Outreach

Your Outreach Librarian can help facilitate evidence-based practise 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 June’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

Upcoming Lunchtime Drop-in Sessions

The Library and Information Service provides free specialist information skills training for all UH Bristol 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.

June (12pm)

Weds 8th Understanding articles
Thurs 16th Statistics
Fri 24th Information resources

July (1pm)

Tue 5th Critical Appraisal
Wed 13th Statistics
Thurs 21st Information resources
Fri 29th Literature Searching
Archives of Disease in Childhood: Fetal and Neonatal
May 2016, Volume 101, Issue 3

Neonatology
2016, Volume 110, Issue 4

Journal of Pediatrics
June 2016, Volume 173

JAMA Pediatrics
June 2016, Volume 170, Issue 6

Pediatrics
June 2016, Volume 137, Issue 6

Journal of Perinatology
June 2016, Volume 36, Issue 6
New NICE Guidance

Updated: Jaundice in newborn babies under 28 days

In development: Neonatal jaundice diagnosis (SC update)

Latest relevant Systematic Reviews from the Cochrane Library

Multi-nutrient fortification of human milk for preterm infants

High frequency jet ventilation versus high frequency oscillatory ventilation for pulmonary dysfunction in preterm infants

Heparin for the prevention of intraventricular haemorrhage in preterm infants

Prophylactic barbiturate use for the prevention of morbidity and mortality following perinatal asphyxia

Oral dextrose gel for the treatment of hypoglycaemia in newborn infants

New activity in UpToDate

www.uptodate.com

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

Early hydrocortisone therapy and bronchopulmonary dysplasia (May 2016)

In high-risk preterm infants (gestational age <28 weeks), postnatal systemic dexamethasone administration reduces the risk for bronchopulmonary dysplasia (BPD), but is not administered routinely because it appears to increase the risk for cerebral palsy. Hydrocortisone has been proposed as an alternative; however, it may increase the risk for intestinal perforation and evidence of efficacy is limited. These issues were addressed by a recent French multicenter trial that randomly assigned high-risk preterm infants to prophylactic treatment with hydrocortisone or placebo and found that hydrocortisone improved the rate of survival without BPD at 36 weeks postmenstrual age (60 versus 51 percent), without an increase in the rate of adverse events, including gastrointestinal perforation [16]. Data on neurodevelopmental outcome are not yet available and the trial was
terminated early because of lack of funding. We continue to recommend not routinely administering prophylactic glucocorticoid therapy (hydrocortisone or dexamethasone) to prevent BPD as many infants would be exposed to these drugs unnecessarily and the balance between reduction of BPD and potential adverse effects remains unclear. In our practice, we limit hydrocortisone therapy to infants who develop severe BPD requiring sustained ventilator support. (See “Postnatal use of glucocorticoids in bronchopulmonary dysplasia”, section on ‘Hydrocortisone’.)

**Quick exercise**

**Relative Risk**

The relative risk is the ratio of probability of an event (a specified outcome) occurring in one group (i.e. those exposed to a particular intervention) compared to those in another group (i.e. those not exposed – a control group).

The relative risk can be interpreted using the following chart. First, you must determine whether the event (the outcome measure) is adverse or beneficial.

<table>
<thead>
<tr>
<th>Relative Risk</th>
<th>Adverse outcome (e.g. death)</th>
<th>Beneficial outcome (e.g. recovery of limb function)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>Intervention better than control</td>
<td>Intervention worse than control</td>
</tr>
<tr>
<td>1</td>
<td>Intervention no better or worse than control</td>
<td>Intervention no better or worse than control</td>
</tr>
<tr>
<td>&gt;1</td>
<td>Intervention worse than control</td>
<td>Intervention better than control</td>
</tr>
</tbody>
</table>

Have a go at interpreting the relative risks for these three studies using the chart above. Is the intervention better or worse than the control?

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Population</th>
<th>Outcome measure (think: adverse or beneficial?)</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drug X</td>
<td>Adults at risk of a heart attack</td>
<td>Heart attack</td>
<td>1.2</td>
</tr>
<tr>
<td>2</td>
<td>Therapy programme Y</td>
<td>Smokers</td>
<td>Smoking cessation</td>
<td>0.8</td>
</tr>
<tr>
<td>3</td>
<td>Probiotic Z</td>
<td>Children on antibiotics</td>
<td>Diarrhoea</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*Find out more about relative risk in one of our Basic Statistics training sessions.*

For more details, email library@uhbristol.nhs.uk.
Title: PO19 - Developing a pain scale for infants in collaboration with clinical staff in the neonatal intensive care unit.

Citation: Nursing children and young people, May 2016, vol. 28, no. 4, p. 99-100, 2046-2344 (May 9, 2016)

Author(s): Pölkki, Tarja, Korhonen, Anne, Heikkinen, Ulla, Palomaa, Anna-Kaija, Miettinen, Seija

Abstract: Theme: Multidisciplinary team working. Pain assessment is unsystematic and only few nurses use pain scales in clinical practice. Poor compliance may indicate that scales are often inaccurate to assess specific behavior in vulnerable children. The aim was to develop a feasible and sensitive enough pain assessment tool for neonates in close collaboration with clinical staff in the neonatal intensive care unit (NICU). The development process of scale lasted for several years and it included many sessions of discussion and putting into practice the scale to test its adequacy. A multidimensional pain assessment scale called NIAPAS (the Neonatal Infant Acute Pain Assessment Scale) was developed. The scale was easy to administer and it allowed nurses to recognize any indications of neonate’s pain. The development of a scale requires a long-term co-operation and multidisciplinary team working. The NIAPAS is recommendable to assess acute pain in preterm and full-term infants.

Title: Antiseptic use in the neonatal intensive care unit - a dilemma in clinical practice: An evidence based review.

