NICU

Current Awareness Newsletter

January 2016
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
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Tables of Contents from January’s NICU journals

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

Neonatology
2016, Volume 109, Issue 1

Journal of Pediatrics
January 2016, Volume 168

JAMA Pediatrics
January 2015, Volume 170, Issue 1

Pediatrics
January 2016, Volume 136, Issue 1

Journal of Perinatology
January 2016, Volume 36, Issue 1

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.

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New NICE Guidance

QS105  Intrapartum care

Latest relevant Systematic Reviews from the Cochrane Library

Alternative lipid emulsions versus pure soy oil based lipid emulsions for parenterally fed preterm infants

Comparison of animal-derived surfactants for the prevention and treatment of respiratory distress syndrome in preterm infants

Early developmental intervention programmes provided post hospital discharge to prevent motor and cognitive impairment in preterm infants

New activity in UpToDate

www.uptodate.com

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

Progesterone to prevent recurrent preterm birth in obese women (December 2015)

Progesterone supplementation during pregnancy can reduce the risk of recurrent preterm birth. However, a secondary analysis of data from the Maternal-Fetal Medicine Units Network Trial of hydroxyprogesterone caproate for prevention of recurrent preterm birth reported that this drug may not be effective in women with a pre-pregnancy body mass index (BMI) >30 kg/m²[1]. The threshold for efficacy appeared to be <165 pounds (74.8 kg). This finding requires further study since the analysis was an unplanned post hoc analysis, pre-pregnancy weights were self-reported, and no data were available on weight gain during pregnancy or hydroxyprogesterone caproate serum levels. We suggest not using any BMI or weight criteria to limit use of hydroxyprogesterone caproate supplementation for prevention of recurrent preterm birth until confirmatory data are available. (See ”Progesterone supplementation to reduce the risk of spontaneous preterm birth”, section on ‘Maternal obesity’.)
Quick exercise

Match the diagrams to the corresponding research designs.

1. A: Randomised Controlled Trial
   - Group of interest (e.g. smokers)
   - Follow over time
   - Comparison group (e.g. non-smokers)
   - Follow over time
   - Compare outcomes

2. B: Cohort Study
   - Treatment Group
   - Control Group
   - Compare results
   - Random assignment
   - Patients

3. C: Case-control Study
   - Group of interest (e.g. cancer patients)
   - Take histories
   - Compare histories
   - Draw conclusions
   - Comparison group (e.g. non-patients)
   - Take histories

A: Randomised Controlled Trial
B: Cohort Study
C: Case-control Study

Find out more about research designs in one of our Understanding Articles training sessions. For more details, email library@uhbristol.nhs.uk.
Current Awareness Database Articles

If you require full articles please email: library@uhbristol.nhs.uk

Title: Long-Range Optical Coherence Tomography of the Neonatal Upper Airway for Early Diagnosis of Intubation-related Subglottic Injury.

Citation: American journal of respiratory and critical care medicine, Dec 2015, vol. 192, no. 12, p. 1504-1513 (December 15, 2015)

Author(s): Sharma, Giriraj K, Ahuja, Gurpreet S, Wiedmann, Maximilian, Osann, Kathryn E, Su, Erica, Heidari, Andrew E, Jing, Joseph C, Qu, Yueqiao, Lazarow, Frances, Wang, Alex, Chou, Lidek, Uy, Cherry C, Dhar, Vijay, Cleary, John P, Pham, Nguyen, Huoh, Kevin, Chen, Zhongping, Wong, Brian J-F

Abstract: Subglottic edema and acquired subglottic stenosis are potentially airway-compromising sequelae in neonates following endotracheal intubation. At present, no imaging modality is capable of in vivo diagnosis of subepithelial airway wall pathology as signs of intubation-related injury. To use Fourier domain long-range optical coherence tomography (LR-OCT) to acquire micrometer-resolution images of the airway wall of intubated neonates in a neonatal intensive care unit setting and to analyze images for histopathology and airway wall thickness. LR-OCT of the neonatal laryngotracheal airway was performed a total of 94 times on 72 subjects (age, 1-175 d; total intubation, 1-104 d). LR-OCT images of the airway wall were analyzed in MATLAB. Medical records were reviewed retrospectively for extubation outcome. Backward stepwise regression analysis demonstrated a statistically significant association between log(duration of intubation) and both laryngeal (P < 0.001; multiple r(2) = 0.44) and subglottic (P < 0.001; multiple r(2) = 0.55) airway wall thickness. Subjects with positive histopathology on LR-OCT images had a higher likelihood of extubation failure (odds ratio, 5.9; P = 0.007). Longer intubation time was found to be significantly associated with extubation failure. LR-OCT allows for high-resolution evaluation and measurement of the airway wall in intubated neonates. Our data demonstrate a positive correlation between laryngeal and subglottic wall thickness and duration of intubation, suggestive of progressive soft tissue injury. LR-OCT may ultimately aid in the early diagnosis of postintubation subglottic injury and help reduce the incidences of failed extubation caused by subglottic edema or acquired subglottic stenosis in neonates. Clinical trial registered with www.clinicaltrials.gov (NCT 00544427).

Full Text: Available from ProQuest in American Journal of Respiratory and Critical Care Medicine

Title: Neonatal infections due to multi-resistant strains: Epidemiology, current treatment, emerging therapeutic approaches and prevention.

Citation: Clinica chimica acta; international journal of clinical chemistry, Dec 2015, vol. 451, p. 71-77 (December 7, 2015)

Author(s): Tzialla, Chryssoula, Borghesi, Alessandro, Pozzi, Margherita, Stronati, Mauro

Abstract: Severe infections represent the main cause of neonatal mortality accounting for more than one million neonatal deaths worldwide every year. Antibiotics are the most commonly prescribed medications in neonatal intensive care units. The benefits of antibiotic therapy when indicated are clearly enormous, but the continued and widespread use of antibiotics has generated over the years
a strong selective pressure on microorganisms, favoring the emergence of resistant strains. Health agencies worldwide are galvanizing attention toward antibiotic resistance in gram-positive and gram-negative bacteria. Infections in neonatal units due to multidrug and extensively multidrug resistant bacteria are rising and are already seriously challenging antibiotic treatment options. While there is a growing choice of agents against multi-resistant gram-positive bacteria, new options for multi-resistant gram-negative bacteria in the clinical practice have decreased significantly in the last 20 years making the treatment of infections caused by multidrug-resistant pathogens challenging mostly in neonates. Treatment options are currently limited and will be some years before any new treatment for neonates become available for clinical use, if ever. The aim of the review is to highlight the current knowledge on antibiotic resistance in the neonatal population, the possible therapeutic choices, and the prevention strategies to adopt in order to reduce the emergency and spread of resistant strains. Copyright © 2015 Elsevier B.V. All rights reserved.

