all births in the state of New Jersey from 1996 to 2006 linked to newborn hospital discharge records. For population-level models, logistic regression analyses were conducted to estimate unadjusted and adjusted differences in outcomes by gestational age. For within-family analyses, unadjusted and adjusted logistic fixed-effects models were estimated with the latter including factors that differed across births to the same mother. RESULTS: Late-preterm birth increased the odds of a neonatal respiratory condition by more than fourfold (odds ratio, 4.08-4.53) and of neonatal hyperbilirubinemia by more than fivefold (odds ratio, 5.11-5.93) even when comparing births to the same mother and controlling for demographic and economic, behavioral, and obstetric factors that may have changed across pregnancies. CONCLUSIONS: Based on population-level and within-family models, this study provides the strongest evidence to date that late-preterm birth is an important risk factor for adverse neonatal outcomes that other studies have found are associated with cognitive and behavioral disorders in childhood.  
**Publication type:** journal article  
**Source:** CINAHL
19. Looking like a proper baby: nurses' experiences of caring for extremely premature infants

Citation: Journal of Clinical Nursing, Jan 2015, vol. 24, no. 1-2, p. 81-89, 0962-1067 (January 2015)

Author(s): Green, Janet, Darbyshire, Philip, Adams, Anne, Jackson, Debra

Abstract: To explore the ways in which neonatal nurses draw meaning and deal with the challenges associated with caring for extremely premature babies. Current literature suggests that nurses face challenges providing care to certain patients because of their appearance. This article will focus on those difficulties in relation to neonatal nurses caring for infants 24 weeks of gestation in the neonatal intensive care unit. Extremely premature babies often have more the appearance of a foetus than the appearance of a baby, and this presented challenges for the neonatal nurses. This paper has used interviews and drew insights from interpretative phenomenology. This paper used a series of interviews in a qualitative study informed by phenomenology. The analysis of the interview data involved the discovery of thematic statements and the analysis of the emerging themes. This paper outlines the difficulties experienced by neonatal nurses when caring for a baby that resembles a foetus more than it does a full-term infant. The theme the challenges of caregiving was captured by three subthemes: A foetus or a viable baby?; protective strategies and attributing personality. This study identified that neonatal nurses experience a range of difficulties when providing care for an infant who resembled a foetus rather than a full-term baby. They employed strategies that minimised the foetal appearance and maximised the appearance and attributes associated with a newborn baby. Increasing survival of extremely premature infants will see nurses caring for more babies 24 weeks of gestation. Caring for extremely premature babies has been reported as being stressful. It is important to understand the nature of stress facing this highly specialised neonatal nursing workforce. Supportive work environments could help to ameliorate stress, facilitate better care of tiny babies and decrease staff turnover. [PUBLICATION] 42 references

Source: BNI

20. Macrophage activation syndrome in a newborn infant born to a mother with autoimmune disease.

Citation: Journal of Perinatology, 01 February 2015, vol./is. 35/2(158-160), 07438346

Author(s): Park, J H, Kim, S H, Kim, H J, Lee, S J, Jeong, D C, Kim, S Y

Language: English

Abstract: Macrophage activation syndrome (MAS) is a complication of rheumatic disorders characterized by cytopenia, multiple organ dysfunction and coagulopathy associated with an inappropriate activation of macrophage. In neonatal lupus erythematosus, MAS is rare but fatal, requiring early diagnosis and treatment for optimal outcome. We report a case of MAS in a neonate born to a mother with autoimmune disease, improved by treatment with steroid, intravenous immunoglobulin and cyclosporine.

Publication type: journal article

Source: CINAHL


Citation: American Journal of Perinatology, 01 February 2015, vol./is. 30/2(143-147), 07351631

Author(s): Langen, Elizabeth S., Kuperstock, Jessica L., Sung, Joyce F., Taslimi, Mark, Byrne, James, El-Sayed, Yasser Y.

Language: English

Abstract: Objective This study aims to describe the pattern of maternal glucose response to betamethasone administration using a continuous glucose monitoring system. Study Design A prospective observational trial was conducted among women receiving clinically indicated betamethasone between 24 and 34 weeks gestation. At the time of initial betamethasone administration, a continuous glucose monitoring device was inserted which measured interstitial fluid glucose levels every 5 minutes. Glucose levels were monitored for 7 days, until delivery, or until hospital discharge, whichever came first. We recorded the percentage of time women spent above three glucose thresholds: 110, 144, and 180 mg/dL, respectively. Results A total of 17 women were enrolled at the time of betamethasone administration and data were available for 15 patients. There were 11 nondiabetic and 4 diabetic women. Both diabetic and nondiabetic women had the highest recorded blood glucose readings between 24 and 48 hours after the first injection of betamethasone. In that period, nondiabetic women spent 73, 40, and 17% of the time with blood glucose levels above the 110, 144, and 180 mg/dL thresholds, respectively. Conclusion Nondiabetic women receiving betamethasone manifest significant hyperglycemia after betamethasone administration. If delivery is imminent, maternal glucose response to betamethasone may need to be monitored to prevent possible neonatal hypoglycemia.

