

NICU

Evidence Update

March 2018
(Quarterly)



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Training Calendar 2018

All sessions are one hour

March (13.00-14.00)

28th (wed) Statistics

April (12.00-13.00)

5th (Thu) Literature Searching

9th (Mon) Critical Appraisal

17th (Tue) Statistics

25th (Wed) Literature Searching

May (13.00-14.00)

3rd (Thu) Critical Appraisal

11th (Fri) Statistics

14th (Mon) Literature Searching

22nd (Tue) Critical Appraisal

30th (Wed) Statistics

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Updates

NICE National Institute for
Health and Care Excellence

[Implementation of a Guideline to Decrease Use of Acid-Suppressing Medications in the NICU](#)

Source: [Medicines Management Collection](#) - 01 December 2017 - Publisher: Pediatrics

inhibitors (PPIs) and histamine-2 receptor antagonists (H2RAs) in our level III/IV NICU by developing and implementing a guideline for...

[Read Summary](#)

[The role of the clinical pharmacist in the NICU: a cross-sectional survey of Australian and Polish pharmacy practice](#)

Source: [Medicines Management Collection](#) - 20 January 2018 - Publisher: European Journal Of Hospital Pharmacy

not consider themselves members of the NICU team and the majority (59.1%) felt that pharmaceutical care on the NICU was...

[Read Summary](#)

[Systematic review of developmental care interventions in the neonatal intensive care unit since 2006](#)

Source: [PubMed](#) - 01 January 2018 - Publisher: Journal Of Child Health Care : For Professionals Working With Children In The Hospital And Community

improve neurodevelopmental outcomes of premature infants in the NICU. Developmental care in the NICU appears to have some...

[Read Summary](#)

[Association of Rooming-in With Outcomes for Neonatal Abstinence Syndrome: A Systematic Review and Meta-analysis](#)

Source: [PubMed](#) - 05 February 2018 - Publisher: Jama Pediatrics

before-and-after quality improvement investigations comparing rooming-in vs standard NICU care for newborns with NAS. Data Extraction...

[Read Summary](#)

[Interventions to prevent hypothermia at birth in preterm and/or low birth weight infants](#)

Source: [Cochrane Database of Systematic Reviews](#) - 12 February 2018

improved core body temperature on admission to the neonatal intensive care unit (NICU) or up to two hours after birth (mean difference...

[Newborn hearing screening programme \(NHSP\) operational guidance](#)

Source: [GOV UK](#) - Source: [Public Health England](#) - 26 January 2018

This guidance supports healthcare professionals and stakeholders delivering and managing newborn hearing screening programmes in England.

[Risk factors for methicillin-resistant Staphylococcus aureus colonization in the neonatal intensive care unit: A systematic review and meta-analysis](#)

Source: [PubMed](#) - 01 December 2017 - Publisher: American Journal Of Infection Control

CONTEXT: Methicillin-resistant Staphylococcus aureus (MRSA) causes a significant burden of illness in neonatal intensive care units (NICUs) worldwide.

[Read Summary](#)

[MAGnesium sulphate for fetal neuroprotection to prevent Cerebral Palsy \(MAG-CP\)—implementation of a national guideline in Canada](#)

Source: [Implementation Science](#) - 11 January 2018 - Publisher: BioMed Central

Evidence supports magnesium sulphate (MgSO₄) for women at risk of imminent birth at < 32–34 weeks to reduce the likelihood of cerebral palsy in the child. MAGnesium sulphate for...

[Fluid supplementation for neonatal unconjugated hyperbilirubinaemia](#)

Source: [Cochrane Database of Systematic Reviews](#) - 08 January 2018 - Publisher: Cochrane Database of Systematic Reviews

Review of 7 RCTs (n=494) concludes there is no evidence that IV fluid supplementation affects important clinical outcomes such as bilirubin encephalopathy, kernicterus, or cerebral palsy in healthy, ...

[Read Summary](#)

[Higher versus lower amino acid intake in parenteral nutrition for newborn infants](#)

Source: [Cochrane Database of Systematic Reviews](#) - 05 March 2018

criteria: inborn babies with birth weight 900 to 1250 grams from a level 3 NICU Exclusion criteria: babies at > first 24 hours of...[Read Summary](#)

[Antibiotics at the time of removal of central venous catheter to reduce morbidity and mortality in newborn infants](#)

Rowena L McMullan, Adrienne Gordon

Online Publication Date: March 2018

[Higher versus lower amino acid intake in parenteral nutrition for newborn infants](#)

David A Osborn, Tim Schindler, Lisa J Jones, John KH Sinn, Srinivas Bolisetty

[Beta-blockers for prevention and treatment of retinopathy of prematurity in preterm infants](#)

Siree Kaempfen, Roland P Neumann, Kerstin Jost, Sven M Schulzke

Online Publication Date: March 2018

[Pulse oximetry screening for critical congenital heart defects](#)

Maria N Plana, Javier Zamora, Gautham Suresh, Luis Fernandez-Pineda, Shakila Thangaratinam, Andrew K Ewer

Online Publication Date: March 2018

[Prostacyclins and analogues for the treatment of pulmonary hypertension in neonates](#)

