PICU
Current Awareness Newsletter
September 2015
**Outreach**

Your Outreach Librarian can help facilitate evidence-based practise for all PICU staff, as well as assisting with academic study and research. We can help with **literature searching**, **obtaining journal articles and books**, and setting up individual **current awareness alerts**.

**Literature Searching**

We provide a literature searching service for any library member. For those embarking on their own research it is advisable to book some time with one of the librarians for a 1 to 1 session where we can guide you through the process of creating a well-focused literature research and introduce you to the health databases access via NHS Evidence.

**Critical Appraisal Training**

We also offer **one-to-one or small group training** in literature searching, accessing electronic journals, and critical appraisal/Statistics. These are essential courses that teach how to interpret clinical papers.

For more information, email: katie.barnard@uhbristol.nhs.uk

**Books**

Books can be searched for using SWIMS our online catalogue at [www.swims.nhs.uk](http://www.swims.nhs.uk). Books and journals that are not available on site or electronically may be requested from other locations. Please email requests to: library@uhbristol.nhs.uk
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4: NHS Behind the Headlines

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Tables of Contents from Paediatric & Critical Care journals

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

Pediatrics
September 2015, Volume 136, Issue 3

Pediatrics Digest
Full Text
Prenatal Decision-Making for Myelomeningocele: Can We Minimize Bias and Variability?
Full Text
The Need for Biological Outcomes to Complement Self-Report in Adolescent Research
Full Text
Up to Speed: A Role for Trainees in Advancing Health Information Technology
Full Text
Infection-Related Hospitalization in Childhood and Adult Metabolic Outcomes
Full Text
Coadministration of a 9-Valent Human Papillomavirus Vaccine With Meningococcal and Tdap Vaccines
Full Text
Computed Tomography and Shifts to Alternate Imaging Modalities in Hospitalized Children
Full Text
Psychological and Psychosocial Impairment in Preschoolers With Selective Eating
Full Text
Parent/Adolescent Weight Status Concordance and Parent Feeding Practices
Full Text
Preterm Birth and Poor Fetal Growth as Risk Factors of Attention-Deficit/Hyperactivity Disorder
Full Text
Concurrent Respiratory Viruses and Kawasaki Disease
Full Text
Outcome of Patients Initiating Chronic Peritoneal Dialysis During the First Year of Life
Full Text
Incidence, Trends, and Survival of Children With Embryonal Tumors
Full Text
Developmental Trajectories of Subjective Social Status
Full Text
Sensitivity of the Automated Auditory Brainstem Response in Neonatal Hearing Screening
Full Text
Preterm Cognitive Function Into Adulthood
Full Text
Late Preterm Infants and Neurodevelopmental Outcomes at Kindergarten
Full Text
Costs of Venous Thromboembolism, Catheter-Associated Urinary Tract Infection, and Pressure Ulcer
Full Text
Suicide Attempts and Childhood Maltreatment Among Street Youth: A Prospective Cohort Study
Full Text
Full Text
Inhibition of Angiofibromas in a Tuberous Sclerosis Patient Using Topical Timolol 0.5% Gel

Full Text
Novel WDR45 Mutation and Pathognomonic BPAN Imaging in a Young Female With Mild Cognitive Delay

Full Text

Full Text

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Full Text
Clinical Report: Skin-to-Skin Care for Term and Preterm Infants in the Neonatal ICU

Full Text
Statement of Endorsement: Consensus Communication on Early Peanut Introduction and the Prevention of Peanut Allergy in High-risk Infants

Full Text
Clinical Report: Binge Drinking

Full Text
Policy Statement: 2015 Recommendations for Preventive Pediatric Health Care: Committee on Practice and Ambulatory Medicine and Bright Futures Periodicity Schedule Workgroup

Full Text
Policy Statement: AAP Publications Reaffirmed or Retired

Full Text

Current Opinion in Pediatrics
October 2015, Volume 27, Issue 5

Editorial introductions

Long-term challenges in congenital heart disease

The pediatric heart network: meeting the challenges to multicenter studies in pediatric heart disease

Quality improvement through collaboration: the National Pediatric Quality improvement Collaborative initiative

The vulnerable right ventricle
The Fontan operation: the long-term outlook

Adults with congenital heart disease transition

Patient-centered medical home for patients with complex congenital heart disease

Computational modeling and engineering in pediatric and congenital heart disease

Advances in mechanical assist devices and artificial hearts for children

Screening ECGs for young competitive athletes: it is complicated

Therapy of caustic ingestion: new treatment considerations

Hepatitis C in children in times of change

Current concepts in functional gastrointestinal disorders

Drug-induced liver injury in children

Colonic polyps and polyposis syndromes in pediatric patients

Esophageal infections: an update

New developments in allergen immunotherapy

Current Opinion in Critical Care
October 2015, Volume 21, Issue 5

Editorial introductions

Understanding central venous pressure: not a preload index?

