

Here is the latest edition of the Sepsis Bulletin. The bulletin covers the latest information on sepsis and comes out fortnightly. Next edition is due 28 February 2019. Older editions are available as pdfs on the Keeping Up To Date library guide (http://libguides.bodleian.ox.ac.uk/Keeping_up_to_date)

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SEPSIS BULLETIN 14 February 2019

Neonatal, paediatric and maternal sepsis

[Evaluating Newborns at Risk for Early-Onset Sepsis](#)

Good, P.I. et al

The Pediatric Clinics of North America 1 February 2019

Early-onset sepsis (EOS) is an important cause of neonatal morbidity. Despite extensive study, identifying at-risk newborns remains challenging, especially if they are initially well appearing. Existing official EOS recommendations suggest a conservative approach that likely results in overtreatment of a low-risk population. Recent studies indicate that more precise risk assessment and alternative management strategies could decrease the number of infants exposed to blood draws and antibiotics during evaluations for EOS. This article reviews existing guidelines and provides an overview of the Bayesian sepsis calculator and serial observation as an alternative to laboratory studies and empirical antibiotics.

Adult sepsis (cont.)

[Hyponatremia could identify patients with intrabdominal sepsis and anastomotic leak after colorectal surgery: a systematic review of the literature.](#)

Alsaleh A. et al

Updates Surg. 2019 Feb 8.

Anastomotic leak (AL) is a serious post-operative complication in colorectal surgery. It can lead to devastating morbidity and mortality. Clinicians usually depend on a combination of clinical, biochemical and radiological findings to diagnose this problem. In our article, we tried to look if electrolyte disturbances could be indicators for intra-abdominal sepsis due to AL. Systematic review of the literature identifies a potential correlation between electrolyte alterations and AL in digestive surgery. Hyponatremia seems to be a significant and clinically relevant marker for of intra-abdominal sepsis and AL.

[New perspectives for the treatment of the patient with sepsis](#)

[Intravenous fluid contaminated with Klebsiella oxytoca as a source of sepsis in a preterm newborn: Case report](#)

Eshetu, B. et al

AJIC: American Journal of Infection Control February 2019

We report a case of hospital-acquired sepsis in a preterm baby secondary to Klebsiella oxytoca, resulting from contaminated intravenous fluid. Cultures from the intravenous fluid and blood both grew K oxytoca. Phenotypic characteristics and drug resistance patterns were similar for both isolates. Advances in neonatal care have led to the increasing survival of smaller and sicker infants, but nosocomial infections continue to be a serious problem, associated with increased mortality rates, immediate and long-term morbidity, prolonged hospital stay, and increased cost of care.

[Prospective surveillance of bacterial colonization and primary sepsis - findings of a tertiary neonatal intensive and intermediate care unit](#)

Baier, C. et al.

Journal of Hospital Infection Feb 2019

Preterm infants and critically ill neonates are predisposed to nosocomial infections as sepsis. Moreover, these infants acquire commensal bacteria, which might become potentially harming. On-ward transmission of these bacteria can cause outbreaks. We report the findings of a prospective surveillance of bacterial colonization and primary sepsis in preterm infants and neonates. Surveillance of colonization provided a comprehensive overview on species and antibiotic resistance patterns. It allowed early detection of a colonization cluster. Knowledge of colonization and surveillance of sepsis is useful for guiding infection control measures and antibiotic treatment.

[Outcome of Infants with Therapeutic Hypothermia after Perinatal Asphyxia and Early-Onset Sepsis](#)

Hakobyan, M. et al.

Neonatology, 2018, pp.127-133

Animal models suggest that neuroprotective effects of therapeutic hypothermia (TH) after perinatal asphyxia are reduced in infants with early-onset sepsis. We assessed the outcome of infants with perinatal asphyxia, neonatal encephalopathy, and TH in the presence of early-onset sepsis. A good outcome was reported in the majority of infants with perinatal asphyxia, TH, and early-onset sepsis. Cooling should not be withheld from these infants.