Binoy Shivanna, Sharada Gowda, Stephen E Welty, Keith J Barrington, Mohan Pammi

Online Publication Date: February 2018

[Interventions to prevent hypothermia at birth in preterm and/or low birth weight infants](#)

Emma M McCall, Fiona Alderdice, Henry L Halliday, Sunita Vohra, Linda Johnston

[Prophylactic vitamin K for the prevention of vitamin K deficiency bleeding in preterm neonates](#)

Stephanie Ardell, Martin Offringa, Colleen Ovelman, Roger Soll

Online Publication Date: February 2018

[Routine monitoring of gastric residual for prevention of necrotising enterocolitis in preterm infants](#)

Thangaraj Abiramalatha, Sivam Thanigainathan, Binu Ninan

Online Publication Date: January 2018

[Re-feeding versus discarding gastric residuals to improve growth in preterm infants](#)

Thangaraj Abiramalatha, Sivam Thanigainathan, Umamaheswari Balakrishnan

Online Publication Date: January 2018

[Diaphragm-triggered non-invasive respiratory support for preventing respiratory failure in preterm infants](#)

Dimple Goel, Ju Lee Oei, John Smyth, Tim Schindler

Online Publication Date: January 2018

[Community-based antibiotic delivery for possible serious bacterial infections in neonates in low- and middle-income countries](#)

Jessica Duby, Zohra S Lassi, Zulfiqar A Bhutta

Online Publication Date: January 2018

[Anti-vascular endothelial growth factor \(VEGF\) drugs for treatment of retinopathy of prematurity](#)

Mari Jeeva Sankar, Jhuma Sankar, Parijat Chandra

Online Publication Date: January 2018

[Stopping feeds for prevention of transfusion-associated necrotising enterocolitis in preterm infants](#)

Kee Thai Yeo, Juin Yee Kong, Arun Sasi, Kenneth Tan, Nai Ming Lai

Online Publication Date: December 2017

[Feed thickener for infants up to six months of age with gastro-oesophageal reflux](#)

T'ng Chang Kwok, Shalini Ojha, Jon Dorling

Online Publication Date: December 2017

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NEONATOLOGY

Mortality risk associated with early administration of inhaled steroids in preterm neonates (January 2018)

A systematic review previously reported that early administration of inhaled steroid therapy to preterm neonates lowered the risk for the composite outcome of bronchopulmonary dysplasia (BPD) and death, reduced the risk of BPD among survivors, and had no effect on mortality compared with placebo. However, a follow-up study of patients enrolled in the largest trial included in this review found that use of early inhaled steroids was associated with higher mortality at a corrected age of 18 to 22 months; rates of neurodevelopmental

impairment (NDI) and the composite outcome of NDI and death were similar in both groups [20]. The results of this study support our recommendation not to use inhaled steroids routinely in an attempt to reduce the risk of BPD. (See "[Postnatal use of corticosteroids in bronchopulmonary dysplasia](#)", section on 'Prevention of BPD'.)

Erythropoietin administration in preterm infants (December 2017)

A recent systematic review and meta-analysis of randomized trials in preterm infants confirmed that early (before eight days of age) administration of erythropoietin (EPO) resulted in a small reduction in use of red cell transfusions, which was of limited clinical benefit [21]. In addition, EPO resulted in improved neurodevelopmental outcomes and a lower risk of necrotizing enterocolitis, but the quality of evidence for these findings ranged from poor to moderate. In contrast to findings from previous meta-analyses, EPO did not increase the risk of retinopathy of prematurity stage ≥ 3 . We recommend NOT routinely administering EPO before eight days of age because the low quality of evidence of meaningful benefit does not warrant the cost of the intervention. (See "[Anemia of prematurity](#)", section on 'Early EPO use'.)

Papers

If you would like any of the articles in full text, or if you would like a more focused search on your own topic, please contact us: library@bristol.nhs.uk

1. The Energy Costs of Prematurity and the Neonatal Intensive Care Unit (NICU) Experience.

Author(s): Tan, John B C; Boskovic, Danilo S; Angeles, Danilyn M

Source: Antioxidants (Basel, Switzerland); Mar 2018; vol. 7 (no. 3)

Publication Date: Mar 2018

Publication Type(s): Journal Article Review

PubMedID: 29498645

Available at [Antioxidants](#) - from Europe PubMed Central - Open Access

Available at [Antioxidants](#) - from mdpi.com

Abstract: Premature neonates are in an energy deficient state due to (1) oxygen desaturation and hypoxia events, (2) painful and stressful stimuli, (3) illness, and (4) neurodevelopmental energy requirements. Failure to correct energy deficiency in premature infants may lead to adverse effects such as neurodevelopmental delay and negative long-term metabolic and cardiovascular outcomes. The effects of energy dysregulation and the challenges that clinicians in the Neonatal Intensive Care Unit (NICU) face in meeting the premature infant's metabolic demands are discussed. Specifically, the focus is on the effects of pain and stress on energy homeostasis. Energy deficiency is a complex problem and requires a multi-faceted solution to promote optimum development of premature infants.