Arterial blood pressure and heart rate regulation in shock state

Oxygen extraction and perfusion markers in severe sepsis and septic shock: diagnostic, therapeutic and outcome implications

Fluid bolus therapy: monitoring and predicting fluid responsiveness

Monitoring: from cardiac output monitoring to echocardiography

New antibiotics and antimicrobial combination therapy for the treatment of gram-negative bacterial infections

Pharmacokinetic/pharmacodynamic considerations for the optimization of antimicrobial delivery in the critically ill

Fungal infections in the ICU: advances in treatment and diagnosis

Update on ventilator-associated pneumonia

Progress on core outcome sets for critical care research

Describing and measuring recovery and rehabilitation after critical illness
Making sense of clinical outcomes following cardiac arrest

What can acute medicine learn from qualitative methods?

Exploiting big data for critical care research

**Paediatric Critical Care Medicine**
*September 2015, Volume 16, Issue 7*

Gastric Acid Supplessant Prophylaxis in Pediatric Intensive Care: Current Practice as Reflected in a Large Administrative Database*

Trends in PICU Admission and Survival Rates in Children in Australia and New Zealand Following Cardiac Arrest*

Hyperglycemia at the Time of Acquiring Central Catheter–Associated Bloodstream Infections Is Associated With Mortality in Critically Ill Children*

Postoperative Hydrocortisone Infusion Reduces the Prevalence of Low Cardiac Output Syndrome After Neonatal Cardiopulmonary Bypass*

Thermal Blanket to Improve Thermoregulation in Preterm Infants: A Randomized Controlled Trial

Evaluation of Electronic Medical Record Vital Sign Data Versus a Commercially Available Acuity Score in Predicting Need for Critical Intervention at a Tertiary Children’s Hospital

Neuroimaging, Pain Sensitivity, and Neuropsychological Functioning in School-Age Neonatal Extracorporeal Membrane Oxygenation Survivors Exposed to Opioids and Sedatives

Urinary Neutrophil Gelatinase–Associated Lipocalin Predicts Renal Injury Following Extracorporeal Membrane Oxygenation

Gastric Acid Suppression—More Data, Less Answers*

Pediatric Cardiac Arrests Are a Big Problem No Matter What the Denominator*

Another Target for Glycemic Control in Critically Ill Children?*

The Role of Prophylactic Postoperative Steroids in Pediatric Cardiac Operations*

Can Racemic Albuterol Help Patients With Respiratory Failure in the PICU?*

Goal-Directed Mechanical Ventilation in Pediatric Acute Respiratory Distress Syndrome: What Pressure Variable Should Be the Goal?*

Detection Versus Infection: What Is the Difference?*

Allocation of Resources During Crisis: Data Infused With Wisdom, Ethics, and Transparency*

Fluid Overload in General PICU

The authors reply

Optimizing Timing of Tracheostomy Placement in the PICU: Why Defining Success Will Require a Longer View

The authors reply
Orphan anesthesia: an initiative of the scientific working group of pediatric anesthesia of the German society of anesthesiology

Demonstrating value in preoperative preparatory programs: a tough row to hoe

Pharmacodynamic interaction models in pediatric anesthesia

Cyanotic congenital heart disease (CCHD): focus on hypoxemia, secondary erythrocytosis, and coagulation alterations

Preoperative preparation workshop reduces postoperative maladaptive behavior in children

The nature and sources of variability in pediatric surgical case duration

Fast-track recovery after day case surgery

Comparison of different anesthesia techniques during esophagogastroduodenoscopy in children: a randomized trial

A comparison of the postoperative pain experience in children with and without attention-deficit hyperactivity disorder (ADHD)

Procedural sedation for MRI in children with ADHD

Sevoflurane exposure during the neonatal period induces long-term memory impairment but not autism-like behaviors

Comparison of the gold standard of hemoglobin measurement with the clinical standard (BGA) and noninvasive hemoglobin measurement (SpHb) in small children: a prospective diagnostic observational study

Long-term tolerability of capnography and respiratory inductance plethysmography for respiratory monitoring in pediatric patients treated with patient-controlled analgesia

Successful use of ultrasound-guided caudal catheter in a child with a very low termination of dural sac and Opitz–GBBB syndrome: a case report

Rectal puncture complicating caudal blockade in a child with severe rectal distension

Response to comments by Yibo et al. regarding our manuscript: prophylactic methylprednisolone to reduce inflammation and improve outcomes from one lung ventilation in children: a randomized clinical trial

Reply to Bouvet et al. regarding their comment ‘How may a mathematical model using ultrasound measurement of antral area be predictive of the gastric volume?’

Reply to Bhalotra, regarding his comment on ‘Awake caudals and epidurals should be used more frequently in neonates and infants’
Latest relevant Systematic Reviews from the Cochrane Library

Binocular versus standard occlusion or blurring treatment for unilateral amblyopia in children aged three to eight years

Alpha-2 adrenergic agonists for the prevention of shivering following general anaesthesia

Hypothalamic-pituitary-adrenal (HPA) axis suppression after treatment with glucocorticoid therapy for childhood acute lymphoblastic leukaemia

NHS Behind the Headlines

Music can help ease pain and anxiety after surgery

Thursday Aug 13 2015

"Listening to music before, during and after an operation can help reduce pain," BBC News reports. An analysis of data found evidence that people who listened to music had reduced anxiety and were less likely to request pain relief…

Upcoming Lunchtime Drop-in Sessions

The Library and Information Service provides free specialist information skills training for all UHBristol staff and students.

