

The bulletin covers the latest information on sepsis and comes out monthly. Next edition is May 2020. Older editions are available as pdfs on the Keeping Up To Date library guide ([http://libguides.bodleian.ox.ac.uk/Keeping\\_up\\_to\\_date](http://libguides.bodleian.ox.ac.uk/Keeping_up_to_date))

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## SEPSIS BULLETIN

### April 2020

#### Adult sepsis

[Automated screening of natural language in electronic health records for the diagnosis septic shock is feasible and outperforms an approach based on explicit administrative codes.](#)

Vermassen J; Colpaert K; De Bus L; Depuydt P; Decruyenaere J

**Journal of critical care**; Apr 2020; vol. 56 ; p. 203-207

Identification of patients for epidemiologic research through administrative coding has important limitations. We investigated the feasibility of a search based on natural language processing (NLP) on the text sections of electronic health records for identification of patients with septic shock. An automated search strategy based on a combination of explicit and implicit concept retrieval is feasible to screen electronic health records for septic shock and outperforms an administrative coding based explicit approach.

[Predictive Accuracy of the Quick Sepsis-related Organ Failure Assessment Score in Brazil. A Prospective Multicenter Study.](#)

Machado FR; et al

**American journal of respiratory and critical care medicine**; Apr 2020; vol. 201 (no. 7); p. 789-798

Although proposed as a clinical prompt to sepsis based on predictive validity for mortality, the Quick Sepsis-related Organ Failure Assessment (qSOFA) score is often used as a screening tool, which requires high sensitivity. We assess the predictive accuracy of qSOFA for mortality in Brazil, focusing on sensitivity. A qSOFA score greater than or equal to 2 has low sensitivity for predicting death in patients with suspected infection in a developing country. Using a qSOFA score greater than or equal to 2 as a screening tool for sepsis may miss patients who ultimately die. Using a qSOFA score greater than or

equal to 1 or adding lactate to a qSOFA score greater than or equal to 1 may improve sensitivity. Clinical trial registered with [www.clinicaltrials.gov](http://www.clinicaltrials.gov) (NCT03158493).

#### [Evaluation and management of abdominal sepsis.](#)

Sartelli M

**Current opinion in critical care;** Apr 2020; vol. 26 (no. 2); p. 205-211

The review focuses on the evaluation and management of abdominal sepsis. Early clinical diagnosis, adequate source control to stop ongoing contamination, appropriate antibiotic therapy dictated by patient and infection risk factors, and prompt resuscitation are the cornerstones of its management.

#### [Sex-based differences in ED management of critically ill patients with sepsis: a nationwide cohort study.](#)

Sunden-Cullberg J; Nilsson A; Inghammar M

**Intensive care medicine;** Apr 2020; vol. 46 (no. 4); p. 727-736

We compare management and outcomes for critically ill women and men with sepsis in the emergency medical services (EMS), the emergency department (ED) and the ICU. Women and men with severe sepsis or septic shock received differential care in the ED, but this did not explain higher odds of death in women.

#### [A novel prediction equation of resting energy expenditure for Japanese septic patients.](#)

Takemae A; Takazawa T; Kamiyama J; Kanamoto M; Tobe M; Hinohara H; Kunimoto F; Saito S

**Journal of critical care;** Apr 2020; vol. 56 ; p. 236-242

Estimating nutrient consumption and administering appropriate nutritional therapy is essential for improving clinical outcomes in critically ill patients. Various equations, such as the Harris-Benedict equation, have been developed to estimate the required calories. Previous equations, however, targeted Westerners, whose physical characteristics are likely different from those of Asians. Hence, it is unclear whether these equations can be used for Asian patients. This study focused specifically on sepsis patients admitted to a single Japanese ICU, and aimed to develop novel equations to estimate their total energy expenditure. The current study suggested that these equations might allow accurate estimation of the total energy expenditure and proper management of nutritional therapy in Asian sepsis patients.

#### [The role of neutrophil chemotaxis activity as an immunologic biomarker to predict mortality in critically-ill patients with severe sepsis.](#)

Srisawat N; et al

**Journal of critical care;** Apr 2020; vol. 56 ; p. 215-221

Innate immunity is an important host response to infection. However, the role of innate immunity as a prognostic biomarker in severe sepsis is still unknown. This study is to evaluate the discriminatory characteristics of these biomarkers on clinical outcome. Neutrophil chemotaxis activity appears to be a promising novel immunologic biomarker in predicting clinical outcome in patients with severe sepsis.