Citation: World journal of clinical pediatrics, May 2016, vol. 5, no. 2, p. 159-171, 2219-2808 (May 8, 2016)

Author(s): Sathiyamurthy, Sundar, Banerjee, Jayanta, Godambe, Sunit V

Abstract: Infants in the neonatal intensive care unit are highly susceptible to healthcare associated infections (HAI), with a substantial impact on mortality, morbidity and healthcare costs. Effective skin disinfection with topical antiseptic agents is an important intervention in the prevention or reduction of HAI. A wide array of antiseptic preparations in varying concentrations and combinations has been used in neonatal units worldwide. In this article we have reviewed the current evidence of a preferred antiseptic of choice over other agents for topical skin disinfection in neonates. Chlorhexidine (CHG) appears to be a promising antiseptic agent; however there exists a significant concern regarding the safety of all agents used including CHG especially in preterm and very low birth weight infants. There is substantial evidence to support the use of CHG for umbilical cord cleansing and some evidence to support the use of topical emollients in reducing the mortality in infants born in developing countries. Well-designed large multicentre randomized clinical trials are urgently needed to guide us on the most appropriate and safe antiseptic to use in neonates undergoing intensive care, especially preterm infants.

Title: Bilateral Dilated Nonreactive Pupils in a Neonate After Surgery.
Citation: A & A case reports, May 2016, vol. 6, no. 9, p. 286-287, 2325-7237 (May 1, 2016)

Author(s): Joyce, Christine, Greenwald, Bruce M, Han, Peggy

Abstract: Fixed and dilated pupils are disturbing when encountered during a physical examination in the pediatric intensive care unit, particularly when sedation or neuromuscular blockade confounds the neurologic examination. Rocuronium, a nondepolarizing neuromuscular drug, does not cross the blood-brain barrier and is not considered a causative agent for fixed mydriasis. We report a case of bilateral fixed and dilated pupils in a 1-week-old low-birth-weight neonate, which we contend was secondary to centrally mediated neuromuscular blockade.

Full Text: Available from Ovid in A&A Case Reports

Title: Ultrasonography for Central Catheter Placement in the Neonatal Intensive Care Unit-A Review of Utility and Practicality.

Citation: American journal of perinatology, May 2016, vol. 33, no. 6, p. 525-530, 1098-8785 (May 2016)

Author(s): Nguyen, Jimmy

Abstract: Objective Central catheters (CCs) are routinely used in the neonatal intensive care unit (NICU). Ultrasonography (US) has been advocated as a procedural adjunct for CC placement to better localize catheter tip position (CTP), minimize radiation exposure, and decrease procedural burden. This review evaluates the clinical benefit, practical considerations for implementation, and limitations of US for CC placement in the NICU. Study Design A literature search was conducted using the Pubmed and Ovid databases with search terms regarding the ultrasound modality relating to CCs in infants and neonates. Results Five studies regarding US-guided CC insertions and seven studies describing postinsertion US were determined pertinent to this review's objective and discussed. Conclusions At this time, the literature seems insufficient to recommend US as a replacement for radiography for CTP confirmation; however, US-guidance during insertion followed by radiographic verification can decrease line manipulations and repeat radiographs. Postinsertion assessments by US can better determine the CTP and guide repositioning decisions, reducing the likelihood of malposition and potential complications, and may be more practical for many NICUs. However, it is unclear how much training and experience is necessary to deem an individual competent for reliable and clinically beneficial bedside US evaluations. Thieme Medical Publishers 333 Seventh Avenue, New York, NY 10001, USA.

Title: Infant Outcomes after Periviable Birth: External Validation of the Neonatal Research Network Estimator with the BEAM Trial.

Citation: American journal of perinatology, May 2016, vol. 33, no. 6, p. 569-576, 1098-8785 (May 2016)

Author(s): Marrs, Caroline C, Pedroza, Claudia, Mendez-Figueroa, Hector, Chauhan, Suneet P, Tyson, Jon E
Abstract: Objective The objective of this study was to use data from the 20-center beneficial effect of antenatal magnesium sulfate (BEAM) trial to assess the external validity of the Neonatal Research Network (NRN) estimator, a widely employed web-based counseling tool to estimate the probability of an adverse outcome for periviable infants given intensive care. Study Design The probability of different adverse outcomes predicted from the NRN estimator was compared with observed rates at 18 to 22 months for ventilated, nonanomalous infants born at 23 to 25 weeks and assessed in BEAM as in the NRN. Results were assessed using rigorous validation methods for prediction models. Results Among 289 eligible infants, 26% died, 40% died or had profound neurodevelopmental impairment (PNDI), and 71% died or had NDI. The area under the receiver operating characteristic curve was 0.70 (95% confidence interval [CI], 0.63-0.78) for death, 0.64 (95% CI, 0.56-0.71) for death or NDI, and 0.71 (95% CI, 0.65-0.78) for death or PNDI. Observed and predicted rates were somewhat different for death or NDI but quite similar for death and for death or PNDI in different risk groups. Brier scores for accuracy were favorable (0.17-0.22) for all outcomes. Conclusion Our results provide external validation of the NRN estimator for assessing the probability of adverse outcomes at 18 to 22 months for periviable infants given intensive care. Thieme Medical Publishers 333 Seventh Avenue, New York, NY 10001, USA.

Title: Dexmedetomidine Pharmacology in Neonates and Infants After Open Heart Surgery.