**Citation:** American Journal of Perinatology, 01 January 2015, vol./is. 32/1(1-7), 07351631

**Author(s):** Tubbs-Cooley, Heather L., Pickler, Rita H., Meinzen-Derr, Jareen K.

**Language:** English

**Abstract:** Objective To examine the association of missed oral feeding opportunities among preterm infants with achievement of full oral feedings and length of hospitalization. Study Design A secondary analysis of clinical trial data was conducted. Study infants included in the analysis (N = 89) were randomized to one of four standardized feeding progression approaches; detailed records on all feedings were maintained. The proportion of oral feeding opportunities reported as missed due to factors unrelated to the infant's clinical condition was calculated for each infant. Results The proportion of missed oral feeding opportunities per infant ranged from 0 to 0.12; 30 infants experienced one or more missed oral feeding opportunity. Each 1% increase in the proportion of missed oral feeding opportunities extended the time to achieve full oral feeding by 1.45 days (p = 0.007) and time to discharge by 1.36 days (p = 0.047). Conclusion Preterm infants' missed oral feeding opportunities may adversely affect feeding outcomes and extend hospitalization.


**Citation:** Archives of Disease in Childhood -- Fetal & Neonatal Edition, 01 January 2015, vol./is. 100/1(0-), 13592998

**Author(s):** van Vonderen, Jeroen J, Hooper, Stuart B, Krabbe, Vera B, Siew, Melissa L, Te Pas, Arjan B

**Language:** English

**Abstract:** OBJECTIVE: Upper airway distention during mask ventilation could reduce gas volumes entering the lung compared with ventilation via an endotracheal tube. Therefore, respiratory tract volumes were measured in lambs and tidal volumes were compared in preterm infants before and after intubation. DESIGN: In seven preterm lambs, volumes of the airways (oropharynx, trachea, lungs) were assessed. In 10 preterm infants, delta pressures, tidal volumes and leak were measured during ventilation 2min before (mask ventilation) and 2min after intubation (endotracheal ventilation). Inflations coinciding with breaths were excluded. OUTCOME MEASURES: Amount of upper airway distention in lambs and differences in inspiratory and expiratory tidal volume before and after intubation. RESULTS: In lambs, the combined trachea and oropharynx contributed to 14 (12-21) % (median (IQR), whereas the oropharynx contributed to 9 (7-10) % of the total tidal volume measured at the mouth. In preterm infants, inspiratory (11.1 (7.9-22.6) mL/kg vs 5.8 (3.9-9.6) mL/kg (p=0.01)) and expiratory (8.3 (6.8-15.4) mL/kg vs 4.9 (3.9-9.6) mL/kg (p=0.02)) tidal volumes were significantly larger during mask ventilation compared with endotracheal ventilation. Leak was 18.7 (3.3-28.7) % before versus 0 (0-2.3) % after intubation (p<0.0001). Delta pressure was 23.7 (20.8-25.6) cmH2O before versus 24.8 (20.8-26.0) cmH2O after intubation (p>0.05). During mask ventilation, expiratory tidal volume increased from 10.0 (5.4-15.6) mL/kg to 11.3 (7.6-17.0) mL/kg (p=0.01), but remained unchanged during endotracheal ventilation. CONCLUSIONS: During neonatal mask ventilation, distention of the upper respiratory tract contributes to the tidal volumes measured and should be taken into account when targeting tidal volumes during mask ventilation.

24. Natural evolution of patent ductus arteriosus in the extremely preterm infant.

**Citation:** Archives of Disease in Childhood -- Fetal & Neonatal Edition, 01 January 2015, vol./is. 100/1(0-), 13592998

**Author(s):** Rolland, Audrey, Shankar-Aguilera, Shivani, Diomandé, Douty, Zupan-Simunek, Véronique, Boileau, Pascal

**Language:** English

**Abstract:** OBJECTIVE: The persistence of the patent ductus arteriosus (PDA) is frequently encountered in very preterm infants. Neither preventive nor curative treatments of PDA have been shown to improve the outcome of
these infants. Since no consensus on optimal treatment of PDA is established, we evaluated the rate of spontaneous PDA closure in infants born before 28 weeks of gestation. PATIENTS AND METHODS: We studied a retrospective cohort of 103 infants (gestational age 24-27 weeks) admitted to our neonatal intensive care unit from 1 June 2008 to 31 July 2010. Maternal and neonatal characteristics were collected. The PDA was defined by the persistence of ductal patency after 72h and was followed up by regular echocardiography. RESULTS: Twelve infants died within the first 72h and were excluded from the analysis. Among 91 infants analysed, 8 (9%) closed their ductus arteriosus before 72h and the ductus could not be determined patent in 13. Of the 70 infants with a PDA still persistent, one underwent surgical ligation and echocardiography showed spontaneous closure in 51 (73%) of them. In the remaining 18 infants, the date of PDA closure could not be determined either because of their death (n=11) or due to discharge (n=7). Overall, a spontaneous closure of the ductus arteriosus was observed in 59 of the 91 infants. CONCLUSIONS: We have to question whether exposure to the risks of therapeutic interventions targeted for ductal closure is warranted since a PDA closes spontaneously in at least 73% of infants born before 28 weeks.

