

SEPSIS BULLETIN

06 December 2017

Adult Sepsis

[Effect of Transfusion on Mortality and Other Adverse Events Among Critically Ill Septic Patients: An Observational Study Using a Marginal Structural Cox Model](#)

Dupuis, C et al

Critical Care Medicine: December 2017 - Volume 45 - Issue 12 - p 1972–1980

RBC transfusion is often required in patients with sepsis. However, adverse events have been associated with RBC transfusion, raising safety concerns. Estimates the effect of one or more RBC within 1 day on three major outcomes (mortality, ICU-acquired infections, and severe hypoxemia) at day 30. RBC transfusion did not affect overall mortality in critically ill patients with sepsis. Increased occurrence rate of ICU-acquired infection and severe hypoxemia are expected outcomes from RBC transfusion that need to be weighted with its benefits in selected patients.

[Red blood cell transfusion in the resuscitation of septic patients with hematological malignancies.](#)

Mirouse, Adrien, et al.

Annals of intensive care; Dec 2017; vol. 7 (no. 1); p. 62

Indications for red blood cell (RBC) transfusion in septic acute circulatory failure remain unclear. RBC transfusion is commonly used in the early resuscitation of septic patients with hematological malignancies. Although it was preferentially provided to the most severe patients, we found it possibly associated with an increased risk of death.

[Low HDL levels in sepsis versus trauma patients in intensive care unit.](#)

Tanaka, Sébastien et al

[Time Course of Septic Shock in Immunocompromised and Nonimmunocompromised Patients](#)

Jamme, Matthieu et al

Critical Care Medicine: December 2017 - Volume 45 - Issue 12 - p 2031–2039

Addresses the impact of underlying immune conditions on the course of septic shock with respect to both mortality and the development of acute infectious and non-infectious complications. The underlying immune status impacts on the course of septic shock and on the susceptibility to ICU-acquired complications. This emphasizes the complexity of sepsis syndromes in relation with comorbid conditions and raises the question of the relevant endpoints in clinical studies.

[Sepsis prediction in critically ill patients by platelet activation markers on ICU admission: a prospective pilot study.](#)

Layios, Nathalie et al.

Intensive care medicine experimental; Dec 2017; vol. 5 (no. 1); p. 32

Platelets have been involved in both immune surveillance and host defense against severe infection. Aim of this work was to identify platelet markers that could predict sepsis occurrence in critically ill injured patients. Patients with sepsis had longer ICU and hospital stays and higher death rate. Platelet-bound fibrinogen levels assayed by flow cytometry within 24 h of ICU admission help identifying critically ill patients at risk of developing sepsis.

[The impact of a multifaceted intervention including sepsis electronic alert system and sepsis response team on the outcomes of patients with sepsis and septic shock.](#)

Arabi, Yaseen M et al.

Annals of intensive care; Dec 2017; vol. 7 (no. 1); p. 57

Describes the results of implementing a multifaceted intervention including an electronic alert (e-alert) with a sepsis response team (SRT) on the outcome of patients with sepsis and septic shock presenting to the emergency department. Shows that it was associated with earlier

Annals of intensive care; Dec 2017; vol. 7 (no. 1); p. 60

Some studies suggest that HDL concentration decreases during sepsis, and an association was reported between low HDL levels and a poor outcome. This study compares lipid profiles between sepsis and trauma patients in intensive care unit (ICU). Lipid profile was totally different between sepsis and trauma in ICU patients: HDL levels were low in septic patients, whereas their concentration was not altered in trauma patients. This major difference reinforces the necessity to explore the therapeutic potential of HDL in sepsis.

[Fluid resuscitation in human sepsis: Time to rewrite history?](#)

Byrne, Liam; Van Haren, Frank

Annals of intensive care; Dec 2017; vol. 7 (no. 1); p. 4

Recently, the safety of intravenous fluids in patients with sepsis has been called into question with both prospective and observational data suggesting improved outcomes with less fluid or no fluid. This article reviews the historical and physiological rationale for the introduction of fluid resuscitation as treatment for sepsis and highlights a number of significant concerns based on current experimental and clinical evidence.

[Venous-to-arterial carbon dioxide difference in the resuscitation of patients with severe sepsis and septic shock: A systematic review.](#)

Diaztagle Fernández, J J, et al.

Medicina intensiva; Oct 2017; vol. 41 (no. 7); p. 401-410

A qualitative systematic review of the literature was made, comprising studies that assessed pCO₂ delta in adult patients with severe sepsis or septic shock, and published between January 1966 and November 2016. The studies demonstrate its correlation to mortality and other clinical outcomes, defining pCO₂ delta as a useful tool in the management of these patients.

[The Rate of Sepsis in a National Pediatric Population, 2006 to 2012.](#)

Schuller, Kristin A. et al

Clinical pediatrics; Oct 2017; vol. 56 (no. 11); p. 1001-1007

The goal of this study was to determine the rate of pediatric sepsis per 100 000 inpatient discharges over time. The 2006, 2009, and 2012 Agency for Healthcare Research and Quality Healthcare Cost Utilization Project Kid's

identification of sepsis, increase in compliance with sepsis resuscitation bundle and reduction in the need for mechanical ventilation and reduction in hospital mortality and LOS.