Database: Medline

2. Anticoagulation in neonatal ECMO.

Author(s): Kamdar, Aditi; Rintoul, Natalie; Raffini, Leslie

Source: Seminars in perinatology; Mar 2018; vol. 42 (no. 2); p. 122-128

Publication Date: Mar 2018

Publication Type(s): Journal Article Review

PubMedID: 29336832

Abstract: Despite advances made in technology and neonatal intensive care, the rate of hemorrhagic and thrombotic complications remains unacceptably high in patients undergoing extracorporeal membrane oxygenation (ECMO) and these complications negatively impact morbidity and mortality. Management of anticoagulation in neonates who have a developing hemostatic system is vastly different from adults and poses unique challenges. Variation in practice among ECMO centers regarding anticoagulation monitoring and titration reflects the lack of high-quality evidence. Novel anticoagulants may offer alternative options, though their impact on outcomes is yet to be demonstrated. In this chapter, we review the hemostatic alterations that occur during ECMO with a focus on current approaches and limitations to anticoagulation titration in neonates on ECMO.

Database: Medline

3. Infants born preterm, stress, and neurodevelopment in the neonatal intensive care unit: might music have an impact?

Author(s): Anderson, Dane E; Patel, Aniruddh D

Source: Developmental medicine and child neurology; Mar 2018; vol. 60 (no. 3); p. 256-266

Publication Date: Mar 2018

Publication Type(s): Journal Article Review

PubMedID: 29363098

Abstract:AIMThe neonatal intensive care unit (NICU) provides life-saving medical care for an increasing number of newborn infants each year. NICU care, while lifesaving, does have attendant consequences which can include repeated activation of the stress response and reduced maternal interaction, with possible negative long-term impacts on brain development. Here we present a neuroscientific framework for considering the impact of music on neurodevelopment in the NICU of infants born preterm and evaluate current literature on the use of music with this population to determine what is most reliably known of the physiological effects of music interventions.METHODUsing online academic databases we collected relevant, experimental studies aimed at determining effects of music listening in infants in the NICU. These articles were evaluated for methodological rigor, ranking the 10 most experimentally stringent as a representative sample.RESULTSThe selected literature seems to indicate that effects are present on the cardio-pulmonary system and behavior of neonates, although the relative effect size remains unclear.INTERPRETATIONThese findings indicate a need for more standardized longitudinal studies aimed at determining not only whether NICU music exposure has beneficial effects on the cardio-pulmonary system, but also on the hypothalamic-pituitary-adrenal axis, brain structures, and cognitive behavioral status of these children as well.WHAT THIS PAPER ADDSProvides a neuroscience framework for considering how music might attenuate stress in neonatal intensive care unit (NICU) infants. Considers how repeated stress may cause negative neurodevelopmental impacts in infants born preterm. Posits epigenetics can serve as a mechanistic pathway for music moderating the stress response.

Database: Medline

4. The relationship between Gram-negative colonization and bloodstream infections in neonates: a systematic review and meta-analysis.

Author(s): Folgori, L; Tersigni, C; Hsia, Y; Kortsalioudaki, C; Heath, P; Sharland, M; Bielicki, J

Source: Clinical microbiology and infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases; Mar 2018; vol. 24 (no. 3); p. 251-257

Publication Date: Mar 2018

Publication Type(s): Journal Article Review

PubMedID: 28830807

Abstract:OBJECTIVESNeonates admitted to neonatal intensive care units (NICU) are at significant risk of developing bloodstream infections (BSIs). Gram-negative bacteria (GNB) both colonize and infect, but the association between these entities is unclear. By conducting a systematic literature review, we aimed to explore the impact of factors on the association between GN colonization and GN-BSI at both baby-level and unit-level.METHODSWe searched Medline, Embase, and Cochrane Library. Observational cohort studies published after 2000 up to June 2016 reporting data on the total number of neonates (0-28 days) colonized with GNB assessed by rectal/skin swab culture and the total number of neonates with GN-BSI (same bacteria) were included. Studies were excluded if data

on skin/rectal colonization, neonates, and GNB could not be identified separately. Meta-analyses along with multivariate meta-regression with a random-effect model were performed to investigate factors associated with the GN colonization and GN-BSI at baby-level and unit-level. RESULTSTwenty-seven studies fulfilled our inclusion criteria, 15 for the baby-level and 12 for the unit-level analysis. Study heterogeneity was high, with suboptimal overall quality of reporting assessed by the STROBE-NI statement (44.8% of items adequately reported). In 1984 colonized neonates, 157 (7.9%) developed GN-BSI compared with 85 of 3583 (2.4%) non-colonized neonates. Considerable heterogeneity was observed across studies. Four factors were included in the meta-regression model: gross domestic product (GDP), pathogen, outbreak, and frequency of screening. There was no statistically significant impact of these factors on GN colonization and GN-BSI in baby-level. We were unable to perform the multivariate meta-regression because of insufficient reported data for unit-level. CONCLUSIONSStudy limitations include the small number and the high heterogeneity of the included studies. While this report shows a correlation between colonization and BSI risk, these data currently do not support routine screening for GNB. Analysis of large cohorts of colonized neonates with clinical outcomes is still needed to define the major determinants leading from colonization to infection.

