Your Outreach Librarian – **Helen Pullen**

Whatever your information needs, the library is here to help. Just email us at library@uhbristol.nhs.uk

**Outreach:** Your Outreach Librarian can help facilitate evidence-based practice for all in the team, as well as assisting with academic study and research. We also offer one-to-one or small group training in literature searching, critical appraisal and medical statistics. Get in touch: library@uhbristol.nhs.uk

**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. Please email requests to library@uhbristol.nhs.uk

---

**Training Calendar 2016/17**

*All sessions are 1 hour*

<table>
<thead>
<tr>
<th>December (12pm)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Thurs 8th</td>
<td>Information resources</td>
</tr>
<tr>
<td>Fri 16th</td>
<td>Literature Searching</td>
</tr>
<tr>
<td>Tues 20th</td>
<td>Critical Appraisal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>January (13.00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tues 10th</td>
</tr>
<tr>
<td>Wed 18th</td>
</tr>
<tr>
<td>Thur 26th</td>
</tr>
</tbody>
</table>
Contents

The Latest Evidence

NICE National Institute for Health and Care Excellence

**CytoSorb therapy for sepsis** | MIB87 | November 2016 | November 2016

Cochrane Library

**Zinc supplementation for the prevention of pneumonia in children aged 2 months to 59 months**
Zohra S Lassi, Anoosh Moin, Zulfiqar A Bhutta
Online Publication Date: December 2016

**Oral Astragalus (Huang qi) for preventing frequent episodes of acute respiratory tract infection in children**
Guobin Su, Xiankun Chen, Zhuangzhu Liu, Lihong Yang, La Zhang, Cecilia Stålsby Lundborg, Zehuai Wen, Xinfeng Guo, Xindong Qin, Jueyao Liang, Xusheng Liu
Online Publication Date: December 2016

**Parent training programmes for managing infantile colic**
Megan R Thomas, Morris Gordon, Shel SC Banks, Chris Wallace
Online Publication Date: December 2016
CARDIOLOGY

Restrictive postoperative transfusion strategy in infants and children with congenital heart disease (October 2016)

In a randomized trial of restrictive versus liberal postoperative transfusion strategies in 162 infants with congenital heart disease undergoing surgical repair or palliation, a restrictive transfusion strategy reduced the red cell transfusion rate, without increasing in-hospital mortality, need for extracorporeal membrane oxygenation (ECMO) support, or hospital length of stay [32]. The restrictive group was transfused for hemoglobin <7.0 g/dL for biventricular repairs or <9.0 g/dL for palliative procedures plus a clinical indication; the liberal group was transfused for hemoglobin <9.5 g/dL for biventricular repairs or <12 g/dL for palliative procedures. Larger more definitive trials are needed before clear transfusion guidelines in this population can be made. (See "Red blood cell transfusion in infants and children: Indications", section on 'Surgery'.)

EMERGENCY MEDICINE

Clinical prediction rule for abusive head trauma in well-appearing infants (August 2016)

Detection of abusive head trauma (AHT) is challenging in well-appearing infants who typically present with an unrelated complaint and no history of trauma. High-risk complaints include apnea or acute life-threatening event, seizure, vomiting without diarrhea, soft-tissue scalp swelling, bruising, lethargy, fussiness, or poor feeding. In a prospective multicenter validation of a clinical prediction rule in over 1000 well-appearing infants younger than one year of age (109 with abuse) who presented with high-risk complaints for possible abuse, a score of two or more had high sensitivity for an abnormality on computed tomography (CT) of the head [38]. This rule, which assigns points based upon age, head circumference, skin examination, and serum hemoglobin, has significant potential for assisting the clinician with decisions about neuroimaging in well-appearing infants with equivocal findings for abuse. Magnetic resonance imaging is preferred to CT in such patients if there is timely availability of the study and interpretation by a pediatric neuroradiologist. (See "Child abuse: Evaluation and diagnosis of abusive head trauma in infants and children", section on 'Well-appearing infants'.)
<table>
<thead>
<tr>
<th>Other – Behind the Headlines, Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>I searched the Behind the Headlines but there was nothing relevant to add to this section</td>
</tr>
</tbody>
</table>
Journal Tables of Contents

The most recent issues of key journals. If you would like any of the papers in full text then please email the library: library@uhbristol.nhs.uk

**Intensive Care Medicine**
December 2016, Volume 42, Issue 12

**Refractory septic shock in children: a European Society of Paediatric and Neonatal Intensive Care definition**
Luc Morin, Samiran Ray, Clare Wilson, Solenn Remy, Mohamed Rida Benissa, Nicolaas J. G. Jansen, Etienne Javouhey, Mark J. Peters, Martin Kneyber, Daniele De Luca, Simon Nadel, Luregn Jan Schlapbach, Graeme Maclaren and Pierre Tissieres

**Understanding antibiotic stewardship for the critically ill**
J. J. De Waele, J. Schouten and G. Dimopoulos

**Understanding why resistant bacteria are associated with higher mortality in ICU patients**
François Barbier, Thiago Lisboa and Saad Nseir

**Understanding clinical signs of poor tissue perfusion during septic shock**
Hafid Ait-Oufella and Jan Bakker

**Cardiac dysfunction in sepsis**
Anders Aneman and Antoine Vieillard-Baron

**Understanding circulatory failure in sepsis**
Andreas Bloch, David Berger and Jukka Takala

**Understanding resistance**
François Barbier & Charles-Edouard Luyt

**Understanding host–pathogen interaction**
K. Asehnoune, J. Villadangos & R. S. Hotchkiss

**Current Awareness in Pediatrics**
December 2016, Volume 28, Issue 6

**Methylmalonic and propionic acidemias: clinical management update**
J.L Fraser and C.P Venditti
**Pediatrics**
December 2016, Volume 138, Issue 6

**Management and Outcomes of Previously Healthy, Full-Term, Febrile Infants Ages 7 to 90 Days**
Tara L. Greenhow, MD, a Yun-Yi Hung, PhD, b Robert H. Pantell, MDc

**Should Neonatologists Give Opinions Withdrawal Life-sustaining Treatment?**
J.S. Blumenthal-Barby, Laura Loftis, Christy L. Cummings, William Meadow, Monica Lemmon, Peter A. Ubel, Laurence McCullough, Emily Rao, John D. Lantos.

