

PICU

Current Awareness Newsletter

January 2017

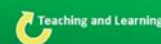


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Training Calendar 2017

All sessions are 1 hour

January (1pm - 2pm)

Tues 10th	Literature Searching
Weds 18th	Critical Appraisal
Thurs 26th	Interpreting Statistics

February (12pm - 1pm)

Fri 3rd	Literature searching
Mon 6th	Critical Appraisal
Tues 14th	Interpreting Statistics
Weds 22nd	Literature Searching

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[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

[Acta Paediatric](#)

January 2017, Volume 106, Issue 1

[Introducing High-flow nasal cannula to the neonatal transport environment](#)

[Critical Care Medicine](#)

January 2017 , Volume 45, Issue 1

[Accuracy of an Extubation Readiness Test in Predicting Successful Extubation in Children With Acute Respiratory Failure From Lower Respiratory Tract Disease*](#)

[Guidelines for Family-Centered Care in the Neonatal, Pediatric, and Adult ICU](#)

[Patient, Process, and System Predictors of Iatrogenic Withdrawal Syndrome in Critically Ill Children*](#)

[Knowing Risk Factors for Iatrogenic Withdrawal Syndrome in Children May Still Leave Us Empty-Handed*](#)

[Pediatrics](#)

January 2017, Volume 139, Issue 1

[Families' Priorities Regarding Hospital-to-Home Transitions for Children With Medical Complexity](#)

[Development of a Pediatric Adverse Events Terminology](#)

[A Population Intervention to Improve Outcomes in Children With Medical Complexity](#)

[Pediatric Anesthesia](#)

January 2017, Early View (Online Version)

[Kaolin-activated thromboelastography and standard coagulation assays in cyanotic and acyanotic infants undergoing complex cardiac surgery: a prospective cohort study](#)

[PCCM](#)

December 2016 - Volume 17 - Issue 12

[Dexmedetomidine Use in Critically Ill Children With Acute Respiratory Failure*](#)

Grant, Mary Jo C.; Schneider, James B.; Asaro, Lisa A.; More

Current Awareness Database Articles

1. Sources of Circuit Thrombosis in Pediatric Extracorporeal Membrane Oxygenation.

Author(s): Hastings, Susan M; Ku, David N; Wagoner, Scott; Maher, Kevin O; Deshpande, Shriprasad

Source: ASAIO journal (American Society for Artificial Internal Organs : 1992); ; vol. 63 (no. 1); p. 86-92

Publication Type(s): Journal Article

Abstract: Extracorporeal membrane oxygenation (ECMO) for cardiopulmonary support of critically ill patients is used frequently in the pediatric population. ECMO is burdened by complications, including thrombosis and hemorrhage. Here we demonstrate the focused location of clots, their histologic composition, and the relationship of in situ thrombus to local hemodynamics in ECMO circuits. Pediatric ECMO circuits from Children's Healthcare of Atlanta, Emory University (Atlanta, GA) were obtained after removal from extracorporeal support over a 2.5 year period (n = 50). All clots and material deposited within the circuit were recorded. Location of clot was compared with local hemodynamics. Most clots were adherent to the junctions made by the tubing and connectors, as opposed to being randomly disturbed throughout the circuit tubing (p << 0.05). Loose, nonadherent clots were also found at the entry side of oxygenators. The clots collocated directly with zones of low shear rate. Histology revealed a fibrinous composition, consistent with coagulation potentiated by low shear. Centrifugal pump circuits (n = 16) had more clots than roller pump (n = 34) circuits (p << 0.05). In addition, all centrifugal pumps had clots that formed at the top of the pump shaft. The ECMO circuits from our single-center study demonstrate the concentrated location of fibrin clots at low shear zones created by tubing-connector junctions. Type of pump also influences the frequency of clot formation. Since the mechanism of the majority of ECMO circuit thrombosis is low shear and fibrin driven, optimization of hemodynamics and anticoagulation regimen may reduce clot formation and bleeding.

