For abstracts or full text of the evidence in the update please click on the hyperlinks within the update. If full text is not available please [Click here to request a copy](http://www.porthosp.nhs.uk/Library/join-the-library.htm). You will need to be a member of the Library to access this service. You can join the library online via: [http://www.porthosp.nhs.uk/Library/join-the-library.htm](http://www.porthosp.nhs.uk/Library/join-the-library.htm). You may be required to log in using your NHS Athens username and password. If you don’t have one, please log on to [Openathens Registration](http://www.porthosp.nhs.uk/Library/join-the-library.htm) and register for free. Back issues of the Evidence Updates are available on the PHT Library Website: [http://www.porthosp.nhs.uk/Library/evidence-updates.htm](http://www.porthosp.nhs.uk/Library/evidence-updates.htm).
### None in this issue

### OTHER GUIDANCE

### Brighton and Sussex University Hospitals NHS Trust
**Sepsis: 60 minutes to save a life**
**Summary:** This guide outlines the 6 factors that have been shown to improve outcomes for patients and should be completed within the first hour following recognition of sepsis. [Click to view](#)

### British Association of Perinatal Medicine
**Identifying and managing neonatal hypoglycaemia in full term infants**
**Summary:** The Framework for Practice includes recommendations based on literature review including existing guidelines, data analysis of admissions for hypoglycaemia, national audit of practice including admission and thresholds for intervention, and clinical experience. [Click to view](#)

### The CHYLD Study
**Summary:** Hypoglycemia is common in neonates; in severe cases, it can cause neurologic impairment. But how low is too low? New research findings are summarized in a short video. [Click to view](#)

### NIHR Signal
- MRI scans help confirm ultrasound diagnosis of fetal brain abnormalities. [Click to view](#)
- Fortified donor breast milk led to similar development for very-low-birthweight babies compared with formula milk [Click to view](#)

### Royal College of Paediatrics and Child Health (RCPCH)
**Stroke in childhood : Clinical guideline for diagnosis, management and rehabilitation**
**Summary:** This clinical guideline is the most comprehensive and up-to-date guidance on how stroke care should be provided, covering the whole pathway from identification, diagnosis and management of children and young people with arterial ischaemic stroke (AIS) and. [Click to view](#)

### American College of Critical Care Medicine
**Clinical Practice Parameters for Hemodynamic Support of Pediatric and Neonatal Septic Shock.**
**Summary:** Provides the 2014 update of the 2007 American College of Critical Care Medicine "Clinical Guidelines for Hemodynamic Support of Neonates and Children with Septic Shock." The major new recommendation in the 2014 update is consideration of institution-specific use of 1) a "recognition bundle" containing a trigger tool for rapid identification of patients with septic shock, 2) a "resuscitation and stabilization bundle" to help adherence to best practice principles, and 3) a "performance bundle" to identify and overcome perceived barriers to the pursuit of best practice principles. [Click to view](#)
What are the benefits and harms of inositol for preterm infants with or at risk for respiratory distress syndrome? [Click to view answer]

Does randomized controlled trial evidence support early administration of inhaled corticosteroids for preventing chronic lung disease in ventilated very low birth weight preterm neonates? [Click to view answer]

Does evidence from randomized controlled trials support the use of intravenous midazolam infusion for sedation of infants in the neonatal intensive care unit? [Click to view answer]

For preterm infants, does avoidance of bottles during establishment of breast-feeding help to increase the extent and duration of breast-feeding? [Click to view answer]

**New and Updated Cochrane Systematic Reviews (Click on topics to view)**

**Antenatal corticosteroids for accelerating fetal lung maturation for women at risk of preterm birth**

*Author conclusions:* The evidence from this review update supports the continued use of a single course of antenatal corticosteroids in women at risk of preterm birth. Treatment with antenatal corticosteroids reduces the risk of perinatal death, neonatal death, RDS, IVH, necrotising enterocolitis, need for respiratory support and NICU admission, even in the current era of advanced neonatal care.

**Clonidine for sedation and analgesia for neonates receiving mechanical ventilation**

*Authors’ conclusions:* At present, evidence is insufficient to show the efficacy and safety of clonidine for sedation and analgesia in term and preterm newborn infants receiving mechanical ventilation.

**Long chain polyunsaturated fatty acid supplementation in infants born at term**

*Summary:* No beneficial effects or harms of supplementation on neurodevelopmental outcomes of formula-fed full-term infants and no consistent beneficial effects on visual acuity were reported.

**Routine oro/nasopharyngeal suction versus no suction at birth**

*Authors’ conclusions:* The currently available evidence does not support or refute the benefits or harms of routine oro/nasopharyngeal suction over no suction. Further high-quality studies are required in preterm infants or term newborn infants with thick meconium amniotic fluid. Studies should investigate long-term effects such as neurodevelopmental outcomes.