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If you’re unable to attend we also provide one-to-one or small group sessions. Contact library@uhbristol.nhs.uk or katie.barnard@uhbristol.nhs.uk to arrange a session.

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New activity in Uptodate

Predictors of the need for repeat epinephrine doses in anaphylaxis (August 2015)

Epinephrine is the first-line therapy for anaphylaxis, and retrospective studies suggest that up to one-third of patients may require a second dose. However, predictive factors for requiring more than one dose are not well defined. In a prospective cohort study of over 500 patients (all ages) treated for anaphylaxis in a tertiary care emergency department, 14 percent of those requiring any epinephrine required more than one dose [15]. Patients with a history of previous anaphylaxis, and those presenting with flushing, diaphoresis, or dyspnea, were more likely to require multiple doses of epinephrine to control symptoms. Anaphylaxis is an inherently unpredictable disorder, but this study provides some insight into predictors of a more complicated treatment course and may help clinicians managing such patients. (See "Anaphylaxis: Rapid recognition and treatment", section on 'Dosing and administration'.)

Stevens-Johnson syndrome outbreak associated with M. pneumoniae (August 2015)

Stevens-Johnson syndrome/toxic epidermal necrolysis (SJS/TEN) is a rare, severe blistering mucocutaneous reaction, most commonly triggered by medications, characterized by extensive necrosis and detachment of the epidermis and mucosa. Mycoplasma pneumoniae and cytomegalovirus infections are the next most common trigger of SJS/TEN, particularly in children. Between September and November 2013, an outbreak of eight pediatric cases of M. pneumoniae-associated SJS/TEN was reported in Colorado, likely related to high levels of M. pneumoniae infection in the region [21]. All children had severe oropharyngeal mucositis; the conjunctiva was involved in seven children and the genital mucosa in five. (See "Stevens-Johnson syndrome and toxic epidermal necrolysis: Pathogenesis, clinical manifestations, and diagnosis", section on 'Infection'.)

Lumacaftor-ivacaftor for patients with cystic fibrosis and homozygous for the F508del mutation (August 2015)

Lumacaftor-ivacaftor is a combination of two cystic fibrosis transmembrane conductance regulator (CFTR) modulators that was approved by the US Food and Drug Administration in July 2015. The approval was based on two randomized trials with 1100 homozygous F508del subjects ages 12 years and older [64]. Compared with placebo, the groups receiving lumacaftor-ivacaftor for 24 weeks had small but statistically significant improvements in percent predicted FEV1 and body mass index (BMI), and reduced frequency of pulmonary exacerbations. Adverse effects included chest discomfort and dyspnea and were more common in subjects with worse baseline lung function. The improvement in absolute FEV1 from baseline compared with placebo (2.6 to 4 percentage points) is similar in magnitude to that achieved by treatments with inhaled dornase alfa or tobramycin. We suggest use of lumacaftor-ivacaftor for F508del homozygotes because it has modest short-term benefits and is tolerated by most patients. However, the expense of the drug and drug-drug interactions should be considered when deciding on its use. (See "Cystic fibrosis: Overview of the treatment of lung disease", section on 'Efficacy'.)
Forgotten how to conduct a search using the NHS Health Databases Advanced Search (HDAS)? Not sure how to get the best out of your search strategy? This quick guide will help you fill in the blanks...

You will need to log in using your OpenAthens username and password.
Register if needed here: https://openathens.nice.org.uk/

1) Choose your databases (or select all)
2) Enter in your search terms
   - Choose which fields to search (the default is title and abstract)
   - Break each concept down into all possible terms (British/American spellings, acronyms, alternative terms etc), then combine using ‘OR’
   - More useful database search tips:
     * Truncation: A substitute for any letters (or none)
       - E.g. p*ediatric* = paediatric, pediatrics, paediatrician etc.
     " " Inverted commas: Specifies that adjacent words should be searched as phrases
       - E.g. “noninvasive ventilation”
     ADJ Adjacency: Specifies the maximum number of words that can appear between two search terms
       - E.g. Random* ADJ1 trial
3) Combine the different search concepts using ‘AND’
4) Apply limits e.g. publication date
5) Remove duplicates (this function can be slow)
6) Click on ‘unique results’ to see you results

But remember, the Library team can carry out searches on your behalf or provide you with assistance.
Email library@uhbristol.nhs.uk for help with literature searches.
Title: Respiratory Failure in Children With Hemato-oncological Diseases Admitted to the PICU: A Single-center Experience.