Database: Medline

2. Parents' experience of a follow-up meeting after a child's death in the Paediatric Intensive Care Unit.

Author(s): Brink, Helle L; Thomsen, Anja K; Laerkner, Eva

Source: Intensive & critical care nursing; Feb 2017; vol. 38 ; p. 31-39

Abstract: To identify parents' experience of a follow up meeting and to explore whether the conversation was adequate to meet the needs of parents for a follow-up after their child's death in the Paediatric Intensive Care Unit (PICU). Qualitative method utilising semi-structured interviews with six pairs of parents 2-12 weeks after the follow-up conversation. The interviews were held in the parents' homes at their request. Data were analysed using a qualitative, descriptive approach and thematic analysis. Four main themes emerged: (i) the way back to the PICU; (ii) framework; (iii) relations and (iv) closure. The parents expressed nervousness before the meeting, but were all pleased to have participated in these follow-up meetings. The parents found it meaningful that the follow-up meeting was interdisciplinary, since the parents could have answers to their questions both about treatment and care. It was important that the staff involved in the follow-up meeting were those who had been present through the hospitalisation and at the time of the child's death. Parents experienced the follow-up meeting as being a closure of the course in the PICU, regardless the length of the hospitalisation. Copyright © 2016 Elsevier Ltd. All rights reserved.

Database: Medline

4. Laryngeal ultrasound and vocal fold movement in the pediatric cardiovascular intensive care unit.

Author(s): Ongkasuwan, Julina; Ocampo, Elena; Tran, Brandon

Source: The Laryngoscope; Jan 2017; vol. 127 (no. 1); p. 167-172

Abstract: Vocal fold motion impairment (VFMI) is a known sequela of cardiovascular surgery. The gold standard for the evaluation of vocal fold movement is flexible nasolaryngoscopy (FNL). Although safe, FNL does cause measurable physiologic changes. Noxious stimuli in cardiovascular intensive care unit (CVICU) neonates may cause imbalance between the pulmonary and systemic circulations and potentially circulatory collapse. The goals of this project were to determine the accuracy of laryngeal ultrasound (LUS) compared to FNL to identify VFMI in CVICU neonates and compare their physiologic impact. Case control. Prospective case-control study. Forty-six consecutive infants from the CVICU were recruited, 23 with VFMI and 23 without based on FNL findings. They then underwent LUS, which was subsequently reviewed by two pediatric radiologists blinded to the FNL results. Physiologic parameters were recorded before and after the procedures. Data analysis was performed with Cohen's kappa and Wilcoxon signed-rank test. Agreement between LUS and FNL was substantial ($\kappa = 0.78$). Laryngeal ultrasound had a sensitivity of 0.84 and specificity of 0.95 for identifying VFMI. In terms of physiologic impact, LUS caused statistically significantly less change in diastolic blood pressure ($P = 0.01$), pulse ($P = 0.001$), and O₂ saturation ($P = 0.004$) compared to FNL. Arytenoid rotation could be seen clearly, and the vocal fold-arytenoid angle in abduction was most predictive of symmetry and movement ($P = 0.17$). However, it was difficult to determine vocal fold closure patterns with LUS. Laryngeal ultrasound is comparable to FNL for evaluating vocal fold mobility with less physiologic impact. 3b. Laryngoscope, 127:167-172, 2017. © 2016 The American Laryngological, Rhinological and Otological Society, Inc.

Database: Medline

5. Clinical Pharmacology Studies in Critically Ill Children.

Author(s): Thakkar, Nilay; Salerno, Sara; Hornik, Christoph P; Gonzalez, Daniel

Source: Pharmaceutical research; Jan 2017; vol. 34 (no. 1); p. 7-24

Abstract: Developmental and physiological changes in children contribute to variation in drug disposition with age. Additionally, critically ill children suffer from various life-threatening conditions that can lead to pathophysiological alterations that further affect pharmacokinetics (PK). Some factors that can alter PK in this patient population include variability in tissue distribution caused by protein binding changes and fluid shifts, altered drug elimination due to organ dysfunction, and use of medical interventions that can affect drug disposition (e.g., extracorporeal membrane oxygenation and continuous renal replacement therapy). Performing clinical studies in critically ill children is challenging because there is large inter-subject variability in the severity and time course of organ dysfunction; some critical illnesses are rare, which can affect subject enrollment; and critically ill children usually have multiple organ failure, necessitating careful selection of a study design. As a result, drug dosing in critically ill children is often based on extrapolations from adults or non-critically ill children. Dedicated clinical studies in critically ill children are urgently needed to identify optimal dosing of drugs in this vulnerable population. This review will summarize the effect of critical illness on pediatric PK, the challenges associated with performing studies in this vulnerable subpopulation, and the clinical PK studies performed to date for commonly used drugs.