Title: Caregiving Factors Affecting Breastfeeding Duration Within a Neonatal Intensive Care Unit.

Citation: Advances in neonatal care : official journal of the National Association of Neonatal Nurses, Dec 2015, vol. 15, no. 6, p. 421-428 (December 2015)

Author(s): Casavant, Sharon G, McGrath, Jacqueline M, Burke, Georgine, Briere, Carrie-Ellen

Abstract: Increasingly, evidence supports oral feeding of very low birth-weight (VLBW) preterm infants exclusively at breast or with breast milk. Despite known breast milk benefits, outcomes related to exclusive breast milk provision are poor. Identifying factors that promote breast milk provision is critical. Breastfeeding practices of mothers of VLBW infants admitted to neonatal intensive care unit were explored to identify factors associated with mode of feeding at discharge. This retrospective study replicates previous work. Subjects were VLBW preterm infants consecutively admitted during a 24-month period. Primary outcomes included receiving any breast milk at discharge. Infant variables included gestational age, postmenstrual age of first direct breastfeeding, and comorbid conditions. Maternal variables included age and ethnicity. Nursing practice variables included first direct-to-breastfeeding, number of times to breast daily, and total direct-to-breastfeeding encounters 24 hours prior to discharge. A total of 96 VLBW infants (28.7 ± 2.8 weeks’ gestational age) met inclusion criteria. Of these, 48% received breast milk at discharge. Controlling for significant effect of length of stay, infants receiving first oral feed at breast were more likely discharged home receiving breast milk (adjusted odds ratio = 8.7; 95% confidence interval, 2.9-32.3; P < .0001). There were both an independent effect of first oral feed at breast and an interaction where infants of nonmarried women also benefited from the first oral feed at breast. Significant associations were found between first oral feeding at breast and infant receiving any breast milk at discharge. Targeting VLBW infants to receive first oral feeding at breast may yield the best outcome even among sickest and smallest infants.

Title: Web Camera Use of Mothers and Fathers When Viewing Their Hospitalized Neonate.

Citation: Advances in neonatal care : official journal of the National Association of Neonatal Nurses, Dec 2015, vol. 15, no. 6, p. 440-446 (December 2015)

Author(s): Rhoads, Sarah J, Green, Angela, Gauss, C Heath, Mitchell, Anita, Pate, Barbara

Abstract: Mothers and fathers of neonates hospitalized in a neonatal intensive care unit (NICU) differ in their experiences related to NICU visitation. To describe the frequency and length of
maternal and paternal viewing of their hospitalized neonates via a Web camera. A total of 219 mothers and 101 fathers used the Web camera that allows 24/7 NICU viewing from September 1, 2010, to December 31, 2012, which included 40 mother and father dyads. We conducted a review of the Web camera’s Web site log-on records in this nonexperimental, descriptive study. Mothers and fathers had a significant difference in the mean number of log-ons to the Web camera system (P = .0293). Fathers virtually visited the NICU less often than mothers, but there was not a statistical difference between mothers and fathers in terms of the mean total number of minutes viewing the neonate (P = .0834) or in the maximum number of minutes of viewing in 1 session (P = .6924). Patterns of visitations over time were not measured. Web camera technology could be a potential intervention to aid fathers in visiting their neonates. Both parents should be offered virtual visits using the Web camera and oriented regarding how to use the Web camera. These findings are important to consider when installing Web cameras in a NICU. Future research should continue to explore Web camera use in NICUs.

Title: Retrospective chart review comparing morphine and methadone in neonates treated for neonatal abstinence syndrome.


Author(s): Young, Mallory E, Hager, Shanna J, Spurlock, Darrell

Abstract: The primary objective was to determine whether oral morphine sulfate contributed to decreased length of stay, both in the hospital and neonatal intensive care unit (NICU), when compared to oral methadone for the treatment of neonatal abstinence syndrome (NAS). Secondary objectives included evaluation of NAS scores, opioid requirements, use of adjuvant therapy, and total cost of hospital stay. An equal number of neonates who received oral morphine sulfate and oral methadone as treatment for NAS were identified. Inclusion criteria included in utero exposure to opioids as determined by maternal history, toxicology reports during pregnancy or at the time of delivery, or infant urine toxicology reports and symptoms of NAS requiring pharmacological treatment. Exclusion criteria included neonates transferred to or from another facility during treatment, neonates discharged on NAS treatment, and neonates diagnosed with iatrogenic NAS due to postnatal exposure to opioids. Twenty six neonates met inclusion criteria. Statistically significant decreases in length of hospital and NICU stay, length of treatment, maximum opioid requirements, and total cost were found when neonates treated for NAS with oral morphine sulfate were compared to those treated with oral methadone. No statistically significant differences in average maximum NAS score or use of adjuvant therapy were found between the two groups. Oral morphine sulfate reduced length of NICU and hospital stay, length of treatment, and total cost of treatment for neonates treated for NAS. Copyright © 2015 by the American Society of Health-System Pharmacists, Inc. All rights reserved.

Title: Nosocomial exposure to active pulmonary tuberculosis in a neonatal intensive care unit.

Citation: American journal of infection control, Dec 2015, vol. 43, no. 12, p. 1292-1295 (December 1, 2015)

Author(s): Ahn, Jong Gyun, Kim, Dong Soo, Kim, Ki Hwan
Abstract: Nosocomial transmission of tuberculosis (TB) in a neonatal intensive care unit (NICU) is a recognized risk. We investigated TB transmission to neonates and health care workers (HCWs) exposed to a nurse with active TB in a NICU. A NICU nurse in a tertiary referral hospital in Seoul, Korea, developed pulmonary TB. The investigation included 108 infants and 75 HCWs. Tuberculin skin test (TST) and chest radiograph were performed at baseline. Isoniazid prophylaxis was started in neonates. After 3 months of prophylaxis, infants underwent repeat TST and chest radiograph. HCWs underwent a second TST after 3 months. Baseline chest radiographs were negative in infants and HCWs. Four (3.7%) of 108 infants screened had a positive TST, including 2 conversions, and received isoniazid for 6-9 months. Among the 59 HCWs screened, 27 (45.8%) had an initial positive TST result, and 6 (10.2%) had a positive TST result at 3 months. Four of the 6 HCWs with TST conversions received isoniazid treatment for 9 months. In the 2-year period after exposure, none of the exposed infants or HCWs developed active TB. In this investigation, 4 (3.7%) of 108 infants exposed to a nurse with active TB developed latent TB infection. They were given isoniazid therapy without any adverse events and did not progress to TB disease in the 2 years after exposure. Copyright © 2015 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved.

Title: Integrated measures for prevention of invasive Candida infections in preterm infants in a Chinese neonatal intensive care unit.