**Infusion Medication Error Reduction by Two-Person Verification: A Quality Improvement Initiative**
Rajeev Subramanyam, Mohamed Mahmoud, David Buck, and Anna Varughese

**Pediatric Anesthesia**
December 2016, Early View (Online Version)

**Performance of functional fibrinogen thromboelastography in children undergoing congenital heart surgery**
Nischal K. Gautam, Chunyan Cai, Olga Pawelek, Muhammad B. Rafique, Davide Cattano and Evan G. Pivalizza.

**Pediatric Anesthesia**
December 2016, Volume 26, Issue 12

**Prediction of the midtracheal level based on external anatomical landmarks: implication of the optimal insertion depth of endotracheal tubes in pediatric patients.**
In-Kyung Song, Soo-Hyun Kim, Jaehui Ryu, Eunju Lee, Hyung-Min Oh, Eun-Hee Kim, Jihyun Lee, Hee-Soo Kim and Jin-Tae Kim.

**Can transcutaneous near infrared spectroscopy detect severe hepatic ischemia: a juvenile porcine model**
Justin J. Skowno, Jonathan S. Karpelowsky, Nicola R. Watts and David G. Little
Exercise

Match the diagrams to the corresponding research designs.

1. Group of interest (e.g. smokers)
   Follow over time
   Comparison group (e.g. non-smokers)
   Follow over time
   Compare outcomes

2. Treatment Group
   Patients
   Random assignment
   Control Group
   Follow-up
   Compare results

3. 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.
1. Management of neutropenic patients in the intensive care unit (NEWBORNS EXCLUDED) recommendations from an expert panel from the French Intensive Care Society (SRLF) with the French Group for Pediatric Intensive Care Emergencies (GFRUP), the French Society of Anesthesia and Intensive Care (SFAR), the French Society of Hematology (SFH), the French Society for Hospital Hygiene (SF2H), and the French Infectious Diseases Society (SPILF).

**Author(s):** Schnell, David; Azoulay, Elie; Benoit, Dominique; Clouzeau, Benjamin; Demaret, Pierre; Ducassou, Stéphane; Frange, Pierre; Lafaurie, Matthieu; Legrand, Matthieu; Meert, Anne-Pascale; Mokart, Djamel; Naudin, Jérôme; Pene, Frédéric; Rabbat, Antoine; Raffoux, Emmanuel; Ribaud, Patricia; Richard, Jean-Christophe; Vincent, François; Zahar, Jean-Ralph; Darmon, Michael

**Source:** Annals of intensive care; Dec 2016; vol. 6 (no. 1); p. 90

**Publication Date:** Dec 2016

Available in full text at Annals of Intensive Care - from ProQuest

Available in full text at Annals of Intensive Care - from BioMed Central

**Abstract:** Neutropenia is defined by either an absolute or functional defect (acute myeloid leukemia or myelodysplastic syndrome) of polymorphonuclear neutrophils and is associated with high risk of specific complications that may require intensive care unit (ICU) admission. Specificities in the management of critically ill neutropenic patients prompted the establishment of guidelines dedicated to intensivists. These recommendations were drawn up by a panel of experts brought together by the French Intensive Care Society in collaboration with the French Group for Pediatric Intensive Care Emergencies, the French Society of Anesthesia and Intensive Care, the French Society of Hematology, the French Society for Hospital Hygiene, and the French Infectious Diseases Society. Literature review and formulation of recommendations were performed using the Grading of Recommendations Assessment, Development and Evaluation system. Each recommendation was then evaluated and rated by each expert using a methodology derived from the RAND/UCLA Appropriateness Method. Six fields are covered by the provided recommendations: (1) ICU admission and prognosis, (2) protective isolation and prophylaxis, (3) management of acute respiratory failure, (4) organ failure and organ support, (5) antibiotic management and source control, and (6) hematological management. Most of the provided recommendations are obtained from low levels of evidence, however, suggesting a need for additional studies. Seven recommendations were, however, associated with high level of evidences and are related to protective isolation, diagnostic workup of acute respiratory failure, medical management, and timing surgery in patients with typhlitis.

**Database: Medline**


**Author(s):** Villeneuve, Andréanne; Joyal, Jean-Sébastien; Proulx, François; Ducruet, Thierry; Poitras, Nicole; Lacroix, Jacques

**Source:** Annals of intensive care; Dec 2016; vol. 6 (no. 1); p. 40

**Publication Date:** Dec 2016

Available in full text at Annals of Intensive Care - from ProQuest

Available in full text at Annals of Intensive Care - from BioMed Central

**Abstract:** Two sets of diagnostic criteria of paediatric multiple organ dysfunction syndrome (MODS) were published by Proulx in 1996 and by Goldstein in 2005. We hypothesized that this changes the
epidemiology of MODS. Thus, we determined the epidemiology of MODS, according to these two sets of diagnostic criteria, we studied the intra- and inter-observer reproducibility of each set of diagnostic criteria, and we compared the association between cases of MODS at paediatric intensive care unit (PICU) entry, as diagnosed by each set of diagnostic criteria, and 90-day all-cause mortality. All consecutive patients admitted to the tertiary care PICU of Sainte-Justine Hospital, from April 21, 2009 to April 20, 2010, were considered eligible for enrolment into this prospective observational cohort study. The exclusion criteria were gestational age <18 years at PICU entry, pregnancy, admission immediately after delivery. No patients were censored. Daily monitoring using medical chart ended when the patient died or was discharged from PICU. Mortality was monitored up to death, hospital discharge, or 90 days post PICU entry, whatever happened first. Concordance rate and kappa score were calculated to assess reproducibility. The number of MODS identified with Proulx and Goldstein definitions was compared using 2-by-2 contingency tables. Student’s t test or Wilcoxon signed-ranked test was used to compare continuous variables with normal or abnormal distribution, respectively. We performed a Kaplan-Meier survival analysis to assess the association between MODS at PICU entry and 90-day mortality. The occurrence of MODS was monitored daily and prospectively in 842 consecutive patients admitted to the PICU of Sainte-Justine Hospital over 1 year. According to Proulx and Goldstein diagnostic criteria, 180 (21.4 %) and 314 patients (37.3 %) had MODS over PICU stay, respectively. Concordance of MODS diagnosis over PICU stay was 81.3 % (95 % CI 78.6-83.9 %), and kappa score was 0.56 (95 % CI 0.50-0.61). Discordance was mainly attributable to cardiovascular or neurological dysfunction criteria. The proportion of patients with MODS at PICU entry who died within 90 days was higher with MODS diagnosed with Proulx criteria (17.8 vs. 11.5 %, p = 0.038), as well as the likelihood ratio of death (4.84 vs. 2.37). On the other hand, 90-day survival rate of patients without MODS at PICU entry was similar (98.6 vs. 98.9 % (p = 0.73). Proulx and Goldstein diagnostic criteria of paediatric MODS are not equivalent. The epidemiology of paediatric MODS varies depending on which set of diagnostic criteria is applied.