Database: Medline

7. New parameters for childhood ventilator associated pneumonia diagnosis.

Author(s): İsgüder, Rana; Ceylan, Gökhan; Ağin, Hasan; Gülfidan, Gamze; Ayhan, Yüce; Devrim, İlker

Source: Pediatric pulmonology; Jan 2017; vol. 52 (no. 1); p. 119-128

Abstract:Our aim is to determine whether the presence of soluble triggering receptor expressed on myeloid cells-1 (s-TREM-1) of bronchoalveolar lavage fluid (BALF), serum procalcitonin levels (PCT), and Clinical Pulmonary Infection Score (CPIS) have diagnostic value in children with VAP. All children followed in pediatric intensive care unit (PICU) who were mechanically ventilated at least for 48 hr between January 2014 and December 2015 were enrolled into our study. BALF sample was obtained via non-bronchoscopic method from the children with VAP suspicion (case group) and s-TREM-1 levels were measured. Furthermore we calculated CPIS and measured serum PCT levels. Same procedures were applied to the control group who were admitted to PICU without infectious problems and who were not under antimicrobial therapy. First we compared the case group with the control group and then we compared the quantitative culture confirmed and non-confirmed VAP cases among themselves. Case group (n:58) had significant higher PCT and s-TREM-1 levels compared to control group (n:58). The VAP confirmed cases had higher s-TREM-1, PCT ve CPIS levels compared to non-confirmed VAP cases. s-TREM-1, PCT ve CPIS variables were found to be independent risk factors for VAP. The cutoff values for s-TREM-1, CPIS, and PCT, are 281 pg/ml, 6, and 1.9 ng/ml, respectively. The patients whose s-TREM-1, CPIS, and PCT values above the cutoff levels were found to have higher cumulative VAP rate. s-TREM-1 of BALF, serum PCT levels, and CPIS are useful predictors for ventilator-associated pneumonia diagnosis in children. *Pediatr Pulmonol.* 2017;52:119-128. © 2016 Wiley Periodicals, Inc. © 2016 Wiley Periodicals, Inc.

Database: Medline

9. Patient, Process, and System Predictors of Iatrogenic Withdrawal Syndrome in Critically Ill Children.

Author(s): Best, Kaitlin M; Wypij, David; Asaro, Lisa A; Curley, Martha A Q; Randomized Evaluation of Sedation Titration For Respiratory Failure Study Investigators

Source: Critical care medicine; Jan 2017; vol. 45 (no. 1); p. e7

Available in full text at [Critical Care Medicine](#) - from Ovid

Abstract:To generate a multidimensional predictive model of risk factors for iatrogenic withdrawal syndrome in critically ill children. Secondary analysis of prospective data from the Randomized Evaluation of Sedation Titration for Respiratory Failure clinical trial. PICU. Children who received greater than or equal to 5 days of sedation during mechanical ventilation for acute respiratory failure. The Randomized Evaluation of Sedation Titration for Respiratory Failure study tested the effect of a nurse-led, goal-directed sedation protocol on clinical outcomes. There was no additional intervention in this secondary analysis. Data included 1,157 children from 31 PICUs. Iatrogenic withdrawal syndrome was defined as having at least two Withdrawal Assessment Tool-Version 1 scores greater than or equal to 3 after the start of opioid weaning. Logistic regression with generalized estimating equations to account for clustering by site was used to evaluate patient, process, and healthcare system risk factors for iatrogenic withdrawal syndrome. Subjects with iatrogenic withdrawal syndrome (544/1,157; 47%) were younger and more likely to have preexisting cognitive or functional impairment. They also received higher sedative doses and longer exposure periods. In multivariable analyses, significant predictors of iatrogenic withdrawal syndrome included younger age, preexisting cognitive impairment, higher preweaning mean daily opioid dose, longer duration of sedation, receipt of three or more preweaning sedative classes, higher nursing workload, and more one-to-one nurse staffing. Iatrogenic withdrawal syndrome is common in children

recovering from critical illness, and several risk factors are predictive, including patient characteristics, sedative exposure, additional sedative agents, and system-level factors. High-risk patients could be identified before weaning to better prevent iatrogenic withdrawal syndrome among at-risk patients.