Citation: Anesthesia and analgesia, May 2016, vol. 122, no. 5, p. 1556-1566, 1526-7598 (May 2016)

Author(s): Su, Felice, Gastonguay, Marc R, Nicolson, Susan C, Diliberto, MaryAnn, Ocampo-Pelland, Alanna, Zuppa, Athena F

Abstract: Dexmedetomidine is a highly selective α2-agonist with hypnotic, analgesic, and anxiolytic properties. Despite off-label administration, dexmedetomidine has found a niche in critically ill neonates and infants with congenital heart disease because of its minimal effects on respiratory function at sedative doses, facilitating early extubation and fast-track postoperative care. There are little pharmacokinetic data regarding newborns who have immature drug metabolizing capacity and who are at risk for reduced dexmedetomidine clearance and drug toxicity. The aim of this study was to determine the pharmacokinetics of dexmedetomidine in neonates and infants after open heart surgery. This study included 23 evaluable neonates (age, 1 day-1 month) and 36 evaluable infants (age, 1 month-24 months) after open heart surgery. Full-term neonates and infants requiring mechanical ventilation after open heart surgery received dexmedetomidine in a dose-escalation study. Dexmedetomidine was administered as a loading dose over 10 minutes followed by a continuous IV infusion up to 24 hours. Cohorts of 12 infants were enrolled sequentially to receive 0.35, 0.7, or 1 μg/kg dexmedetomidine followed by 0.25, 0.5, or 0.75 μg/kg/h dexmedetomidine, respectively. Cohorts of 9 neonates received 0.25, 0.35, or 0.5 μg/kg dexmedetomidine followed by 0.2, 0.3, or 0.4 μg/kg/h dexmedetomidine, respectively. Plasma dexmedetomidine concentrations were determined using a validated high-performance liquid chromatography-tandem mass spectrometry assay. A population nonlinear mixed effects modeling approach was used to characterize dexmedetomidine pharmacokinetics. Pharmacokinetic parameters of dexmedetomidine were estimated using a 2-compartment disposition model with weight allometrically scaled as a covariate on drug clearance, intercompartmental clearance, central and peripheral volume of distributions and age, total bypass time, and intracardiac shunting on clearance. Dexmedetomidine demonstrated a plasma drug clearance of 657 × (weight/70) mL/min, intercompartmental clearance of 6780 × (weight/70) mL/min, central volume of distribution of 88 × (weight/70) L and peripheral volume of distribution of 112 × (weight/70) L for a typical subject with age >1 month with a cardiopulmonary bypass time of 60 minutes and without right-to-left intracardiac shunt. Dexmedetomidine pharmacokinetics may be influenced by age during the neonatal period, weight,
total bypass time, and presence of intracardiac shunt. Dexmedetomidine clearance is significantly diminished in full-term newborns and increases rapidly in the first few weeks of life. The dependence of clearance on age during the first few weeks of life reflects the relative immaturity of metabolic processes during the newborn period. Continuous infusions of up to 0.3 μg/kg/h in neonates and 0.75 μg/kg/h in infants were well tolerated after open heart surgery.

Full Text:
Available from Ovid in Anesthesia and Analgesia

Title: The effects of a one-to-one nurse-to-patient ratio on the mortality rate in neonatal intensive care: a retrospective, longitudinal, population-based study.


Author(s): Watson, S I, Arulampalam, W, Petrou, S, Marlow, N, Morgan, A S, Draper, E S, Modi, N, Neonatal Data Analysis Unit (NDAU) and the Neonatal Economic, Staffing, and Clinical Outcomes Project (NESCOP) Group

Abstract: To estimate the effect of the provision of a one-to-one nurse-to-patient ratio on mortality rates in neonatal intensive care units. A population-based analysis of operational clinical data using an instrumental variable method. National Health Service neonatal units in England contributing data to the National Neonatal Research Database at the Neonatal Data Analysis Unit and participating in the Neonatal Economic, Staffing, and Clinical Outcomes Project. 43 tertiary-level neonatal units observed monthly over the period January 2008 to December 2012. Proportion of neonatal intensive care days or proportion of intensive care admissions for which one-to-one nursing was provided. Monthly in-hospital intensive care mortality rate. Over the study period, the provision of one-to-one nursing in tertiary neonatal units declined from a median of 9.1% of intensive care days in 2008 to 5.9% in 2012. A 10 percentage point decrease in the proportion of intensive care days on which one-to-one nursing was provided was associated with an increase in the in-hospital mortality rate of 0.6 (95% CI 1.2 to 0.0) deaths per 100 infants receiving neonatal intensive care per month compared with a median monthly mortality rate of 4.5 deaths per 100 infants per month. The results remained robust to sensitivity analyses that varied the estimation sample of units, the choice of instrumental variables, unit classification and the selection of control variables. Our study suggests that decreases in the provision of one-to-one nursing in tertiary-level neonatal intensive care units increase the in-hospital mortality rate.

Full Text:
Available from Highwire Press in Fetal and Neonatal

Title: Pneumocephalus and subcutaneous scalp emphysema in a neonate on a low-flow nasal cannula.

Citation: General thoracic and cardiovascular surgery, May 2016, vol. 64, no. 5, p. 277-279, 1863-6713 (May 2016)

Author(s): Sugimoto, Ai, Takahashi, Masashi, Shiraishi, Shuichi, Watanabe, Maya, Jiyong, Moon, Tsuchida, Masanori
Abstract: A 15-day-old boy after intracardiac repair was discharged from the intensive care unit with a low-flow nasal cannula for oxygen administration. The cannula was a 4-Fr multi-purpose tube with a side hole that was inserted into his left nostril. Next day, he suddenly developed pneumocephalus emerging from the right periorbital swelling and extending to his face and subcutaneous scalp over the next 6 h. A computed tomography (CT) scan revealed massive air pockets in the orbit, subdural space, subcutaneous scalp, and face. The nasal cannula was found to have been inserted deeper than we thought and was thus presumed to be the source of the air pockets. We immediately removed the cannula. Follow-up CTs revealed rapid resolution of the intracranial and subcutaneous air. The subcutaneous emphysema completely disappeared over the next 4 days, and he was discharged without any incident.