Publication type: journal article
Source: CINAHL
Full text: Available Highwire Press at Fetal and Neonatal

Citation: Respiratory Care, 01 February 2015, vol./is. 60/2(219-230), 00201324
Author(s): DiBlasi, Robert M., Dupras, Donna, Kearney, Christine, Costa Jr., Eddie, Griebel, Jeffrey L.
Language: English
Abstract: BACKGROUND: Inhaled nitric oxide (INO) has been used with heated and humidified high-flow nasal cannula (HFNC), nasal CPAP and several forms of noninvasive ventilation (NIV). This study was designed to evaluate the delivered dose of INO, level of NO<sub>2</sub> generation, and effect of net gas delivery (addition of INO to the ventilator circuit - gas removed for sampling) on lung pressure at different NO doses during noninvasive respiratory support. METHODS: An infant lung model was supported with the different noninvasive modes during INO therapy. NO and NO<sub>2</sub> were measured from within the patient circuit of the noninvasive devices and simulated neonatal trachea at several NO levels. Lung pressures were compared with and without INO and at several INO settings. RESULTS: Accuracy of NO delivery was determined to be within the stated accuracy by the manufacturer with nasal CPAP and NIV, but accuracy was compromised during HFNC. INO and NO<sub>2</sub> were measured from the INOMax DS<sub>IR</sub> (Ikaria, Hampton, New Jersey) did not consistently reflect the delivered dose of NO or formation of NO<sub>2</sub> across all types of neonatal noninvasive respiratory support. Tracheal NO<sub>2</sub> levels were <1.5ppm with all forms of noninvasive support, except nasal intermittent mandatory ventilation at 40ppm INO. Lung model mean airway pressures were mildly affected by gas sampling/delivery during combined INO therapy/HFNC at certain flows but remained stable with all other forms of noninvasive support. CONCLUSIONS: Clinicians cannot always assume that the set INO level results in a similar lung dose when using all forms of neonatal noninvasive support. Clinical decisions regarding ways to improve INO delivery may need to include changing settings or placing patients on a different form of noninvasive support. The NO<sub>2</sub> level delivered to the patient could be greater than the value recorded by the INO delivery system.

Publication type: journal article
Source: CINAHL

26. Nurses' narratives on termination of primary nursing relationship with parents in neonatal intensive care
Citation: Scandinavian Journal of Caring Sciences, Dec 2014, vol. 28, no. 4, p. 716-723, 0283-9318 (December 2014)
Author(s): Korhonen, Anne, Kangasniemi, Mari
Abstract: Primary nursing working model in the neonatal intensive care unit enables a long-lasting caring relationship with the infants and their parents. Terminating this kind of relationship is seldom discussed. The aim of the study was to describe nurses' experiences of terminating the primary nursing relationship with the parents in neonatal intensive care. Qualitative design using narrative method was used because there is a little knowledge relating to the topic. The data were collected with active interviews and analysed with narrative analysis. Seven nurses with experience of neonatal intensive care and primary nursing were recruited by convenience sampling. The approval was granted according to the hospital guidelines. The results gave rise to the three narratives that
described the relationship between the primary nurse and the parents as the nursing relationship ends. All narratives shared a common plot, regulation of the closeness on nursing relationship, but it was manifested in different ways in each narrative. The plot in the narratives changed on a closeness-distance axis according to how the primary nurse regulated the nursing relationship and its termination. In the first narrative, the regulation of the relationship promoted distance, in the second connection and in the third closeness and connection. The long-lasting nature of the primary nursing working model may allow different caring relationships which will be revealed in terminating phase of care. This phenomenon is poorly recognised. It is important to study the caring relationship between the primary nurse and the parents of a hospitalised child, because the caring relationship is the core of nursing and needs to be considered in research and supported in practice. [PUBLICATION] 50 references

Source: BNI


Citation: American Journal of Perinatology, 01 January 2015, vol./is. 32/1(83-86), 07351631

Author(s): Madigan, Theresa, Teng, Christine B., Koshaish, Jena, Johnson, Kent R., Graner, Kevin K., Banerjee, Ritu

Language: English

Abstract: Objective To compare vancomycin serum trough concentrations and 24-hour area under the serum concentration-versus-time curve (AUC24) among very low-birth-weight (VLBW) premature infants before and after implementation of an institution-wide increase in neonatal vancomycin dosing. Study Design We performed a retrospective analysis of vancomycin concentrations among preterm VLBW neonates before (2007-2010) and after (2010-2013) implementation of a new vancomycin dosing protocol consisting of increased vancomycin daily dose and frequency of administration. Results Neonates weighing < 1,500 g and receiving the new vancomycin dosing regimen had lower rates of undetectable trough concentrations (24 vs. 50%, p = 0.04), higher median trough concentrations (10.8 vs. 5.9 µg/mL, p = 0.003), a higher proportion of goal trough concentrations of 10 to 20 µg/mL (35 vs. 4%, p = 0.005), and a significantly higher vancomycin AUC24 (438 vs. 320 mg·h/L, p = 0.004) compared with historical controls. Conclusion Increasing the vancomycin daily dose and dosing frequency led to an increase in vancomycin trough concentrations and AUC24, and a decrease in the proportion of undetectable (< 5.0 µg/mL) troughs, without an increase in toxicity among VLBW premature neonates.