Citation: Journal of pediatric hematology/oncology, Aug 2015, vol. 37, no. 6, p. 449-454 (August 2015)

Author(s): García-Salido, Alberto, Mastro-Martínez, Ignacio, Cabeza-Martín, Beatriz, Oñoro, Gonzalo, Nieto-Moro, Montserrat, Iglesias-Bouzas, María I, Serrano-González, Ana, Casado-Flores, Juan

Abstract: Respiratory failure (RF) is a main cause of pediatric intensive care unit (PICU) admission in children with hemato-oncological diseases. We present a retrospective chart review of children admitted to our PICU because of RF (January 2006 to December 2010). The aims of this study are the following: (1) to describe the demographical and clinical characteristics and respiratory management of these children; and (2) to identify the factors associated with mechanical ventilation (MV) and mortality. A total of 69 patients, encompassing 88 episodes, were included (55/88 cases were hypoxemic RF). The first respiratory support at PICU admission was, in decreasing order of frequency, high-flow oxygen nasal cannula (HFNC; 50/88), noninvasive ventilation (NIV; 13/88), and oxygen nasal cannula (16/88). MV was necessary in 47/88 episodes, 38/47 after another respiratory support. In 18/28 children with initial NIV, MV was required later. MV was associated with O-PRISM score, NIV requirement, suspected respiratory infection, and days of PICU treatment. Patients without MV showed an increased survival rate (P=0.001). In summary, the hypoxemic RF was the main cause of PICU admission, and HFNC or NIV should be investigated in larger clinical studies.

Title: Predictors of Intensive Care Unit Stay After Pediatric Supraglottoplasty.

Citation: JAMA otolaryngology-- head & neck surgery, Aug 2015, vol. 141, no. 8, p. 704-709 (August 1, 2015)

Author(s): Albergotti, William G, Sturm, Joshua J, Stapleton, Amanda S, Simons, Jeffrey P, Mehta, Deepak K, Chi, David H

Abstract: Supraglottoplasty is a common procedure performed without evidence-based postoperative management plans. Patients are routinely admitted to the intensive care unit (ICU) postoperatively, but this may not be necessary in all cases. To determine (1) whether routine admission to the ICU after supraglottoplasty is warranted in all patients who undergo this procedure and (2) which factors predict requirement for ICU-level care. Retrospective case series and analysis of immediate postoperative outcomes of all children aged 1 month to 18 years who underwent supraglottoplasty at 1 tertiary-care children's hospital from January 1, 2008, through January 31, 2014. Exclusion criteria included preoperative admission to the ICU, preoperative need for positive-pressure ventilation, history of major airway reconstruction, or any concomitant other major procedure. Supraglottoplasty. Need for ICU-level care as defined by need for intubation, positive-pressure ventilation, multiple doses of racemic epinephrine, or oxygen via nasal cannula at greater than 4 L/min within the first 24 hours. Of 223 patients identified, 25 (11.2%) met our criteria for ICU-level care. Nine patients required intubation. Twenty of the 25 patients met ICU criteria within 4 hours of surgery. Univariate analysis was performed on 38 risk factors. Risk factors for ICU requirement that remained statistically significant on multivariable analysis (P < .05) included surgical duration longer than 30 minutes (odds ratio [OR], 4.48 [95% CI, 1.51-13.19]; P = .007), nonwhite race (OR, 4.42 [95% CI, 1.54-12.66]; P = .006), and a preoperative diagnosis of gastroesophageal reflux disease (OR, 0.10 [95% CI, 0.09-0.36]; P < .001). Our study suggests that most children undergoing supraglottoplasty do not require ICU-level care postoperatively. Those who require ICU-level care are likely to be identified within the first 4 hours after surgery. Consideration for routine ICU admission should be given to those with longer surgical duration and those of nonwhite race.
Title: Early mobilization in the critical care unit: A review of adult and pediatric literature.

Citation: Journal of critical care, Aug 2015, vol. 30, no. 4, p. 664-672 (August 2015)

Author(s): Cameron, Saoirse, Ball, Ian, Cepinskas, Gediminas, Choong, Karen, Doherty, Timothy J, Ellis, Christopher G, Martin, Claudio M, Mele, Tina S, Sharpe, Michael, Shoemaker, J Kevin, Fraser, Douglas D

Abstract: Early mobilization of critically ill patients is beneficial, suggesting that it should be incorporated into daily clinical practice. Early passive, active, and combined progressive mobilizations can be safely initiated in intensive care units (ICUs). Adult patients receiving early mobilization have fewer ventilator-dependent days, shorter ICU and hospital stays, and better functional outcomes. Pediatric ICU data are limited, but recent studies also suggest that early mobilization is achievable without increasing patient risk. In this review, we provide a current and comprehensive appraisal of ICU mobilization techniques in both adult and pediatric critically ill patients. Contraindications and perceived barriers to early mobilization, including cost and health care provider views, are identified. Methods of overcoming barriers to early mobilization and enhancing sustainability of mobilization programs are discussed. Optimization of patient outcomes will require further studies on mobilization timing and intensity, particularly within specific ICU populations. Copyright © 2015 Elsevier Inc.