**Database:** Medline

### 3. Vitamin D deficiency and length of pediatric intensive care unit stay: a prospective observational study.

**Author(s):** Sankar, Jhuma; Lotha, Wonashi; Ismail, Javed; Anubhuti, C; Meena, Rameshwar S; Sankar, M Jeeva

**Source:** Annals of intensive care; Dec 2016; vol. 6 (no. 1); p. 3

**Publication Date:** Dec 2016

Available in full text at [Annals of Intensive Care - from ProQuest](http://example.com)

Available in full text at [Annals of Intensive Care - from BioMed Central](http://example.com)

**Abstract:** Due to the limited data available in the pediatric population and lack of interventional studies to show that administration of vitamin D indeed improves clinical outcomes, opinion is still divided as to whether it is just an innocent bystander or a marker of severe disease. Our objective was therefore to estimate the prevalence of vitamin D deficiency in children admitted to intensive care unit (ICU) and to examine its association with duration of ICU stay and other key clinical outcomes. We prospectively enrolled children aged 1 month-17 years admitted to the ICU over a period of 8 months (n = 101). The primary objectives were to estimate the prevalence of vitamin D deficiency (serum 25 (OH) <20 ng/mL) at ‘admission’ and to examine its association with length of ICU stay. The prevalence of vitamin D deficiency was 74 % (95 % CI: 65-88). The median (IQR) duration of ICU stay was significantly longer in ‘vitamin D deficient’ children (7 days; 2-12) than in those with ‘no vitamin D deficiency’ (3 days; 2-5; p = 0.006). On multivariable analysis, the association between length of ICU stay and vitamin D deficiency remained significant, even after adjusting for key baseline variables, diagnosis, illness severity (PIM-2), PELOD, and need for fluid.
boluses, ventilation, inotropes and mortality [adjusted mean difference (95% CI): 3.5 days (0.50-6.53); p = 0.024]. We observed a high prevalence of vitamin D deficiency in critically ill children in our study population. Vitamin D deficient children had a longer duration of ICU stay as compared to others.

**Database:** Medline

---

4. **Value of Procalcitonin Measurement for Early Evidence of Severe Bacterial Infections in the Pediatric Intensive Care Unit.**

**Author(s):** Lautz, Andrew J; Dziorny, Adam C; Denson, Adam R; O’Connor, Kathleen A; Chilutti, Marianne R; Ross, Rachael K; Gerber, Jeffrey S; Weiss, Scott L

**Source:** The Journal of pediatrics; Dec 2016; vol. 179; p. 74

**Publication Date:** Dec 2016

**Abstract:** To determine whether peak blood procalcitonin (PCT) measured within 48 hours of pediatric intensive care unit (PICU) admission can differentiate severe bacterial infections from sterile inflammation and viral infection and identify potential subgroups of PICU patients for whom PCT may not have clinical utility. This was a retrospective, observational study of 646 critically ill children who had PCT measured within 48 hours of admission to an urban, academic PICU. Patients were stratified into 6 categories by infection status. We compared test characteristics for peak PCT, C-reactive protein (CRP), white blood cell count (WBC), absolute neutrophil count (ANC), and % immature neutrophils. The area under the receiver operating characteristic curve was determined for each biomarker to discriminate bacterial infection. The area under the receiver operating characteristic curve was similar for PCT (0.73, 95% CI 0.69, 0.77) and CRP (0.75, 95% CI 0.71, 0.79; P = .36), but both outperformed WBC, ANC, and % immature neutrophils (P < .01 for all pairwise comparisons). The combination of PCT and CRP was no better than either PCT or CRP alone. Diagnostic patterns prone to false-positive and false-negative PCT values were identified. Peak blood PCT measured close to PICU admission was not superior to CRP in differentiating severe bacterial infection from viral illness and sterile inflammation; both PCT and CRP outperformed WBC, ANC, and % immature neutrophils. PCT appeared especially prone to inaccuracies in detecting localized bacterial central nervous system infections or bacterial coinfection in acute viral illness causing respiratory failure. Copyright © 2016 Elsevier Inc. All rights reserved.

**Database:** Medline

---

5. **A regional cohort study of the treatment of critically ill children with bronchiolitis.**

**Author(s):** Carroll, Christopher L; Faustino, Edward Vincent S; Pinto, Matthew G; Sala, Kathleen A; Canarie, Michael F; Li, Simon; Giuliano, John S; The Northeast Pediatric Critical Care Research Consortium

**Source:** The Journal of asthma : official journal of the Association for the Care of Asthma; Dec 2016; vol. 53 (no. 10); p. 1006-1011

**Publication Date:** Dec 2016

**Abstract:** To describe the treatment practices in critically ill children with RSV bronchiolitis across four regional PICUs in the northeastern United States, and to determine the factors associated with increased ICU length of stay in this population. We conducted a retrospective cohort study of children who were admitted with RSV bronchiolitis between July 2009 and July 2011 to the PICUs of Connecticut Children’s Medical Center, Yale-New Haven Children’s Hospital, Maria Fareri Children’s Hospital, and Baystate Children’s Hospital. Data were collected regarding clinical characteristics and intensive care course among these hospitals. During the study period, 323 children were admitted to
one of the four ICUs with RSV bronchiolitis. Despite similar mortality risk scores among ICUs, there was considerable variation in the use of therapies, particularly intubation and mechanical ventilation, in which there was greater than a 3.5-fold increased risk of intubation between sites with the highest and lowest frequency of intubation (odds ratio: 3.8; 95% confidence interval: 2.2-6.4). Albuterol was the most commonly used respiratory treatment, followed by chest physiotherapy, high-flow nasal cannula, and hypertonic saline. Longer stays in the ICU were associated with more frequent use of therapies, specifically invasive mechanical ventilation, inhaled corticosteroids, intrapulmonary percussion ventilation, and chest physiotherapy. Even within a close geographic region, there is significant variation in the treatment provided to critically ill children with RSV bronchiolitis. None of these treatments were associated with shorter durations of hospitalization in this population and some, such as mechanical ventilation, were associated with longer ICU lengths of stay.