Publication type: journal article

Source: CINAHL

28. Oropharyngeal Administration of Mother’s Milk to Prevent Necrotizing Enterocolitis in Extremely Low-Birth-Weight Infants.

Citation: Journal of Perinatal & Neonatal Nursing, 01 January 2015, vol./is. 29/1(81-90), 08932190

Author(s): Rodriguez, Nancy A., Caplan, Michael S.

Language: English

Abstract: The oropharyngeal administration of mother’s milk-placing drops of milk onto the infant’s oral mucosa-may serve as a preventative strategy against necrotizing enterocolitis (NEC) for extremely low-birth-weight (ELBW: birth weight <1000 g) infants. Necrotizing enterocolitis is a devastating gastrointestinal disorder which is associated with significant mortality for ELBW infants. Survivors are at risk for costly and handicapping morbidities, including severe neurological impairment. The oropharyngeal administration of mother’s milk to ELBW infants may serve to expose the infant’s oropharynx to protective (immune and trophic) biofactors (also present in amniotic fluid) and may protect the infant against NEC. Emerging evidence suggests that this intervention may have many benefits for extremely premature infants including protection against bacteremia, NEC, and ventilator-associated pneumonia, an earlier attainment of full enteral feeds, enhanced maturation of oral feeding skills, improved growth, and enhanced breast-feeding outcomes. While more research is needed to definitively establish safety and efficacy of this intervention, this article will examine biological plausibility and will describe the theoretical mechanisms of protection against NEC for ELBW infants who receive this intervention. Nurses play a key role in advancing the science and practice of this intervention. Future directions for research and implications for nursing practice will also be presented.

Publication type: journal article

Source: CINAHL

29. Perceptions of Webcams in the Neonatal Intensive Care Unit: Here’s Looking at you Kid!

Citation: American Journal of Perinatology, 01 February 2015, vol./is. 30/2(131-136), 07351631
Author(s): Hawkes, Gavin A., Livingstone, Vicki, Ryan, C. Anthony, Dempsey, Eugene Michael
Language: English
Abstract: Introduction Many tertiary neonatal units employ a restricted visiting policy. Webcams have previously been implemented in the neonatal unit setting in several countries. Objectives This study aims to determine the views from parents, physicians, and nursing staff before implementation of a webcam system. Methods A questionnaire-based study. Results There were 101 responses. Parental computer usage was 83%. The majority of parents indicated that they would use the webcam system. Parents felt that a webcam system would reduce stress. Members of the nursing staff were most concerned about privacy risks (68%), compared with parents who were confident in the security of these systems (92%, p-value < 0.001). Seventy-two percent of nurses felt that a webcam system would increase the stress levels of staff as compared with less than 20% of the physicians (p-value < 0.001). Discussion The majority of parents who completed the questionnaire have positive attitudes toward implementation of a webcam system in the NICU. Education of health care staff is required before implementation.
Publication type: journal article
Source: CINAHL

Citation: JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing, 01 January 2015, vol./is. 44/1(28-41), 08842175
Author(s): DeGrazia, Michele, Giambanco, Deborah, Hamn, Gretchen, Ditzel, Amy, Tucker, Lindsay, Gauvreau, Kimberlee
Language: English
Abstract: Objective To measure the feasibility, safety, and efficacy of the cranial cup device in a sample of hospitalized infants at risk for deformational plagiocephaly (DP). Design A multisite, stratified, and randomized single-blinded study. Setting Neonatal intensive care units (NICU) from three urban and one suburban hospital participated. Participants Subjects included 62 infants with lengths of stay ≥ 14 days. Methods Nurses caring for infants in study group 1 used the moldable positioner. In study group 2, nurses rotated the moldable positioner and cranial cup devices using the cranial cup for a target goal of 12 hours/day. Both study groups received routine position changes. Outcome measures included hours of device use (feasibility), cardiorespiratory and emesis events (safety), and cranial measurements obtained at discharge (efficacy) by one of four, licensed orthotists who were blinded to the study. Results A total of 35 infants were randomized to study group 1 (moldable positioner) and 27 infants to study group 2 (moldable positioner and cranial cup). The median hours per day on the cranial cup was 10.7 (range 4.5 - 15.3). Emesis and cardiorespiratory events were equally distributed for the moldable positioner and cranial cup devices in study group 2. At discharge, more infants in study group 1 (46%, n = 16) exhibited abnormal cranial measurements than those in study group 2 (19%, n = 5) (p = .03). Conclusion Rotating the cranial cup with the moldable positioner provides a feasible, safe, and potentially efficacious therapy for prevention of DP.
Publication type: journal article
Source: CINAHL