Database: Medline

10. Guidelines for Family-Centered Care in the Neonatal, Pediatric, and Adult ICU.

Author(s): Davidson, Judy E; Aslakson, Rebecca A; Long, Ann C; Puntillo, Kathleen A; Kross, Erin K; Hart, Joanna; Cox, Christopher E; Wunsch, Hannah; Wickline, Mary A; Nunnally, Mark E; Netzer, Giora; Kentish-Barnes, Nancy; Sprung, Charles L; Hartog, Christiane S; Coombs, Maureen; Gerritsen, Rik T; Hopkins, Ramona O; Franck, Linda S; Skrobik, Yoanna; Kon, Alexander A; Scruth, Elizabeth A; Harvey, Maureen A; Lewis-Newby, Mithya; White, Douglas B; Swoboda, Sandra M; Cooke, Colin R; Levy, Mitchell M; Azoulay, Elie; Curtis, J Randall

Source: Critical care medicine; Jan 2017; vol. 45 (no. 1); p. 103-128

Available in full text at [Critical Care Medicine](#) - from Ovid

Abstract: To provide clinicians with evidence-based strategies to optimize the support of the family of critically ill patients in the ICU. We used the Council of Medical Specialty Societies principles for the development of clinical guidelines as the framework for guideline development. We assembled an international multidisciplinary team of 29 members with expertise in guideline development, evidence analysis, and family-centered care to revise the 2007 Clinical Practice Guidelines for support of the family in the patient-centered ICU. We conducted a scoping review of qualitative research that explored family-centered care in the ICU. Thematic analyses were conducted to support Population, Intervention, Comparison, Outcome question development. Patients and families validated the importance of interventions and outcomes. We then conducted a systematic review using the Grading of Recommendations, Assessment, Development and Evaluations methodology to make recommendations for practice. Recommendations were subjected to electronic voting with pre-established voting thresholds. No industry funding was associated with the guideline development. The scoping review yielded 683 qualitative studies; 228 were used for thematic analysis and Population, Intervention, Comparison, Outcome question development. The systematic review search yielded 4,158 reports after deduplication and 76 additional studies were added from alerts and hand searches; 238 studies met inclusion criteria. We made 23 recommendations from moderate, low, and very low level of evidence on the topics of: communication with family members, family presence, family support, consultations and ICU team members, and operational and environmental issues. We provide recommendations for future research and work-tools to support translation of the recommendations into practice. These guidelines identify the evidence base for best practices for family-centered care in the ICU. All recommendations were weak, highlighting the relative nascency of this field of research and the importance of future research to identify the most effective interventions to improve this important aspect of ICU care.

Database: Medline

11. The effect of inhaled nitric oxide in acute respiratory distress syndrome in children and adults: a Cochrane Systematic Review with trial sequential analysis.

Author(s): Karam, O; Gebistorf, F; Wetterslev, J; Afshari, A

Source: Anaesthesia; Jan 2017; vol. 72 (no. 1); p. 106-117

Abstract: Acute respiratory distress syndrome is associated with high mortality and morbidity. Inhaled nitric oxide has been used to improve oxygenation but its role remains controversial. Our primary objective in this systematic review was to examine the effects of inhaled nitric oxide administration on mortality in adults and children with acute respiratory distress syndrome. We included all randomised, controlled trials, irrespective of date of publication, blinding status, outcomes reported or language. Our primary outcome measure was all-cause mortality. We performed several subgroup and sensitivity analyses to assess the effect of inhaled nitric oxide. There was no statistically significant effect of inhaled nitric oxide on longest follow-up mortality (inhaled nitric oxide group 250/654 deaths (38.2%) vs. control group 221/589 deaths (37.5%; relative risk (95% CI) 1.04 (0.9-1.19)). We found a significant improvement in PaO₂ /FI O₂ ratio at 24 h (mean difference (95% CI) 15.91 (8.25-23.56)), but not at 48 h or 72 h, while four trials indicated improved oxygenation in the inhaled nitric oxide group at 96 h (mean difference (95% CI) 14.51 (3.64-25.38)). There were no statistically significant differences in ventilator-free days, duration of mechanical ventilation, resolution of multi-organ failure, quality of life, length of stay in intensive care unit or hospital, cost-benefit analysis and methaemoglobin and nitrogen dioxide levels. There was an increased risk of renal impairment (risk ratio (95% CI) 1.59 (1.17-2.16)) with inhaled nitric oxide. In conclusion, there is insufficient evidence to support inhaled nitric oxide in any category of critically ill patients with acute respiratory distress syndrome despite a transient improvement in oxygenation, since mortality is not reduced and it may induce renal impairment. © 2016 The Association of Anaesthetists of Great Britain and Ireland.

Database: Medline

Latest Evidence

NICE National Institute for
Health and Care Excellence

[Paediatric intensive care surge, standard operating procedure](#)

Source: [NHS England](#) - 22 December 2016 - Publisher: NHS England

This document provides a framework for the Paediatric Intensive Care (PIC) community response to manage escalating and unplanned peaks in demand for critical care beds.



No new evidence to report

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Other – Behind the Headlines, Guidance

No new evidence to report

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