**Database:** Medline

### 6. Association of 24/7 In-House Intensive Care Unit Attending Physician Coverage With Outcomes in Children Undergoing Heart Operations.

**Author(s):** Gupta, Punkaj; Rettiganti, Mallikarjuna; Jeffries, Howard E; Brundage, Nancy; Markovitz, Barry P; Scanlon, Matthew C; Simsic, Janet M

**Source:** The Annals of thoracic surgery; Dec 2016; vol. 102 (no. 6); p. 2052-2061

**Publication Date:** Dec 2016

**Abstract:** Multicenter data regarding the around-the-clock (24/7) presence of an in-house critical care attending physician with outcomes in children undergoing cardiac operations are limited. Patients younger than 18 years of age who underwent operations (with or without cardiopulmonary bypass [CPB]) for congenital heart disease at 1 of the participating intensive care units (ICUs) in the Virtual PICU Systems (VPS, LLC) database were included (2009-2014). The study population was divided into 2 groups: the 24/7 group (14,737 patients; 32 hospitals), and the No 24/7 group (10,422 patients; 22 hospitals). Propensity-score matching was performed to match patients 1:1 in the 24/7 group and in the No 24/7 group. Overall, 25,159 patients from 54 hospitals qualified for inclusion. By propensity matching, 9,072 patients (4,536 patient pairs) from 51 hospitals were matched 1:1 in the 2 groups. After matching, mortality at ICU discharge was lower among the patients treated in hospitals with 24/7 coverage (24/7 versus No 24/7, 2.8% versus 4.0%; p = 0.002). The use of extracorporeal membrane oxygenation (ECMO), the incidence of cardiac arrest, extubation within 48 hours after operation, the rate of reintubation, and the duration of arterial line and central venous line use after operation were significantly improved in the 24/7 group. When stratified by surgical complexity, survival benefits of 24/7 coverage persisted among patients undergoing both high-complexity and low-complexity operations. The presence of 24-hour in-ICU attending physician coverage in children undergoing cardiac operations is associated with improved outcomes, including ICU mortality. It is possible that 24-hour in-ICU attending physician coverage may be a surrogate for other factors that may bias the results. Further study is warranted.

Copyright © 2016 The Society of Thoracic Surgeons. Published by Elsevier Inc. All rights reserved.

**Database:** Medline

### 7. Physician Communication in Pediatric End-of-Life Care: A Simulation Study.

**Author(s):** Bateman, Lori Brand; Tofil, Nancy M; White, Marjorie Lee; Dure, Leon S; Clair, Jeffrey Michael; Needham, Belinda L

**Source:** The American journal of hospice & palliative care; Dec 2016; vol. 33 (no. 10); p. 935-941
**Publication Date:** Dec 2016

**Abstract:** The objective of this exploratory study is to describe communication between physicians and the actor parent of a standardized 8-year-old patient in respiratory distress who was nearing the end of life. Thirteen pediatric emergency medicine and pediatric critical care fellows and attendings participated in a high-fidelity simulation to assess physician communication with an actor-parent. Fifteen percent of the participants decided not to initiate life-sustaining technology (intubation), and 23% of participants offered alternatives to life-sustaining care, such as comfort measures. Although 92% of the participants initiated an end-of-life conversation, the quality of that discussion varied widely. Findings indicate that effective physician-parent communication may not consistently occur in cases involving the treatment of pediatric patients at the end of life in emergency and critical care units. The findings in this study, particularly that physician-parent end-of-life communication is often unclear and that alternatives to life-sustaining technology are often not offered, suggest that physicians need more training in both communication and end-of-life care.

© The Author(s) 2015.

**Database:** Medline

---

8. **Relation between safe use of medicines and Clinical Pharmacy Services at Pediatric Intensive Care Units.**

**Author(s):** Okumura, Lucas Miyake; Silva, Daniella Matsubara da; Comarella, Larissa

**Source:** Revista paulista de pediatria : orgao oficial da Sociedade de Pediatria de Sao Paulo; Dec 2016; vol. 34 (no. 4); p. 397-402

**Publication Date:** Dec 2016

**Abstract:** Clinical Pharmacy Services (CPS) are considered standard of care and they are endorsed by the Joint Commission International, the American Academy of Pediatrics, and the American College of Clinical Pharmacy. In Brazil, single experiences have been discreetly arising and the importance of these services to children and adolescents care has led to interesting results, but certainly are under reported. This short report aims to discuss the effect of implementing a bedside CPS at a Brazilian Pediatric Intensive Care Unit (PICU). This is a cross-sectional study conducted in a 12 bed PICU community hospital, from Campo Largo/Brazil. Subjects with<18 years old admitted to PICU were included for descriptive analysis if received a CPS intervention. Of 53 patients accompanied, we detected 141 preventable drug-related problems (DRPs) which were solved within clinicians (89% acceptance of all interventions). The most common interventions performed to improve drug therapy included: preventing incompatible intravenous solutions (21%) and a composite of inadequate doses (17% due to low, high and non-optimized doses). Among the top ten medications associated with DRPs, five were antimicrobials. By analyzing the correlation between DRPs and PICU length of stay, we found that 74% of all variations on length of stay were associated with the number of DRPs. Adverse drug reactions due to avoidable DRPs can be prevented by CPS in a multifaceted collaboration with other health care professionals, who should attempt to use active and evidence-based strategies to reduce morbidity related to medications. Copyright © 2016. Publicado por Elsevier Editora Ltda.

