Outreach

Your Outreach Librarian can help facilitate evidence-based practice for all NICU staff, as well as assisting with academic study and research. We can help with literature searching, obtaining journal articles and books, and setting up individual current awareness alerts.

Literature Searching

We provide a literature searching service for any library member. For those embarking on their own research it is advisable to book some time with one of the librarians for a 1 to 1 session where we can guide you through the process of creating a well-focused literature research and introduce you to the health databases access via NHS Evidence.

Critical Appraisal Training

We also offer one-to-one or small group training in literature searching, accessing electronic journals, and critical appraisal/Statistics. These are essential courses that teach how to interpret clinical papers.

For more information, email: katie.barnard@uhbristol.nhs.uk

Books

Books can be searched for using SWIMS our online catalogue at www.swims.nhs.uk. Books and journals that are not available on site or electronically may be requested from other locations. Please email requests to: library@uhbristol.nhs.uk
Contents

1: Tables of Contents from February’s NICU journals

2: New NICE Guidance

3: Latest relevant Systematic Reviews from the Cochrane Library

4: New activity in Uptodate

5: Quick exercise

6: Current Awareness database articles
Tables of Contents from November’s NICU journals

**Archives of Disease in Childhood: Fetal and Neonatal**
January 2016, Volume 101, Issue 1

**Neonatology**
February 2016, Volume 109, Issue 2

**Journal of Pediatrics**
February 2016, Volume 169, Issue

**JAMA Pediatrics**
February 2016, Volume 170, Issue 2

**Pediatrics**
February 2016, Volume 137, Issue 2

**Journal of Perinatology**
February 2016, Volume 36, Issue 2
New NICE Guidance

QS107 Preventing unintentional injury in under 15s

Latest relevant Systematic Reviews from the Cochrane Library

**Needle aspiration versus intercostal tube drainage for pneumothorax in the newborn**

**Washed versus unwashed red blood cells for transfusion for the prevention of morbidity and mortality in preterm infants**

**Antifungal agents for preventing fungal infections in non-neutropenic critically ill patients**

**Beta-blockers for congestive heart failure in children**

**Glutamine supplementation to prevent morbidity and mortality in preterm infants**

**Topical emollient for preventing infection in preterm infants**

New activity in UpToDate

[www.uptodate.com](http://www.uptodate.com)

You will need your NHS Athens username/password (register through [http://openathens.nice.org.uk/](http://openathens.nice.org.uk/))

**Neonatal and maternal outcomes for planned out-of-hospital birth (January 2016)**

In the United States (US), the safety of non-hospital births is unclear. Several studies have reported that women who deliver at home or at a birth center have equal or improved neonatal and maternal outcomes compared with those who deliver in a hospital; however, outcomes of women transferred to the hospital intrapartum or postpartum because of complications were often included with the hospital delivery group, which could have impacted results. In a US study that analyzed birth outcomes by planned birth location rather than actual delivery site, approximately 16 percent of...
women planning out-of-hospital births (combined home births and freestanding birth centers) required hospital transfer and their infants had higher rates of perinatal death, neonatal seizures, and neonatal ventilator support compared with infants of planned in-hospital births [8]. Mothers who planned out-of-hospital births but delivered in a hospital had fewer obstetric interventions and a higher rate of blood transfusion. For women in the United States, this study provides a more accurate understanding of the outcomes associated with planned out-of-hospital versus planned in-hospital birth. (See "Planned home birth", section on "Retrospective studies").
Quick exercise

Creating a search strategy

**Scenario**: A 64 year old obese male who has tried many ways to lose weight presents with a newspaper article about ‘fat-blazer’ (chitosan). He asks for your advice.

1. **What would your PICO format be?**

<table>
<thead>
<tr>
<th>Population/problem</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention/indicator</td>
<td></td>
</tr>
<tr>
<td>Comparator</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td></td>
</tr>
</tbody>
</table>

2. **What would your research question be?**

**Research Question**: In obese patients, does chitosan compared to a placebo, decrease weight?

**PICO**: P = obese patients; I = chitosan; C = placebo; O = decrease weight

*Taken from the Centre for Evidence Based Medicine*

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**Upcoming Lunchtime Drop-in Sessions**

The **Library and Information Service** provides free specialist information skills training for all UHBristol staff and students.

To book a place, email: **library@uhbristol.nhs.uk**

If you’re unable to attend we also provide **one-to-one** or **small group** sessions. Contact **library@uhbristol.nhs.uk** or **katie.barnard@uhbristol.nhs.uk** to arrange a session.

**February (12pm)**

- Fri 5th: Literature Searching
- Mon 8th: Understanding articles
- Tues 16th: Statistics
- Wed 24th: Information resources

**March (1pm)**

- Thurs 3rd: Literature Searching
- Fri 11th: Understanding articles
- Mon 14th: Statistics
- Tues 22nd: Information resources
- Weds 30th: Literature Searching
Title: Health care-associated infection surveillance in a tertiary neonatal intensive care unit: A prospective clinical study after moving to a new building.

Citation: American journal of infection control, Jan 2016, vol. 44, no. 1, p. 80-84 (January 1, 2016)

Author(s): Cura, Ceyhun, Ozen, Metehan, Akaslan Kara, Aybuke, Alkan, Gulsum, Sesli Cetin, Emel

Abstract: There are very few prospective clinical studies on neonatal health care-associated infection (HAI) surveillance. HAI surveillance helps reduce not only mortality, but also morbidity, length of hospital stay, and health care costs. This prospective clinical study covered a period of 12 months in a tertiary neonatal intensive care unit (NICU). HAI rates were calculated using different denominators: number of patients hospitalized in the NICU, number of patient-days, and number of specific device-days. The HAI rate was 18%, and the incidence density was 17/1,000 patient-days. The most common HAI was bloodstream infection (n = 34; 50%). The most common pathogen was coagulase-negative staphylococci (CoNS; 54.9%) in gram-positive bacteria and in general. Methicillin resistance was 96.4% for CoNS. Klebsiella spp (13.7%) was the most common gram-negative bacteria. Extended-spectrum β-lactamase positivity was 14.3% for Klebsiella spp and 25% for Escherichia coli. HAI-related mortality was 0.3%. NICUs should perform their own HAI surveillance with prospective clinical design. Attention paid to handwashing, disinfection and sanitizing, complying with the terms of asepsis, extending in-service training, increasing the number of medical staff, preventing frequent changes in health care staff positions, and improving physical environmental conditions in NICUs might eventually decrease HAI rates. Copyright © 2016 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved.

Title: Outcomes of a Neonatal Golden Hour Implementation Project.