Title: Pulmonary hypertension associated with acute or chronic lung diseases in the preterm and term neonate and infant. The European Paediatric Pulmonary Vascular Disease Network, endorsed by ISHLT and DGPK.

Citation: Heart (British Cardiac Society), May 2016, vol. 102 Suppl 2, p. ii49., 1468-201X (May 2016)

Author(s): Hilgendorff, Anne, Apitz, Christian, Bonnet, Damien, Hansmann, Georg

Abstract: Persistent pulmonary hypertension of the newborn (PPHN) is the most common neonatal form and mostly reversible after a few days with improvement of the underlying pulmonary condition. When pulmonary hypertension (PH) persists despite adequate treatment, the severity of parenchymal lung disease should be assessed by chest CT. Pulmonary vein stenosis may need to be ruled out by cardiac catheterisation and lung biopsy, and genetic workup is necessary when alveolar capillary dysplasia is suspected. In PPHN, optimisation of the cardiopulmonary situation including surfactant therapy should aim for preductal SpO2 between 91% and 95% and severe cases without post-tricuspid-unrestrictive shunt may receive prostaglandin E1 to maintain ductal patency in right heart failure. Inhaled nitric oxide is indicated in mechanically ventilated infants to reduce the need for extracorporeal membrane oxygenation (ECMO), and sildenafil can be considered when this therapy is not available. ECMO may be indicated according to the ELSO guidelines. In older preterm infant, where PH is mainly associated with bronchopulmonary dysplasia (BPD) or in term infants with developmental lung anomalies such as congenital diaphragmatic hernia or cardiac anomalies, left ventricular diastolic dysfunction/left atrial hypertension or pulmonary vein stenosis, can add to the complexity of the disease. Here, oral or intravenous sildenafil should be considered for PH treatment in BPD, the latter for critically ill patients. Furthermore, prostanoids, mineralcorticoid receptor antagonists, and diuretics can be beneficial. Infants with proven or suspected PH should receive close follow-up, including preductal/postductal SpO2 measurements, echocardiography and laboratory work-up including NT-proBNP, guided by clinical improvement or lack thereof. 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/

Full Text: Available from Highwire Press in Heart

Title: Variation in NICU Admission Rates Without Identifiable Cause.

Citation: Hospital pediatrics, May 2016, vol. 6, no. 5, p. 255-260, 2154-1663 (May 2016)

Author(s): Ziegler, Kathryn A, Paul, David A, Hoffman, Matthew, Locke, Robert
Abstract: Admission to the NICU is influenced by physiologic compromise and by hospital care protocols. Providing appropriate care must be balanced with adverse consequences of NICU admission, such as interrupting maternal-infant bonding and unnecessary interventions. This study aims to determine the variation in NICU admissions in term and late preterm infants among 19 hospitals. We used the Consortium on Safe Labor (CSL) database to determine NICU admission rates. This database includes data from 217,442 infants aged 35 to 42 weeks within 19 US maternal delivery hospitals from 2002 to 2008. NICU admission rates were evaluated for absolute factors including, but not limited to, sepsis, asphyxia, respiratory distress, and intracranial hemorrhage, as well as relative factors, such as maternal drug use, chorioamnionitis, and infant birth weight ≤ 2500 g. Percentage of infants 35 to 42 weeks' gestation admitted to the NICU without an identifiable absolute or relative cause for intensive care services ranged from 0% to 59.4% (mean, 10.8%; P < .001). Among infants 35 to 42 weeks' gestation and ≥ 2500 g, infants without absolute or relative identified cause accounted for 9.1% of total NICU days and had lower length of stays (-2.7 days; 95% confidence interval -3.4; -2.1) compared to those with an identified reason. There is significant variation in admission rates among NICUs that cannot be explained by infant health conditions. Further analysis is needed to determine the cause of between-site variation and potential opportunities to refine protocols and optimize use of NICU services. Copyright © 2016 by the American Academy of Pediatrics.

Full Text: Available from Highwire Press in Hospital Pediatrics

Title: The burden of venipuncture pain in neonatal intensive care units: EPIPPAIN 2, a prospective observational study.

Citation: International journal of nursing studies, May 2016, vol. 57, p. 48-59, 1873-491X (May 2016)

Author(s): Courtois, Emilie, Cimerman, Patricia, Dubuche, Valérie, Goiset, Marie-France, Orfèvre, Claire, Lagarde, Audrey, Sgaggero, Betty, Guiot, Céline, Goussot, Mélanie, Huraux, Etienne, Nanquette, Marie-Christine, Butel, Céline, Ferreira, Anne-Marie, Lacoste, Sylvie, Séjourné, Sandrine, Jolly, Valérie, Lajoie, Gladys, Maillard, Valérie, Guedj, Romain, Chappuy, Hélène, Carbajal, Ricardo