**Database:** Medline

---

9. **High-flow oxygen therapy is more cost-effective for bronchiolitis than standard treatment-A decision-tree analysis.**

**Author(s):** Heikkilä, Paula; Forma, Leena; Korppi, Matti

**Source:** Pediatric pulmonology; Dec 2016; vol. 51 (no. 12); p. 1393-1402
**Publication Date:** Dec 2016

**Abstract:** We evaluated the cost-effectiveness of high-flow nasal cannula (HFNC) to provide additional oxygen for infants with bronchiolitis, compared to standard low-flow therapy. The cost-effectiveness was evaluated by decision analyses, using decision tree modeling, and was based on real costs from our recently published retrospective case-control study. The data on the effectiveness of HFNC treatment were collected from earlier published retrospective studies, using admission rates to pediatric intensive care units (PICU). The analyses in the study showed that the expected treatment costs of each episode of infant bronchiolitis varied between €1,312-2,644 ($1,786-3,600) in the HFNC group and €1,598-3,764 ($2,175-5,125) in the standard treatment group. The PICU admission rates and consequential costs were lower for HFNC than for standard treatment. HFNC treatment proved more cost-effective than standard treatment in all the baseline analyses and was also more cost-effective in the sensitivity analyses, except for in the worst-case scenario analysis. In conclusion, our modeling demonstrated that HFNC was strongly cost-effective for infant bronchiolitis, compared to standard treatment because it was both more effective and less expensive. Thus, if children hospitalized for bronchiolitis need oxygen, it should be delivered as HFNC treatment. Pediatr Pulmonol. 2016;51:1393-1402. © 2016 Wiley Periodicals, Inc. © 2016 Wiley Periodicals, Inc.

**Database:** Medline

---

10. Use of Transcranial Doppler for Management of Central Nervous System Infections in Critically Ill Children.

**Author(s):** Ducharme-Crevier, Laurence; Mills, Michele G; Mehta, Priya M; Smith, Craig M; Wainwright, Mark S

**Source:** Pediatric neurology; Dec 2016; vol. 65 ; p. 52

**Publication Date:** Dec 2016

**Abstract:** The primary objective of this study was to characterize changes in cerebral blood flow measured using transcranial Doppler in children with central nervous system infections. We hypothesized that children with central nervous system infections have abnormal cerebral blood flow, associated with a greater frequency of complications and poor neurological outcome. We conducted a single-center, retrospective study of children admitted to the neonatal or pediatric intensive care unit with central nervous system infection and undergoing transcranial Doppler as part of routine care between March 2011 and July 2015. A total of 20 children with central nervous system infection underwent 35 transcranial Dopplers. The mean age was 8.2 ± 6.3 years, including 12 boys and eight girls. The most common infection was meningitis (n = 11, 55%), with the remainder comprising encephalitis (15%), meningoencephalitis (20%), and abscess or empyema (10%). Bacterial (n = 10, 50%) and viral (n = 6) sources were common with only one (5%) fungal infection and three (15%) unknown but presumed viral etiology. The patients underwent transcranial Doppler 4 ± 9 days after intensive care unit admission. Mean cerebral blood flow velocities were overall increased compared with reference values for age (healthy children and critically ill children) mostly because of hyperemia (n = 21, 60%) and vasospasm (6%). Hypoperfusion (cerebral blood flow velocity <1 S.D. of normal value) in at least one vessel was associated with morbidity (intubation, vasoactive medications, neurosurgery, cardiac arrest) (P = 0.04) and mortality (P = 0.03). Two patients had increased intracranial pressure and hyperventilation was safely achieved with transcranial Doppler monitoring to avoid ischemia. Serial transcranial Dopplers were used to guide blood pressure management. Transcranial Doppler can be used in children with central nervous system infection as a tool to assess cerebral blood flow. In this retrospective study, cerebral hypoperfusion was associated with increased morbidity and mortality. If transcranial Doppler is to guide medical therapy and management of cerebral blood flow in children with central
nervous system infections, these results will need to be validated in prospective studies with a more homogenous population of children with encephalitis or meningitis. Copyright © 2016 Elsevier Inc. All rights reserved.

Database: Medline

11. The Challenges of Providing Effective Pain Management for Children in the Pediatric Intensive Care Unit.

Author(s): Ismail, Ahmad

Source: Pain management nursing : official journal of the American Society of Pain Management Nurses; Dec 2016; vol. 17 (no. 6); p. 372-383

Publication Date: Dec 2016

Abstract: Providing effective pain management is necessary for all patients in the intensive care unit (ICU). Because of developmental considerations, caring for children may provide additional challenges. The purpose of this literature review is to describe key challenges in providing effective pain management in pediatric intensive care units (PICUs), with the aim of bringing about a better understanding by health care providers caring for children. Challenges of providing effective pain management in the PICU can be categorized into four levels. These levels are informed by the Nursing Pain Management Model and include challenges (1) to be considered before pain assessment, (2) related to pain assessment, (3) related to pain treatment, and (4) related to post-treatment. This review mainly discusses the challenges of the first three levels because the fourth (post-treatment) relates to reassessment of pain, which shares the same challenges of level two, pain assessment. Key challenges of level one are related to health care provider’s characteristics, patients and their families’ factors, and PICU setting. The main challenges of the assessment and reassessment levels are the child’s age and developmental level, ability to self-report, relying on behavioral and physiological indicators of pain, selecting the appropriate pain assessment scale, assessing pain while the patient is being treated with sedative and paralytic agents, mechanical ventilation, and changes in patients’ level of consciousness. In the treatment level (level three), nonpharmacological interventions factors; alterations in the pharmacokinetics and pharmacodynamics of medications to be used for pain management in critically ill children; and the complexity of the administration of sedatives, analgesics, and paralytic agents in critically ill children are the main challenges. Health care providers can bear in mind such important challenges in order to provide effective pain management. Health care providers can increase the use of available evidence for pain management. Copyright © 2016 American Society for Pain Management Nursing. Published by Elsevier Inc. All rights reserved.

Database: Medline

12. Failure to Validate a Multivariable Clinical Prediction Model to Identify Pediatric Intensive Care Unit Patients at High Risk for Candidemia.