**Effects of targeting lower versus higher arterial oxygen saturations on death or disability in preterm infants**

*Authors’ conclusions:* In extremely preterm infants, targeting lower (85% to 89%) SpO₂ compared to higher (91% to 95%) SpO₂ had no significant effect on the composite outcome of death or major disability or on major disability alone, including blindness, but increased the average risk of mortality by 28 per 1000 infants treated. The trade-offs between the benefits and harms of the different oxygen saturation target ranges may need to be assessed within local settings (e.g. alarm limit settings, staffing, baseline outcome risks) when deciding on oxygen saturation targeting policies.

**Infant pacifiers for reduction in risk of sudden infant death syndrome**

*Authors’ conclusions:* We found no randomised control trial evidence on which to support or refute the use of pacifiers for the prevention of SIDS.

**Frenotomy for tongue-tie in newborn infants.**
**Authors' conclusions:** Frenotomy reduced breastfeeding mothers’ nipple pain in the short term. Investigators did not find a consistent positive effect on infant breastfeeding. Researchers reported no serious complications, but the total number of infants studied was small. The small number of trials along with methodological shortcomings limits the certainty of these findings. Further randomised controlled trials of high methodological quality are necessary to determine the effects of frenotomy.

**Orotracheal intubation in infants performed with a stylet versus without a stylet**

**Authors' conclusions:** Current available evidence suggests that use of a stylet during neonatal orotracheal intubation does not significantly improve the success rate among paediatric trainees. However, only one brand of stylet and one brand of endotracheal tube have been tested, and researchers performed all intubations on infants in a hospital setting. Therefore, our results cannot be generalised beyond these limitations.

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**SYSTEMATIC REVIEWS FROM OTHER SOURCES**

**Click on titles to view**

- **Title:** The influence of zinc sulfate on neonatal jaundice: a systematic review and meta-analysis
**CONCLUSIONS:** Zinc sulfate could not reduce the TSB on three days and seven days, the incidence of hyperbilirubinemia and phototherapy requirement, but lead to significantly decreased duration of phototherapy.

- **Title:** How often an isolated cardiac disproportion predicts a coarctation of the aorta? Single center experience and systematic review of the literature.
**CONCLUSIONS:** Isolated cardiac disproportion has an overall chance of one in three of heralding a CoA in the neonate. The specificity of these findings is significantly higher in the second trimester.

- **Title:** Preterm Infant Growth Velocity Calculations: A Systematic Review
**LIMITATIONS AND CONCLUSIONS:** The lack of standardization of methods used to calculate preterm infant growth velocity makes comparisons between studies difficult and presents an obstacle to using research results to guide clinical practice.

- **Title:** Intestinal dysbiosis in preterm infants preceding necrotizing enterocolitis: a systematic review and meta-analysis.
**CONCLUSIONS:** Microbial dysbiosis preceding NEC in preterm infants is characterized by increased relative abundances of Proteobacteria and decreased relative abundances of Firmicutes and Bacteroidetes. Microbiome optimization may provide a novel strategy for preventing NEC.

- **Title:** Yinzhihuang oral liquid in the treatment of neonatal jaundice: a meta-analysis.
**CONCLUSION:** Yinzhihuang oral liquid can be considered as an effective treatment option for neonatal jaundice.

- **Title:** A Systematic Review of the Predictive Validity of Neurobehavioral Assessments During the Preterm Period.
**CONCLUSIONS:** Five neurobehavioral measures have established predictive validity for the assessment of premature newborns while they reside in the NICU. Although the GMs and TIMP have the strongest evidence, further higher quality research is required. New methods of testing should be developed that provide accurate prediction and minimize the potential stress induced during developmental assessments.

- **Title:** Antimicrobial-resistant Gram-negative infections in neonates: burden of disease and challenges in treatment.
**SUMMARY:** Improved global neonatal AMR surveillance programmes including both epidemiology and clinical outcomes are critical for defining the burden and designing interventions. The optimal empiric treatment for neonatal sepsis in settings of high rates of AMR is currently unknown. Both strategic trials of older antibiotics and regulatory trials of new antibiotics are required to improve clinical outcomes in MDR-Gram-negative neonatal sepsis.

- **Title:** Cause of and factors associated with stillbirth: a systematic review of classification systems.
**CONCLUSION:** Over time, classification systems have become more complex. The success of application is dependent on the availability of detailed clinical information and laboratory investigations. Systems that adopt a layered approach allow for classification of cause of death to a broad as well as to a more detailed level.

- **Title:** A systematic review of novel technology for monitoring infant and newborn heart rate.
CONCLUSION: This systematic review identified seven new technologies, including camera-based photoplethysmography, reflectance pulse oximetry, laser Doppler methods, capacitive sensors, piezoelectric sensors, electromyography and a digital stethoscope.Clinicians should be aware of several of these, which may become available for clinical use in the near future.

Title: The Successful Immediate Neonatal Transition to Extrauterine Life.
CONCLUSION: Available evidence indicates that the successful immediate transition to extrauterine life should be completed within 1-3 hr after birth, though some adaptive processes can fail as late as 24-48 hr after birth. Further research is necessary to identify a feasible, easily used, noninvasive method to assess the status of a neonate’s transition to extrauterine life.