31. Rescuer fatigue during simulated neonatal cardiopulmonary resuscitation.
Citation: Journal of Perinatology, 01 February 2015, vol./is. 35/2(142-145), 07438346
Author(s): Li, E S, Cheung, P-Y, O'Reilly, M, Aziz, K, Schmölzer, G M
Language: English
Abstract: Objective: To assess development of fatigue during chest compressions (CCs) in simulated neonatal cardiopulmonary resuscitation (CPR). Study design: Prospective randomized manikin crossover study. Thirty neonatal healthcare professionals who successfully completed the Neonatal Resuscitation Program performed CPR using (i) 3:1 compression:ventilation (C:V) ratio, (ii) continuous CC with asynchronous ventilation (CCaV) at a rate of 90 CC per min and (iii) CCaV at 120 CC per min for a duration of 10 min on a neonatal manikin. Changes in peak pressure (a surrogate of fatigue) and CC rate were continuously recorded and fatigue among groups was compared. Participants were blinded to pressure tracings and asked to rate their level of comfort and fatigue for each CPR trial. Result: Compared with baseline, a significant decrease in peak pressure was observed after 72, 96 and 156 s in group CCaV-120, CCaV-90 and 3:1 C:V, respectively. CC depth decreased by 50% within the first 3 min during CCaV-120, 30% during CCaV-90 and 20% during 3:1 C:V. Moreover, 3:1 C:V and CCaV were similarly preferred by healthcare professionals. Conclusion: Similarly, 3:1 C:V and CCaV CPR were also fatiguing. We
recommend that rescuers should switch after every second cycle of heart rate assessment during neonatal CPR.

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

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**32. Standardizing morphine use for ventilated preterm neonates with a nursing-driven comfort protocol.**  
**Citation:** Journal of Perinatology, 01 January 2015, vol./is. 35/1(46-51), 07438346  
**Author(s):** Fleishman, R, Zhou, C, Gleason, C, Larison, C, Myaing, M T, Mangione-Smith, R  
**Language:** English  
**Abstract:** Objective: To test whether implementing a nursing-driven comfort protocol standardizes morphine use in one neonatal intensive care unit (NICU) and to examine how non-standard morphine (N-SM) relates to days of ventilation, days of total parenteral nutrition (TPN) and length of stay (LOS). Study Design: This was a retrospective/prospective observational study using pharmacy records, medical records, and an outcomes database. Comfort protocol implementation began February 2011 and was applied to preterm, ventilated neonates <1500 grams. Pre- and post-implementation proportions of N-SM days were compared using the binomial test. A percent ‘P’-chart spanning 30 quarters was constructed with statistical-process control analysis. Multivariable linear regression adjusting for acuity assessed the relationship between N-SM use and days of ventilation, TPN and LOS. Result: Hundred and thirty-four patients met inclusion criteria, 116 prior to and 18 after implementation. The proportion of patients given N-SM for one or more days decreased from 59 to 35% after protocol implementation (P=0.017). A 9-month period of decreased N-SM days was observed after protocol implementation. Controlling for acuity, each additional day of N-SM use was associated with 0.47 more days of ventilation (95% confidence interval (CI): 0.26-0.69, P<0.001) and 0.52 more days of TPN (95% CI: 0.35-0.68, P<0.001). Exposure to N-SM was associated with 17 additional days of hospitalization (P=0.009, 95% CI: 4.5-30). Conclusion: Implementing a nursing-driven comfort protocol significantly reduced N-SM use. N-SM in the NICU is negatively associated with key clinical outcomes. Testing similar protocols in other settings is warranted.  
**Publication type:** journal article  
**Source:** CINAHL

