University Hospitals Bristol NHS
NHS Foundation Trust

PICU

Evidence Update

July 2017

Respecting everyone
Embracing change
Recognising success
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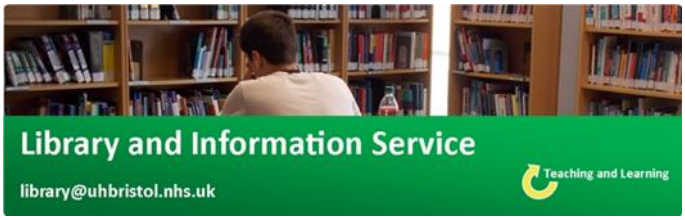

Training Calendar 2017

July (13.00-14.00)

3rd (Mon) Interpreting Statistics
12th (Wed) Critical Appraisal
21st (Fri) Literature Searching
26th (Wed) Interpreting Statistics

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 one-to-one session where we can guide you through the process of creating a well-focused literature research. Please email requests to library@uhbristol.nhs.uk

Journal Tables of Contents

The most recent issues of key journals. Click on the hyperlinked titles (+ Ctrl) to for contents tables. If you would like any of the papers in full text then get in touch: library@uhbristol.nhs.uk

Critical Care Medicine (July 2017, Volume 45, Issue 7)

Resuscitation With Balanced Fluids Is Associated With Improved Survival in Pediatric Severe Sepsis*

Emrath, Elizabeth T.; Fortenberry, James D.; Travers, Curtis; McCracken, Courtney E.; Hebbar, Kiran B.

Influence of Gender on the Performance of Cardiopulmonary Rescue Teams: A Randomized, Prospective Simulator Study

Amacher, Simon Adrian; Schumacher, Cleo; Legeret, Corinne; Tschan, Franziska; Semmer, Norbert Karl; Marsch, Stephan; Hunziker, Sabina

Ultrasound as a Screening Tool for Central Venous Catheter Positioning and Exclusion of Pneumothorax*

Amir, Rabia; Knio, Ziyad O.; Mahmood, Feroze; Oren-Grinberg, Achikam; Leibowitz, Akiva; Bose, Ruma; Shaefi, Shahzad; Mitchell, John D.; Ahmed, Muneeb; Bardia, Amit; Talmor, Daniel; Matyal, Robina

Disassociating Lung Mechanics and Oxygenation in Pediatric Acute Respiratory Distress Syndrome*

Yehya, Nadir; Thomas, Neal J.

Can the Treatment Approach of Sepsis With Balanced Crystalloid Fluids Translate Into Therapy for Acute Respiratory Distress Syndrome if Considered as "Lung-Limited Sepsis"?*

Marraro, Giuseppe A.; Genovese, Umberto; Spada, Claudio; Piga, Maria Antonella

Using Clinically Accessible Tools to Measure Sound Levels and Sleep Disruption in the ICU: A Prospective Multicenter Observational Study

Litton, Edward; Elliott, Rosalind; Thompson, Kelly; Watts, Nicola; Seppelt, Ian; Webb, Steven A. R.; on behalf of The ANZICS Clinical Trials Group and The George Institute for Global Health

American College of Critical Care Medicine Clinical Practice Parameters for Hemodynamic Support of Pediatric and Neonatal Septic Shock

Exosomes in Critical Illness

Terrasini, Nora; Lionetti, Vincenzo

Outcomes for Children Receiving Noninvasive Ventilation as the First-Line Mode of Mechanical Ventilation at Intensive Care Admission: A Propensity Score-Matched Cohort Study*

Morris, Jenny V.; Ramnarayan, Padmanabhan; Parslow, Roger C.; Fleming, Sarah J.

Noninvasive Ventilation in the PICU: One Step Closer*

Emeriaud, Guillaume; Essouri, Sandrine; Tucci, Marisa

European Journal of Pediatrics (June 2017, Volume 176, Issue 6)

A comparison of McGrath MAC® and standard direct laryngoscopy in simulated immobilized cervical spine pediatric intubation: a manikin study

Marcin Madziala, Jacek Smereka, Marek Dabrowski, Steve Leung, Kurt Ruetzler & Lukasz Szarpak

Breathing circuit compliance and accuracy of displayed tidal volume during pressure-controlled ventilation of infants: A quality improvement project

Todd A. Glenski, Carrie Diehl, Rachel G. Clopton and Robert H. Friesen
Version of Record online: 15 MAY 2017 | DOI: 10.1111/pan.13164

Current Awareness Database Articles

Below is a selection of articles recently added to the healthcare databases. If you would like any of the following articles in full text, or if you would like a more focused search on your own topic, then get in touch: library@uhbristol.nhs.uk

1. Diagnostic Values and Limitations of (1,3)-β-D-Glucans and Galactomannan Assays for Invasive Fungal Infection in Patients Admitted to Pediatric Intensive Care Unit.