Citation: American journal of medical quality : the official journal of the American College of Medical Quality, Jan 2016, vol. 31, no. 1, p. 73-80 (January 2016)

Author(s): Ashmeade, Terri L, Haubner, Laura, Collins, Sherie, Miladinovic, Branko, Fugate, Karen

Abstract: The objective of this study was to implement and evaluate a quality improvement project (the golden hour pathway [GHP]) aimed at improving the quality and efficiency of care delivered to extremely low birth weight (ELBW) infants <28 weeks gestation and/or <1000 g birth weight during the first hour of life. Process improvement and patient data collected during the quality improvement cycles were compared with retrospective data for ELBW infants admitted to the study neonatal intensive care unit during the 2 years prior to GHP implementation. GHP implementation resulted in improvements compared with past internal performance in time to surfactant administration, time to administration of dextrose and amino acids, body temperature at admission, odds of developing chronic lung disease, and odds of developing retinopathy of prematurity. A standardized interdisciplinary approach to the care of ELBW infants in the first hour of life can lead to more efficient care delivery and contribute to improved outcomes. © The Author(s) 2014.
Title: Neonatal Biomarkers of Inflammation: Correlates of Early Neurodevelopment and Gait in Very-Low-Birth-Weight Preterm Children.

Citation: American journal of perinatology, Jan 2016, vol. 33, no. 1, p. 71-78 (January 2016)

Author(s): Rose, Jessica, Vassar, Rachel, Cahill-Rowley, Katelyn, Hintz, Susan R, Stevenson, David K

Abstract: Objective Neonatal biomarkers of inflammation were examined in relation to early neurodevelopment and gait in very-low-birth-weight (VLBW) preterm children. We hypothesized that preterm infants exposed to higher levels of neonatal inflammation would demonstrate lower scores on Bayley Scales of Infant Toddler Development, 3rd ed. (BSID-III) and slower gait velocity at 18 to 22 months adjusted age. Study Design A total of 102 VLBW preterm infants (birthweight [BW] ≤ 1,500 g, gestational age [GA] ≤ 32 weeks) admitted to neonatal intensive care unit [NICU] were recruited. Neonatal risk factors examined were GA at birth, BW, bronchopulmonary dysplasia, necrotizing enterocolitis, retinopathy of prematurity, sepsis, and serum C-reactive protein (CRP), albumin, and total bilirubin over first 2 postnatal weeks. At 18 to 22 months, neurodevelopment was assessed with BSID-III and gait was assessed with an instrumented mat. Results Children with neonatal CRP ≥ 0.20 mg/dL (n = 52) versus < 0.20 mg/dL (n = 37) had significantly lower BSID-III composite cognitive (92.0 ± 13.1 vs. 100.1 ± 9.6, p = 0.002), language (83.9 ± 16.0 vs. 95.8 ± 14.2, p < 0.001), and motor scores (90.0 ± 13.2 vs. 98.8 ± 10.1, p = 0.002), and slower gait velocity (84.9 ± 19.0 vs. 98.0 ± 22.4 cm/s, p = 0.004). Higher neonatal CRP correlated with lower cognitive (rho = -0.327, p = 0.002), language (rho = -0.285, p = 0.007), and motor scores (rho = -0.257, p = 0.015), and slower gait (rho = -0.298, p = 0.008). Multivariate analysis demonstrated neonatal CRP ≥ 0.20 mg/dL significantly predicted BSID-III cognitive (adjusted R(2) = 0.104, p = 0.008), language (adjusted R(2) = 0.124, p = 0.001), and motor scores (adjusted R(2) = 0.122, p = 0.004). Conclusions Associations between low-level neonatal inflammation and neurodevelopment suggest early biomarkers that may inform neuroprotective treatment for preterm children. Thieme Medical Publishers 333 Seventh Avenue, New York, NY 10001, USA.

Title: Impact of Prophylactic Continuous Positive Airway Pressure on Transient Tachypnea of the Newborn and Neonatal Intensive Care Admission in Newborns Delivered by Elective Cesarean Section.

Citation: American journal of perinatology, Jan 2016, vol. 33, no. 1, p. 99-106 (January 2016)

Author(s): Celebi, Miray Yilmaz, Alan, Serdar, Kahvecioglu, Dilek, Cakir, Ufuk, Yildiz, Duran, Erdeve, Omer, Arsan, Saadet, Atasay, Begum

Abstract: Objective This study aims to evaluate the effect of the prophylactic continuous positive airway pressure (CPAP) administration in the delivery room to newborns who were delivered by elective cesarean section (CS). Study Design Inborn infants with gestational age between 34(0/7) to 38(6/7) and born by elective CS were prospectively randomized to receive either prophylactic CPAP for 20 minutes via face mask or standardized care without CPAP in the delivery room. Primary outcomes were the incidence of transient tachypnea of the newborn (TTN) and neonatal intensive care unit (NICU) admission due to respiratory distress. Results A total of 259 infants with a mean gestational age of 37.7 ± 0.8 weeks and birth weight of 3,244 ± 477 g were included. A total of 134 infants received prophylactic CPAP and 125 received control standard care. The rate of NICU admission was significantly lower in prophylactic CPAP group (p = 0.045). Although the rate of TTN was lower in the prophylactic CPAP group, the difference was not statistically significant (p = 0.059).
The rate of NICU admission due to respiratory distress was significantly higher in late-preterm cohort than early-term cohort ($p < 0.0001$). Conclusion Prophylactic CPAP administration decreases the rate of NICU admission without any side effect in late-preterm and early-term infants delivered by elective CS. Thieme Medical Publishers 333 Seventh Avenue, New York, NY 10001, USA.

**Title:** Tubular Injury Biomarkers to Detect Gentamicin-Induced Acute Kidney Injury in the Neonatal Intensive Care Unit.

**Citation:** American journal of perinatology, Jan 2016, vol. 33, no. 2, p. 180-187 (January 2016)

**Author(s):** Jansen, Diana, Peters, Esther, Heemskerk, Suzanne, Koster-Kamphuis, Linda, Bouw, Martijn P W J M, Roelofs, Hennie M J, van Oeveren, Wim, van Heijst, Arno F J, Pickkers, Peter

**Abstract:** Objective We evaluated whether urinary excretion of tubular injury markers could be useful for early detection of gentamicin (GM)-induced renal damage in neonates. Study Design We conducted a prospective, observational trial in neonates admitted to the neonatal intensive care unit (26 GM treated, 20 control). Kidney injury molecule-1 (KIM-1), neutrophil gelatinase-associated lipocalin (NGAL), N-acetyl-β-D-glucosaminidase (NAG), and π- and α-glutathione-S-transferase (GSTP1-1 and GSTA1-1) were measured every 2 hours during admission and compared with serum creatinine (sCr) and urine output. Results Nine neonates developed AKI during the course of the study. The peak in excretion of urinary biomarkers preceded the peak in sCr ($p < 0.0001$). GM administration resulted in a more pronounced increase of sCr compared with control (13 [12-28] vs. 10 μmol/L [8.5-17]; $p < 0.05$). The urinary excretion of NAG (178 [104-698] vs. 32 ng/mol Cr [9-82]; $p < 0.001$) and NGAL (569 [168-1,681] vs. 222 ng/mol Cr [90-497]; $p < 0.05$) was higher in the GM group compared with control and preceded the peak of sCr and urine output decrease. Conclusion GM administration to neonates is associated with renal damage reflected by a more pronounced increase in sCr preceded by urinary excretion of biomarkers. Urinary biomarkers may be useful for earlier identification of renal injury in neonates. Thieme Medical Publishers 333 Seventh Avenue, New York, NY 10001, USA.