Author(s): Fisher, Brian T; Ross, Rachael K; Roilides, Emmanuel; Palazzi, Debra L; Abzug, Mark J; Hoffman, Jill A; Berman, David M; Prasad, Priya A; Localio, A Russell; Steinbach, William J; Vogiatzi, Lambrini; Dutta, Ankhi; Zaoutis, Theoklis E

Source: Journal of the Pediatric Infectious Diseases Society; Dec 2016; vol. 5 (no. 4); p. 458-461

Publication Date: Dec 2016

Abstract: We attempted to validate a previously derived clinical prediction rule for candidemia in the pediatric intensive care unit. This multicenter case control study did not identify significant association of candidemia with most of the previously identified predictors. Additional study in
larger cohorts with other predictor variables is needed. © The Author 2015. Published by Oxford University Press on behalf of the Pediatric Infectious Diseases Society. All rights reserved. For Permissions, please e-mail: journals.permissions@oup.com.

Database: Medline

13. Regional Epidemiology of Methicillin-Resistant Staphylococcus aureus Among Critically Ill Children in a State With Mandated Active Surveillance.

Author(s): Lyles, Rosie D; Trick, William E; Hayden, Mary K; Lolans, Karen; Fogg, Louis; Logan, Latania K; Shulman, Stanford T; Weinstein, Robert A; Lin, Michael Y; Centers for Disease Control and Prevention, Prevention Epicenters Program

Source: Journal of the Pediatric Infectious Diseases Society; Dec 2016; vol. 5 (no. 4); p. 409-416

Publication Date: Dec 2016

Abstract: In theory, active surveillance of methicillin-resistant Staphylococcus aureus (MRSA) reduces MRSA spread by identifying all MRSA-colonized patients and placing them under contact precautions. In October 2007, Illinois mandated active MRSA surveillance in all intensive care units, including neonatal intensive care units (NICUs) and pediatric intensive care units (PICUs). We evaluated MRSA trends in a large metropolitan region in the wake of this law. Chicago hospitals with a NICU or PICU were recruited for 8 single-day point prevalence surveys that occurred twice-yearly between June 2008 and July 2011 and then yearly in 2012 to 2013. Samples from all patients were cultured for MRSA (nose and umbilicus for neonates, nose and groin for pediatric patients). Hospital-reported admission MRSA-screening results also were obtained. Point prevalence cultures were screened for MRSA by using broth enrichment, chromogenic agar, and standard confirmatory methods. All eligible hospitals (N = 10) participated (10 NICUs, 6 PICUs). Hospital-reported adherence to state-mandated MRSA screening at admission was high (95% for NICUs, 94% for PICUs). From serial point prevalence surveys, overall MRSA prevalences in the NICUs and PICUs were 4.2% (89 of 2101) and 5.7% (36 of 632), respectively. MRSA colonization prevalences were unchanged in the NICUs (year-over-year risk ratio [RR], 0.93 [95% confidence interval (CI), 0.78-1.12]; P = .45) and trended toward an increase in the PICUs (RR, 1.25 [95% CI, 0.72-2.12]; P = .053). We estimated that 81% and 40% of MRSA-positive patients in the NICUs and PICUs, respectively, had newly acquired MRSA. In a region with mandated active MRSA surveillance, we found ongoing unchanged rates of MRSA colonization and acquisition among NICU and PICU patients. © The Author 2015. Published by Oxford University Press on behalf of the Pediatric Infectious Diseases Society. All rights reserved. For Permissions, please e-mail: journals.permissions@oup.com.

Database: Medline


Author(s): LaRovere, Kerri L; O’Brien, Nicole F; Tasker, Robert C

Source: Journal of neurotrauma; Dec 2016; vol. 33 (no. 23); p. 2105-2114

Publication Date: Dec 2016

Abstract: The purpose of this study was to identify and review clinical studies using transcranial Doppler (TCD) ultrasonography in children with severe traumatic brain injury (TBI) in the pediatric intensive care unit (PICU). We identified 16 articles from January 2005 to July 2015 that met inclusion (TBI, five or more cases in case series, subjects <18 years old, TCD performed in PICU) and exclusion criteria (age not stated, data from subjects <18 years not separated from adult data, <85% study population <18 years in mixed population with adults). TCD parameters were used to assess
autoregulation, intracranial pressure, and vasospasm, and to predict neurological outcome. Incidence of impaired autoregulation varied in severe TBI from 25% to 80%. Altered TCD flows and pulsatility index variably predicted intracranial hypertension across studies. Sonographic vasospasm in the middle cerebral artery occurred in 34% of 69 children with severe TBI. Outcomes seem to be related to altered TCD-derived flow velocities while in the ICU. TCD may be a useful tool to assess autoregulation, intracranial pressure, and vasospasm following TBI in the PICU. Further research is needed to establish gold standards and validate the findings in children. TCD may then impact day-to-day management in the PICU, and potentially improve outcomes in children with severe TBI.

**Database:** Medline

---

**15. Do in-hours or off-hours matter for extubating children in the pediatric intensive care unit?**

**Author(s):** da Silva, Paulo Sérgio Lucas; Reis, Maria Eunice; Fonseca, Thais Suelotto Machado; Fonseca, Marcelo Cunio Machado

**Source:** Journal of critical care; Dec 2016; vol. 36 ; p. 97-101

**Publication Date:** Dec 2016

**Abstract:** Several studies have suggested worse outcomes for patients requiring medical care at night or on weekends. However, whether or not children should be extubated only during in-hours has not been studied yet. We sought to compare outcomes and complications of in-hours versus off-hours extubated patients. We prospectively included all children receiving invasive mechanical ventilation (MV) in a pediatric intensive care unit. Off-hours extubations included patients who were extubated at nighttime (8:00 pm-7:59 am) plus weekends/holidays whereas the in-hours extubations included regular daytime weekdays (Monday to Friday: 8:00 am-7:59 pm). Of the 480 patients, 346 (72%) were extubated during in-hours period and 134 (28%) were extubated during off-hours. In-hours patients spent a longer time to have planned extubation and had a longer MV duration and pediatric intensive care unit stay compared to those extubated at off-hours. Kaplan-Meier curve showed that in-hours patients were more likely to have a longer time until the first extubation (log-rank test: P=.006, HR: 5.05). Patients extubated at off-hours had more favorable outcomes with similar complications rate compared with those extubated at in-hours. These results provide no support for delaying extubations until in-hours period. Further studies are required to confirm these findings. Copyright © 2016 Elsevier Inc. All rights reserved.