Database: Medline

5. A systematic review of instruments for assessing parent satisfaction with family-centred care in neonatal intensive care units.

Author(s): Dall'Oglio, Immacolata; Mascolo, Rachele; Gawronski, Orsola; Tiozzo, Emanuela; Portanova, Anna; Ragni, Angela; Alvaro, Rosaria; Rocco, Gennaro; Latour, Jos M

Source: Acta paediatrica (Oslo, Norway : 1992); Mar 2018; vol. 107 (no. 3); p. 391-402

Publication Date: Mar 2018

Publication Type(s): Journal Article Review

PubMedID: 29239021

Abstract:This systematic review synthesised and described instruments measuring parent satisfaction with the increasing standard practice of family-centred care (FCC) in neonatal intensive care units. We evaluated 11 studies published from January 2006 to March 2016: two studies validated a parent satisfaction questionnaire, and nine developed or modified previous questionnaires to use as outcome measures in their local settings. Most instruments were not tested on reliability and validity. CONCLUSIONOnly two validated instruments included all six of the FCC principles and could assess parent satisfaction with FCC in neonatal intensive care units and be considered as outcome indicators for further research.

Database: Medline

6. What's the harm? Risks and benefits of evolving rule-out sepsis practices.

Author(s): Hooven, Thomas A; Randis, Tara M; Polin, Richard A

Source: Journal of perinatology : official journal of the California Perinatal Association; Feb 2018

Publication Date: Feb 2018

Publication Type(s): Journal Article Review

PubMedID: 29483569

Abstract:Asymptomatic term and late-preterm newborns with risk factors for early onset sepsis commonly undergo laboratory evaluation and receive empiric antibiotic therapy. Some have challenged the rationale for current "rule-out sepsis" practices, arguing that they lead to

unnecessary overtreatment and healthcare costs. A series of recent clinical studies has explored scheduled serial observations as an alternative to laboratory testing and empiric antibiotics for asymptomatic newborns with historical risk factors for sepsis. These studies have shared the conclusion that serial observation is safe and cost-effective for well-appearing term and late-preterm babies, but they are also somewhat speculative because culture-proven early onset sepsis is an extremely low prevalence diagnosis. Here, we review the evolving consensus of optimal rule-out sepsis practices. We examine chorioamnionitis as an example of a problematic risk factor that has contributed to the controversy surrounding this topic. We also discuss how introduction of online sepsis risk calculators has allowed more precise delineation of a patient's chances of developing culture-proven infection. Finally, we analyze existing data from published studies to estimate the number needed to harm (NNH) when an observation-based strategy is used instead of a risk-based approach. We conclude that, if harm is defined as death or serious sepsis complications such as hemodynamic instability or neurologic injury, the NNH is 1610, compared to an NNH of 7 and 2.9 for IV infiltrates and delayed breastfeeding, respectively—two common and potentially consequential complications of NICU admission for a rule-out sepsis. We believe that the differential between risk of serious harm from observing a well-appearing term or late-preterm newborn with risk factors for sepsis and the risk of less significant but common NICU complications argues in favor of the ongoing trend toward less aggressive management of newborns with sepsis risks.

Database: Medline

7. Parents' experiences of neonatal transfer. A meta-study of qualitative research 2000-2017.

Author(s): Aagaard, Hanne; Hall, Elisabeth O C; Ludvigsen, Mette S; Uhrenfeldt, Lisbeth; Fegran, Liv

Source: Nursing inquiry; Feb 2018

Publication Date: Feb 2018

Publication Type(s): Journal Article Review

PubMedID: 29446189

Abstract: Transfers of critically ill neonates are frequent phenomena. Even though parents' participation is regarded as crucial in neonatal care, a transfer often means that parents and neonates are separated. A systematic review of the parents' experiences of neonatal transfer is lacking. This paper describes a meta-study addressing qualitative research about parents' experiences of neonatal transfer. Through deconstruction and reflections of theories, methods, and empirical data, the aim was to achieve a deeper understanding of theoretical, empirical, contextual, historical, and methodological issues of qualitative studies concerning parents' experiences of neonatal transfer over the course of this meta-study (2000-2017). Meta-theory and meta-method analyses showed that caring, transition, and family-centered care were main theoretical frames applied and that interviewing with a small number of participants was the preferred data collection method. The meta-data-analysis showed that transfer was a scary, unfamiliar, and threatening experience for the parents; they were losing familiar context, were separated from their neonate, and could feel their parenthood disrupted. We identified 'wavering and wandering' as a metaphoric representation of the parents' experiences. The findings add knowledge about meta-study as an approach for comprehensive qualitative research and point at the value of meta-theory and meta-method analyses.

Database: Medline

8. European guidance on paediatric use of probiotics states that benefits are limited to several conditions and urges caution with specific vulnerable groups.