Citation: American journal of infection control, Dec 2015, vol. 43, no. 12, p. 1321-1325 (December 1, 2015)

Author(s): Chen, Jiahui, Yu, Xiaodan, Zhou, Yijun, Zhang, Yongjun, Zhu, Jianxing, Xie, Lijuan, Qian, Jihong, Yang, Qingnan, Xia, Hongping, Zhu, Tianwen, Zhang, Yonghong, Chen, Yan, Zhao, Dongying, He, Zhenjuan

Abstract: The increasing incidence of invasive Candida infections (ICIs) in preterm infants in the neonatal intensive care unit (NICU) of Xinhua Hospital aroused our concern. We undertook a retrospective study to evaluate the efficacy of different preventive measures for ICI in preterm infants. Preterm infants with gestational age (GA) <33 weeks admitted between 2010 and 2013 were divided into 3 groups according to the preventive measures applied in different periods: the control group (CG), fluconazole group (FG), and integrated measures group (IMG). We analyzed the incidence of ICI and distribution of fungal pathogens in these 3 groups, and also evaluated the efficiency of various measures in preventing ICIs in preterm infants. The study sample comprised 261 preterm infants born at <33 weeks GA, including 94 in the CG, 99 in the FG, and 68 in the IMG. The differences among the groups were not significant at baseline. ICI developed in 41 of the 261 infants (15.7%). The incidence of ICI varied significantly among the groups: 22.3% in the CG (21/94), 18.2% in the FG (18/99), and only 2.9% in the IMG (2/68) (P = .003). ICI was less frequent in the IMG compared with the CG (P <.001) and the FG (P = .003). The integrated measures approach is meaningful for the prevention of ICIs in preterm infants in NICUs with many patients but inadequate medical resources in some developing countries. Copyright © 2015 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved.

Title: Neonatal Outcomes by Mode of Delivery in Preterm Birth.

Citation: American journal of perinatology, Dec 2015, vol. 32, no. 14, p. 1292-1297 (December 2015)
**Author(s):** Blue, Nathan R, Van Winden, Kristi R, Pathak, Bhuvan, Barton, Lorayne, Opper, Neisha, Lane, Christianne Joy, Ramanathan, Rangasamy, Ouzounian, Joseph G, Lee, Richard H

**Abstract:** Objective We set out to test the hypothesis that infants born vaginally at ≤ 30 weeks gestation have less respiratory distress syndrome (RDS) than those born by cesarean delivery. Study Design We conducted a retrospective cohort study of 652 infants born between 24 and 30 (6/7) weeks gestation from March 31, 1996 to May 31, 2014. Comparisons of neonatal outcomes by intended and actual mode of delivery were made using chi-square and t-tests (α = 0.05). Multiple logistic regression was performed to control for confounding variables. Results Neonates born by cesarean delivery were more likely to have RDS (odds ratio [OR], 1.79; 95% confidence interval [CI], 1.10-2.90), require intubation (OR, 1.80; 95% CI, 1.12-2.88), and have longer neonatal intensive care unit stay (70.0 ± 37.1 vs. 57.3 ± 40.1 days, p = 0.02). Conclusion Compared with cesarean delivery, vaginal delivery is associated with a significant reduction in RDS among infants born at ≤ 30 weeks gestation. Thieme Medical Publishers 333 Seventh Avenue, New York, NY 10001, USA.

**Title:** Does Induction with Misoprostol Impact the Small for Gestational Age Neonate?

**Citation:** American journal of perinatology, Dec 2015, vol. 32, no. 14, p. 1311-1317 (December 2015)

**Author(s):** Foeller, Megan E, Cruz, Meredith O, Kominarek, Michelle A, Hibbard, Judith U

**Abstract:** Objective To compare outcomes in small for gestational age neonates induced with misoprostol to other cervical ripening agents. We hypothesized that misoprostol use will demonstrate no significant difference in outcomes compared with alternative agents. Study Design Small for gestational age neonates (<10th percentile for gestational age) from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) sponsored Consortium on Safe Labor database were analyzed. Neonates induced with misoprostol ± oxytocin (n = 451) were compared with neonates induced with prostaglandin E2 ± oxytocin and/or mechanical dilation ± oxytocin (n = 663). Primary outcomes included intrapartum fetal distress, cesarean section for fetal distress, cesarean section for any reason, neonatal intensive care unit admission, low 5-minute Apgar, and composite neonatal morbidity. Multiple logistic regression was used to calculate adjusted odds ratios (aORs). Data were analyzed using SAS. Results Small for gestational age neonates induced with misoprostol ± oxytocin compared with alternative agents had decreased low 5-minute Apgar scores (aOR 0.27 [0.10-0.71]). No significant differences were demonstrated among very small for gestational age neonates (<5th percentile for gestational age). Conclusion Our results suggest that misoprostol does not increase risk of adverse outcomes in small for gestational age neonates; however, prospective studies are warranted to further assess optimal cervical ripening agents in this population. Thieme Medical Publishers 333 Seventh Avenue, New York, NY 10001, USA.

**Title:** Perioperative feeding management of neonates with CHD: analysis of the Pediatric Cardiac Critical Care Consortium (PC4) registry.

**Citation:** Cardiology in the young, Dec 2015, vol. 25, no. 8, p. 1593-1601 (December 2015)

**Author(s):** Alten, Jeffrey A, Rhodes, Leslie A, Tabbutt, Sarah, Cooper, David S, Graham, Eric M, Ghanayem, Nancy, Marino, Bradley S, Figueroa, Mayte I, Chanani, Nikhil K, Jacobs, Jeffrey P, Donohue, Janet E, Yu, Sunkyung, Gaies, Michael
Abstract: The optimal perioperative feeding strategies for neonates with CHD are unknown. In the present study, we describe the current feeding practices across a multi-institutional cohort. Inclusion criteria for this study were as follows: all neonates undergoing cardiac surgery admitted to the cardiac ICU for ≥24 hours preoperatively between October, 2013 and July, 2014 in the Pediatric Cardiac Critical Care Consortium registry. The cohort included 251 patients from eight centres. The most common diagnoses included the following: hypoplastic left heart syndrome (17%), coarctation/aortic arch hypoplasia (18%), and transposition of the great arteries (22%); 14% of the patients were <37 weeks of gestational age. The median total hospital length of stay was 21 days (interquartile range (IQR) 14-35) and overall mortality was 8%. Preoperative feeding occurred in 133 (53%) patients. The overall preoperative feeding rates across centres ranged from 29 to 79%. Postoperative feeds started on median day 2 (IQR 1-4); for patients with hypoplastic left heart syndrome postoperative feeds started on median day 4. Postoperative feeds were initiated in 89 (35%) patients before extubation (range across centres: 21-61%). The median cardiac ICU discharge feeding volume was 108 cc/kg/day, varying across centres. The mean discharge weight was 280 g above birth weight, ranging from +100 to 430 g across centres. A total of 110 (44%) patients had discharge feeding tubes, ranging from 6 to 80% across centres, and 40/110 patients had gastrostomy/enterostomy tubes placed. In addition, eight (3.2%) patients developed necrotising enterocolitis - three preoperatively and five postoperatively. In this cohort, neonatal feeding practices and outcomes appear to vary across diagnostic groups and institutions. Only half of the patients received preoperative enteral nutrition; almost half had discharge feeding tubes. Multi-institutional collaboration is necessary to determine feeding strategies associated with best clinical outcomes.