[Early risk factors and the role of fluid administration in developing acute respiratory distress syndrome in septic patients.](#)

Seethala, Raghu R, et al.

Annals of intensive care. Dec 2017

Sepsis is a major risk factor for acute respiratory distress syndrome (ARDS). This study examined the role of early fluid administration and identified other risk factors within the first 6 h of hospital presentation associated with developing ARDS in septic patients.

Neonatal and Paediatric Sepsis

[Paediatric sepsis, the under-recognised killer: quality improvement initiative of outreach teaching in paediatric sepsis.](#)

Stewart, Claire Elizabeth. et al

Archives of disease in childhood. Education and practice edition; Oct 2017; vol. 102 (no. 5); p. 278-280

Sepsis is the leading cause of child's death, yet it is well known that the rapid initiation of simple, timely interventions reduces morbidity and mortality. This paper shares our findings on the barriers doctors in training have identified to delivering such care. We also share the results of a pilot paediatric intensive care unit outreach teaching programme designed to directly address these highlighted concerns.

[Reducing antibiotic exposure in suspected neonatal sepsis.](#)

Grant CH et al.

Clin Pediatr (Phila). 2018 Jan;57(1):76-81

Prolonged antibiotic therapy is associated with antimicrobial resistance and increased mortality in preterm infants. We evaluated the impact of an automatic stop order (ASO) and C-reactive protein (CRP) on the duration of antibiotics and level of intervention in infants screened for early-onset sepsis who had negative cultures. We introduced an ASO for low-risk infants, then, consequently, for all infants treated for suspected sepsis. We subsequently introduced a single CRP measurement at 36 hours. There was a reduction in lumbar punctures performed.

[Improving recognition of pediatric severe sepsis in the emergency department: contributions of a vital sign-based electronic alert and bedside clinician identification.](#)

Balamuth F, Alpern ER, Abbadessa MK, Hayes K, Schast A, Lavelle J, Fitzgerald JC, Weiss SL, Zorc JJ.

Ann Emerg Med. 2017 Dec;70(6):759-768.e2

Recognition of pediatric sepsis is a key clinical challenge. Study evaluates the performance of a sepsis recognition

Inpatient Databases were used to analyze the rate of sepsis in children over time. Understanding the at-risk population aids policymakers and care providers in targeting these populations and make drastic changes to sepsis policies.

[Barriers and facilitators towards implementing the Sepsis Six care bundle \(BLISS-1\): a mixed methods investigation using the theoretical domains framework.](#)

Roberts, Neil et al.

Scandinavian journal of trauma, resuscitation and emergency medicine; Sep 2017; vol. 25 (no. 1); p. 96

The 'Sepsis 6', a care bundle of basic, but vital, measures (e.g. intravenous fluid, antibiotics) has been implemented to improve sepsis treatment. However, uptake has been variable. This study used a behavioral science approach to identify barriers and facilitators towards Sepsis Six implementation at a case study hospital. A range of barriers and facilitators towards Sepsis Six performance across different staff groups were systematically identified using a theoretically-informed approach. This can inform development of targeted performance improvement interventions.

[Diabetes Is Not Associated With Increased 90-Day Mortality Risk in Critically Ill Patients With Sepsis.](#)

van Vught, Lonneke A. et al

Critical care medicine; Oct 2017; vol. 45 (no. 10); p. e1026

Aims to determine the association of pre-existing diabetes, hyperglycemia, and hypoglycemia during the first 24 hours of ICU admissions with 90-day mortality in patients with sepsis admitted to the ICU. In the current retrospective large database review, diabetes was not associated with adjusted 90-day mortality risk in critically ill patients admitted with sepsis.

[Readmissions for Recurrent Sepsis: New or Relapsed Infection?](#)

DeMerle, Kimberley Marie et al.

Critical care medicine; Oct 2017; vol. 45 (no. 10); p. 1702-1708

The aim of this study was to assess the extent to which 90-day readmissions for recurrent sepsis are due to infection of the same site and same pathogen as the initial episode. Of the patients readmitted with sepsis within 90 days, two thirds had infection at the same site as their

process including an electronic sepsis alert and bedside assessment in a pediatric emergency department (ED). Electronic sepsis alert for severe sepsis demonstrated good sensitivity and high specificity. Addition of clinician identification of electronic sepsis alert-negative patients further improved sensitivity. Implementation of the electronic sepsis alert was associated with improved recognition of severe sepsis.

[Procalcitonin: The marker of pediatric bacterial infection.](#)

Memar MY et al.

Biomed Pharmacother. 2017 Dec 1. pii: S0753-3322(17)36029-8.

This review provides an overview of procalcitonin (PCT) as an early marker for the detection of severe, invasive bacterial infection in children. Employment of PCT in the identification of neonatal bacterial infection is a complex process in some conditions. Due to its correlation with the severity of infection, PCT can consequently be used as a prognostic indicator especially for sepsis and urinary tract infection. It is, therefore, a practical supplementary means for the identification of bacterial infections in pediatric health settings.

initial admission. Just 19% had infection confirmed to be from the same site and organism as the initial sepsis hospitalization. Half of readmissions were definitively for new infections, whereas an additional 34% were unclear since cultures were negative in one of the hospitalizations.

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