Author(s): Hojsak, Iva; Fabiano, Valentina; Pop, Tudor Lucian; Goulet, Olivier; Zuccotti, Gian Vincenzo; Çokuğraş, Fugen Cullu; Pettoello-Mantovani, Massimo; Kolaček, Sanja

Source: Acta paediatrica (Oslo, Norway : 1992); Feb 2018

Publication Date: Feb 2018

Publication Type(s): Journal Article Review

PubMedID: 29446865

Abstract:AIMThe use of probiotics has been covered by many guidelines, position papers and evidence-based recommendations, but few have referred to specific patient groups or clinical indications. This European study summarises recommendations and scientifically credited guidelines on the use of probiotics for children and provides practice points.METHODSAn expert panel was convened by the European Paediatric Association in June 2017 to define the relevant clinical questions for using probiotics in paediatric healthcare and review and summarise the guidelines, recommendations, position papers and high-quality evidence.RESULTSThe panel found that specific probiotic strains were effective in preventing antibiotic associated and nosocomial diarrhoea, treating acute gastroenteritis and treating infantile colic in breast fed infants. However special caution is indicated for premature infants, immunocompromised and critically ill patients and those with central venous catheters, cardiac valvular disease and short-gut syndrome. We discuss the safety of using probiotics for paediatric patients and the quality of the products that are available and provide practice points based on our findings.CONCLUSIONThe efficacy of probiotics is strain specific and the scientifically proven benefits are currently limited to several clinical indications in the paediatric age group and not recommended for certain patient groups. This article is protected by copyright. All rights reserved.

Database: Medline

9. Interventions to prevent hypothermia at birth in preterm and/or low birth weight infants.

Author(s): McCall, Emma M; Alderdice, Fiona; Halliday, Henry L; Vohra, Sunita; Johnston, Linda

Source: The Cochrane database of systematic reviews; Feb 2018; vol. 2 ; p. CD004210

Publication Date: Feb 2018

Publication Type(s): Journal Article Review

PubMedID: 29431872

Available at [Cochrane Database of Systematic Reviews](#) - from Cochrane Collaboration (Wiley)

Abstract:BACKGROUNDNewborn admission temperature is a strong predictor of outcomes across all gestations. Hypothermia immediately after birth remains a worldwide issue and, if prolonged, is associated with harm. Keeping preterm infants warm is difficult even when recommended routine thermal care guidelines are followed in the delivery room.OBJECTIVESTo assess the efficacy and safety of interventions designed for prevention of hypothermia in preterm and/or low birth weight infants applied within 10 minutes after birth in the delivery room, compared with routine thermal care or any other single/combination of intervention(s) also designed for prevention of hypothermia in preterm and/or low birth weight infants applied within 10 minutes after birth in the delivery room.SEARCH METHODSWe used the standard search strategy of Cochrane Neonatal to search the Cochrane Central Register of Controlled Trials (CENTRAL; 2016, Issue 5), MEDLINE via PubMed (1966 to 30 June 2016), Embase (1980 to 30 June 2016), and CINAHL (1982 to 30 June 2016). We also searched clinical trials databases, conference proceedings, and reference lists of retrieved articles for randomised controlled trials and quasi-randomised trials.SELECTION CRITERIA Trials using

randomised or quasi-randomised allocations to test interventions designed to prevent hypothermia (apart from 'routine' thermal care) applied within 10 minutes after birth in the delivery room for infants at < 37 weeks' gestation and/or birth weight \leq 2500 grams.

DATA COLLECTION AND ANALYSIS We used Cochrane Neonatal methods when performing data collection and analysis.

MAIN RESULT Twenty-five studies across 15 comparison groups met the inclusion criteria, categorised as: barriers to heat loss (18 studies); external heat sources (three studies); and combinations of interventions (four studies).

Barriers to heat loss Plastic wrap or bag versus routine care
 Plastic wraps improved core body temperature on admission to the neonatal intensive care unit (NICU) or up to two hours after birth (mean difference (MD) 0.58°C, 95% confidence interval (CI) 0.50 to 0.66; 13 studies; 1633 infants), and fewer infants had hypothermia on admission to the NICU or up to two hours after birth (typical risk ratio (RR) 0.67, 95% CI 0.62 to 0.72; typical risk reduction (RD) -0.25, 95% CI -0.29 to -0.20; number needed to treat for an additional beneficial outcome (NNTB) 4, 95% CI 4 to 5; 10 studies; 1417 infants). Risk of hyperthermia on admission to the NICU or up to two hours after birth was increased in infants in the wrapped group (typical RR 3.91, 95% CI 2.05 to 7.44; typical RD 0.04, 95% CI 0.02 to 0.06; number needed to treat for an additional harmful outcome (NNTH) 25, 95% CI 17 to 50; 12 studies; 1523 infants), but overall, fewer infants receiving plastic wrap were outside the normothermic range (typical RR 0.75, 95% CI 0.69 to 0.81; typical RD -0.20, 95% CI -0.26 to -0.15; NNTB 5, 95% CI 4 to 7; five studies; 1048 infants). Evidence was insufficient to suggest that plastic wraps or bags significantly reduce risk of death during hospital stay or other major morbidities, with the exception of reducing risk of pulmonary haemorrhage. Evidence of practices regarding permutations on this general approach is still emerging and has been based on the findings of only one or two small studies.