**Title:** Outbreaks of extended spectrum beta-lactamase-producing Enterobacteriaceae in neonatal intensive care units: a systematic review.

**Citation:** Archives of disease in childhood. Fetal and neonatal edition, Jan 2016, vol. 101, no. 1, p. 72-78 (January 2016)

**Author(s):** Stapleton, Patrick Jm, Murphy, Madeleine, McCallion, Naomi, Brennan, Marion, Cunney, Robert, Drew, Richard J

**Abstract:** To establish the number of outbreaks of extended spectrum beta-lactamase (ESBL) producing organisms in neonatal intensive care units (NICUs), to determine causes, mortality rates, proportions of infants colonised and infected and the interventions that terminated outbreaks. A systematic review of the literature in English, Spanish and French was undertaken with searches in four databases. The review conformed to the PRISMA guidelines, and the data extraction was modelled on the ORION criteria for studies of nosocomial infection. 75 studies fulfilled the inclusion criteria. There were 1185 cases of colonisation, 860 infections and 139 deaths. The median outbreak duration was 6.2 months (IQR 2.0-7.5 months). Klebsiella pneumoniae was the most frequently implicated pathogen. Understaffing was the most frequent risk factor for outbreaks. The most commonly identified source was admission of an ESBL-colonised infant with subsequent horizontal
dissemination. The main interventions described were improved infection-control procedures and screening of staff and the environment. 26 studies were included in the quantitative analysis. Random effects meta-analysis indicated high mortality rates in infants who developed infection (31%, 95% CI 20% to 43%). ESBL outbreaks in NICUs are associated with significant mortality and prolonged disruption. Understaffing is a major risk factor, but is infrequently addressed by interventions. Poor infection-control procedures are frequently implicated as contributing to ESBL spread. Better reporting of outbreaks may help clarify the role for routine ESBL screening in NICUs. Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to http://www.bmj.com/company/products-services/rights-and-licensing/

Title: A Pilot Study of Antithrombin Replacement Prior to Cardiopulmonary Bypass in Neonates.

Citation: Artificial organs, Jan 2016, vol. 40, no. 1, p. 80-85 (January 2016)


Abstract: Neonates have low levels of antithrombin. Inadequate anticoagulation during cardiopulmonary bypass (CPB) due to low antithrombin activity may result in a poor preservation of the coagulation system during bypass. We hypothesize that antithrombin replacement to neonates prior to CPB will preserve the hemostatic system and result in less postoperative bleeding. A randomized, double-blinded, placebo-controlled pilot study of antithrombin replacement to neonates prior to CPB was conducted. Preoperative antithrombin levels determined the dose of recombinant antithrombin or placebo to be given. Antithrombin levels were measured following the dosing of the antithrombin/placebo, after initiation of bypass, near the completion of bypass, and upon intensive care unit admission. Eight subjects were enrolled. No subject had safety concerns. Mediastinal exploration occurred in two antithrombin subjects and one placebo subject. Antithrombin activity levels were significantly higher in the treated group following drug administration; levels continued to be higher than preoperatively but not different from the placebo group at all other time points. Total heparin administration was less in the antithrombin group; measurements of blood loss were similar in both groups. A single dose of recombinant antithrombin did not maintain 100% activity levels throughout the entire operation. Although no safety concerns were identified in this pilot study, a larger trial is necessary to determine clinical efficacy. Copyright © 2015 International Center for Artificial Organs and Transplantation and Wiley Periodicals, Inc.

Title: Wide geographical dissemination of the multiresistant Staphylococcus capitis NRCS-A clone in neonatal intensive-care units.

Citation: Clinical microbiology and infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases, Jan 2016, vol. 22, no. 1, p. 46-52 (January 2016)


Abstract: Nosocomial late-onset sepsis represents a frequent cause of morbidity and mortality in preterm neonates. The Staphylococcus capitis clone NRCS-A has been previously described as an emerging cause of nosocomial bacteraemia in French neonatal intensive-care units (NICUs). In this study, we aimed to explore the possible unrecognized dissemination of this clone on a larger
One hundred methicillin-resistant S. capitis strains isolated from neonates (n = 86) and adult patients (n = 14) between 2000 and 2013 in four different countries (France, Belgium, the UK, and Australia) were analysed with Smal pulsed-field gel electrophoresis (PFGE) and drug typing. The vast majority of NICU strains showed the NRCS-A pulsotype and the dt11c type (96%). We then randomly selected 14 isolates (from neonates, n = 12, three per country; from adult patients, n = 2), considered to be a subset of representative isolates, and performed further molecular typing (SacII PFGE, SCCmec typing, and multilocus sequence typing-like analysis), confirming the clonality of the S. capitis strains isolated from neonates, despite their distant geographical origin. Whole genome single-nucleotide polymorphism-based phylogenetic analysis of five NICU isolates (from the different countries) attested to high genetic relatedness within the NRCS-A clone. Finally, all of the NRCS-A strains showed multidrug resistance (e.g. methicillin and aminoglycoside resistance, and decreased vancomycin susceptibility), with potential therapeutic implications for infected neonates. In conclusion, this study represents the first report of clonal dissemination of methicillin-resistant coagulase-negative Staphylococcus clone on a large geographical scale. Questions remain regarding the origin and means of international spread, and the reasons for this clone's apparent predilection for neonates.

Title: Pain-associated stressor exposure and neuroendocrine values for premature infants in neonatal intensive care.

Citation: Developmental psychobiology, Jan 2016, vol. 58, no. 1, p. 60-70 (January 2016)

Author(s): Rohan, Annie J

Abstract: Recurrent stress during neonatal intensive care taxes the adaptive capacity of the premature infant and may be a risk factor for suboptimal developmental outcomes. This research used a descriptive, cross-sectional design and a life course perspective to examine the relationship between resting adrenocorticoid values at 37 postmenstrual weeks of age and cumulative pain-associated stressor exposure in prematurely born infants. Subjects were 59 infants born at under 35 completed weeks of gestation, who were at least 2 weeks of age, and who had been cared for in the NICU since birth. No significant relationships were identified between cortisol values and any of the study variables (number of skin breaking procedures, hours of assisted ventilation, gestational age at birth, exposure to antenatal steroids, history of severe academia, birthweight, days of age to attain birthweight, weight at testing, days of age at testing, recent pain-associated procedures, and 17-OHP value). A significant negative correlation (Spearman rank, one-tailed) between the number of skin-breaking procedures and 17-OHP values was identified (r = -.232, p = .039). Recurrent pain-associated stressor exposure may be a more important factor in explaining the variance of 17-OHP values at 37 postmenstrual weeks of age than birthweight, gestational age, or chronological age. © 2015 Wiley Periodicals, Inc. Dev Psychobiol 58:60-70, 2016. © 2015 Wiley Periodicals, Inc.

Title: Evaluation of the relationship between opioid exposure in extremely low birth weight infants in the neonatal intensive care unit and neurodevelopmental outcome at 2 years.