Abstract: Newborns in intensive care units (ICUs) undergo numerous painful procedures including venipunctures. Skin-breaking procedures have been associated with adverse neurodevelopment long-term effects in very preterm neonates. The venipuncture frequency and its real bedside pain management treatment are not well known in this setting. To describe venipuncture frequency, its pain intensity, and the analgesic approach in ICU newborns; to determine the factors associated with the lack of preprocedural analgesia and with a high pain score during venipuncture. Further analysis of EPIPPAIN 2 (Epidemiology of Procedural Pain In Neonates), which is a descriptive prospective epidemiologic study. All 16 neonatal and pediatric ICUs in the Paris region in France. All newborns in the ICU with a maximum corrected age under 45 weeks of gestation on admission who had at least one venipuncture during the study period. Data on all venipunctures, their pain score assessed with the DAN scale and their corresponding analgesic therapies were prospectively collected. The inclusion period lasted six weeks, from June 2, 2011, to July 12, 2011. Newborns were followed from their admission to the 14th day of their ICU stay or discharge, whichever occurred first. 495 newborns who underwent venipunctures were included. The mean (SD) gestational age was 33.0 (4.4) weeks and duration of participation was 8.0 (4.5) days. A total of 257 (51.9%) neonates were very preterm (<33 weeks). The mean (SD; range) number of venipunctures per neonate during the study period was 3.8 (2.8; 1-19) for all neonates and 4.1 (2.9; 1-17) for neonates ≤ 33 weeks. Of the 1887 venipunctures, 1164 (61.7%) were performed successfully in one attempt, 437 (23.2%) with
continuous analgesia, 1434 (76.0%) with specific preprocedural analgesia. In multivariate models, lack of preprocedural analgesia was associated with higher disease-severity score, intrauterine growth retardation, invasive or noninvasive ventilation, venipuncture performed on the first day of hospitalization or at nighttime, and the use of continuous sedation/analgesia. High pain scores were significantly associated with absence of parents during procedures, surgery during the study period, and higher number of attempts. Venipuncture is very frequent in preterm and term neonates in the ICUs. 76% were performed with preprocedural analgesia. Strategies to reduce the number of attempts and to promote parental presence seem necessary. Copyright © 2016 Elsevier Ltd. All rights reserved.

Title: Use of intravenous propranolol for control of a large cervicofacial hemangioma in a critically ill neonate.

Citation: International journal of pediatric otorhinolaryngology, May 2016, vol. 84, p. 52-54, 1872-8464 (May 2016)

Author(s): Fernando, Shanik J, Leitenberger, Sabra, Majerus, Matt, Krol, Alfons, MacArthur, Carol J

Abstract: Cervicofacial segmental infantile hemangiomas (IH) may result in airway obstruction requiring use of propranolol to induce hemangioma regression and reestablish the airway. We present the first case using intravenous (IV) propranolol for control of airway obstruction and rapid expansion of cervicofacial IH in the setting of necrotizing enterocolitis (NEC) impaired gastrointestinal function. Intravenous dosing of propranolol was tolerated well in a critically ill neonate with multisystem complications of prematurity. Copyright © 2016 Elsevier Ireland Ltd. All rights reserved.

Title: Hospital survival upon discharge of ill-neonates transported by ground or air ambulance to a tertiary center.

Citation: Jornal de pediatria, May 2016, vol. 92, no. 3, p. 276-282, 1678-4782 (2016 May-Jun)

Author(s): Alvarado-Socarras, Jorge Luis, Idrovo, Alvaro Javier, Bermon, Anderson

Abstract: To evaluate the differences in hospital survival between modes of transport to a tertiary center in Colombia for critically ill neonates. Observational study of seriously ill neonates transported via air or ground, who required medical care at a center providing highly complex services. Data on sociodemographic, clinical, the Transport Risk Index of Physiologic Stability (TRIPS), and mode of transport were collected. Patients were described, followed by a bivariate analysis with condition (live or dead) at time of discharge as the dependent variable. A multiple Poisson regression with robust variance model was used to adjust associations. A total of 176 neonates were transported by ambulance (10.22% by air) over six months. The transport distances were longer by air (median: 237.5km) than by ground (median: 11.3km). Mortality was higher among neonates transported by air (33.33%) than by ground (7.79%). No differences in survival were found between the two groups when adjusted by the multiple model. An interaction between mode of transport and distance was observed. Live hospital discharge was found to be associated with clinical severity upon admittance, birth weight, hemorrhaging during the third trimester, and serum potassium levels when admitted. Mode of transport was not associated with the outcome. In Colombia, access to medical services through air transport is a good option for neonates in critical condition. Further studies would determine the optimum distance (time of transportation) to obtain good clinical
Title: Implementation of a Donor Milk Program Is Associated with Greater Consumption of Mothers' Own Milk among VLBW Infants in a US, Level 3 NICU.

Citation: Journal of human lactation: official journal of International Lactation Consultant Association, May 2016, vol. 32, no. 2, p. 221-228, 1552-5732 (May 2016)

Author(s): Parker, Margaret G K, Burnham, Laura, Mao, Wenyang, Philipp, Barbara L, Merewood, Anne

Abstract: It is unclear whether use of donor milk (DM) changes the provision of mothers' own milk (MOM) to very low birth weight (VLBW) infants in the neonatal intensive care unit (NICU). To determine whether (1) the rates of any MOM and human milk consumption at feeding initiation and discharge and (2) the proportion of VLBW infants who stopped consuming any MOM and human milk during hospitalization changed in the 2 years after versus before implementation of a DM program in a US, inner-city, level 3 NICU. We studied VLBW infants admitted to Boston Medical Center in the 2 years before (n = 74) and after (n = 80) implementation of a DM program (June 2011). We used multivariable logistic regression to compare milk consumption at feeding initiation and discharge and Cox proportional hazards to compare the proportion of infants that stopped consuming milk during the hospitalization pre and post our DM program. After adjustment for maternal race, age, insurance, delivery type, gestational age, and birth weight, we found a 6.0-fold increased odds (95% CI, 2.0-17.7) of consuming MOM at discharge and a 49% reduction in the cessation of MOM consumption during hospitalization (hazard ratio [HR], 0.51; 95% CI, 0.28-0.93) in the 2 years after versus before our DM program. Implementation of a DM program was associated with greater consumption of MOM throughout hospitalization and at discharge among VLBW infants. Implementation of DM programs may augment support of mothers to provide breast milk in level 3 NICUs. © The Author(s) 2015.

Title: Predictors of Breastfeeding Initiation and Frequency for Preterm Infants in the NICU.