Title: Effectiveness of prothrombin complex concentrate (PCC) in neonates and infants with bleeding or risk of bleeding: a systematic review and meta-analysis.
CONCLUSION: There is insufficient evidence to allow a recommendation for use of PCC in neonates and infants. What is Known: • Prothrombin Complex Concentrate is becoming increasingly used off-label for treatment of neonates and infants with severe bleeding or risk of severe bleeding. • Some case reports showed PCC seemed to be effective for infants and children with coagulation factor deficiency, but evidence about the effectiveness of PCC to reverse serious Vitamin K Deficiency Bleeding is limited. What is New: • As far as we know, this is the first systematic review that evaluates the effectiveness of PCC in neonates with bleeding or risk of bleeding. • There is insufficient evidence to allow a recommendation for use of PCCs in neonates and infants.

PRIMARY RESEARCH

Title: Neonatal sepsis
Citation: The Lancet Published: 20 April 2017 DOI: http://dx.doi.org
Summary: As part of a clinical series on neonatal intensive care, this seminar discusses the epidemiology, pathophysiology, risk factors, diagnosis and management of neonatal sepsis. Click to view

Title: Risk Factors for the Development of Delayed TSH Elevation in Neonatal Intensive Care Unit (NICU) Newborns.
Citation: J Clin Endocrinol Metab. 2017 Jun 20. doi: 10.1210/jc.2017-00701. [Epub ahead of print]
Conclusion: Although some variables had direct effects on pituitary-thyroid axis dysfunction, altogether these variables reflect the severity of the clinical conditions in the NICU, which is the common basis for dTSH. Click to view

Title: Medication errors by caregivers at home in neonates discharged from the neonatal intensive care unit.
Conclusion: Medication errors by caregivers in infants less than 3 months of age are very common, dose administration error being the most common type. A prescription of more than three drugs increases the odds of an error. Click to view

NEONATOLOGY POINT OF CARE INFORMATION SUMMARIES UPDATES
(Athens required when offsite)

Topic: Antidepressant use in pregnancy and lactation
any SSRI exposure during pregnancy associated with increased risk of neonatal intensive care unit admission and neonatal morbidity (Pediatrics 2016 Nov)

Topic: Management of routine labor, Breastfeeding
skin-to-skin contact between mother and infant in first 24 hours of life appears to increase likelihood of breastfeeding at 1-4 months and may increase breastfeeding duration (Cochrane Database Syst Rev 2016 Nov 25)
### Topic: Noninvasive positive pressure ventilation (NPPV) in infants and children

Early NIPPV may decrease risk of respiratory failure and need for intubation but may not reduce mortality or chronic lung disease compared to early nasal CPAP in preterm infants with or at risk of RDS (Cochrane Database Syst Rev 2016 Dec 15)

### Topic: Feeding the premature infant

Nutrient-enriched donor milk does not appear to improve neurodevelopmental outcomes at 18 months compared to preterm formula, but may reduce risk of in-hospital necrotizing enterocolitis in very low-birth-weight infants (JAMA 2016 Nov 8)

### Topic: Neonatal opioid withdrawal

Sublingual buprenorphine reduces duration of hospital stay compared to oral morphine in term infants with neonatal abstinence syndrome (N Engl J Med 2017 Jun 15)

### Topic: Evaluation and management of the premature infant

Nonnutritive sucking may reduce time to full oral feeding and duration of hospital stay in preterm infants (Cochrane Database Syst Rev 2016 Oct 4)

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**Below are updates from UpToDate and news stories:**

### NEONATOLOGY

**Buprenorphine treatment of neonatal abstinence syndrome (May 2017)**

Morphine and methadone are the preferred drugs for initial pharmacologic management of neonatal abstinence syndrome (NAS). However, in a single-center trial that randomly assigned 63 infants with NAS to sublingual buprenorphine or oral morphine, sublingual buprenorphine resulted in a shorter median duration of treatment and median length of hospital stay, with no difference in the use of adjunctive phenobarbital or in adverse events [18]. Until these findings are confirmed in trials with larger numbers of patients and from other centers, we continue to use either morphine or methadone for initial pharmacologic treatment of NAS.

### NEONATOLOGY IN THE NEWS – MEDIA STORIES

**Handshake-Free Zones Target Spread Of Germs In The Hospital**

Mark Sklansky, a pediatric cardiologist and self-described germaphobe, tested a new method for limiting the spread of germs: a handshake-free zone. He tested it in two UCLA neonatal intensive care units. Click to view

**Reducing baby deaths and brain injuries during childbirth**

Failure to monitor properly baby heart rates during labour is one reason why some newborns are dying on UK maternity wards, an investigation has found.

**An egg a day may prevent stunted growth in infants**

"An egg a day appears to help young children grow taller," BBC News reports.

**Obese mums more likely to give birth to babies with birth defects**

"Women who are obese when they conceive are more likely to have a baby with serious birth defects," The Guardian reports. Swedish researchers looked at more than a million health records and found a link between excess body mass index (BMI)...

**Link between stress in pregnancy and ADHD unfounded**

"Stressed mothers-to-be face an increased risk of giving birth to a child who will develop ADHD or heart disease later in life," the Mail Online reports. However, the new study it is reporting on did not look at long-term outcomes in children...

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