Citation: Early human development, Jan 2016, vol. 92, p. 29-32 (January 2016)

Author(s): Kocek, Melissa, Wilcox, Roger, Crank, Christopher, Patra, Kousiki
Abstract: Extremely low birth weight (ELBW) infants are exposed to many painful procedures while in the neonatal intensive care unit (NICU), such as catheter insertion and endotracheal intubation. Exposure of ELBW infants to repetitive pain and stress in the NICU can lead to cardiovascular instability and may alter neuronal and synaptic organization. Opioid analgesics are administered to reduce pain, stress and to potentially reduce poor neurologic outcomes. They may also be utilized as sedation for mechanically ventilated ELBW infants. There is limited data in regards to neurodevelopmental outcomes of preterm infants exposed to opioids, and available studies have conflicting results. To examine the relationship between cumulative opioid dose in ELBW infants in the NICU and neurodevelopmental outcomes at 20months corrected age (CA). 100 ELBW infants who had complete neurodevelopmental assessments at 20months CA were categorized by cumulative opioid exposure during the NICU stay (high vs. low/no opioid). Outcome measures included cognitive, motor and language scores from the Bayley Scales of Infant and Toddler Development-III (BSITD-III). Multiple regression analyses adjusted for the impact of social and neonatal risk factors on outcome. There were 60 patients with high and 40 with low/no opioid exposure. Infants in the high dose group had a higher number of median ventilator days (53.5 vs. 45.6days, p=0.046) and a higher incidence of necrotizing enterocolitis (5% vs. 21.7%, p=0.022). There were no significant differences in BSITD-III scores between the two opiate groups. In multivariate analysis cumulative opioid dose was associated with lower cognitive scores on the BSITD-III even after adjusting for social and neonatal risk factors (β=-0.247, p=0.012). Cumulative opioid dose is associated with worse cognitive scores at 20months CA even after adjusting for social and neonatal risk factors. Copyright © 2015 Elsevier Ireland Ltd. All rights reserved.

Title: A bundle with a preformatted medical order sheet and an introductory course to reduce prescription errors in neonates.

Citation: European journal of pediatrics, Jan 2016, vol. 175, no. 1, p. 113-119 (January 2016)

Author(s): Palmero, David, Di Paolo, Ermindo R, Beauprop, Lydie, Pannatier, André, Tolsa, Jean-François

Abstract: The objective of this study was to assess whether the introduction of a new preformatted medical order sheet coupled with an introductory course affected prescription quality and the frequency of errors during the prescription stage in a neonatal intensive care unit (NICU). Two-phase observational study consisting of two consecutive 4-month phases: pre-intervention (phase 0) and post-intervention (phase I) conducted in an 11-bed NICU in a Swiss university hospital. Interventions consisted of the introduction of a new preformatted medical order sheet with explicit information supplied, coupled with a staff introductory course on appropriate prescription and medication errors. The main outcomes measured were formal aspects of prescription and frequency and nature of prescription errors. Eighty-three and 81 patients were included in phase 0 and phase I, respectively. A total of 505 handwritten prescriptions in phase 0 and 525 in phase I were analysed. The rate of prescription errors decreased significantly from 28.9 % in phase 0 to 13.5 % in phase I (p < 0.05). Compared with phase 0, dose errors, name confusion and errors in frequency and rate of drug administration decreased in phase I, from 5.4 to 2.7 % (p < 0.05), 5.9 to 0.2 % (p < 0.05), 3.6 to 0.2 % (p < 0.05), and 4.7 to 2.1 % (p < 0.05), respectively. The rate of incomplete and ambiguous prescriptions decreased from 44.2 to 25.7 and 8.5 to 3.2 % (p < 0.05), respectively. Inexpensive and simple interventions can improve the intelligibility of prescriptions and reduce medication errors. • Medication errors are frequent in NICUs and prescription is one of the most critical steps. • CPOE reduce prescription errors, but their implementation is not available everywhere. What is New: • Preformatted medical order sheet coupled with an introductory course decrease medication errors
in a NICU. • Preformatted medical order sheet is an inexpensive and readily implemented alternative to CPOE.

Title: Retinopathy of prematurity: an oxidative stress neonatal disease.

Citation: Frontiers in bioscience (Landmark edition), Jan 2016, vol. 21, p. 165-177 (2016)

Author(s): Stone, William L, Shah, Darshan, Hollinger, Shawn M

Abstract: Proteomics is the global study of proteins in an organism or a tissue/fluid and is clinically relevant since most disease states are accompanied by specific alterations in an organism's proteome. This review focuses on the application of proteomics to neonatology with particular emphasis on retinopathy of prematurity (ROP), which is a disease in which oxidative stress plays a key pathophysiological role. Oxidative stress is a physiologically relevant redox imbalance caused by an excess of reactive oxygen (ROS) or reactive nitrogen oxide species (RNOS). A major conclusion of this review is that proteomics may be the optimal technology for studying neonatal diseases such as ROP, particularly in the setting of a neonatal intensive care unit (NICU). Proteomics has already identified a number of ROP serum biomarkers. This review will also suggest novel therapeutic approaches to ROP and other neonatal oxidative stress diseases (NOSDs) based on a systems medicine approach.

Title: Factors associated with infant feeding of human milk at discharge from neonatal intensive care: Cross-sectional analysis of nurse survey and infant outcomes data.

Citation: International journal of nursing studies, Jan 2016, vol. 53, p. 190-203 (January 2016)

Author(s): Hallowell, Sunny G, Rogowski, Jeannette A, Spatz, Diane L, Hanlon, Alexandra L, Kenny, Michael, Lake, Eileen T

Abstract: Nurses are principal caregivers in the neonatal intensive care unit and support mothers to establish and sustain a supply of human milk for their infants. Whether an infant receives essential nutrition and immunological protection provided in human milk at discharge is an issue of health care quality in this setting. To examine the association of the neonatal intensive care unit work environment, staffing levels, level of nurse education, lactation consultant availability, and nurse-reported breastfeeding support with very low birth weight infant receipt of human milk at discharge. Cross sectional analysis combining nurse survey data with infant discharge data. A national sample of neonatal intensive care units (N=97), nurses (N=5614) and very low birth weight infants (N=6997). Sequential multivariate linear regression models were estimated at the unit level between the dependent variable (rate of very low birth weight infants discharged on "any human milk") and the independent variables (nurse work environment, nurse staffing, nursing staff education and experience, lactation consultant availability, and nurse-reported breastfeeding support). The majority of very low birth weight infants (52%) were discharged on formula only. Fewer infants (42%) received human milk mixed with fortifier or formula. Only 6% of infants were discharged on exclusive human milk. A 1 SD increase (0.25) in the Practice Environment Scale of the Nursing Work Index composite score was associated with a four percentage point increase in the fraction of infants discharged on human milk (p<0.05). A 1 SD increase (0.15) in the fraction of nurses with a bachelor's degree in nursing was associated with a three percentage point increase in the fraction infants discharged on human milk (p<0.05). The acuity-adjusted staffing ratio was marginally associated with the rate of human milk at discharge (p=.056). A 1 SD increase (7%) in the fraction of infants who
received breastfeeding support was associated with an eight percentage point increase in the fraction of infants discharged on human milk (p<0.001). Neonatal intensive care units with better work environments, better educated nurses, and more infants who receive breastfeeding support by nurses have higher rates of very low birth weight infants discharged home on human milk. Investments by nurse administrators to improve work environments and support educational preparation of nursing staff may ensure that the most vulnerable infants have the best nutrition at the point of discharge. Copyright © 2015 Elsevier Ltd. All rights reserved.