Citation: Journal of obstetric, gynecologic, and neonatal nursing: JOGNN / NAACOG, May 2016, vol. 45, no. 3, p. 346-358, 1552-6909 (2016 May-Jun)

Author(s): Niela-Vilén, Hannakaisa, Melender, Hanna-Leena, Axelin, Anna, Löyttyniemi, Eliisa, Salanterä, Sanna

Abstract: To determine factors that predict the initiation and frequency of breastfeeding, attitudes about breastfeeding, and the self-efficacy of mothers of preterm infants in a neonatal intensive care unit. A structured survey using two measurement points. A university hospital in Finland. Mothers (N = 124) and their infants born at less than 35 weeks gestation. Structured questionnaires were used during the first week postpartum and at discharge of infants from the hospital. Neonatal and breastfeeding data were collected from patient records. Preterm infants initiated breastfeeding at the median postnatal age of 4 days (range = 0-70 days). The factors that predicted earlier initiation of breastfeeding were greater gestational age, no ventilator treatment, early physical contact, and greater maternal education level. Greater gestational age, early physical contact, and a breastfeeding-favorable attitude also predicted the frequency of breastfeeding. The attitudes of the mothers regarding breastfeeding immediately after birth were generally positive but decreased
during their infants' hospital stays. Gestational age and early physical contact seemed to be the strongest predictors of breastfeeding initiation and frequency in the NICU. In addition, the role of the mother’s attitude regarding breastfeeding was significant. Current care practices should be critically reviewed with emphasis on early physical contact at the time of birth. Copyright © 2016 AWHONN, the Association of Women’s Health, Obstetric and Neonatal Nurses. Published by Elsevier Inc. All rights reserved.

**Title:** Palliative care in neonatal neurology: robust support for infants, families and clinicians.

**Citation:** Journal of perinatology: official journal of the California Perinatal Association, May 2016, vol. 36, no. 5, p. 331-337, 1476-5543 (May 2016)

**Author(s):** Lemmon, M E, Bidegain, M, Boss, R D

**Abstract:** Infants with neurological injury and their families face unique challenges in the neonatal intensive care unit. As specialty palliative care support becomes increasingly available, we must consider how to intentionally incorporate palliative care principles into the care of infants with neurological injury. Here, we review data regarding neonatal symptom management, prognostic uncertainty, decision making, communication and parental support for neonatal neurology patients and their families.

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**Title:** A comparison of the performance of the Braden Q and the Glamorgan paediatric pressure ulcer risk assessment scales in general and intensive care paediatric and neonatal units.

**Citation:** Journal of tissue viability, May 2016, vol. 25, no. 2, p. 119-126, 0965-206X (May 2016)

**Author(s):** Willock, Jane, Habiballah, Laila, Long, Deborah, Palmer, Kelli, Anthony, Denis

**Abstract:** To compare the predictive ability of two risk assessment scales used in children. There are several risk assessment scales (RASs) employed in paediatric settings but most have been modified from adult scales such as the Braden Q whereas the Glamorgan was an example of a scale designed for children. Using incidence data from 513 paediatric hospital admissions, receiver operating characteristic (ROC) was employed to compare the two scales. The area under the curve (AUC) was the outcome of interest. The two scales were similar in this population in terms of area under the curve. Neonatal and paediatric intensive care were similar in terms of AUC for both scales but in general paediatric wards the Braden Q may be superior in predicting risk. Either scale could be used if the predictive ability was the outcome of interest. The scales appear to work well with neonatal, paediatric intensive care and general children’s wards. However the Glamorgan scale is probably preferred by children's nurses as it is easy to use and designed for use in children. There is some suggestion that while the two scales are similar in intensive care, for general paediatrics the Braden Q may be the better scale. Copyright © 2016 Tissue Viability Society. Published by Elsevier Ltd. All rights reserved.

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**Title:** Use of Temporary Enteral Access Devices in Hospitalized Neonatal and Pediatric Patients in the United States.

**Citation:** JPEN. Journal of parenteral and enteral nutrition, May 2016, vol. 40, no. 4, p. 574-580, 0148-6071 (May 2016)
Author(s): Lyman, Beth, Kemper, Carol, Northington, LaDonna, Yaworski, Jane Anne, Wilder, Kerry, Moore, Candice, Duesing, Lori A, Irving, Sharon

Abstract: Temporary enteral access devices (EADs), such as nasogastric (NG), orogastric (OG), and postpyloric (PP), are used in pediatric and neonatal patients to administer nutrition, fluids, and medications. While the use of these temporary EADs is common in pediatric care, it is not known how often these devices are used, what inpatient locations have the highest usage, what size tube is used for a given weight or age of patient, and how placement is verified per hospital policy. This was a multicenter 1-day prevalence study. Participating hospitals counted the number of NG, OG, and PP tubes present in their pediatric and neonatal inpatient population. Additional data collected included age, weight and location of the patient, type of hospital, census for that day, and the method(s) used to verify initial tube placement. Of the 63 participating hospitals, there was an overall prevalence of 1991 temporary EADs in a total pediatric and neonatal inpatient census of 8333 children (24% prevalence). There were 1316 NG (66%), 414 were OG (21%), and 261 PP (17%) EADs. The neonatal intensive care unit (NICU) had the highest prevalence (61%), followed by a medical/surgical unit (21%) and pediatric intensive care unit (18%). Verification of EAD placement was reported to be aspiration from the tube (n = 21), auscultation (n = 18), measurement (n = 8), pH (n = 10), and X-ray (n = 6). The use of temporary EADs is common in pediatric care. There is wide variation in how placement of these tubes is verified.

Title: Appropriateness of care and moral distress among neonatal intensive care unit staff: repeated measurements.