#### [First-Days Reduction of Plasma and Skin Advanced Glycation End Products is Related to Outcome in Septic Patients.](#)

Rodriguez-Ruiz E; et al

**Shock (Augusta, Ga.);** Apr 2020; vol. 53 (no. 4); p. 400-406

Advanced glycation end products (AGEs) are a result of nonenzymatic glycation of proteins and lipids, which can attach to either their cell surface receptor (RAGE) or its soluble form (sRAGE). Evidence exists for the implication of AGE-RAGE axis in sepsis, but data are still insufficient and conflicting. We aimed to analyze the kinetics of plasma and skin AGEs and sRAGE during sepsis, and their association with outcome in septic patients. Kinetics of plasma and skin AGEs during the first days of sepsis are independently associated with mortality, where a decrease of plasma and skin AGEs are related to higher mortality.

#### [Preadmission Antihypertensive Drug Use and Sepsis Outcome: Impact of Angiotensin-Converting Enzyme Inhibitors \(ACEIs\) and Angiotensin Receptor Blockers \(ARBs\).](#)

Hsieh MS; How CK; Hsieh VC; Chen PC

**Shock (Augusta, Ga.);** Apr 2020; vol. 53 (no. 4); p. 407-415

Several studies have reported improved sepsis outcomes when certain preadmission antihypertensive drugs, namely, calcium channel blockers (CCBs), are used. This study aims to determine whether preadmission antihypertensive drug use, especially angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs), is associated with decreased total hospital mortality in sepsis. Preadmission ACEI or ARB use is associated with a decreased risk of total hospital mortality, regardless of a nonshock or septic shock condition.

[Treatment in Disproportionately Minority Hospitals Is Associated With Increased Risk of Mortality in Sepsis: A National Analysis.](#)

Rush B; Danziger J; Walley KR; Kumar A; Celi LA

**Critical care medicine;** Apr 2020;;

Treatment in a disproportionately minority-serving hospital has been associated with worse outcomes in a variety of illnesses. We examined the association of treatment in disproportionately minority hospitals on outcomes in patients with sepsis across the United States. Patients with sepsis regardless of race who were treated in disproportionately high minority hospitals suffered significantly higher rates of in-hospital mortality.

[Fluid Response Evaluation in Sepsis Hypotension and Shock: A Randomized Clinical Trial.](#)

Douglas IS; et al

**Chest;** Apr 2020;;

Fluid and vasopressor management in septic shock remains controversial. In this randomized controlled trial, we evaluated the efficacy of dynamic measures (stroke volume change during passive leg raise) to guide resuscitation and improve patient outcome. We ask: will resuscitation guided by dynamic assessments of fluid responsiveness in patients with septic shock improve patient outcomes? Physiologically informed fluid and vasopressor resuscitation using passive leg raise-induced stroke volume change to guide management of septic shock is safe and demonstrated lower net fluid balance and reductions in the risk of renal and respiratory failure. Dynamic assessments to guide fluid administration may improve outcomes for septic shock patients compared with Usual Care.

[Unexpected BP Sensitivity to Angiotensin II in a Patient With Coronavirus Disease 2019, ARDS, and Septic Shock.](#)

Wang H; Das S; Wieruszewski PM; Taji J; Bartlett B; Azad N; Chowdhury A; Kolar G; Jain N; Subla MR; Khan SA

**Chest;** Apr 2020;;

We report the case of an 88-year-old man with coronavirus disease 2019 (COVID-19) who presented with ARDS and septic shock. The patient had exquisite BP sensitivity to low-dose angiotensin II (Ang-2), allowing for rapid liberation from high-dose vasopressors. We hypothesize that sensitivity to Ang-2 might be related to biological effect of severe acute respiratory syndrome coronavirus 2 infection. The case is suggestive of a potential role for synthetic Ang-2 for patients with COVID-19 and septic shock. Further studies are needed to confirm our observed clinical efficacy.