Title: Association of Newborn Apgar Score With Maternal Admission to the Intensive Care Unit.

Citation: JAMA pediatrics, Jan 2016, vol. 170, no. 1, p. 88-89 (January 1, 2016)

Author(s): Ray, Joel G, Medcalf, Karyn E, Park, Alison L

Title: Effect of an educational intervention on parental readiness for premature infant discharge from the neonatal intensive care units.

Citation: Journal of advanced nursing, Jan 2016, vol. 72, no. 1, p. 135-146 (January 2016)

Author(s): Chen, Yongfeng, Zhang, Jun, Bai, Jinbing

Abstract: To examine the effect of an educational intervention on parental readiness for premature infant discharge from neonatal intensive care units. Low readiness for discharge can result in negative healthcare outcomes for infants and their parents. However, few studies have examined the effect of discharge education programmes on parental readiness for premature infant discharge in Chinese critical care settings. A quasi-experimental study. Between October 2011-March 2012, 154 parents of premature infants were recruited from neonatal intensive care units of two tertiary hospitals in Central China. These parents were assigned to either the intervention or control group based on their entry order. Parents in the intervention group received two sessions of 60-minute discharge education along with hospital routine care; parents in the control group only received hospital routine care. Parental readiness for discharge and quality of discharge education were assessed on the day of infant discharge from neonatal intensive care units. Independent samples t-test and linear regression were used to analyse the data. Parental readiness for premature infant discharge was in the moderate level. Independent samples t-test showed that both mean scores of parental discharge readiness and discharge teaching quality from the intervention group were significantly higher than those in the control group. Linear regression analysis showed that discharge teaching quality explained 39.7% of the variance in parental readiness for premature infant discharge. Discharge education can improve parental readiness for premature infant discharge. Quality of discharge teaching can significantly predict parental readiness for premature infant discharge. © 2015 John Wiley & Sons Ltd.

Title: The prevention of Cronobacter infections in hospital neonatal intensive care units.

Citation: Journal of infection and public health, Jan 2016, vol. 9, no. 1, p. 110-112 (2016 Jan-Feb)

Author(s): Odeyemi, Olumide A, Sani, Norrkiah A
**Title:** Higher Quality of Care and Patient Safety Associated With Better NICU Work Environments.

**Citation:** Journal of nursing care quality, Jan 2016, vol. 31, no. 1, p. 24-32 (2016 Jan-Mar)

**Author(s):** Lake, Eileen T, Hallowell, Sunny G, Kutney-Lee, Ann, Hatfield, Linda A, Del Guidice, Mary, Boxer, Bruce Alan, Ellis, Lauren N, Verica, Lindsey, Aiken, Linda H

**Abstract:** The objective of this study was to investigate the associations between the neonatal intensive care unit (NICU) work environment, quality of care, safety, and patient outcomes. A secondary analysis was conducted of responses of 1247 NICU staff nurses in 171 hospitals to a large nurse survey. Better work environments were associated with lower odds of nurses reporting poor quality, safety, and outcomes. Improving the work environment may be a promising strategy to achieve safer settings for at-risk newborns.

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**Title:** Phototherapy in transport for neonates with unconjugated hyperbilirubinaemia.

**Citation:** Journal of paediatrics and child health, Jan 2016, vol. 52, no. 1, p. 67-71 (January 2016)

**Author(s):** Waterham, Michelle, Bhatia, Risha, Donath, Susan, Molesworth, Charlotte, Tan, Kenneth, Stewart, Michael

**Abstract:** In Victoria, neonates with severe unconjugated hyperbilirubinaemia at risk of requiring exchange transfusion are retrieved by the Paediatric Infant Perinatal Emergency Retrieval Service and transferred to a Neonatal Intensive Care Unit where an exchange transfusion can be performed if necessary. Transfer may result in prolonged periods without phototherapy in neonates at risk of developing bilirubin encephalopathy. We aimed to describe our experience of the introduction of phototherapy using a portable phototherapy unit during transport. Neonates with a primary diagnosis of severe unconjugated hyperbilirubinaemia were identified from the Paediatric Infant Perinatal Emergency Retrieval clinical database over an 11-year period. Demographic and clinical data including gestation, age at transport, serum bilirubin levels pre- and post-transport, use of phototherapy during transport (PTDT), likely diagnosis, and use of exchange transfusion were included. A total of 147 neonates were included with 104 neonates receiving PTDT and 43 who did not. Neonates who received PTDT were less likely to require exchange transfusion, 19.2% versus 34.9%, odds ratio 0.44 (95% CI 0.2-0.98), P = 0.05. However, after correction for factors appearing to be related to use of exchange transfusion, the odds ratio increased to 0.58 (95% CI 0.21-1.63), P = 0.3. There was a greater reduction in the pre- to post-transport total serum bilirubin levels (μmol/L) for the group receiving PTDT (mean 46.3, SD 64.6) versus no PTDT (mean 26.1, SD 62.5), but this did not reach significance, P = 0.08. Phototherapy during neonatal transport is feasible and safe and may result in a decreased requirement for subsequent exchange transfusion. © 2015 The Authors. Journal of Paediatrics and Child Health © 2015 Paediatrics and Child Health Division (Royal Australasian College of Physicians).

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**Title:** Pulse oximetry screening for critical congenital heart disease in the neonatal intensive care unit.

**Citation:** Journal of perinatology : official journal of the California Perinatal Association, Jan 2016, vol. 36, no. 1, p. 52-56 (January 2016)
**Author(s):** Goetz, E M, Magnuson, K M, Eickhoff, J C, Porte, M A, Hokanson, J S

**Abstract:** Pulse oximetry screening (POS) is an effective tool to detect critical congenital heart disease (CCHD) in asymptomatic term infants, but its value in the neonatal intensive care unit (NICU) requires further clarification. A retrospective review of 1005 babies without previously diagnosed CCHD admitted to a level III NICU was performed to assess the risk for missed CCHD and performance of POS. Of the 1005 NICU patients, 812 had documented POS and none failed POS. In 812 patients, 547 had delayed POS because of the use of supplemental oxygen. In 259/812 patients, POS was delayed until the baby was >2 weeks old. CCHD was excluded by echocardiography, irrespective of POS, in 287/1005 patients. POS can be performed in the NICU with minimal adverse effects. However, in many NICU patients CCHD is confirmed or excluded before POS, and POS will frequently be performed after CCHD would have been expected to become symptomatic.

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**Title:** Relationship Between Serum Albumin Levels and Infections in Newborn Late Preterm Infants.