Citation: Nursing in critical care, May 2016, vol. 21, no. 3, p. e19., 1478-5153 (May 2016)

Author(s): de Boer, Jacoba Coby, van Rosmalen, Joost, Bakker, Arnold B, van Dijk, Monique

Abstract: Perceived constraints to providing patient care in their own morally justified way may cause moral distress (MD) in neonatal nurses and physicians. Negative long-term effects of MD include substandard patient care, burnout and leaving the profession. To assess the immediate impact of perceived inappropriate patient care on nurses' and physicians' MD intensity, and explore a possible moderating effect of ethical climate. In a repeated measures design, after baseline assessment, each participant completed self-report questionnaires after five randomly selected shifts. Data were analysed with logistic and Tobit regression. Data were collected among 117 of 147 eligible nurses and physicians (80%) in a level-III neonatal intensive care unit in the Netherlands. At baseline, overall MD was relatively low; in nurses, it was significantly higher than in physicians. Few morally distressing situations were reported in the repeated measurements, but distress could be intense in these cases; nurses' and physicians' scores were comparable. Physicians were significantly more likely than nurses to disagree with their patients' level of care (p = 0.02). Still, perceived overtreatment, but not undertreatment, was significantly related to distress intensity in both professional groups; ethical climate did not moderate this effect. Substandard patient care due to lack of continuity, poor communication and unsafe levels of staffing were rated as more important causes of MD than perceived inappropriate care. Although infrequently perceived, overtreatment of patients caused considerable distress in nurses and physicians. Our unit introduced multidisciplinary medical ethical decision making 5 years ago, which may partly explain the low MD at baseline. MD might be prevented by improved continuity of care, safe levels of staffing and better team communication, along with other targeted interventions with demonstrated effectiveness, such as palliative care programs and facilitated ethics conversations.
Title: Diagnostic accuracy of capnography during high-frequency ventilation in neonatal intensive care units.

Citation: Pediatric pulmonology, May 2016, vol. 51, no. 5, p. 510-516, 1099-0496 (May 2016)

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

Abstract: High-frequency ventilation (HFV) is a powerful tool for CO2 elimination, and thus requires careful monitoring of CO2. Our aim was to assess the diagnostic accuracy (correlation, agreement, and trending) of continuous distal capnography (dCap) with PaCO2 in infants ventilated with HFV. This was a prospective, observational, multicenter study. dCap was compared with simultaneous PaCO2 (“gold standard”) drawn from indwelling arterial line for patient care in term and preterm infants ventilated with HFV. dCap was obtained via the side-port of a double-lumen endotracheal tube by a Microstream capnograph with specially designed software for HFV. Twenty-four infants participated in the study (median [range] gestational age [GA]: 26.8 [23.6-38.6] weeks). Analysis included 332 measurements. dCap was in correlation (r = 0.70, P < 0.001) but with less than adequate agreement (mean difference ± SD of the differences: -11.7 ± 10.3 mmHg) with PaCO2. Comparable findings were found in the subgroup of infants <1,000 g (n = 240 measurements). Correlations were maintained in severe lung disease. Changes in dCap and in PaCO2 for consecutive measurements within each patient were correlated (r = 0.63, P < 0.001). Area under the receiver operating curves (ROC) for dCap to detect high (>60 mmHg) or low (<30 mmHg) PaCO2 was 0.83 (CI: 0.76-0.90) and 0.88 (CI: 0.79-0.97), respectively; P < 0.001. Our prospective study suggests that continuous dCap in infants ventilated with HFV may be helpful for trends and alarm for unsafe levels of PaCO2. dCap is only a complimentary tool and cannot replace PaCO2 sampling because the agreement between these measurements was less than adequate.

Title: Combined education and skin antisepsis intervention for persistently high blood-culture contamination rates in neonatal intensive care.

Citation: The Journal of hospital infection, May 2016, vol. 93, no. 1, p. 105-107, 1532-2939 (May 2016)

Author(s): O’Connor, C, Philip, R K, Powell, J, Slevin, B, Quinn, C, Power, L, O’Connell, N H, Dunne, C P

Abstract: Contaminated blood cultures represent challenges regarding diagnosis, duration of hospitalization, antimicrobial use, pharmacy and laboratory costs. Facing problematic neonatal blood culture contamination (3.8%), we instigated a successful intervention combining skin antisepsis using sterile applicators with 2% chlorhexidine gluconate in 70% isopropanol prior to phlebotomy (replacing 70% isopropanol) and staff education. In the six months prior to intervention, 364 neonatal peripheral blood samples were collected. Fourteen (3.8%) were contaminated. In the post-intervention six months, 314 samples were collected. Three (0.96%) were contaminated, representing significant improvement (Fisher’s exact test: P = 0.0259). No dermatological sequelae were observed. The improvement has been sustained. Copyright © 2016 The Healthcare Infection Society. Published by Elsevier Ltd. All rights reserved.

Title: A comparison of manual versus automated saturation of peripheral oxygenation in the neonatal intensive care unit.
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, May 2016, vol. 29, no. 10, p. 1631-1635, 1476-4954 (May 2016)

Author(s): Das, Anirudha, Mhanna, Maroun, Teleron-Khorshad, Amy, Houdek, John, Kumar, Nitin, Gunzler, Douglas, Collin, Marc

Abstract: It is vital to maintain the saturation of peripheral oxygenation (SpO2) in a targeted range in extremely premature infants to improve survival without significant morbidities. To compare manual versus automated monitor documentations of daily upper and lower values of SpO2 in premature infants. In a prospective observational study, the highest and lowest daily SpO2 manually recorded values from electronic medical records were compared with automatically recorded values from bedside cardiorespiratory monitors. Eighteen infants were monitored for 605 patient days, with a mean birth weight of 859 ± 183 g, and gestational age of 26.0 ± 1.3 wks. Within the lowest SpO2 values, manually recorded values were consistently higher than the simultaneous automatically recorded monitor values. The highest SpO2 point differences in documentation was seen in patients with SpO2 range ≤ 70% (16 ± 13 points), followed by 71-80% (10 ± 7 points) and 81-90% (7 ± 4 points); p < 0.01. The difference between manually and automatically recorded SpO2 is large in lower SpO2 ranges and small in higher SpO2 ranges. Automated oxygen administering systems should be considered to reduce potential errors.