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**33. The aetiology of neonatal seizures and the diagnostic contribution of neonatal cerebral magnetic resonance imaging.**  
**Citation:** Developmental Medicine & Child Neurology, 01 March 2015, vol./is. 57/3(248-256), 00121622  
**Author(s):** Weeke, Lauren C, Groenendaal, Floris, Toet, Mona C, Benders, Manon J N L, Nieuvelstein, Rutger A J, van Rooij, Linda G M, de Vries, Linda S  
**Language:** English  
**Abstract:** The aim of this study was to delineate aetiologies and explore the diagnostic value of cerebral magnetic resonance imaging (MRI) in addition to cranial ultrasonography (cUS) in infants presenting with neonatal seizures. METHOD: This retrospective cohort study comprised infants (gestational age 35.0-42.6wks) with seizures, confirmed by either continuous amplitude-integrated electroencephalography (aEEG) or standard EEG and admitted during a 14-year period to a level three neonatal intensive care unit (n=378; 216 males, 162 females; mean [SD] birthweight 3334g [594]). All infants underwent cUS and MRI (MRI on median of 5 days after birth, range 0-58d) within the first admission period. RESULTS: An underlying aetiology was identified in 354 infants (93.7%). The most common aetiologies identified were hypoxic-ischaemic encephalopathy (46%), intracranial haemorrhage (12.2%), and perinatal arterial ischaemic stroke (10.6%). When comparing MRI with cUS in these 354 infants MRI showed new findings which did not become apparent on cUS, contributing to a diagnosis in 42 (11.9%) infants and providing additional information to cUS, contributing to a diagnosis in 141 (39.8%). cUS alone would have allowed a diagnosis in only 37.9% of infants (134/354). INTERPRETATION: Cerebral MRI contributed to making a diagnosis in the majority of infants. In 11.9% of infants the diagnosis would have been missed if only cUS were used and cerebral MRI added significantly to the information obtained in 39.8% of infants. These data suggest that cerebral MRI should be performed in all newborn infants presenting with EEG- or aEEG-confirmed seizures.  
**Publication type:** journal article  
**Source:** CINAHL
34. The effect of facilitated tucking on procedural pain control among premature babies
Citation: Journal of Clinical Nursing, Jan 2015, vol. 24, no. 1-2, p. 183-191, 0962-1067 (January 2015)
Author(s): Lopez, Olive, Subramanian, Pathmawathi, Rahmat, Norsiah, Theam, Lim Chin, Chinna, Karuthan, Rosli, Roshaslina
Abstract: To determine the effectiveness of facilitated tucking in reducing pain when venepuncture is being performed on preterm infants. Preterm neonates are exposed to a myriad of invasive, often painful, procedures throughout their stay in the neonatal intensive care unit. A growing volume of evidence shows that pain in preterm infants has both short- and long-term deleterious effects. It is within the power and ethical responsibility of neonatal nurses to help premature babies cope with procedural pain. A quasi-experimental study with two groups: control and treatment group. A study was conducted on a cohort of preterm infants (n = 42), divided into control (n = 21) and treatment (n = 21) groups, to determine the effect of facilitated tucking on pain relief during venepuncture on preterm infants in the neonatal intensive care unit. The severity of pain was measured using the Premature Infant Pain Profile score. The primary outcome measure was reduction in the Premature Infant Pain Profile scores. The Premature Infant Pain Profile score for the treatment group was significantly lower (M = 6.62, SD 2.598) than for the control group (6.62 ± 2.60 vs. 8.52 ± 2.99, respectively, t = -2.202, p 0.05). Facilitated tucking reduced the Premature Infant Pain Profile scores in preterm infants. The findings of this study suggest that facilitated tucking is able to alleviate pain; therefore, nurses must be able to carry out facilitated tucking when necessary. [PUBLICATION] 16 references
Source: BNI

35. The Neonatal Pain, Agitation and Sedation Scale and the bedside nurse's assessment of neonates.
Citation: Journal of Perinatology, 01 February 2015, vol./is. 35/2(128-131), 07438346
Author(s): Hillman, B A, Tabrizi, M N, Gauda, E B, Carson, K A, Aucott, S W
Language: English
Abstract: Objective: To determine the reliability of an objective measure of pain, agitation and sedation using the Neonatal Pain, Agitation and Sedation Scale (N-PASS) compared with nursing bedside assessment. Study Design: Neonates admitted in neonatal intensive care unit over a 6-month period were eligible. Pain and sedation were assessed with N-PASS, and a subjective questionnaire was administered to the bedside nurse. Result: A total of 218 neonates were eligible (median: gestational age 34.6 weeks, age at assessment 7 days). N-PASS pain score correlated significantly with both nurses' pain score (Spearman coefficient (r)=-0.37; P<0.001) and agitation score (r=-0.56; P<0.001). N-PASS sedation score correlated with nurses' sedation score (r=-0.39; P<0.001). Adjusting for gestational age, day of life, intrauterine drug exposure and use of high frequency ventilation only slightly attenuated the correlations (r=-0.36, 0.55 and -0.31, respectively). Conclusion: The N-PASS captures nursing assessment of pain, agitation and sedation in this broad population and provides a quantitative assessment of subjective descriptions that often drives patient therapy.
Publication type: journal article
Source: CINAHL