**Citation:** Medical science monitor : international medical journal of experimental and clinical research, Jan 2016, vol. 22, p. 92-98 (2016)

**Author(s):** Yang, Chunyan, Liu, Zhaoguo, Tian, Min, Xu, Ping, Li, Baoyun, Yang, Qiaozhi, Yang, Yujun

**Abstract:** BACKGROUND We aimed to evaluate the clinical value of serum albumin levels for the evaluation and prognosis of late preterm infants with infections. MATERIAL AND METHODS This was a retrospective study performed in late preterm infants admitted at the neonatal intensive care unit (NICU) of the Liaocheng People's Hospital between July 2012 and March 2013. Data, including laboratory test results, neonatal critical illness score (NCIS), perinatal complications and prognosis, were analyzed. The newborn infants were divided into 3 groups according to their serum albumin levels, (≥30 g/L, 25-30 g/L and ≤25 g/L for high, moderate, and low, respectively). RESULTS Among 257 patients, birth weight was 2003±348 g, gestational age was 35.7±2.3 weeks, and 59.1% were male. In addition, 127 (49.4%) were in the low albumin group. There were 32 patients with sepsis, 190 with infections, and 35 without infection, and their rates of hypoalbuminemia were 86.0%, 50.5%, and 30.7%, respectively (P<0.05). Albumin levels of the patients who survived were higher than those of the patients who died. In the low albumin group, the number of individual-event-critical NCIS cases and the frequency of multiple organs injuries were 63.8% and 28.3%, respectively, and were higher than in the 2 other groups. Mortality was higher in patients with sepsis. Hypoalbuminemia was associated with severe adverse outcomes (odds ratio=6.3, 95% confidence interval: 3.7-10.9, P<0.001). CONCLUSIONS Hypoalbuminemia was frequent among neonates with sepsis. Lower albumin levels might be associated with a poorer prognosis. Albumin levels could be appropriate for the diagnosis and prognosis of late preterm neonates with infections.

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**Title:** Outborns or Inborns: Where Are the Differences A Comparison Study of Very Preterm Neonatal Intensive Care Unit Infants Cared for in Australia and New Zealand and in Canada.

**Citation:** Neonatology, Jan 2016, vol. 109, no. 1, p. 76-84 (2016)

**Author(s):** Hossain, Sadia, Shah, Prakesh S, Ye, Xiang Y, Darlow, Brian A, Lee, Shoo K, Lui, Kei, Canadian Neonatal Network and Australian and New Zealand Neonatal Network

**Abstract:** Very preterm infants born outside tertiary centers are at higher risks of adverse outcomes than inborn infants. Regionalization of perinatal care has been introduced worldwide to improve...
outcomes. To compare the risk-adjusted outcomes of both inborn and outborn infants cared for in tertiary neonatal intensive care units in Australia and New Zealand and in Canada. Deidentified data of infants <32 weeks’ gestational age from the 29 Australian and New Zealand Neonatal Network units (ANZNN; n = 9,893) and 26 Canadian Neonatal Network units (CNN; n = 7,133) between 2005 and 2007 were analyzed for predischarge adverse outcomes. ANZNN had lower rates of outborns compared to CNN (13 vs. 19%), particularly of late admissions (>2 days of age; 5.8 vs. 22.2% of outborns) who had high morbidity rates. After adjusting for confounding variables including gestation, ANZNN inborn infants had lower odds of chronic lung disease [CLD; 17.0 vs. 23.3%; adjusted odds ratio (AOR) = 0.70, 95% CI: 0.64-0.77], severe neurological injuries on ultrasound (SNI; 4.1 vs. 6.7%; AOR = 0.62, 95% CI: 0.53-0.73), severe retinopathy (5.6 vs. 7%; AOR = 0.71, 95% CI: 0.59-0.84) and necrotizing enterocolitis (3.5 vs. 5.4%; AOR = 0.67, 95% CI: 0.56-0.79), but no difference in mortality odds. After excluding the late outborn admissions, ANZNN outborns had lower odds of SNI (AOR = 0.43, 95% CI: 0.32-0.58) and CLD (AOR = 0.63, 95% CI: 0.49-0.81) than CNN. ANZNN inborn and early admitted outborn infants had lower odds of neonatal morbidities than their CNN counterparts. However, compared to ANZNN, the higher CNN rates of outborns and their late admissions are likely related to the differences in regionalization and referral practices, and may explain differences in outcomes. © 2015 S. Karger AG, Basel.

Title: Transepidermal Water Loss in Neonates: Baseline Values Using a Closed-Chamber System.

Citation: Pediatric dermatology, Jan 2016, vol. 33, no. 1, p. 33-37 (January 2016)

Author(s): Mathanda, Teena R, M Bhat, Ramesh, Hegde, Pavan, Anand, Shivaraja

Abstract: Transepidermal water loss (TEWL) is the normal, constitutive loss of water vapor from the skin in the absence of sweat gland activity. It is regarded as one of the most important parameters for characterizing skin barrier function, and the values are dependent on multiple variables. The objective of this study was to evaluate TEWL in neonates using a closed-chamber system, and determine if there is a variation of TEWL with the mode of delivery, preterm birth, low birthweight or phototherapy. This prospective study was conducted in 104 healthy neonates, 30 neonates in the Neonatal Intensive Care Unit (NICU) and 40 adults using a noninvasive, closed-chamber system (VapoMeter(TM) ). A statistically significant difference in TEWL was noted between newborns and adults. No remarkable difference in TEWL was seen between boys or men and girls or women or those born via normal vaginal birth and caesarean section, but TEWL was significantly higher in preterm and low birthweight neonates. Significantly higher TEWL was noted from the antecubital fossa of the neonates who received phototherapy when compared with six other sites. The closed-chamber system is an acceptable alternative to the more widely used open-chamber system. The higher mean TEWL in neonates suggests that the epidermal barrier is still adapting to extrauterine life, making newborn skin more sensitive and requiring appropriate, age adapted care. © 2015 Wiley Periodicals, Inc.

Title: Effect of comfort pads and incubator design on neonatal radiography.

Citation: Pediatric radiology, Jan 2016, vol. 46, no. 1, p. 112-118 (January 2016)

Author(s): Jiang, Xia, Baad, Michael, Reiser, Ingrid, Feinstein, Kate A, Lu, Zhengfeng

Abstract: There has been increasing interest in patient dose reduction in neonatal intensive care units. Removing comfort pads for radiography has been identified as a potential means to decrease
patient dose. To assess the effect of comfort pads and support trays on detector entrance exposure (DEE) and image quality for neonatal radiography, and its implication for patient dose. Comfort pads and support trays from three incubator and warmer systems were examined. The attenuation of the primary beam by these structures was measured using a narrow beam geometry. Their effect on DEE and image quality was then assessed using typical neonatal chest radiography techniques with three configurations: 1) both the comfort pad and support included in the beam, 2) only the support tray included and 3) both the comfort pad and support tray removed. Comfort pads and support trays were found to attenuate the primary beam by 6-15%. Eliminating these structures from the X-ray beam’s path was found to increase the detector entrance exposure by 28-36% and increase contrast-to-noise ratio by more than 21%, suggesting room for patient dose reduction when the same image quality is maintained. Comfort pads and tray support devices can have a considerable effect on DEE and image quality, with large variations among different incubator designs. Positioning the image detector directly underneath neonatal patients for radiography is a potential means for patient dose reduction. However, such benefit should be weighed against the risks of moving the patient.