External heat sources Evidence is emerging on the efficacy of external heat sources, including skin-to-skin care (SSC) versus routine care (one study; 31 infants) and thermal mattress versus routine care (two studies; 126 infants). SSC was shown to be effective in reducing risk of hypothermia when compared with conventional incubator care for infants with birth weight \geq 1200 and \leq 2199 grams (RR 0.09, 95% CI 0.01 to 0.64; RD -0.56, 95% CI -0.84 to -0.27; NNTB 2, 95% CI 1 to 4). Thermal (transwarmer) mattress significantly kept infants \leq 1500 grams warmer (MD 0.65°C, 95% CI 0.36 to 0.94) and reduced the incidence of hypothermia on admission to the NICU, with no significant difference in hyperthermia risk.

Combinations of interventions Two studies (77 infants) compared thermal mattresses versus plastic wraps or bags for infants at \leq 28 weeks' gestation. Investigators reported no significant differences in core body temperature nor in the incidence of hypothermia, hyperthermia, or core body temperature outside the normothermic range on admission to the NICU. Two additional studies (119 infants) compared plastic bags and thermal mattresses versus plastic bags alone for infants at < 31 weeks' gestation. Meta-analysis of these two studies showed improvement in core body temperature on admission to the NICU or up to two hours after birth, but an increase in hyperthermia. Data show no significant difference in the risk of having a core body temperature outside the normothermic range on admission to the NICU nor in the risk of other reported morbidities.

AUTHORS' CONCLUSION Evidence of moderate quality shows that use of plastic wraps or bags compared with routine care led to higher temperatures on admission to NICUs with less hypothermia, particularly for extremely preterm infants. Thermal mattresses and SSC also reduced hypothermia risk when compared with routine care, but findings are based on two or fewer small studies. Caution must be taken to avoid iatrogenic hyperthermia, particularly when multiple interventions are used simultaneously. Limited evidence suggests benefit and no evidence of harm for most short-term morbidity outcomes known to be associated with hypothermia, including major brain injury, bronchopulmonary dysplasia, retinopathy of prematurity, necrotising enterocolitis, and nosocomial infection. Many observational studies have shown increased mortality among preterm hypothermic infants compared with those who maintain normothermia, yet evidence is insufficient to suggest that these interventions reduce risk of in-hospital mortality across all comparison groups. Hypothermia may be a marker for illness and poorer outcomes by association rather than by causality. Limitations of this review include small numbers of identified studies; small sample sizes;

and variations in methods and definitions used for hypothermia, hyperthermia, normothermia, routine care, and morbidity, along with lack of power to detect effects on morbidity and mortality across most comparison groups. Future studies should: be adequately powered to detect rarer outcomes; apply standardised morbidity definitions; focus on longer-term outcomes, particularly neurodevelopmental outcomes.

Database: Medline

10. Pediatric Palliative Care in Infants and Neonates.

Author(s): Carter, Brian S

Source: Children (Basel, Switzerland); Feb 2018; vol. 5 (no. 2)

Publication Date: Feb 2018

Publication Type(s): Journal Article Review

PubMedID: 29414846

Available at [Children \(Basel\)](#) - from Europe PubMed Central - Open Access

Available at [Children \(Basel\)](#) - from mdpi.com

Abstract:The application of palliative and hospice care to newborns in the neonatal intensive care unit (NICU) has been evident for over 30 years. This article addresses the history, current considerations, and anticipated future needs for palliative and hospice care in the NICU, and is based on recent literature review. Neonatologists have long managed the entirety of many newborns' short lives, given the relatively high mortality rates associated with prematurity and birth defects, but their ability or willingness to comprehensively address of the continuum of interdisciplinary palliative, end of life, and bereavement care has varied widely. While neonatology service capacity has grown worldwide during this time, so has attention to pediatric palliative care generally, and neonatal-perinatal palliative care specifically. Improvements have occurred in family-centered care, communication, pain assessment and management, and bereavement. There remains a need to integrate palliative care with intensive care rather than await its application solely at the terminal phase of a young infant's life-when s/he is imminently dying. Future considerations for applying neonatal palliative care include its integration into fetal diagnostic management, the developing era of genomic medicine, and expanding research into palliative care models and practices in the NICU.

Database: Medline

11. Developmental and Interprofessional Care of the Preterm Infant: Neonatal Intensive Care Unit Through High-Risk Infant Follow-up.

Author(s): Lipner, Hildy S; Huron, Randy F

Source: Pediatric clinics of North America; Feb 2018; vol. 65 (no. 1); p. 135-141

Publication Date: Feb 2018

Publication Type(s): Journal Article Review

PubMedID: 29173714

Abstract:Practices in the neonatal intensive care unit (NICU) that reduce infant stress and respond to behavioral cues positively influence developmental outcomes. Proactive developmental surveillance and timely introduction of early intervention services improve outcomes for premature infants. A model that emphasizes infant development and a continuum of care beginning in the NICU with transition to outpatient monitoring and provision of early intervention services is hypothesized to support the most optimal outcomes for premature infants.