Title: Caffeine Exposure and Risk of Acute Kidney Injury in a Retrospective Cohort of Very Low Birth Weight Neonates.

Citation: The Journal of pediatrics, May 2016, vol. 172, p. 63, 1097-6833 (May 2016)

Author(s): Carmody, J Bryan, Harer, Matthew W, Denotti, Anna R, Swanson, Jonathan R, Charlton, Jennifer R

Abstract: To evaluate the association between caffeine exposure and acute kidney injury (AKI) in very low birth weight (VLBW; ≤1500 g) neonates. We retrospectively reviewed a cohort of 140 VLBW neonates consecutively admitted to the University of Virginia's neonatal intensive care unit from March 2011 to June 2012, excluding only those admitted >2 days of age or who died at <2 days after birth. We separately analyzed a subgroup of 44 neonates who received prolonged invasive respiratory support (mechanical ventilation for first 7 days after birth). The exposure of interest was caffeine exposure in the first week after birth. The primary outcome was AKI within the first 10 days after birth according to the Kidney Disease: Improving Global Outcomes system, modified to include only serum creatinine. Caffeine exposure occurred in 72.1% of all patients and 54.5% of those who received prolonged invasive respiratory support. AKI occurred less frequently in neonates who received caffeine (all patients: 17.8% vs 43.6%; P = .002; prolonged invasive respiratory support: 29.2% vs 75.0%; P = .002). Caffeine exposure was associated with decreased odds for AKI in logistic regression models adjusted for sex, birth weight, gestational age, small for gestational age status, illness severity on admission, and receipt of indomethacin, invasive ventilation, dopamine, aminoglycosides, and vancomycin (all patients: OR 0.22; 95% CI 0.07-0.75, P = .02; prolonged invasive respiratory support subgroup: OR 0.06; 95% CI 0.01-0.57, P = .02). In a cohort of VLBW neonates, those exposed to caffeine were less likely to experience AKI. Copyright © 2016 Elsevier Inc. All rights reserved.
Title: Initial Presentation of Neonatal Herpes Simplex Virus Infection.

Citation: The Journal of Pediatrics, May 2016, vol. 172, p. 121, 1097-6833 (May 2016)

Author(s): Curfman, Alison L, Glissmeyer, Eric W, Ahmad, Fahd A, Korgenski, E Kent, Blaschke, Anne J, Byington, Carrie L, Miller, Aaron S

Abstract: To inform the decision to test and empirically treat for herpes simplex virus (HSV) by describing the initial clinical presentation and laboratory findings of infants with a confirmed diagnosis of neonatal HSV. This is a retrospective case series performed at 2 pediatric tertiary care centers. Infants who developed symptoms prior to 42 days of age with laboratory confirmed HSV from 2002 through 2012 were included. We excluded infants <34 weeks gestation, those who developed illness before discharge from their birth hospital, and those who developed symptoms after 42 days of age. We identified 49 infants with HSV meeting these criteria. Most infants (43/49, 88%) came to medical attention at ≤28 days. Of 49 infants, 22 (45%) had disseminated, 16 (33%) central nervous system, and 10 (20%) skin, eye, mouth HSV disease. Eight infants (16%) had nonspecific presentations without the classic signs of seizure, vesicular rash, or critical illness (intensive care admission). All infants with nonspecific presentation were ≤14 days, had cerebrospinal fluid pleocytosis, or both. The majority of infants with HSV (84%) presented with seizure, vesicular rash, or critical illness. A subset of patients (16%) lacked classic signs at hospitalization; most manifested signs suggestive of HSV within 24 hours. Further studies are needed to validate the risk factors identified in this study including age <14 days and cerebrospinal fluid pleocytosis at presentation. Copyright © 2016 Elsevier Inc. All rights reserved.

Title: Cost Analysis of Fluconazole Prophylaxis for Prevention of Neonatal Invasive Candidiasis.

Citation: The Pediatric infectious disease journal, May 2016, vol. 35, no. 5, p. 519-523, 1532-0987 (May 2016)

Author(s): Swanson, Jonathan R, Vergales, Jeff, Kaufman, David A, Sinkin, Robert A

Abstract: Fluconazole prophylaxis (FP) in premature infants is well studied and has been shown to decrease invasive candidiasis (ICs). IC in neonates has significant financial costs; determining the cost-benefit of FP may provide additional justification for targeting high-risk neonates. We aimed to determine the IC rate in premature infants at which FP is cost-beneficial. A decision tree cost-analysis model using cost of FP related to costs associated with IC was used. We searched PubMed for all papers that used intravenous FP and reported rates of IC in very low birth weight neonates. Average IC rates in those who received FP (2.0%; range, 0-6.1%) and in those who did not receive FP (9.2%; range, 0-20.5%) were used. Incremental hospital costs because of IC and for FP were retrieved from the literature. Sensitivity analysis was performed to determine the incremental cost of FP across the range of published IC rates. The average cost per patient attributed to IC in patients receiving FP was $785 versus $2617 in those not receiving FP. Sensitivity analysis demonstrates the rate of IC would need to be <2.8% for FP to lose its cost-benefit. In Monte Carlo simulation, targeting infants <1000 g would lead to $50,304,333 in cost savings per year in the United States. FP provides a cost-advantage across most IC rates seen in the youngest premature infants. Using a rate of 2.8% for their individual high-risk neonatal intensive care unit patients, providers can determine if FP is cost-beneficial in determining for whom to provide IC prophylaxis.
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