Title: Breastfeeding the NICU Infant: What to Expect.

Citation: Clinical obstetrics and gynecology, Dec 2015, vol. 58, no. 4, p. 840-854 (December 2015)

Author(s): Wight, Nancy E

Abstract: Approximately 14% of infants born in the United States are admitted to neonatal intensive care units (NICU). The evidence for the use of human milk in the NICU is convincing. NICU mothers are at greater risk of delayed onset of lactation and insufficient milk when compared with healthy breastfeeding couplets. Unfortunately many infants leave the NICU not receiving sufficient or any breastmilk. A mother’s success depends upon the obstetric and NICU environment, and the knowledge and attitudes of those who care for her and her infant(s). Obstetrician-gynecologists have a significant role in the decision to breastfeed and the success of the provision of human milk and breastfeeding in the NICU.

Full Text: Available from Ovid in Clinical Obstetrics and Gynecology

Title: Neurobehavioral development prior to term-age of preterm infants and acute stressful events during neonatal hospitalization.

Citation: Early human development, Dec 2015, vol. 91, no. 12, p. 769-775 (December 2015)

Author(s): Gorzilio, Daniela Moré, Garrido, Elisa, Gaspardo, Cláudia Maria, Martinez, Francisco Eulogio, Linhares, Maria Beatriz Martins
**Abstract:** Neonatal Intensive Care Units (NICUs) protect preterm infants; otherwise, this is a stressful environment including painful stimuli. To compare early neurobehavioral development prior to term-age in preterm infants at 34-36 weeks of post-conceptional age in different gestational ages, and to examine the effects of prematurity level and acute stressful events during NICU hospitalization on neurobehavioral development. Cross-sectional design. Forty-five preterm infants, 34-36 weeks of post-conceptional age, were distributed into groups: extreme preterm (EPT; 23-28 weeks of gestational age; n=10), moderate preterm (MPT; 29-32 weeks of gestational age; n=10), late preterm (LPT; 34-36 weeks of gestational age; n=25). All of the neonates were evaluated using the Neurobehavioral Assessment of Preterm Infant (NAPI) prior to 37 weeks of post-conceptional age. The Neonatal Infant Stressor Scale (NISS) was applied for EPT and MPT infants during NICU hospitalization, and medical charts were analyzed. The EPT group experienced significantly more acute stressful events during NICU hospitalization than the MPT group. The MPT group had lower scores in motor development and vigor than the EPT and LPT group, and they exhibited poorer quality crying than the LPT group. Motor development and vigor and alertness and orientation in preterm infants were predicted by prematurity level and acute stressful events. The extreme preterm was exposed to higher stressful experiences than moderate and late preterm infants. However, the moderate preterm infants presented more vulnerable than the other counterparts in motor and vigor outcomes. Copyright © 2015 Elsevier Ireland Ltd. All rights reserved.

**Title:** What do we really know about newborn infant pain?

**Citation:** Experimental physiology, Dec 2015, vol. 100, no. 12, p. 1451-1457 (December 1, 2015)

**Author(s):** Fitzgerald, Maria

**Abstract:** What is the topic of this review? Pain in infancy. What advances does it highlight? New neurophysiological research on pain processing in the human infant brain. Increased awareness of pain in the newborn has led to the development of numerous assessment tools for use in neonatal intensive care units. Here, I argue that we still know too little about the neurophysiological basis for infant pain to interpret data from clinical observational measures. With increased understanding of how the neural activity and CNS connections that underlie pain behaviour and perception develop in the newborn will come better measurement and treatment of their pain. This review focuses upon two interconnected nociceptive circuits, the spinal cord dorsal horn and the somatosensory cortex in the brain, to highlight what we know and what we do not know about infant pain. The effectiveness of oral sucrose, widely used in clinical practice to relieve infant pain, is discussed as a specific example of what we do not know. This 'hot topic review' highlights the importance of new laboratory-based neurophysiological research for the treatment of newborn infant pain. © 2015 The Authors. Experimental Physiology © 2015 The Physiological Society.

**Title:** Spreading the Benefits of Infection Prevention in the Neonatal Intensive Care Unit.

**Citation:** JAMA pediatrics, Dec 2015, vol. 169, no. 12, p. 1089-1091 (December 1, 2015)

**Author(s):** Cantey, Joseph B, Ronchi, Andrea, Sánchez, Pablo J

**Title:** A burden of knowledge: A qualitative study of experiences of neonatal intensive care nurses’ concerns when keeping information from parents.
Citation: Journal of child health care: for professionals working with children in the hospital and community, Dec 2015, vol. 19, no. 4, p. 485-494 (December 2015)

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

Abstract: Improved life-sustaining technology in the neonatal intensive care has resulted in an increased probability of survival for extremely premature babies. In the neonatal intensive care, the condition of a baby can deteriorate rapidly. Nurses and parents are together for long periods at the bedside and so form close and trusting relationships. Neonatal nurses as the constant caregivers may be presented with contradictory demands in attempting to meet the baby's needs and being a patient and family advocate. This article aims to explore the issues arising for neonatal nurses when holding information about changes to a condition of a baby that they are unable to share with parents. Data were collected via interviews with 24 neonatal nurses in New South Wales, Australia. A qualitative approach was used to analyse the data. The theme 'keeping secrets' was identified and comprised of three sub-themes 'coping with potentially catastrophic news', 'fear of inadvertent disclosure' and 'a burden that could damage trust'. Keeping secrets and withholding information creates internal conflict in the nurses as they balance the principle of confidentiality with the parent's right to know information. The neonatal nurses experienced guilt and shame when they were felt forced by circumstances to keep secrets or withhold information from the parents of extremely premature babies. © The Author(s) 2014.

Title: Shwachman-Diamond syndrome (SDS) in a preterm neonate.