**Database:** Medline

---


**Author(s):** Morin, Luc; Ray, Samiran; Wilson, Clare; Remy, Solenn; Benissa, Mohamed Rida; Jansen, Nicolaas J G; Javouhey, Etienne; Peters, Mark J; Kneyber, Martin; De Luca, Daniele; Nadel, Simon; Schlaphbach, Luregn Jan; Maclaren, Graeme; Tissieres, Pierre; ESPNIC Refractory Septic Shock Definition Taskforce the Infection Systemic Inflammation Sepsis section of ESPNIC

**Source:** Intensive care medicine; Dec 2016; vol. 42 (no. 12); p. 1948-1957

**Publication Date:** Dec 2016

**Abstract:** Although overall paediatric septic shock mortality is decreasing, refractory septic shock (RSS) is still associated with high mortality. A definition for RSS is urgently needed to facilitate earlier identification and treatment. We aim to establish a European society of paediatric and neonatal intensive care (ESPNIC) experts' definition of paediatric RSS. We conducted a two-round Delphi study followed by an observational multicentre retrospective study. One hundred and fourteen paediatric intensivists answered a clinical case-based, two-round Delphi survey, identifying clinical
items consistent with RSS. Multivariate analysis of these items in a development single-centre cohort (70 patients, 30% mortality) facilitated development of RSS definitions based on either a bedside or computed severity score. Both scores were subsequently tested in a validation cohort (six centres, 424 patients, 11.6% mortality). From the Delphi process, the draft definition included evidence of myocardial dysfunction and high blood lactate levels despite high vasopressor treatment. When assessed in the development population, each item was independently associated with the need for extracorporeal life support (ECLS) or death. Resultant bedside and computed septic shock scores had high discriminative power against the need for ECLS or death, with areas under the receiver operating characteristics curve of 0.920 (95% CI 0.89-0.94), and 0.956 (95% CI 0.93-0.97), respectively. RSS defined by a bedside score equal to or higher than 2 and a computed score equal to or higher than 3.5 was associated with a significant increase in mortality. This ESPNIC definition of RSS accurately identifies children with the most severe form of septic shock.

Database: Medline


Author(s): Düzkaya, Duygu Sönmez; Sahiner, Nejla Canbulat; Uysal, Gülzade; Yakut, Tülay; Çitak, Agop

Source: Critical care nurse; Dec 2016; vol. 36 (no. 6); p. e1

Publication Date: Dec 2016

Available in full text at Critical Care Nurse - from EBSCOhost

Abstract: Bloodstream infections related to use of catheters are associated with increased morbidity and mortality rates, prolonged hospital lengths of stay, and increased medical costs. To compare the effectiveness of chlorhexidine-impregnated dressings with that of standard dressings in preventing catheter-related bloodstream infections. A total of 100 children were randomly divided into 2 groups of 50 each: a chlorhexidine group and a standard group. Patient care was provided in accordance with prevention bundles. Patients were followed up for development of catheter-related bloodstream infections. Catheter colonization occurred in 4 patients in the standard group (8%) and in 1 patient in the chlorhexidine group (2%). Catheter-related bloodstream infections occurred in 5 patients in the standard group (10%) and in 1 patient in the chlorhexidine group (2%). Although more patients in the standard group had catheter-related bloodstream infections, the difference in infection rates between the 2 groups was not significant (P = .07). Use of chlorhexidine-impregnated dressings reduced rates of catheter-related bloodstream infections, contamination, colonization, and local catheter infection in a pediatric intensive care unit but was not significantly better than use of standard dressings. ©2016 American Association of Critical-Care Nurses.

Database: Medline

18. Cost Associated With Pediatric Delirium in the ICU.

Author(s): Traube, Chani; Mauer, Elizabeth A; Gerber, Linda M; Kaur, Savneet; Joyce, Christine; Kerson, Abigail; Carlo, Charlene; Notterman, Daniel; Worgall, Stefan; Silver, Gabrielle; Greenwald, Bruce M

Source: Critical care medicine; Dec 2016; vol. 44 (no. 12); p. e1175

Publication Date: Dec 2016

Available in full text at Critical Care Medicine - from Ovid

Abstract: To determine the costs associated with delirium in critically ill children. Prospective observational study. An urban, academic, tertiary-care PICU in New York city. Four-hundred and
sixty-four consecutive PICU admissions between September 2, 2014, and December 12, 2014. None. All children were assessed for delirium daily throughout their PICU stay. Hospital costs were analyzed using cost-to-charge ratios, in 2014 dollars. Median total PICU costs were higher in patients with delirium than in patients who were never delirious ($18,832 vs $4,803; p < 0.0001); this remained highly significant even after adjusting for PICU length of stay (p < 0.0001). After controlling for age, gender, severity of illness, and PICU length of stay, delirium was associated with an 85% increase in PICU costs (p < 0.0001). Pediatric delirium is associated with a major increase in PICU costs. Further research directed at prevention and treatment of pediatric delirium is essential to improve outcomes in this population and could lead to substantial healthcare savings.

Database: Medline


Author(s): Roumeliotis, Nadia; Dong, Christian; Pettersen, Géraldine; Crevier, Louis; Emeriaud, Guillaume

Source: Child’s nervous system : ChNS : official journal of the International Society for Pediatric Neurosurgery; Dec 2016; vol. 32 (no. 12); p. 2363-2368