**Neonatal, infant and maternal sepsis**

[Risk of Mortality in Immunocompromised Children With Severe Sepsis and Septic Shock.](#)

Lindell RB; Nishisaki A; Weiss SL; Traynor DM; Fitzgerald JC

**Critical care medicine;** Apr 2020;;

We assess the prevalence of immunocompromised diagnoses among children with severe sepsis and septic shock, and to determine the association between immunocompromised diagnoses and clinical outcomes after adjustment for demographics and illness severity. Immunocompromised diagnoses are present in 28% of children with severe sepsis or septic shock. Multiple prior malignancies, hemophagocytic lymphohistiocytosis, congenital immunodeficiency, and hematopoietic cell transplant

are independently associated with an increased odds of PICU mortality in children with severe sepsis or septic shock. Significant variation exists in PICU mortality among centers. This is despite adjustment for immunocompromised diagnoses, known risk factors for sepsis-related mortality, and center-level sepsis volume.

[Early Use of Adjunctive Therapies for Pediatric Acute Respiratory Distress Syndrome: A PARDIE Study.](#)

Rowan CM; Klein MJ; Hsing DD; Dahmer MK; Spinella PC et al.

**American journal of respiratory and critical care medicine;** Mar 2020

Little data exist to guide early adjunctive therapy use in pediatric acute respiratory distress syndrome (PARDS). OBJECTIVE: To describe contemporary use of adjunctive therapies for early PARDS as a framework for future investigations. The contemporary description of prevalence, combinations of therapies and oxygenation threshold for which the therapies are applied is important for design of future studies. Region of the world, income and comorbidities influence adjunctive therapy use and are important variables to include in PARDS investigations.

**NEWS2**

[Prehospital Point-Of-Care Lactate Increases the Prognostic Accuracy of National Early Warning Score 2 for Early Risk Stratification of Mortality: Results of a Multicenter, Observational Study.](#)

Martín-Rodríguez F; López-Izquierdo R; Delgado Benito JF; Sanz-García A; Del Pozo Vegas C; Castro Villamor MÁ; Martín-Conty JL; Ortega GJ

**Journal of clinical medicine;** Apr 2020; vol. 9 (no. 4)

The objective of this study was to assess whether the use of prehospital lactate (pLA) can increase the prognostic accuracy of the National Early Warning Score 2 (NEWS2) to detect the risk of death within 48 h. A prospective, multicenter study in adults treated consecutively by the emergency medical services (EMS) included six advanced life support (ALS) services and five hospitals. Patients were assigned to one of four groups according to their risk of mortality (low, low-medium, medium, and high), as determined by the NEWS2 score. For each group, the validity of pLA in our cohort was assessed by the area under the curve (AUC) of the receiver operating characteristic (ROC) curve. The risk stratification provided by the NEWS2 can be improved by incorporating pLA measurement to more accurately predict the risk of mortality in patients with low risk.

[COVID-19: Symptoms, course of illness and use of clinical scoring systems for the first 42 patients admitted to a Norwegian local hospital.](#)

Ihle-Hansen H; Berge T; Tveita A; Rønning EJ; Ernø PE; Andersen EL; Wang CH; Tveit A; Myrstad M

**Tidsskrift for den Norske lægeforening : tidsskrift for praktisk medicin, ny række;** ; vol. 140 (no. 7)

The COVID-19 outbreak is presenting the health system with new challenges, and there is a great need for knowledge about symptoms, clinical findings and course of illness in patients admitted to Norwegian hospitals with COVID-19. Most patients admitted to our hospital with COVID-19 had a fever and respiratory tract symptoms. A high percentage of patients had a critical course of illness. A NEWS2 score of  $\geq 5$  on admission may be a useful aid in identifying patients at risk of a critical course of illness, while CRB-65 and qSOFA score  $\geq 2$  proved to be of little usefulness for this purpose in our material.

[Association between National Early Warning Scores in primary care and clinical outcomes: an observational study in UK primary and secondary care.](#)

Scott LJ; Redmond NM; Tavaré A; Little H; Srivastava S; Pullyblank A

**The British journal of general practice : the journal of the Royal College of General Practitioners;** Apr 2020;;

NHS England has mandated use of the National Early Warning Score (NEWS), more recently NEWS2, in acute settings, and suggested its use in primary care. However, there is reluctance from GPs to adopt NEWS/NEWS2. We assess whether NEWS calculated at the point of GP referral into hospital is associated with outcomes in secondary care. This study has demonstrated that higher NEWS values calculated at GP referral into hospital are associated with a faster medical review and poorer clinical outcomes.

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