Title: Chronic Complications After Femoral Central Venous Catheter-related Thrombosis in Critically Ill Children.

Citation: Journal of pediatric hematology/oncology, Aug 2015, vol. 37, no. 6, p. 462-467 (August 2015)

Author(s): Sol, Jeanine J, Knoester, Hennie, de Neef, Marjorie, Smets, Anne M J B, Betlem, Aukje, van Ommen, C Heleen

Abstract: Prescription of thromboprophylaxis is not a common practice in pediatric intensive care units. Most thrombi are catheter-related and asymptomatic, without causing acute complications. However, chronic complications of these (a)symptomatic catheter-related thrombi, that is, postthrombotic syndrome (PTS) and residual thrombosis have not been studied. To investigate these complications, critically ill children of 1 tertiary center with percutaneous inserted femoral central venous catheters (FCVCs) were prospectively followed. Symptomatic FCVC-thrombosis occurred in 10 of the 134 children (7.5%; 95% confidence interval [CI], 2.4-9.5). Only FCVC-infection appeared to be independently associated (P=0.001) with FCVC-thrombosis. At follow-up 2 of the 5 survivors diagnosed with symptomatic thrombosis developed mild PTS; one of them had an occluded vein on ultrasonography. A survivor without PTS had a partial occluded vein at follow-up. Asymptomatic FCVC-thrombosis occurred in 3 of the 42 children (7.1%; 95% CI, 0.0-16.7) screened by ultrasonography within 72 hours after catheter removal. At follow-up, mild PTS was present in 6 of the 33 (18.2%; 95% CI, 6.1-30.3) screened children. Partial and total vein occlusion was present in 1 (3%) and 4 (12%) children, respectively. In conclusion, children on pediatric intensive care units are at risk for (a)symptomatic FCVC-thrombosis, especially children with FCVC-infection. Chronic complications of FCVC-thrombosis are common. Therefore, thromboprophylaxis guidelines are warranted in pediatric intensive care units to minimize morbidity as a result of FCVC-thrombosis.

Title: Acid and Weakly Acidic Gastroesophageal Reflux and Pepsin Isoforms (A and C) in Tracheal Secretions of Critically Ill Children.

Citation: CHEST, 01 August 2015, vol./is. 148/2(333-339), 00123692


Language: English

Abstract: BACKGROUND: Gastroesophageal reflux (GER) and pulmonary aspiration are frequent in patients in the ICU. The presence of pepsin in airways seems to be the link between them. However, pepsin isoforms A (gastric specific) and C (pneumocyte potentially derived) need to be distinguished. This study aimed to evaluate
GER patterns and to determine the presence of pepsin A and C in tracheal secretions of critically ill children receiving mechanical ventilation. METHODS: All patients underwent combined multichannel intraluminal impedance-pH (MII-pH) monitoring. Tracheal secretion samples were collected to determine the presence of pepsin. Pepsin A and C were evaluated by Western blot. MII-pH parameters analyzed were number of total GER episodes (NGER); acid, weakly acidic, and weakly alkaline GER episodes; and proximal and distal GER episodes. RESULTS: Thirty-four patients (median age, 4 months; range, 1-174 months) were included. MII-pH monitoring detected 2,172 GER episodes (77.0% were weakly acidic; 71.7% were proximal). The median NGER episodes per patient was 59.5 (25th-75th percentile, 20.3-85.3). Weakly acidic GER episodes per patient were significantly more frequent than acid GER episodes per patient (median [25th-75th percentile], 43.5 [20.3-68.3] vs 1.0 [0-13.8], respectively; P < .001). Only three patients had an altered acid reflux index (44.9%, 12.7%, and 13.6%) while not taking antacid drugs. Pepsin A was found in 100% of samples and pepsin C in 76.5%. CONCLUSIONS: The majority of GER episodes of children in the ICU were proximal and weakly acidic. All patients had aspiration of gastric contents as detected by pepsin A in tracheal fluid. A specific pepsin assay should be performed to establish gastropulmonary aspiration because pepsin C was found in > 70% of samples.
Electrographic status epilepticus and neurobehavioral outcomes in critically ill children.

Abstract: Electrographic seizures (ESs) and electrographic status epilepticus (ESE) are common in children with acute neurologic conditions in pediatric intensive care units (PICUs), and ESE is associated with worse functional and quality-of-life outcomes. As an exploratory study, we aimed to determine if ESE was associated with worse outcomes using more detailed neurobehavioral measures. Three hundred children with an acute neurologic condition and altered mental status underwent clinically indicated EEG monitoring and were enrolled in a prospective observational study. We obtained follow-up data from subjects who were neurodevelopmentally

Title: Electrographic status epilepticus and neurobehavioral outcomes in critically ill children.

Citation: Epilepsy & behavior : E&B, Aug 2015, vol. 49, p. 238-244 (August 2015)

Author(s): Abend, Nicholas S, Wagenman, Katherine L, Blake, Taylor P, Schultheis, Maria T, Radcliffe, Jerilynn, Berg, Robert A, Topjian, Alexis A, Dlugos, Dennis J

Electrographic status epilepticus and neurobehavioral outcomes in critically ill children.