Title: Reference values of regional cerebral oxygen saturation during the first 3 days of life in preterm neonates.

Citation: Pediatric research, Jan 2016, vol. 79, no. 1-1, p. 55-64 (January 2016)

Author(s): Alderliesten, Thomas, Dix, Laura, Baerts, Wim, Caicedo, Alexander, van Huffel, Sabine, Naulaers, Gunnar, Groenendaal, Floris, van Bel, Frank, Lemmers, Petra

Abstract: Currently, reliable reference values of regional cerebral oxygen saturation (rScO2) for different gestational age (GA) groups are lacking, which hampers the implementation of near-infrared spectroscopy (NIRS) alongside monitoring arterial oxygen saturation (SaO2) and blood pressure in neonatal intensive care. The aim of this study was to provide reference values for rScO2 and cerebral fractional tissue oxygen extraction (cFTOE; (SaO2 - rScO2)/SaO2) for small adult and neonatal NIRS sensors. In this study, 999 infants born preterm (GA <32 wk) were monitored with NIRS during the first 72 h of life. Mixed modeling was used to generate reference curves grouped per 2 wk of GA. In addition, the influence of a hemodynamically significant patent ductus arteriosus, gender, and birth weight were explored. Average rScO2 was ~65% at admission, increased with GA (1% per week) and followed a parabolic curve in relation to postnatal age with a peak at ~36 h. The cFTOE showed similar but inverse effects. On average, the neonatal sensor measured 10% higher than the adult sensor. rScO2 and cFTOE reference curves are provided for the first 72 h of life in preterm infants, which might support the broader implementation of NIRS in neonatal intensive care.

Title: Improved Filtering of Pulse Oximeter Monitoring Alarms in the Neonatal ICU: Bedside Significance.

Citation: Respiratory care, Jan 2016, vol. 61, no. 1, p. 85-89 (January 2016)

Author(s): Stefanescu, Beatrice M, O'Shea, T Michael, Haury, Fran, Carlo, Waldemar A, Slaughter, James C

Abstract: The OxiMax N-600x containing SatSeconds alarm management software was designed to assist clinicians in discriminating nuisance alarms from those that are clinically relevant. Instead of
sounding an alarm the moment the oxygen saturation reading violates the upper or lower limit settings, a magnitude and duration of tolerance can be set. The primary objective was to study the proportion of nuisance alarms relative to the proportion of clinically relevant alarms being filtered under 4 different SatSeconds alarm settings (i.e., 10, 25, 50, and 100) in the neonatal intensive care environment. This is an observational prospective study of 50 infants cared for in 3 large neonatal ICUs. Infants were monitored for 4 continuous h each by a study observer with the study monitor, in addition to standard multiparameter monitors. The performance of the SatSeconds alarm was compared with nursing intervention. The area under the receiver operating characteristic curve (95% CI) for SatSeconds alarm settings when compared with nursing intervention were as follows: 0.61 (0.57-0.66) when the SatSeconds alarm setting was off, 0.63 (0.59-0.68) for the 10 SatSeconds alarm setting, 0.64 (0.59-0.69) for the 25 SatSeconds alarm setting, 0.64 (0.59-0.69) for the 50 SatSeconds alarm setting, and 0.63 (0.58-0.68) for the 100 SatSeconds alarm setting, respectively. The SatSeconds feature of the OxiMax N-600x pulse oximeter reduced some nuisance alarms; however, its specificity to nurse-identified desaturation events does not significantly improve with lengthening SatSeconds alarm settings. Copyright © 2016 by Daedalus Enterprises.

Title: A Mass Balance-Based Semiparametric Approach to Evaluate Neonatal Erythropoiesis.

Citation: The AAPS journal, Jan 2016, vol. 18, no. 1, p. 187-195 (January 2016)

Author(s): Kuruvilla, Denison J, Widness, John A, Nalbant, Demet, Schmidt, Robert L, Mock, Donald M, Veng-Pedersen, Peter

Abstract: Postnatal hemoglobin (Hb) production in anemic preterm infants is determined by several factors including the endogenous erythropoietin levels, allogeneic RBC transfusions administered to treat anemia, and developmental age. As a result, their postnatal Hb production rate can vary considerably. This work introduces a novel Hb mass balance-based semiparametric approach that utilizes infant blood concentrations of Hb from the first 30 postnatal days to estimate the amount of Hb produced and the erythropoiesis rate in newborn infants. The proposed method has the advantage of not relying on specific structural pharmacodynamic model assumptions to describe the Hb production, but instead utilizes simple mass balance principles and nonparametric regression analysis. The developed method was applied to the Hb data from 79 critically ill anemic very low birth weight preterm infants to evaluate the dynamic changes in erythropoiesis during the first month of life and to determine the inter-subject variability in Hb production. The estimated mean (±SD) cumulative amount of Hb produced by the infants over the first month of life was 6.6 ± 3.4 g (mean body weight, 0.768 kg), and the mean estimated body weight-scaled Hb production rate over the same period was 0.23 ± 0.12 g/day/kg. A significant positive correlation was observed between infant gestational age and the mean body weight-scaled Hb production rate over the first month of life (P < 0.05). We conclude that the proposed mathematical approach and its implementation provide a flexible framework to evaluate postnatal erythropoiesis in newborn infants.

Title: The Validity and Clinical Utility of the COVERS Scale and Pain Assessment Tool for Assessing Pain in Neonates Admitted to an Intensive Care Unit.

Citation: The Clinical journal of pain, Jan 2016, vol. 32, no. 1, p. 51-57 (January 2016)

Author(s): O’Sullivan, Anna T, Rowley, Simon, Ellis, Sharon, Faasse, Kate, Petrie, Keith J
Abstract: Infants admitted to a neonatal intensive care unit (NICU) are routinely subject to a range of painful procedures. However, pain assessments in NICUs are under-utilized due to a lack of a gold standard pain measure. In this study we assessed the psychometric properties and clinical utility of the COVERS and Pain Assessment Tool (PAT), in a neonatal unit. We had 72 nurses use the scales to assess pain at baseline and during a heel-lance procedure in 80 NICU infants. An independent research observer and the infant’s mother also completed pain ratings. After the study, we assessed nurse preference and clinical utility ratings for both scales. The COVERS had satisfactory internal consistency at baseline (Cronbach α=0.74) and heel lance (α=0.78), as did the PAT (baseline α=0.79, heel lance α=0.85). Intraclass correlation coefficients demonstrated good inter-rater reliability at baseline and heel lance, respectively, for both the COVERS (0.82 and 0.80) and the PAT (0.83 and 0.86). There were strong associations between total scores on the 2 scales at baseline (r=0.81, P<0.001) and heel lance (r=0.91, P<0.001), between researcher’s ratings and total COVERS (p=0.75, P<0.001) and PAT scores (p=0.69, P<0.001), and between maternal ratings and total COVERS (r=0.74, P<0.05) and PAT scores (r=0.65, P<0.05). Both scales were sensitive to pain and nonpain events. Reliability and validity was mostly upheld across gestational age. Most nurses preferred the COVERS (52%) to the PAT (16%), and 32% had no preference. This study builds on evidence for the COVERS scale and the PAT; both scales were reliable and valid measures of acute pain in neonates as premature as 24-week gestational age.