Publication Date: Dec 2016

Abstract: The objectives of the study are to describe the use of hyperosmolar therapy in pediatric traumatic brain injury (TBI) and examine its effect on intracranial pressure (ICP) and cerebral perfusion pressure (CPP). A retrospective review of patients with severe TBI admitted to the pediatric intensive care unit (PICU) was conducted. Inclusion criteria were ICP monitoring and administration of a hyperosmolar agent (20% mannitol or 3% hypertonic saline) within 48 h of PICU admission; for which dose and timing were recorded. For the first two boluses received for increased ICP (>20 mmHg), the impact on ICP and CPP was assessed during the following 4 h, using repeated measures ANOVA. Co-interventions to control ICP (additional hyperosmolar agent, propofol, or barbiturate bolus) and serum sodium were also documented. A tertiary care pediatric hospital center. Children aged 1 month to 18 years, with severe traumatic brain injury (Glasgow Coma Score ≤ 8) and intracranial pressure (ICP) monitor. Sixty-four patients were eligible, of which 16 met inclusion criteria. Average age was 11 years (SD ± 4) and median Glasgow Coma Score was 6 (range 4-7). Seventy percent of boluses were 3% hypertonic saline, with no identified baseline difference associated with this initial choice. Both mannitol and hypertonic saline were followed by a non-significant decrease in ICP (mannitol, p = 0.055 and hypertonic saline, p = 0.096). There was no significant change in CPP post bolus. A co-intervention occurred in 69% of patients within the 4 h post hyperosmolar agent, and eight patients received continuous 3% saline. In pediatric TBI with intracranial hypertension, mannitol and 3% hypertonic saline are commonly used, but dose and therapeutic threshold for use vary without clear indications for one versus another. Controlled trials are warranted, but several barriers were identified, including high exclusion rate, multiple co-interventions, and care variability.

Database: Medline


Author(s): Brissaud, Olivier; Botte, Astrid; Cambonie, Gilles; Dauger, Stéphane; de Saint Blanquat, Laure; Durand, Philippe; Gournay, Véronique; Guillet, Elodie; Laux, Daniela; Leclerc, Francis; Mauriat, Philippe; Boulain, Thierry; Kuteifan, Khaldoun

Source: Annals of intensive care; Dec 2016; vol. 6 (no. 1); p. 14

Publication Date: Dec 2016
Abstract: Cardiogenic shock which corresponds to an acute state of circulatory failure due to impairment of myocardial contractility is a very rare disease in children, even more than in adults. To date, no international recommendations regarding its management in critically ill children are available. An experts’ recommendations in adult population have recently been made (Levy et al. Ann Intensive Care 5(1):52, 2015; Levy et al. Ann Intensive Care 5(1):26, 2015). We present herein recommendations for the management of cardiogenic shock in children, developed with the grading of recommendations’ assessment, development, and evaluation system by an expert group of the Groupe Francophone de Réanimation et Urgences Pédiatriques (French Group for Pediatric Intensive Care and Emergencies). The recommendations cover four major fields of application such as: recognition of early signs of shock and the patient pathway, management principles and therapeutic goals, monitoring hemodynamic and biological variables, and circulatory support (indications, techniques, organization, and transfer criteria). Major principle care for children with cardiogenic shock is primarily based on clinical and echocardiographic assessment. There are few drugs reported as effective in childhood in the medical literature. The use of circulatory support should be facilitated in terms of organization and reflected in the centers that support these children. Children with cardiogenic shock are vulnerable and should be followed regularly by intensivist cardiologists and pediatricians. The experts emphasize the multidisciplinary nature of management of children with cardiogenic shock and the importance of effective communication between emergency medical assistance teams (SAMU), mobile pediatric emergency units (SMUR), pediatric emergency departments, pediatric cardiology and cardiac surgery departments, and pediatric intensive care units.

Database: Medline


Authors: Browning Carmo, Kathryn; Lutz, Tracey; Berry, Andrew; Kluckow, Martin; Evans, Nick

Source: Acta paediatrica (Oslo, Norway : 1992); Dec 2016; vol. 105 (no. 12); p. e549

Publication Date: Dec 2016

Abstract: To determine the role of clinician performed ultrasound (CPU) during the retrieval and transport of critically ill term and near term newborns. A neonatologist with portable ultrasound accompanied a sample of newborn retrievals to perform cardiac and cerebral ultrasound before and after transportation. A total of fifty-five babies were studied. Median birthweight: 3350 g (2220-5030 g). CPU led to a change in the planned receiving hospital in ten babies. Eleven babies were suspected congenital heart disease (CHD) prior to retrieval: eight confirmed CHD by CPU and three normal structure. One transported to a children’s hospital for cardiology review was confirmed as having normal structure; one to a perinatal hospital where normal structure was confirmed and one baby died at the referring hospital and postmortem confirmed normal structure. In five babies with clinical pulmonary hypertension, CPU revealed unsuspected CHD. The destination was changed to a paediatric cardiology centre, avoiding a second retrieval. Eleven babies had evidence of haemodynamic compromise allowing targeting of inotropes. This is the first study of CPU during retrieval of high-risk infants. Ultrasound in retrieval is feasible, allows accurate triage of babies to cardiac centres and may allow more accurate targeting of fluid and inotrope support. ©2016 Foundation Acta Paediatrica. Published by John Wiley & Sons Ltd.

Database: Medline
What is OpenAthens?
OpenAthens is a way of authenticating that you have permission to access our subscription e-resources. To access our electronic resources you will need a UH Bristol Athens username/password.

How can I get an Athens login?
Click [here](#) to complete the online registration form. You will need to register using a Trust PC and a UH Bristol email address. Once you have successfully completed the form, you will be sent an email to your UH Bristol account with an authentication link.

I have an Athens account from another Trust/University. Do I still need a UH Bristol account?
You will need a UH Bristol account to access our local subscription resources. You can either update the settings of your existing account by logging in and selecting ‘change organisation’, or you can set up a new UH Bristol account by clicking [here](#) (you will need to register using a Trust PC and a UH Bristol email address).

My Athens account has expired. What should I do?
You can register for a new account [here](#).

I have forgotten my Athens Username / Password. How can I reset it?
**Password**: If you are on a Trust PC, follow the link to [https://register.athensams.net/nhs/forgotten_password.php](https://register.athensams.net/nhs/forgotten_password.php).

**Username and password**: You should email athens.sdhct@nhs.net with your full name, full work address, work telephone number and the email address you used to register for the account. In the email subject line put ‘Forgotten username and password’. It may take up to five working days to receive your username and a reset password.
Library Opening Times

Staffed hours: 8am-5pm, Mon-Fri

Swipe-card access: 7am-11pm 7 days a week

Level 5, Education and Research Centre

University Hospitals Bristol

Contact your outreach librarian:

Helen Pullen