Abstract: Electrographic seizu

Title: Limb ischaemia and below-knee amputation following life-saving patent ductus arteriosus stent in a critically ill infant.

Citation: Cardiology in the young, Aug 2015, vol. 25, no. 6, p. 1206-1209 (August 2015)

Author(s): Bharmanee, Apinya, Gowda, Srinath, Singh, Harinder R

Abstract: Limb ischaemia is a rare but catastrophic complication related to cardiac catheterisation. We report an infant weighing 3 kg with unrepaired tricuspid atresia type 1b, small patent ductus arteriosus, and ventricular septal defect presenting with cardiogenic shock owing to progressively reduced pulmonary blood flow from closing ventricular septal defect and patent ductus arteriosus. An emergency palliative ductal stent was successfully placed with marked clinical improvement. However, acute limb ischaemia developed necessitating above-knee amputation, despite medical management and vascular surgery. The cause of limb loss in our patient was catheterisation-related vascular injury causing arterial dissection-arterial thrombosis in the presence of shock and coagulopathy. This report emphasises the complexity in managing limb ischaemia associated with coagulopathy and highlights the importance of early recognition of reduced pulmonary flow in a single ventricle patient. Timely elective placement of a surgical systemic to pulmonary shunt would prevent catastrophic clinical presentation of compromised pulmonary flow and avoid the need for an emergent life-saving intervention and its associated complications.

Title: Limb ischaemia and below-knee amputation following life-saving patent ductus arteriosus stent in a critically ill infant.

Citation: Cardiology in the young, Aug 2015, vol. 25, no. 6, p. 1206-1209 (August 2015)

Author(s): Neunhoeffer, Felix, Kumpf, Matthias, Renk, Hanna, Hanelt, Malte, Berneck, Nicole, Bosk, Axel, Gerbig, Ines, Himberg, Ellen, Hofbeck, Michael

Abstract: While several analgesia and sedation guidelines and protocols have been developed and implemented for adults, there is still little evidence of clinical use of analgesia and sedation protocols and the impact on withdrawal symptoms in critically ill children. The aim of this study was to evaluate the effects of a nurse-driven goal-directed analgesia and sedation protocol for mechanically ventilated pediatric patients (pASP) on duration of mechanical ventilation, pediatric intensive care unit (PICU) length of stay, total doses of opioids and benzodiazepines, and occurrence of withdrawal symptoms. This is a before and after protocol implementation study in a 14-bed medical-surgical-cardiac pediatric intensive care unit at a university children's hospital. A total of 357 medical pediatric patients requiring mechanical ventilation with PICU length of stay for at least 24 h were included. Prior to implementation of the protocol, analgesia and sedation was managed by the attending physician's order. Afterwards, postimplementation, nurses managed analgesia and sedation following a pASP, including COMFORT 'behavioral' Scale, Nurse Interpretation Sedation Scale, and Sophia Observation Withdrawal Symptoms Scale. One hundred and sixty-five patients were included in the 15-month period before and 172 patients were included in the 15-month period after implementation of the pASP. Median duration of mechanical ventilation was 2.02 (0.96-25.0) days in the group preceding protocol implementation and 1.71 (0.96-66.0) days afterwards (P = 0.23). Median PICU length of stay was 5.8 (1-37.75) days in the preimplementation and 5.0 (1-120) days in the postimplementation group (P = 0.14). Total doses of opioids and benzodiazepines were 3.9 mg·kg(-1) ·day(-1) (0.1-70) vs 3.1 mg·kg(-1) ·day(-1) (0.05-56); P = 0.38 and 5.9 mg·kg(-1) ·day(-1) (0-82.0) vs 4.2 mg·kg(-1) ·day(-1) (0-66); P = 0.009 after implementation. Incidence of withdrawal was significantly lower over the postimplementation period (12.8% vs 23.6%; P = 0.005). Implementation of a nurse-driven pASP reduced the total dose of benzodiazepines and the occurrence of withdrawal symptoms significantly. © 2015 John Wiley & Sons Ltd.
normal prior to PICU admission. We evaluated for associations between ESE and adaptive behavior (Adaptive Behavior Assessment System-II, ABAS-II), behavioral and emotional problems (Child Behavior Checklist, CBCL), and executive function (Behavior Rating Inventory of Executive Function, BRIEF) using linear regression analyses. A p-value of <0.05 was considered significant. One hundred thirty-seven of 300 subjects were neurodevelopmentally normal prior to PICU admission. We obtained follow-up data from 36 subjects for the CBCL, 32 subjects for the ABAS-II, and 20 subjects for the BRIEF. The median duration from admission to follow-up was 2.6 years (IQR: 1.2–3.8). There were no differences in the acute care variables (age, sex, mental status category, intubation status, paralysis status, acute neurologic diagnosis category, seizure category, EEG background category, or short-term outcome) between subjects with and without follow-up data for any of the outcome measures. On univariate analysis, significant differences were not identified for CBCL total problem (ES coefficient: -4.1, p=0.48; ESE coefficient: 8.9, p=0.13) or BRIEF global executive function (ES coefficient: 2.1, p=0.78; ESE coefficient: 14.1, p=0.06) scores, although there were trends toward worse scores in subjects with ESE. On univariate analysis, ESs were not associated with worse scores (coefficient: -21.5, p=0.051), while ESE (coefficient: -29.7, p=0.013) was associated with worse ABAS-II adaptive behavioral global composite scores. On multivariate analysis, when compared to subjects with no seizures, both ESs (coefficient: -28, p=0.014) and ESE (coefficient: -36, p=0.003) were associated with worse adaptive behavioral global composite scores. Among previously neurodevelopmentally normal children with acute neurologic disorders, ESs and ESE were associated with worse adaptive behavior and trends toward worse behavioral-emotional and executive function problems. This was a small exploratory study, and the impact of ESs and ESE on these neurobehavioral measures may be clarified by subsequent larger studies. This article is part of a Special Issue entitled "Status Epilepticus". Copyright © 2015 Elsevier Inc. All rights reserved.