Title: Risk factor profile of massive pulmonary haemorrhage in neonates: the impact on survival studied in a tertiary care centre.

Citation: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians, January 2016, vol. 29, no. 2, p. 338-343 (January 2016)

Author(s): Yum, Sook Kyung, Moon, Cheong-Jun, Youn, Young-Ah, Lee, Hyun Seung, Kim, So-Young, Sung, In Kyung

Abstract: Pulmonary haemorrhage (PH) in neonates is a fatal event leading to hazardous complications and even death. The aim of this study was to elucidate influential factors of the ultimate disease course that affect death or survival. Infants treated for PH in our institution from March 2009 to December 2013 were retrospectively reviewed. Infants transferred from other hospitals were excluded. Infants were grouped into two categories, deceased or survived at neonatal intensive care unit discharge. Information regarding perinatal history, initial management and laboratory results were obtained and analysed for each group. Seventy infants fulfilled the inclusion criteria, 41 infants in the deceased group and 29 infants in the survived group. Overall, the infants in the deceased group displayed lower gestational age (27 and 1/7 ± 3.610 versus 29 and 3/7 ± 3.530 weeks, p = 0.009) and lower one-minute (2.342 ± 1.493 versus 4.035 ± 2.079, p < 0.001) and five-minute Apgar scores (2.342 ± 1.493 versus 4.035 ± 2.079, p < 0.001) and required aggressive resuscitation (p = 0.003) and a greater number of inotropes (2.195 ± 1.346 versus 1.069 ± 0.704, p < 0.001). Deceased infants were administered increased amounts of fluid during the first 24 h after birth (117.783 ± 32.325 versus 99.379 ± 17.728 mL/kg, p = 0.004). A relatively short prothrombin time impacted survival (p = 0.01), whereas platelet count was the only factor that significantly affected the time length from the onset of PH to death (p = 0.01). Infants with a lower gestational age in a compromised state are prone to die once PH develops. The initial management of fluid intake not to exceed the adequate limit is especially important in order to prevent PH-related deaths when correcting hypoalbuminemia and coagulopathy.
Title: Impact of Continuous Capnography in Ventilated Neonates: A Randomized, Multicenter Study.

Citation: The Journal of pediatrics, Jan 2016, vol. 168, p. 56 (January 2016)

Author(s): Kugelman, Amir, Golan, Agenta, Riskin, Arieh, Shoris, Irit, Ronen, Michal, Qumqam, Nelly, Bader, David, Bromiker, Ruben

Abstract: To compare the time spent within a predefined safe range of CO2 (30-60 mmHg) during conventional ventilation between infants who were monitored with distal end-tidal CO2 (dETCO2, or capnography) and those who were not. For this randomized, controlled multicenter study, ventilated infants with a double-lumen endotracheal tube were randomized to 1 of 2 groups: the open (monitored) group, in which data from the capnograph were recorded, displayed to the medical team, and used for patient care, and the masked group, in which data from the capnograph were recorded. However, the measurements were masked and not available for patient care. dETCO2 was compared with PaCO2 measurements recorded for patient care. Fifty-five infants (25 open, 30 masked) participated in the study (median gestational age, 28.6 weeks; range, 23.5-39.0 weeks). The 2 groups were comparable. dETCO2 was in good correlation (r = 0.73; P < .001) and adequate agreement (mean ± SD of the difference, 3.0 ± 8.5 mmHg) with PaCO2. Compared with infants in the masked group, those in the monitored group had significantly (P = .03) less time with an unsafe dETCO2 level (high: 3.8% vs 8.8% or low: 3.8% vs 8.9%). The prevalence of intraventricular hemorrhage or periventricular leukomalacia rate was lower in the monitored group (P = .02) and was significantly (P < .05) associated with the independent factors dETCO2 monitoring and gestational age. Continuous dETCO2 monitoring improved control of CO2 levels within a safe range during conventional ventilation in a neonatal intensive care unit. ClinicalTrials.gov: NCT01572272. Copyright © 2016 Elsevier Inc. All rights reserved.

Title: Endotracheal Intubation in Neonates: A Prospective Study of Adverse Safety Events in 162 Infants.

Citation: The Journal of pediatrics, Jan 2016, vol. 168, p. 62 (January 2016)


Abstract: To determine the rate of adverse events associated with endotracheal intubation in newborns and modifiable factors contributing to these events. We conducted a prospective, observational study in a 100-bed, academic, level IV neonatal intensive care unit from September 2013 through June 2014. We collected data on intubations using standardized data collection instruments with validation by medical record review. Intubations in the delivery or operating rooms were excluded. The primary outcome was an intubation with any adverse event. Adverse events were defined and tracked prospectively as nonsevere or severe. We measured clinical variables including number of attempts to successful intubation and intubation urgency (elective, urgent, or emergent). We used logistic regression models to estimate the association of these variables with adverse events. During the study period, 304 intubations occurred in 178 infants. Data were available for 273 intubations (90%) in 162 patients. Adverse events occurred in 107 (39%) intubations with nonsevere and severe events in 96 (35%) and 24 (8.8%) intubations, respectively. Increasing number of intubation attempts (OR 2.1, 95% CI, 1.6-2.6) and emergent intubations (OR 4.7, 95% CI, 1.7-13) were predictors of adverse events. The primary cause of emergent intubations was unplanned extubation (62%). Adverse events are common in the neonatal intensive care unit, occurring in 4 of 10 intubations. The odds of an adverse event doubled with increasing number of
attempts and quadrupled in the emergent setting. Quality improvement efforts to address these factors are needed to improve patient safety. Copyright © 2016 Elsevier Inc. All rights reserved.

Title: Care of the Family of an Infant With a Congenital Heart Defect During the NICU Hospitalization.

Citation: The Journal of perinatal & neonatal nursing, Jan 2016, vol. 30, no. 1, p. 64-67 (2016 Jan-Mar)

Author(s): Milford, Cheryl A

Abstract: The family of an infant born with a congenital heart defect is challenged by both the short- and long-term implications of the diagnosis and the neonatal intensive care unit (NICU) hospitalization. Nurses are in a key position to support these families as they deal with the psychological, emotional, and financial impact of the NICU experience. Understanding how families perceive the NICU environment and their grief in losing the desired healthy baby provides the NICU nurse with the knowledge to engage in self-reflection on her or his interpersonal style and caregiving attitudes. Utilizing the concepts and principles of family-centered care and relationship-based practice, nurses can work together with the families to determine how to best meet the families' needs and to find the resources to support them. Families and colleagues appreciate nurses who demonstrate expertise in this approach to family-centered care. This appreciation leads to greater job satisfaction and decreased job-related stress.
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