36. The NICU Parent Risk Evaluation and Engagement Model and Instrument (PREEMI) for Neonates in Intensive Care Units.
Citation: JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing, 01 January 2015, vol./is. 44/1(114-126), 08842175
Author(s): Samra, Haifa A., McGrath, Jacqueline M., Fischer, Sheri, Schumacher, Bette, Dutcher, Janet, Hansen, Julie
Language: English
Abstract: Engagement is a fairly new concept in practice and research and is gaining the interest of federal and private regulators, clinicians, and researchers. In this article, we offer a standard definition and outline an engagement model and an instrument for early prediction and identification of low engagement in at-risk parents of late preterm infants. The Parent Risk Evaluation and Engagement Model and Instrument (PREEMI), its theoretical underpinnings, instrument design, and practical application and future research are discussed.
Publication type: journal article
Source: CINAHL
37. The Role of Peer Support in the Development of Maternal Identity for 'NICU Moms'.
Citation: JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing, 01 January 2015, vol./is. 44/1(3-16), 08842175
Author(s): Rossman, Beverly, Greene, Michelle M., Meier, Paula P.
Language: English
Abstract: Objective To examine first-time neonatal intensive care unit (NICU) mothers' perceptions of the initial effect and stress of their birth experiences and hospitalizations of their infants and what facilitated or hindered the development of their maternal roles within the context of the NICU. Design A qualitative descriptive design. Setting A 57-bed, tertiary NICU in Chicago. Participants Twenty-three mothers of very low birth weight (VLBW) infants hospitalized in the NICU. Methods Participants were a subset of a larger longitudinal mixed-method study of psychological distress in 69 mothers of VLBW infants. Mothers were interviewed using an adaptation of the Clinical Interview for Parents of High-Risk Infants (CLIP) approximately 6 weeks after the births of their infants. Data were analyzed using conventional content analysis. Results Mothers characterized the infants' births and hospitalizations as a time of overwhelming change culminating in a new perspective on life. Primary themes were loss, stress and anxiety, adapting, resilience, peer support, and 'I'm a NICU Mom.' Mothers rated peer support as the most facilitative and supportive aspect of developing the maternal role in the NICU. Conclusion Peer support and role modeling by NICU-based breastfeeding peer counselors helped the mothers throughout every stage of their infants' hospitalizations, from giving them hope, to helping them begin to develop maternal identity, to providing anticipatory guidance about taking their infants home. Talking points are provided for nurses who work in NICUs without dedicated peer support to help mothers establish a healthy mother/infant relationship.
Publication type: journal article
Source: CINAHL

Citation: Maternal & Child Health Journal, 01 March 2015, vol./is. 19/3(468-479), 10927875
Author(s): Khan, Jehangir, Vesel, Linda, Bahl, Rajiv, Martines, José
Language: English
Abstract: The purpose of this study was to review the evidence on the effect of initiation of breastfeeding early after birth and of exclusive breastfeeding during the first month in reducing neonatal mortality and morbidity. We searched Cochrane and PubMed databases for all available papers addressing our review questions and identified eleven papers. Data were extracted using a standard abstraction form. Evidence was assessed using the Grading of Recommendations Assessment, Development and Evaluation system. Meta-analysis was done using STATA 11.0. Early initiation of breastfeeding was associated with a reduced risk of neonatal mortality. Initiating breastfeeding after the first hour doubled the risk of neonatal mortality. Exclusively breastfed neonates had a lower risk of mortality and infection-related deaths in the first month than partially breastfed neonates. Exclusively breastfed neonates also had a significantly lower risk of sepsis, diarrhea and respiratory infections compared with those partially breastfed. The pooled evidence indicates that substantial benefits in reducing neonatal mortality and morbidity can be achieved with effective promotion of early initiation of breastfeeding and exclusive breastfeeding during the first month of life.
Publication type: journal article
Source: CINAHL

39. Ultrasound to diagnose spontaneous intestinal perforation in infants weighing <1000 g at birth.
Citation: Journal of Perinatology, 01 February 2015, vol./is. 35/2(104-109), 07438346
Author(s): Fischer, A, Vachon, L, Durand, M, Cayabyab, R G
Language: English
Abstract: Objective:To evaluate the usefulness of abdominal ultrasound in infants with gasless abdomen radiographically suspected to have spontaneous intestinal perforation (SIP).Study Design:This was a retrospective analysis of data from our neonatal database including infants with birth weight <1000 g with suspicion of SIP, for the period January 2000 to May 2012.Result:Four hundred and ninety-six infants weighing <1000 g were identified. There were 68 infants with suspicion for SIP, 11 with pneumoperitoneum and 57 with gasless abdomen on X-rays. Ultrasound was performed in 55 of 57 infants with gasless abdomen, 10 with SIP and 45 nonperforated. Echogenic free fluid (EFF) was present in 70% of patients with SIP and 11% of nonperforated patients (P<0.001). When performed within 2 days of surgical diagnosis, EFF had 100% sensitivity and 89% specificity, with 58%
positive predictive value and 100% negative predictive value. Conclusion: These data suggest that abdominal ultrasound may be useful for the diagnosis of SIP in infants with birth weight \( \leq 1000 \text{ g} \) presenting with gasless abdomen.