**Title:** Do β-Blockers Decrease the Hypermetabolic State in Critically Ill Children With Severe Burns?

**Citation:** Hospital pediatrics, Aug 2015, vol. 5, no. 8, p. 446–451, 2154-1663 (August 2015)

**Author(s):** Shan Chew, Elaine Chu, Baier, Nicole, Lee, Jan Hau

**Abstract:** Severe burns result in a hypermetabolic state that is associated with increased morbidity and mortality. We reviewed the literature to determine if there is strong evidence that short-term β-blockers reduce the hypermetabolic state or mortality and length of stay (LOS) compared with no therapy in patients with severe burns. A literature search of PubMed, Embase, the Cochrane Database of Systematic Reviews, and BestBETs was conducted on the use of adrenergic β-antagonists in burn patients. Six randomized controlled trials met the inclusion criteria. Five pediatric trials found that β-blockers reduced the hypermetabolic state (as defined by reduction of cardiac work, rate pressure product, resting energy expenditure, central deposition of fat, and bone mineral loss) and were associated with an improvement in lean muscle mass in patients with severe burns. However, there was no change in LOS or mortality in these children. One adult study in burn patients found shorter LOS in patients treated with β-blockers but no difference in mortality rate. β-blockers were relatively well tolerated, with no differences in adverse effects reported. β-blockers seem to reduce the hypermetabolic state in pediatric patients with burns, but there is insufficient evidence to suggest they have an impact on mortality rates or LOS. Copyright © 2015 by the American Academy of Pediatrics.

**Full Text:** Available from *Highwire Press* in *Hospital Pediatrics*

**Title:** Incorporating Morbidity Into PICU Quality Measures: A "TOPICC" of Critical Importance.

**Citation:** Critical care medicine, Aug 2015, vol. 43, no. 8, p. 1781-1782 (August 2015)

**Author(s):** Dervan, Leslie A, Watson, R Scott

**Full Text:** Available from *Ovid* in *Critical Care Medicine*

**Title:** The Critically Ill Infant with Congenital Heart Disease.

**Citation:** Emergency medicine clinics of North America, Aug 2015, vol. 33, no. 3, p. 501-518 (August 2015)
**Author(s):** Strobel, Ashley M, Lu, Le N

**Abstract:** This article presents an approach for identification of infants with congenital heart disorders. These disorders are difficult to diagnose because of the complexity and variety of cardiac malformations; additionally presentation can be complicated by age-dependent physiology. By compiling data from the history and the physical examination, the emergency physician can identify lesion category and initiate stabilization procedures. Critical congenital cardiac lesions can be classified as left-sided obstructive ductal dependent, right-sided obstructive ductal dependent, and shunting or mixing. The simplified approach categorizes infants with these lesions respectively as "pink," "blue," or "gray." The emergency provider can provide life-saving stabilization until specialized care can be obtained. Copyright © 2015 Elsevier Inc. All rights reserved.

**Title:** 1,25-Dihydroxyvitamin D Levels in Pediatric Intensive Care Units: Risk Factors and Association With Clinical Course.

**Citation:** The Journal of clinical endocrinology and metabolism, Aug 2015, vol. 100, no. 8, p. 2942-2945 (August 2015)