Database: Medline

12. Ethical dilemmas of recording and reviewing neonatal resuscitation.

Author(s): den Boer, Maria C; Houtlosser, Mirjam; van Zanten, Henriëtte Anje; Foglia, Elizabeth E; Engberts, Dirk P; Te Pas, Arjan B

Source: Archives of disease in childhood. Fetal and neonatal edition; Jan 2018

Publication Date: Jan 2018

Publication Type(s): Journal Article Review

PubMedID: 29353257

Available at [Archives of disease in childhood. Fetal and neonatal edition](#) - from BMJ Journals - NHS

Available at [Archives of disease in childhood. Fetal and neonatal edition](#) - from BMJ Journals

Abstract: Neonatal resuscitation is provided to approximately 3% of neonates. Adequate ventilation is often the key to successful resuscitation, but this can be difficult to provide. There is increasing evidence that inappropriate respiratory support can have severe consequences. Several neonatal intensive care units have recorded and reviewed neonatal resuscitation procedures for quality assessment, education and research; however, ethical dilemmas sometimes make it difficult to implement this review process. We reviewed the literature on the development of recording and reviewing neonatal resuscitation and have summarised the ethical concerns involved. Recording and reviewing vital physiological parameters and video imaging of neonatal resuscitation in the delivery room is a valuable tool for quality assurance, education and research. Furthermore, it can improve the quality of neonatal resuscitation provided. We observed that ethical dilemmas arise as the review process is operating in several domains of healthcare that all have their specific moral framework with requirements and conditions on issues such as consent, privacy and data storage. These moral requirements and conditions vary due to local circumstances. Further research on the ethical aspects of recording and reviewing is desirable before wider implementation of this technique can be recommended.

Database: Medline

13. Neurodevelopmental outcome in very preterm and very-low-birthweight infants born over the past decade: a meta-analytic review.

Author(s): Pascal, Aurelie; Govaert, Paul; Oostra, Ann; Naulaers, Gunnar; Ortibus, Els; Van den Broeck, Christine

Source: Developmental medicine and child neurology; Jan 2018

Publication Date: Jan 2018

Publication Type(s): Journal Article Review

PubMedID: 29350401

Abstract: AIM The purpose of this systematic review was to provide an up-to-date global overview of the separate prevalences of motor and cognitive delays and cerebral palsy (CP) in very preterm (VPT) and very-low-birthweight (VLBW) infants. METHOD A comprehensive search was conducted across four databases. Cohort studies reporting the prevalence of CP and motor or cognitive outcome from 18 months corrected age until 6 years of VPT or VLBW infants born after 2006 were included. Pooled prevalences were calculated with random-effects models. RESULT Thirty studies were retained, which included a total of 10 293 infants. The pooled prevalence of cognitive and motor delays, evaluated with developmental tests, was estimated at 16.9% (95% confidence interval [CI] 10.4-26.3) and 20.6% (95% CI 13.9-29.4%) respectively. Mild delays were more frequent than moderate-to-severe delays. Pooled prevalence of CP was estimated to be 6.8% (95% CI 5.5-8.4). Decreasing

gestational age and birthweight resulted in higher prevalences. Lower pooled prevalences were found with the Third Edition of the Bayley Scales of Infant Development than with the Second Edition. INTERPRETATION Even though neonatal intensive care has improved over recent decades, there is still a wide range of neurodevelopmental disabilities resulting from VPT and VLBW births. However, pooled prevalences of CP have diminished over the years. WHAT THIS PAPER ADDS The Bayley Scales of Infant and Toddler Development, Third Edition reported lower pooled prevalences of motor and cognitive delays than the Second Edition. The pooled prevalence of cerebral palsy in infants born extremely preterm was reduced compared with previous meta-analyses.

Database: Medline

14. Assessment of sedation level prior to neonatal intubation: A systematic review.

Author(s): de Kort, Ellen H M; Halbmeijer, Nienke M; Reiss, Irwin K M; Simons, Sinno H P

Source: Paediatric anaesthesia; Jan 2018; vol. 28 (no. 1); p. 28-36

Publication Date: Jan 2018

Publication Type(s): Journal Article Review

PubMedID: 29159860

Available at [Pediatric Anesthesia](#) - from Ovid (Journals @ Ovid)

Abstract: BACKGROUND Adequate premedication before neonatal endotracheal intubation reduces pain, stress, and adverse physiological responses, diminishes duration and number of attempts at intubation, and prevents traumatic airway injury. Therefore, intubation should not be started until an adequate level of sedation is reached. It is not clear how this should be measured in the clinical situation. OBJECTIVE The aim of this study is to provide a systematic review of the usability and validity of scoring systems or other objective parameters to evaluate the level of sedation before intubation in neonates. Secondary aims were to describe parameters that are used to determine the level of sedation and criteria on which the decision to proceed with intubation is based. METHODS Literature was searched (January 2017) in the following electronic databases: Embase, Medline, Web of Science, Cochrane Central Registrar of Controlled Trials, Pubmed Publisher, and Google Scholar. RESULTS From 1653 hits, 20 studies were finally included in the systematic review. In 7 studies, intubation was started after a predefined time period; in 1 study, preoxygenation was the criterion to start with intubation; and in 12 studies, intubation was started in case of adequate sedation and/or relaxation. Only 4 studies described the use of 3 different objective scoring system, all in the neonatal intensive care unit, which are not validated. CONCLUSION No validated scoring systems to assess the level of sedation prior to intubation in newborns are available in the literature. Three objective sedation assessment tools seem promising but need further validation before they can be implemented in research and clinical settings.