Citation: Journal of paediatrics and child health, Dec 2015, vol. 51, no. 12, p. 1228-1231 (December 2015)

Author(s): Saito-Benz, Maria, Miller, Helen Elizabeth, Berry, Mary Judith

Abstract: A preterm neonate at 29-week gestational age was born with intrauterine growth restriction, severe pancytopenia and gross skeletal dysplasia. Antenatal screening bloods, TORCH/parvovirus tests and karyotype were unremarkable. Postnatally, he had normal microarray comparative genomic hybridization and serum B12/folate levels, and human immunodeficiency virus and cytomegalovirus polymerase chain reaction and antoimmune screening were negative. Targeted gene testing for Shwachman-Diamond syndrome (SDS) revealed the pathognomic mutation (c.183_184delTAinsCT). His postnatal clinical course was complicated by: (i) Ventilator dependency because of a combination of a pathologically compliant chest wall and preterm-associated chronic lung disease. (ii) Progressive bone marrow failure, resulting in transfusion dependence and profound neutropenia associated with recurrent sepsis. (iii) Gastrointestinal failure and TPN dependency. (iv) Poor postnatal growth with weight/length/head circumference all <3rd centile. (v) Prognostication was complicated by the lack of published literature on the presentation of SDS in a preterm infant. However, because of inexorable progression of multiorgan failure, intensive care was withdrawn on day 54 of life. SDS is a rare autosomal recessive disorder characterised by haematological abnormalities, skeletal dysplasia and exocrine pancreatic dysfunction. Neonatal presentation is thought to be extremely rare. However, with the availability of genetic testing, it has now become clear that because of overlap in clinical presentation, term-born infants with skeletal dysplasia and severe respiratory distress may initially be misdiagnosed as asphyxiating thoracic dystrophy. This case report highlights the complexities of preterm birth complicating clinical manifestations of SDS. © 2015 The Authors. Journal of Paediatrics and Child Health © 2015 Paediatrics and Child Health Division (Royal Australasian College of Physicians).
Title: Psychosocial program standards for NICU parents.

Citation: Journal of perinatology : official journal of the California Perinatal Association, Dec 2015, vol. 35 Suppl 1, p. S1. (December 2015)

Author(s): Hynan, M T, Hall, S L

Abstract: This article provides a rationale for and brief description of the process of developing recommendations for program standards for psychosocial support of parents with babies in the neonatal intensive care unit (NICU). A multidisciplinary workgroup of professional organizations and NICU parents was convened by the National Perinatal Association. Six interdisciplinary committees (family-centered developmental care, peer-to-peer support, mental health professionals in the NICU, palliative and bereavement care, follow-up support and staff education and support) worked to produce the recommendations found in this supplemental issue. NICU parents contributed to the work of each committee.

Title: Recommendations for involving the family in developmental care of the NICU baby.

Citation: Journal of perinatology : official journal of the California Perinatal Association, Dec 2015, vol. 35 Suppl 1, p. S5. (December 2015)

Author(s): Craig, J W, Glick, C, Phillips, R, Hall, S L, Smith, J, Browne, J

Abstract: Family involvement is a key to realize the potential for long-lasting positive effects on physical, cognitive and psychosocial development of all babies, including those in the neonatal intensive care unit (NICU). Family-centered developmental care (FCDC) recognizes the family as vital members of the NICU health-care team. As such, families are integrated into decision-making processes and are collaborators in their baby's care. Through standardized use of FCDC principles in the NICU, a foundation is constructed to enhance the family's lifelong relationship with their child and optimize development of the baby. Recommendations are made for supporting parental roles as caregivers of their babies in the NICU, supporting NICU staff participation in FCDC and creating NICU policies that support this type of care. These recommendations are designed to meet the basic human needs of all babies, the special needs of hospitalized babies and the needs of families who are coping with the crisis of having a baby in the NICU.

Title: Recommendations for peer-to-peer support for NICU parents.


Author(s): Hall, S L, Ryan, D J, Beatty, J, Grubbs, L

Abstract: Peer-to-peer support provided by 'veteran' neonatal intensive care unit (NICU) parents to those with current NICU babies is a legitimate and unique form of support that can complement or supplement, but not replace, services provided by professional NICU staff. Peer support can be delivered through hospital- or community-based programs that offer one-to-one in-person or telephone matches, or support groups that meet in-person or via the Internet. Issues in program development, volunteer training and program operation are discussed. Recommendations for
offering peer support to all NICU parents as an integral component of family-centered care and comprehensive family support are presented.

Title: Recommendations for mental health professionals in the NICU.


Author(s): Hynan, M T, Steinberg, Z, Baker, L, Cicco, R, Geller, P A, Lassen, S, Milford, C, Mounts, K O, Patterson, C, Saxton, S, Segre, L, Stuebe, A

Abstract: This article describes recommended activities of social workers, psychologists and psychiatric staff within the neonatal intensive care unit (NICU). NICU mental health professionals (NMHPs) should interact with all NICU parents in providing emotional support, screening, education, psychotherapy and teleservices for families. NMHPs should also offer educational and emotional support for the NICU health-care staff. NMHPs should function at all levels of layered care delivered to NICU parents. Methods of screening for emotional distress are described, as well as evidence for the benefits of peer-to-peer support and psychotherapy delivered in the NICU. In the ideal NICU, care for the emotional and educational needs of NICU parents are outcomes equal in importance to the health and development of their babies. Whenever possible, NMHPs should be involved with parents from the antepartum period through after discharge.

Title: NICU discharge planning and beyond: recommendations for parent psychosocial support.

Citation: Journal of perinatology : official journal of the California Perinatal Association, Dec 2015, vol. 35 Suppl 1, p. S24. (December 2015)

Author(s): Purdy, I B, Craig, J W, Zeanah, P

Abstract: Parents will interact with a multitude of teams from various disciplines during their child's admission to the neonatal intensive care unit. Recognition of the emotional stressors experienced by these parents is a first step in working to provide the crucial support and parenting skills needed for bonding and caring for their infant from admission through discharge and beyond. Family-centered care involves time-sensitive two-way communication between parents and the multidisciplinary team members who coordinate care transition by providing emotional, educational, medical and home visitor support for these families. To do this well, a thoughtful exchange of information between team members and parents is essential to identify psychosocial stress and ameliorate family concerns. Parents will need emotional and educational support and follow-up resources. Establishing individualized, flexible but realistic, pre- and post-discharge plans with parents is needed to start their healthy transition to home and community.

Title: Recommendations for enhancing psychosocial support of NICU parents through staff education and support.