Author(s): Zheng, Fang; Zha, Hui; Yang, Dandan; Deng, Jun; Zhang, Zhiquan

Source: Mycopathologia; Apr 2017; vol. 182 (no. 3-4); p. 331-338

Publication Date: Apr 2017

Publication Type(s): Comparative Study Journal Article Evaluation Studies

Abstract: The relationship among (1,3)-β-D-glucans (BG), galactomannan (GM), and the risk of developing invasive fungal infections (IFI) has been observed in adult ICU and in children with hematological malignancies. Only scant data evaluated the value of BG/GM assays for diagnosis of IFI in patients with nonhematological diseases in pediatric intensive care unit (PICU). In this study, we assessed the diagnostic value of these markers for IFI in PICU. The records of 230

patients were retrospectively evaluated. Out of 117 patients (7 proven, 23 probable, and 87 cases without evidence of IFI) performed GM and BG assays. The results showed many factors were associated with false-positive test results. Patients who aged over 3 years had higher levels of GM and BG than younger infants. The levels of BG were higher in subjects with dairy, human blood products, antibiotics, and corticosteroids therapy than in cases without these treatments. Unlike BG assay, GM assay was less susceptible to above-mentioned factors expect blood products. The levels of BG and GM in IFI cases were dramatically higher than in controls. The diagnostic performance of these assays showed that GM assay had better results when compared with BG assay. On the whole, negative predictive value in both GM and BG assays was dramatically higher than other diagnostic parameters. In conclusion, BG assay was highly susceptible to many factors, and GM assay could be useful for diagnosis of IFI for its high sensitivity, but the over benefit of this assay limited in its inadequate specificity. The comparative advantage of BG and BG assays lied in excluding IFI in non-hematological PICU patients.

5. Development and validation of a mortality risk model for pediatric sepsis.

Author(s): Chen, Mengshi; Lu, Xiulan; Hu, Li; Liu, Pingping; Zhao, Wenjiao; Yan, Haipeng; Tang, Liang; Zhu, Yimin; Xiao, Zhenghui; Chen, Lizhang; Tan, Hongzhuan

Source: Medicine; May 2017; vol. 96 (no. 20); p. e6923

Publication Date: May 2017

Publication Type(s): Journal Article Observational Study Validation Studies

PubMedID: 28514310

Abstract: Pediatric sepsis is a burdensome public health problem. Assessing the mortality risk of pediatric sepsis patients, offering effective treatment guidance, and improving prognosis to reduce mortality rates, are crucial.We extracted data derived from electronic medical records of pediatric sepsis patients that were collected during the first 24 hours after admission to the pediatric intensive care unit (PICU) of the Hunan Children's hospital from January 2012 to June 2014. A total of 788 children were randomly divided into a training (592, 75%) and validation group (196, 25%). The risk factors for mortality among these patients were identified by conducting multivariate logistic regression in the training group. Based on the established logistic regression equation, the logit probabilities for all patients (in both groups) were calculated to verify the model's internal and external validities.According to the training group, 6 variables (brain natriuretic peptide, albumin, total bilirubin, D-dimer, lactate levels, and mechanical ventilation in 24 hours) were included in the final logistic regression model. The areas under the curves of the model were 0.854 (0.826, 0.881) and 0.844 (0.816, 0.873) in the training and validation groups, respectively.The Mortality Risk Model for Pediatric Sepsis we established in this study showed acceptable accuracy to predict the mortality risk in pediatric sepsis patients.

9. Delirium and Mortality in Critically Ill Children: Epidemiology and Outcomes of Pediatric Delirium.

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

Source: Critical care medicine; May 2017; vol. 45 (no. 5); p. 891-898

Publication Date: May 2017

Publication Type(s): Journal Article

PubMedID: 28288026

Abstract:OBJECTIVESDelirium occurs frequently in adults and is an independent predictor of mortality. However, the epidemiology and outcomes of pediatric delirium are not well-characterized. The primary objectives of this study were to describe the frequency of delirium in critically ill children, its duration, associated risk factors, and effect on in-hospital outcomes, including mortality. Secondary objectives included determination of delirium subtype, and effect of delirium on duration of mechanical ventilation, and length of hospital stay.DESIGNProspective, longitudinal cohort study.SETTINGUrban academic tertiary care PICU.PATIENTSAll consecutive admissions from September 2014 through August 2015.INTERVENTIONSChildren were screened for delirium twice daily throughout their ICU stay.MEASUREMENTS AND MAIN RESULTSOf 1,547 consecutive patients, delirium was diagnosed in 267 (17%) and lasted a median of 2 days (interquartile range, 1-5). Seventy-eight percent of children with delirium developed it within the first 3 PICU days. Most cases of delirium were of the hypoactive (46%) and mixed (45%) subtypes; only 8% of delirium episodes were characterized as hyperactive delirium. In multivariable analysis, independent predictors of delirium included age less than or equal to 2 years old, developmental delay, severity of illness, prior coma, mechanical ventilation, and receipt of benzodiazepines and anticholinergics. PICU length of stay was increased in children with delirium (adjusted relative length of stay, 2.3; CI = 2.1-2.5; $p < 0.001$), as was duration of mechanical ventilation (median, 4 vs 1 d; $p < 0.001$). Delirium was a strong and independent predictor of mortality (adjusted odds ratio, 4.39; CI = 1.96-9.99; $p < 0.001$).CONCLUSIONSDelirium occurs frequently in critically ill children and is independently associated with mortality. Some in-hospital risk factors for delirium development are modifiable. Interventional studies are needed to determine best practices to limit delirium exposure in at-risk children.

Latest Evidence

NICE National Institute for Health and Care Excellence

This resource has been searched and there is nothing relevant to add to this update.

Cochrane Library

http://www.cochranelibrary.com/topic/Child%20health/?date=3&per-page=100

UpToDate®

OpenAthens login required. Register here: https://openathens.nice.org.uk/

This resource has been searched but there isn't anything relevant to add to this Update

Library Opening Times

Staffed hours: 8am-5pm, Monday to Friday

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

Level 5, Education and Research Centre

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Helen Pullen

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