Database: Medline

15. Music therapy and musical stimulation in the context of prematurity: A narrative literature review from 2010-2015.

Author(s): Palazzi, Ambra; Nunes, Camila Canani; Piccinini, Cesar Augusto

Source: Journal of clinical nursing; Jan 2018; vol. 27 (no. 1-2); p. e1

Publication Date: Jan 2018

Publication Type(s): Journal Article Review

PubMedID: 28544065

Abstract:AIMS AND OBJECTIVESTo examine empirical studies of musical stimulation and music therapy carried out with preterm infants and their parents published from 2010-2015.BACKGROUNDPrematurity constitutes a global health problem that can impact the development of the preterm infant and the well-being of the parents. Music-based interventions may benefit the infant, parents and their relationship. In our review, we distinguished between musical stimulation and music therapy, as we found no previous studies that had made this distinction.DESIGNThis is a narrative literature review.METHODSA search was undertaken in PubMed, PsycINFO and LILACS using the terms "music," "music therapy," "singing," "prematurity" and "preterm." Thirty studies were included and analysed according to the following categories: (i) aims of the study, (ii) participants, (iii) design, (iv) type of intervention, (v) assessment and measures and (vi) main results.RESULTSThe vast majority of the studies focused on the preterm infants and used an experimental design. Few studies carried out family-centred interventions, despite this having been noted as an important factor in effective interventions. Musical stimulation studies used more recorded music, whereas music therapy studies used more individualised interventions with live music.CONCLUSIONSBoth musical stimulation and music therapy demonstrated significant effects on preterm infants and their parents. However, compared to musical stimulation studies, interventions performed by music therapists provided more individualised care and tended to show greater effects on infants' physiological and behavioural responses.RELEVANCE TO CLINICAL PRACTICEOur review showed that music therapy interventions may provide individualised, effective and family-centred care. There is a significant need for these types of interventions in the neonatal intensive care unit (NICU).

Database: Medline

16. Objective cardiovascular assessment in the neonatal intensive care unit.

Author(s): Dempsey, Eugene M; El-Khuffash, Afif Faisal

Source: Archives of disease in childhood. Fetal and neonatal edition; Jan 2018; vol. 103 (no. 1); p. F72

Publication Date: Jan 2018

Publication Type(s): Journal Article Review

PubMedID: 29127152

Available at [Archives of Disease in Childhood - Fetal and Neonatal Edition](#) - from BMJ Journals - NHS

Available at [Archives of Disease in Childhood - Fetal and Neonatal Edition](#) - from BMJ Journals

Abstract:Traditionally, cardiovascular well-being was essentially based on whether the mean blood pressure was above or below a certain value. However, this singular crude method of assessment provides limited insight into overall cardiovascular well-being. Echocardiography has become increasingly used and incorporated into clinical care. New objective modality assessments of cardiovascular status continue to evolve and are being evaluated and incorporated into clinical care. In this review article, we will discuss some of the recent advances in objective assessment of cardiovascular well-being, including the concept of multimodal monitoring. Sophisticated haemodynamic monitoring systems are being developed, including mechanisms of data acquisition and analysis. Their incorporation into clinical care represents an exciting next stage in the management of the infant with cardiovascular compromise.

Database: Medline



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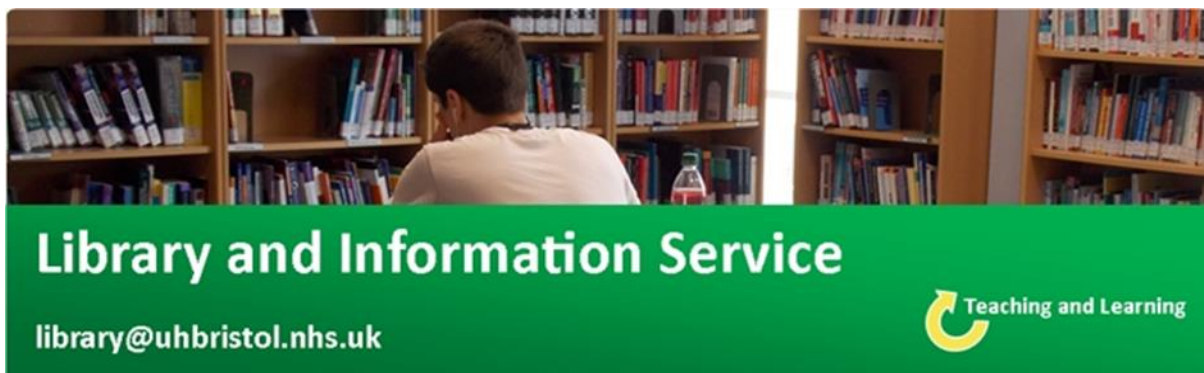
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