Citation: Journal of perinatology : official journal of the California Perinatal Association, Dec 2015, vol. 35 Suppl 1, p. S29. (December 2015)
**Author(s):** Hall, S L, Cross, J, Selix, N W, Patterson, C, Segre, L, Chuffo-Siewert, R, Geller, P A, Martin, M L

**Abstract:** Providing psychosocial support to parents whose infants are hospitalized in the neonatal intensive care unit (NICU) can improve parents' functioning as well as their relationships with their babies. Yet, few NICUs offer staff education that teaches optimal methods of communication with parents in distress. Limited staff education in how to best provide psychosocial support to families is one factor that may render those who work in the NICU at risk for burnout, compassion fatigue and secondary traumatic stress syndrome. Staff who develop burnout may have further reduced ability to provide effective support to parents and babies. Recommendations for providing NICU staff with education and support are discussed. The goal is to deliver care that exemplifies the belief that providing psychosocial care and support to the family is equal in importance to providing medical care and developmental support to the baby.

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**Title:** Early urinary angiotensinogen excretion in critically ill neonates.

**Citation:** Journal of the renin-angiotensin-aldosterone system : JRAAS, Dec 2015, vol. 16, no. 4, p. 1010-1020 (December 2015)

**Author(s):** Wang, Qing, Li, Mengxia, Li, Xiaozhong, Pan, Jian, Wang, Jian, Feng, Xing, Li, Yanhong

**Abstract:** Urinary angiotensinogen is considered a reliable biomarker for intrarenal renin-angiotensin system activity. The aims of this study were to assess the urinary angiotensinogen level during the first day of life and to evaluate its correlation with renal function in critically ill neonates. Urinary angiotensinogen concentration during the first 24 hours of life was measured in 98 critically ill neonates. Neonatal renal function was assessed by urinary levels of cystatin-C, albumin and α1-microglobulin and urinary electrolyte excretion. Urinary angiotensinogen level decreased with increasing gestational age and body weight in critically ill neonates (P<0.001). After adjustment for gestational age, urinary angiotensinogen level correlated with urinary fractional excretion of sodium and urinary levels of cystatin-C and α1-microglobulin. Multivariate linear regression identified a significant impact of urinary cystatin-C on urinary angiotensinogen level (P<0.001). Furthermore, urinary angiotensinogen was significantly increased in neonates with a urinary cystatin-C-to-creatinine ratio ≥2500 ng/mg, which was the optimal cut-off value to predict acute kidney injury in our previous study. The urinary angiotensinogen level correlates with the overall maturity of renal function during the early postnatal period in critically ill neonates and an increased urinary angiotensinogen level might reflect renal injury in immature neonates. © The Author(s) 2015.

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**Title:** Intrapartum and neonatal mortality in primary midwife-led and secondary obstetrician-led care in the Amsterdam region of the Netherlands: A retrospective cohort study.

**Citation:** Midwifery, Dec 2015, vol. 31, no. 12, p. 1168-1176 (December 2015)


**Abstract:** To compare intrapartum- and neonatal mortality and intervention rates in term women starting labour in primary midwife-led versus secondary obstetrician-led care. retrospective cohort study. Amsterdam region of the Netherlands. women with singleton pregnancies who gave birth beyond 37+0 weeks gestation in the years 2005 up to 2008 and lived in the catchment area of the
neonatal intensive care units of both academic hospitals in Amsterdam. Women with a primary caesarean section or a pregnancy complicated by antepartum death or major congenital anomalies were excluded. For women in the midwife-led care group, a home or hospital birth could be planned. Analysis of linked data from the national perinatal register, and hospital- and midwifery record data. We assessed (unadjusted) relative risks with confidence intervals. Main outcome measures were incidences of intrapartum and neonatal (<28 days) mortality. Secondary outcomes included incidences of caesarean section and vaginal instrumental delivery. 53,123 women started labour in primary care and 30,166 women in secondary care. Intrapartum and neonatal mortality rates were 37/53,123 (0.70‰) in the primary care group and 24/30,166 (0.80‰) in the secondary care group (relative risk 0.88; 95% CI 0.52-1.46). Women in the primary care group were less likely to deliver by secondary caesarean section (5% versus 16%; RR 0.31; 95% CI 0.30-0.32) or by instrumental delivery (10% versus 13%; RR 0.76; 95% CI 0.73-0.79). We found a low absolute risk of intrapartum and neonatal mortality, with a comparable risk for women who started labour in primary versus secondary care. The intervention rate was significantly lower in women who started labour in primary care. These findings suggest that it is possible to identify a group of women at low risk of complications that can start labour in primary care and have low rates of medical interventions whereas perinatal mortality is low. Copyright © 2015 Elsevier Ltd. All rights reserved.

Title: Ethical challenges in neonatal intensive care nursing.

Citation: Nursing ethics, Dec 2015, vol. 22, no. 8, p. 901-912 (December 2015)

Author(s): Strandås, Maria, Fredriksen, Sven-Tore D

Abstract: Neonatal nurses report a great deal of ethical challenges in their everyday work. Seemingly trivial everyday choices nurses make are no more value-neutral than life-and-death choices. Everyday ethical challenges should also be recognized as ethical dilemmas in clinical practice. The purpose of this study is to investigate which types of ethical challenges neonatal nurses experience in their day-to-day care for critically ill newborns. Data were collected through semi-structured qualitative in-depth interviews. Phenomenological-hermeneutic analysis was applied to interpret the data. Six nurses from neonatal intensive care units at two Norwegian hospitals were interviewed on-site. The study is designed to comply with Ethical Guidelines for Nursing Research in the Nordic Countries and the Helsinki declaration. Findings suggest that nurses experience a diverse range of everyday ethical challenges related to challenging interactions with parents and colleagues, emotional strain, protecting the vulnerable infant, finding the balance between sensitivity and authority, ensuring continuity of treatment, and miscommunication and professional disagreement. A major finding in this study is how different agents involved in caring for the newborn experience their realities differently. When these realities collide, ethical challenges arise. Findings suggest that acting in the best interests of the child becomes more difficult in situations involving many agents with different perceptions of reality. The study presents new aspects which increases knowledge and understanding of the reality of nursing in a neonatal intensive care unit, while also demanding increased research in this field of care. © The Author(s) 2014.

Full Text:
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Title: Comparison of early and late MRI in neonatal hypoxic-ischemic encephalopathy using three assessment methods.

Citation: Pediatric radiology, Dec 2015, vol. 45, no. 13, p. 1988-2000 (December 2015)

Author(s): Charon, Valérie, Proisy, Maïa, Ferré, Jean-Christophe, Bruneau, Bertrand, Tréguier, Catherine, Beuchée, Alain, Chauvel, Jennifer, Rozel, Céline

Abstract: There is no consensus on the optimum timing of MRI in neonates with hypoxic-ischemic encephalopathy treated with hypothermia. Reliable early imaging assessment might help managing treatment. To assess non-random differences between early and late MRI that might influence intensive-care decisions. This single-center retrospective study included all asphyxiated term neonates eligible for hypothermia treatment November 2009-July 2012. MRI scans were systematically performed at day 4 (early MRI) and day 11 of life as part of routine protocol. Two experienced pediatric radiologists reviewed both scans according to three assessment methods: a pattern classification, a scoring system and a simplified classification. Agreement between early and late imaging findings was assessed using Cohen’s kappa coefficients. Thirty-three neonates were included. Interobserver agreement was excellent. Early MRI detected all severe injuries. Agreement between early and late MRI was excellent for the simplified classification (κ = 0.82), good for the pattern classification (κ = 0.64), and good to excellent for 3 scores out of 4 in the scoring system (κ = 0.70-0.89). Early MRI may provide valuable information about brain injury to help parents and neonatologists in intensive-care decisions at the end of hypothermia treatment.