**Author(s):** McNally, J Dayre, Menon, Kusum, Lawson, Margaret L, Williams, Kathryn, Doherty, Dermot R

**Abstract:** Multiple adult and some pediatric critical care studies have suggested that poor vitamin D status is associated with illness severity and outcome. The majority have evaluated vitamin D status through serum 25-hydroxyvitamin D [25(OH)D]. Critical illness-related organ dysfunction may result in impaired conversion of 25(OH)D to the active hormone 1,25-dihydroxyvitamin D [1,25(OH)2D]. Consequently 1,25(OH)2D levels could be an independent additive prognostic marker in the intensive care unit. The distribution of 1,25(OH)2D levels, prevalence of low levels, investigation of risk factors, and tests for associations with markers of illness severity and outcome are reported. This was a secondary analysis of data and samples collected as part of a prospective cohort study in six Canadian pediatric intensive care units (PICUs). Admission blood 1,25(OH)2D concentrations were measured. The median cohort 1,25(OH)2D level was 93.3 pmol/L (interquartile range, 53.0-121.9) with 13% (95% confidence interval, 9-17) and 21% (95% confidence interval, 17-27) of patients having levels of <40 and <50 pmol/L, respectively. Low 1,25(OH)2D levels occurred more often in patients with low 25(OH)D and hepatic, renal, and parathyroid organ dysfunction. After adjustment for 25(OH)D, low 1,25(OH)2D levels were not associated with catecholamine or fluid administration, ventilation, PICU length of stay, or mortality. Critically ill children are at risk for low 1,25(OH)2D levels, particularly in the presence of established risk factors. However, the lack of association between the 1,25(OH)2D level and selected outcome measures, after controlling for 25(OH)D, does not suggest value in measuring this metabolite at the time of PICU admission.

**Title:** In-line Filtration Decreases Systemic Inflammatory Response Syndrome, Renal and Hematologic Dysfunction in Pediatric Cardiac Intensive Care Patients.

**Citation:** Pediatric cardiology, Aug 2015, vol. 36, no. 6, p. 1270-1278 (August 2015)

**Author(s):** Sasse, Michael, Dziuba, Friederike, Jack, Thomas, Köditz, Harald, Kaussen, Torsten, Bertram, Harald, Beerbaum, Philipp, Boehne, Martin

**Abstract:** Cardiac surgery with cardiopulmonary bypass (CPB) frequently leads to systemic inflammatory response syndrome (SIRS) with concomitant organ malfunction. Infused particles may exacerbate inflammatory syndromes since they activate the coagulation cascade and alter inflammatory response or microvascular perfusion. In a randomized, controlled, prospective trial, we have previously shown that particle-retentive in-line filtration prevented major complications in critically ill children. Now, we investigated the effect of in-line filtration on major complications in the subgroup of cardiac patients. Children admitted to tertiary pediatric intensive care unit were randomized to either control or filter group obtaining in-line filtration throughout complete infusion therapy. Risk differences and 95 % confidence intervals (CI) of several complications such as SIRS, sepsis, mortality, various organ failure and dysfunction were compared between both groups using the Wald method. 305 children (n = 150 control, n = 155 filter group) with cardiac diseases were finally analyzed. The majority was admitted after cardiac surgery with CPB. Risk of SIRS (-11.3 %; 95 % CI -21.8 to -0.5 %), renal (-10.0 %; 95 % CI -17.0 to -3.0 %) and hematologic (-8.1 %; 95 % CI -14.2 to -0.2 %) dysfunction were significantly decreased within the filter group. No risk differences were demonstrated for occurrence of sepsis,
any other organ failure or dysfunctions between both groups. Infused particles might aggravate a systemic hypercoagulability and inflammation with subsequent organ malfunction in pediatric cardiac intensive care patients. Particle-retentive in-line filtration might be effective in preventing SIRS and maintaining renal and hematologic function. In-line filtration offers a novel therapeutic option to decrease morbidity in cardiac intensive care.

Title: Treatment of Ventilator-Associated Pneumonia Using Intravenous Colistin Alone or in Combination with Inhaled Colistin in Critically Ill Children.

Citation: Paediatric drugs, Aug 2015, vol. 17, no. 4, p. 323-330 (August 2015)

Author(s): Polat, Meltem, Kara, Soner Sertan, Tapsız, Anıl, Tezer, Hasan, Kalkan, Gökhan, Dolgun, Anıl

Abstract: The objective of this study was to compare the safety and efficacy of inhaled plus intravenous (IV) colistin with that of IV colistin alone in critically ill children with ventilator-associated pneumonia (VAP) due to colistin-only susceptible (COS) Gram-negative bacteria (GNB). This retrospective cohort study included critically ill children aged 1 month to 18 years with culture-documented monomicrobial VAP due to COS GNB. Fifty patients were included, and 32 patients received IV colistin alone, whereas 18 patients received inhaled plus IV colistin. No between-cohort differences were observed in clinical (p = 0.49) and microbiological outcomes (p = 0.68), or VAP-related mortality (p = 0.99). Although the bacterial eradication rates did not differ in either treatment group, the median time to bacterial eradication (TBE) was significantly shorter in the inhaled plus IV colistin group than in the IV colistin group. The additional use of inhaled colistin was the only independent factor associated with TBE, and it shortened the median TBE by 3 days. Only one patient in the IV colistin group developed reversible nephrotoxicity. Mild bronchoconstriction was observed in three patients at the time of administration of the first doses of inhaled colistin, which did not require discontinuation of treatment. The present study has demonstrated that the addition of inhaled colistin to IV colistin led to a shorter TBE in critically ill children with VAP due to COS GNB. However, it did not lead to a significant difference in the clinical and microbiological outcomes of VAP.
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