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

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**40. Use of Noninvasive High-Frequency Ventilation in the Neonatal Intensive Care Unit: A Retrospective Review.**

**Citation:** American Journal of Perinatology, 01 February 2015, vol./is. 30/2(171-178), 07351631  
**Author(s):** Mukerji, Amit, Singh, Balpreet, el Helou, Salhab, Fusch, Christoph, Dunn, Michael, Belik, Jaques, Shah, Vibhuti  
**Language:** English  
**Abstract:** Objective: The aim of the article is to review the effectiveness of neonatal noninvasive high-frequency ventilation (NIHFV) in preventing endotracheal mechanical ventilation. Study Design: Retrospective case series including all 79 instances of NIHFV use at four participating centers between July 2010 and September 2012. Results: In 73% of cases, NIHFV was used as rescue after another noninvasive mode, and prophylactically (postextubation) in the remainder. In 58% of cases, infants transitioned to another noninvasive mode, without requiring intubation. There were significant reductions in the mean (SD) number of apneas, bradycardias, or desaturations (over 6 hours) (3.2 [0.4] vs. 1.2 [0.3]; p < 0.001), FiO2 (48 [3] vs. 40 [2%]; p < 0.001) and CO2 levels (74 [6] vs. 62 [4] mm Hg; p ¼ 0.025] with NIHFV. No NIHFV-related complications were noted. Conclusions: NIHFV is a promising NIV mode that may help prevent or delay intubation and deserves further clinical research.  
**Publication type:** journal article  
**Source:** CINAHL

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**41. Volume-targeted ventilation in newborn infants**

**Citation:** Infant, Jan 2015, vol. 11, no. 1, p. 8-12, 1745-1205 (January 2015)  
**Author(s):** Chitty, Helen, Sinha, Sunil  
**Abstract:** Mechanical ventilation via an endotracheal tube remains a ‘standard of care’ for infants with severe respiratory failure. Ventilation saves lives but can also cause lung injury and evidence suggests that excessive or inadequate tidal volume delivery causes more lung injury (volutrauma) than unregulated inspiratory pressure delivery (barotrauma). Volume-targeted ventilation (VTV) has been shown to produce better short-term outcomes than pressure-targeted ventilation and is used to aim to minimise lung injury. However, data are limited with regards to medium- and long-term outcomes and there are no published data comparing efficacy and safety of different modes of VTV. [PUBLICATION]  
**Source:** BNI

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**42. Why do four NICUs using identical RBC transfusion guidelines have different gestational age-adjusted RBC transfusion rates?**

**Citation:** Journal of Perinatology, 01 February 2015, vol./is. 35/2(132-136), 07438346  
**Author(s):** Henry, E, Christensen, R D, Sheffield, M J, Eggert, L D, Carroll, P D, Minton, S D, Lambert, D K, Ilstrup, S J  
**Language:** English  
**Abstract:** Objective: To compare neonatal red blood cell (RBC) transfusion rates in four large Intermountain Healthcare NICUs, all of which adhere to the same RBC transfusion guidelines. Study Design: This retrospective analysis was part of a transfusion-management quality-improvement project. De-identified data included RBC transfusions, clinical and laboratory findings, the anemia-prevention strategies in place in each NICU, and specific costs and outcomes. Result: Of 2389 NICU RBC transfusions given during the 4-year period studied, 98.9±2.1% (mean±s.d.) were compliant with our transfusion guidelines, with no difference in compliance between any of the four NICUs. However, RBC transfusion rates varied widely between the four, with averages ranging from 4.6 transfusions/1000 NICU days to 21.7/1000 NICU days (P<0.00001). Gestational age-adjusted transfusion rates were correspondingly discordant (P<0.00001). The lower-transfusing NICUs had written anemia-preventing guidelines, such as umbilical cord milking at very low birth weight delivery, use of cord blood for admission laboratory studies, and darbepoetin dosing for selected neonates. Rates of Bell stage \( \geq 2 \) necrotizing enterocolitis and grade \( \geq 3 \) intraventricular hemorrhage were lowest in the two lower-transfusing NICUs (P<0.0002 and P<0.0016). Average pharmacy costs for darbepoetin were $84/dose, with an average pharmacy cost of $269 per
transfusion averted. With a cost of $900/RBC transfusion, the anemia-preventing strategies resulted in an estimated cost savings to Intermountain Healthcare of about $6970 per 1000 NICU days, or about $282,300 annually.

Conclusion: Using transfusion guidelines has been shown previously to reduce practice variability, lower transfusion rates and diminish transfusion costs. Based on our present findings, we maintain that even when transfusion guidelines are in place and adhered to rigorously, RBC transfusion rates are reduced further if anemia-preventing strategies are also in place.

Publication type: journal article
Source: CINAHL

Training & Networking Opportunities, Conferences & Events

Baby Friendly conference: taking neonatal care to the next level
Baby Friendly, in partnership with Bliss, the special care baby charity, will be holding its first Neonatal conference: Taking neonatal care to the next level. This one day conference will take place on Tuesday 19th May (9am-5pm), at the Royal Institution in London. Tickets are £95 per person. Please book online, or fill in and return our order form, along with payment, to bfi@unicef.org.uk.

This event will highlight the importance of breastfeeding for sick and vulnerable babies, and will offer insights into the great benefits of developmental care in neonatal settings. Speakers include: Nils Bergman, Shoo Lee and Paula Meier.

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