Title: Monocyte HLA-DR expression and neutrophil CD64 expression as biomarkers of infection in critically ill neonates and infants.

Citation: Pediatric research, Dec 2015, vol. 78, no. 6, p. 683-690 (December 2015)


Abstract: Reduced monocyte HLA-DR expression and increased neutrophil CD64 expression have been proposed as biomarkers of infection. From 2009-2011, blood samples from neonatal intensive care unit (NICU) and pediatric intensive care unit (ICU) patients <1 y of age were collected at enrollment and during subsequent evaluation for suspected infection, if it occurred. Samples were analyzed for monocyte HLA-DR and neutrophil CD64 expression levels by flow cytometry. Forty-seven infants had study samples collected at enrollment; 26 infants had study samples collected at the time of a suspected infection. At enrollment, there was an inverse relationship between neutrophil CD64 expression and age (P ≤ 0.047). At the time of suspected infection, infants with an infection demonstrated a lower percentage of HLA-DR+ monocytes (P = 0.02, area under the curve (AUC) 0.78), higher percentage of CD64+ neutrophils (P = 0.009, AUC 0.81), and higher neutrophil CD64 expression levels (P = 0.04, AUC 0.75). Monocyte HLA-DR and neutrophil CD64 expression in critically ill infants are related to age and infection.

Title: Endocan and Soluble Triggering Receptor Expressed on Myeloid Cells-1 as Novel Markers for Neonatal Sepsis.

Citation: Pediatrics and neonatology, Dec 2015, vol. 56, no. 6, p. 415-421, 1875-9572 (December 2015)
Author(s): Sadir, Mehmet, Tunc, Turan, Cekmez, Ferhat, Cetinkaya, Merih, Kalayci, Tugce, Fidanci, Kursat, Babacan, Oguzhan, Erdem, Galip, Kocak, Necmettin, Sari, Erkan, Akgul, Emin Ozgur, Kul, Mustafa

Abstract: Neonatal sepsis is an important cause of neonatal morbidity and mortality in the neonatal intensive care unit. Soluble triggering receptor expressed on myeloid cells-1 (sTREM-1) has been evaluated in sepsis and septic shock, and it was found to be valuable in distinguishing septic cases from nonseptic cases. Endocan is constitutively expressed by endothelial cells, and high levels of endocan may be of relevance for the promotion of systemic inflammation. The aim of this study was to investigate whether the levels of sTREM-1 and endocan were increased in late-onset neonatal sepsis. Patients were classified into septic and nonseptic groups. Blood was collected from a peripheral vein of all septic newborns and healthy newborns at the time of initial laboratory evaluation before any treatment, and within 48-72 hours after initiation of treatment. Serum sTREM-1 and endocan measurements were performed when the study was finished. The study population comprised of 50 neonates: 20 nonseptic neonates and 30 septic neonates. The groups were similar with regards to baseline characteristics. The initial measurements of interleukin-6 (IL-6), sTREM-1, endocan, and immature/total neutrophil ratio (I/T ratio) were significantly higher in septic neonates in comparison with nonseptic neonates. Receiver operating characteristic (ROC) curve analyses revealed that IL-6, sTREM-1, endocan, and I/T ratio resulted in significant areas under the curve (AUC) with respect to early identification of septic neonates. Soluble TREM-1 and IL-6 performed best to distinguish septic neonates from nonseptic neonates. Univariate logistic regression analysis showed that increased IL-6 and sTREM-1 were strong predictors of neonatal late-onset sepsis. Serum sTREM-1, IL-6, endocan levels, and I/T ratio increased in septic neonates. However, the diagnostic accuracy of circulating sTREM-1 seemed to be better than endocan and I/T ratio, but lower than IL-6. Copyright © 2015. Published by Elsevier B.V.

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Author(s): Polin, Richard A, Lorenz, John M

Abstract: Given the overwhelming size of the neonatal literature, clinicians must rely upon expert panels such as the Committee on Fetus and Newborn in the USA and the National Institute for Healthcare and Excellence in the UK for guidance. Guidelines developed by expert panels are not equivalent to evidence-based medicine and are not rules, but do provide evidence-based recommendations (when possible) and at minimum expert consensus reports. The standards used to develop evidence-based guidelines differ among expert panels. Clinicians must be able judge the quality of evidence from an expert panel, and decide whether a recommendation applies to their neonatal intensive care unit or infant under their care. Furthermore, guidelines become outdated within a few years and must be revised or discarded. Clinical practice guidelines should not always be equated with standard of care. However, they do provide a framework for determining acceptable care. Clinicians do not need to follow guidelines if the recommendations are not applicable to their population or infant. However, if a plan of care is not consistent with apparently applicable clinical practice guidelines, the medical record should include an explanation for the deviation from the relevant practice guideline. Copyright © 2015 Elsevier Ltd. All rights reserved.
Title: The ethics of neonatal research: A trialists' perspective.

Citation: Seminars in fetal & neonatal medicine, Dec 2015, vol. 20, no. 6, p. 431-435 (December 2015)

Author(s): DeMauro, Sara B, Foglia, Elizabeth E, Schmidt, Barbara

Abstract: We are neonatal physicians who strive to practice evidence-based medicine. We conduct and promote randomized trials in preterm and critically ill infants to improve their care and outcomes. Controlled clinical trials are ethical and essential because randomization is the best strategy to minimize bias when evaluating therapies of uncertain benefit. Perinatal and neonatal randomized trials have identified better care practices, uncovered useless or harmful therapies, and revealed new knowledge gaps. We are convinced that neonatal randomized trials can be done safely and in partnership with the infants' families. Copyright © 2015 Elsevier Ltd. All rights reserved.

Title: The ethics of neonatal research: An ethicist's and a parents' perspective.

Citation: Seminars in fetal & neonatal medicine, Dec 2015, vol. 20, no. 6, p. 436-441 (December 2015)

Author(s): Janvier, Annie, Farlow, Barbara

Abstract: The ethics of neonatal research are complex because vulnerable new parents are asked to provide consent on behalf of their fragile baby. Whereas clinical neonatal care has evolved to value personalized and shared decision-making, the goal of research ethics is still to standardize the informed consent process and make it as complete and thorough as possible. Ethicists, lawyers and physicians have shaped the field of research ethics and consent for research. The goal of detailed informed consent is to protect participants from harm, but procedures were developed without input from the principal stakeholders: ex-neonatal intensive care unit parents/patients. Empirical investigations examining patient and parental perspectives on research and research ethics are lacking. Rigorous investigations are needed to determine how parents of sick neonates want their families to be protected, knowing that a lack of research is also harmful. Large randomized controlled multicenter trials will always be needed to improve neonatal outcomes. These trials are costly and time-consuming. Currently, the way in which research is funded and regulated and the way in which academic merit is recognized lead to inefficiency and a waste of precious resources. Following a review of the history of research ethics, this article examines and discusses the ethics of research in neonatology. In addition, challenges and opportunities are identified and ideas for future investigations are proposed. Copyright © 2015 Elsevier Ltd. All rights reserved.

Title: Elucidating the role of genomics in neonatal sepsis.

Citation: Seminars in perinatology, Dec 2015, vol. 39, no. 8, p. 611-616 (December 2015)

Author(s): Srinivasan, Lakshmi, Kirpalani, Haresh, Cotten, Charles Michael

Abstract: Sepsis is a major cause of neonatal morbidity and mortality, especially in vulnerable preterm populations. Immature immune defenses, and environmental and maternal factors contribute to this risk, with as many as a third of very preterm infants experiencing sepsis during their stay in the neonatal intensive care unit (NICU). Epidemiologic and twin studies have suggested
that there is a genetic contribution to sepsis predilection. Several investigators have conducted candidate gene association studies on variants of specific interest and potential functional significance in neonatal sepsis. In this review, we describe details of studies that have evaluated genetic susceptibility in neonatal sepsis, and summarize findings from a review of candidate gene association studies. Copyright © 2015 Elsevier Inc. All rights reserved.

Title: Rapid whole genome sequencing and precision neonatology.

Citation: Seminars in perinatology, Dec 2015, vol. 39, no. 8, p. 623-631 (December 2015)

Author(s): Petrikin, Joshua E, Willig, Laurel K, Smith, Laurie D, Kingsmore, Stephen F

Abstract: Traditionally, genetic testing has been too slow or perceived to be impractical to initial management of the critically ill neonate. Technological advances have led to the ability to sequence and interpret the entire genome of a neonate in as little as 26 h. As the cost and speed of testing decreases, the utility of whole genome sequencing (WGS) of neonates for acute and latent genetic illness increases. Analyzing the entire genome allows for concomitant evaluation of the currently identified 5588 single gene diseases. When applied to a select population of ill infants in a level IV neonatal intensive care unit, WGS yielded a diagnosis of a causative genetic disease in 57% of patients. These diagnoses may lead to clinical management changes ranging from transition to palliative care for uniformly lethal conditions for alteration or initiation of medical or surgical therapy to improve outcomes in others. Thus, institution of 2-day WGS at time of acute presentation opens the possibility of early implementation of precision medicine. This implementation may create opportunities for early interventional, frequently novel or off-label therapies that may alter disease trajectory in infants with what would otherwise be fatal disease. Widespread deployment of rapid WGS and precision medicine will raise ethical issues pertaining to interpretation of variants of unknown significance, discovery of incidental findings related to adult onset conditions and carrier status, and implementation of medical therapies for which little is known in terms of risks and benefits. Despite these challenges, precision neonatology has significant potential both to decrease infant mortality related to genetic diseases with onset in newborns and to facilitate parental decision making regarding transition to palliative care. Copyright © 2015 Elsevier Inc. All rights reserved.

Title: Palliative Care in Neonatal Intensive Care, Effects on Parent Stress and Satisfaction: A Feasibility Study.

Citation: The American journal of hospice & palliative care, Dec 2015, vol. 32, no. 8, p. 869-875 (December 2015)

Author(s): Petteys, Annie R, Goebel, Joy R, Wallace, Joetta D, Singh-Carlson, Savitri

Abstract: Approximately 1 in 10 infants require neonatal intensive care unit (NICU) hospitalization, which causes parental stress. Palliative care (PC) provides an opportunity to alleviate suffering and stress. This study examines the effects of PC on NICU parent stress and satisfaction. A prospective cohort design compares stress and satisfaction among families receiving or not receiving PC. No significant differences in stress scores were found (P = .27-1.00). Palliative care parents (100%) were more likely to report being “extremely satisfied” with care than usual-care parents (50%). This study supports the feasibility of evaluating NICU PC services. Infants referred for PC typically have higher morbidity/mortality; therefore, higher parental stress scores may be expected. Stress levels were
similar in both cohorts, thus PC did not increase stress and may decrease PC parent stress. © The Author(s) 2014.

Title: Prostaglandin E2 Mediates Cardiorespiratory Disturbances during Infection in Neonates.

Citation: The Journal of pediatrics, Dec 2015, vol. 167, no. 6, p. 1207 (December 2015)

Author(s): Siljehav, Veronica, Hofstetter, Annika M, Leifsdottir, Kristin, Herlenius, Eric

Abstract: To determine whether infection, with associated eicosanoid release, is a main cause of respiratory disruption in neonates, by measuring levels of prostaglandin E2 (PGE2) and its metabolite (PGEM) in cerebrospinal fluid (CSF). Of 59 eligible infants, 25 preterm infants (mean gestational age, 28 ± 0.5 weeks) and 22 full-term infants (mean gestational age, 40 ± 0.5 weeks) from a level 3 neonatal intensive care unit and the general maternity neonatal ward were enrolled prospectively. Infants with a condition that can cause secondary apnea were excluded. Cardiorespiratory disturbances, such as apnea, bradycardia, and desaturation (ABD) events, were quantified. All infants were subjected to standard laboratory analysis of blood and CSF concentrations of biomarkers, including PGE2 and PGEM, within 24 hours of lumbar puncture, which were correlated with ABD events and culture-verified infections. PGEM levels were highest in infants with culture-verified sepsis and meningitis (P < .01). In infants without culture-verified bacterial infections, PGEM levels were higher in preterm infants compared with term infants (P < .05). The numbers of desaturation events and apnea events in neonates were positively associated with PGE2 levels in CSF (P < .05). PGE2 and PGEM are rapidly elevated in CSF during an infectious event and may explain cardiorespiratory disturbances, which are the major presenting symptoms of neonatal infections. PGE2 and PGEM are released during bacterial infections and could serve as biomarkers for sepsis and autonomic dysfunction in neonates. Copyright © 2015 The Authors. Published by Elsevier Inc. All rights reserved.

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