Cárnio, Evelin Capellari

Revista Latino-Americana de Enfermagem, 2019, Vol.27

In 2016, the Society of Critical Care Medicine (SCCM) and the European Society of Intensive Care Medicine (ESICM) published new definitions. They also created the campaign Surviving Sepsis, which provided guidelines for the treatment of the disease worldwide. These guidelines were reviewed in May 2018 and underwent some changes. This is a brief overview of the changes

[Challenging the One-Hour Sepsis Bundle](#)

Kalantari, Annahieta ; Rezaie, Salim

Western Journal of Emergency Medicine 2019

In April 2018, the Surviving Sepsis Campaign (SSC) released an updated sepsis bundle, which combines directives previously listed in the three-hour and six-hour bundles. The authors discussed the reasoning and evidence supporting these changes. However, there are data that suggest these recommendations may be contrary to the best available evidence. Our purpose here is to highlight the areas where evidence is only as strong as the methodological constructs of the research used. This article is a narrative review of the available, limited evidence on which the one-hour bundle was based.

[Risk factors for mortality in elderly and very elderly critically ill patients with sepsis: a prospective, observational, multicenter cohort study](#)

Martin-Loeches, I. et al.

Annals of Intensive Care, 12/2019, Vol.9(1)

Age has been traditionally considered a risk factor for mortality in elderly patients admitted to intensive care units. The aim of this prospective, observational, multicenter cohort study is to determine the risk factors for mortality in elderly and very elderly critically ill patients with sepsis. This prospective multicenter study found that patients aged 80 or over had higher hospital mortality compared to patients between 65 and 79 years. Age was found to be an independent risk factor only in the very elderly group, and prompt therapy provided within the first 6 h of resuscitation was associated with a reduction in hospital mortality in the very elderly patients.

[Effectiveness of Treatments and Diagnostic Tools and Declining Mortality in Patients With Severe Sepsis: A 12-Year Population-Based Cohort Study](#)

Chen, K.F. et al.

Journal of intensive care medicine, 30 January 2019, pp.885066619827270

Sepsis is a major cause of morbidity and mortality worldwide. With the advance of medical care, the mortality of sepsis has decreased in the past decades.

[The global maternal sepsis study and awareness campaign \(GLOSS\): study protocol](#)

Bonet, M. et al.

Reproductive Health 2018 15:16

Maternal sepsis is the underlying cause of 11% of all maternal deaths and a significant contributor to many deaths attributed to other underlying conditions. The effective prevention, early identification and adequate management of maternal and neonatal infections and sepsis can contribute to reducing the burden of infection as an underlying and contributing cause of morbidity and mortality. The objectives of the Global Maternal Sepsis Study (GLOSS) include: the development and validation of identification criteria for possible severe maternal infection and maternal sepsis; assessment of the frequency of use of a core set of practices recommended for prevention, early identification and management of maternal sepsis; further understanding of mother-to-child transmission of bacterial infection; assessment of the level of awareness about maternal and neonatal sepsis among health care providers; and establishment of a network of health care facilities to implement quality improvement strategies for better identification and management of maternal and early neonatal sepsis. GLOSS will provide a set of actionable criteria for identification of women with possible severe maternal infection and maternal sepsis. This study will provide data on the frequency of maternal sepsis and uptake of effective diagnostic and therapeutic interventions in obstetrics in different hospitals and countries. We will also be able to explore links between interventions and maternal and perinatal outcomes and identify priority areas for action.

[Early onset sepsis calculator-based management of newborns exposed to maternal intrapartum fever: a cost benefit analysis](#)

Gong, C.L. et al.

Journal of perinatology : official journal of the California Perinatal Association, 28 January 2019

We looked to determine potential net monetary benefit of an early onset sepsis calculator-based approach for management of neonates exposed to maternal intrapartum fever, compared to existing guidelines. Compared to existing guidelines, a calculator-based approach for newborns exposed to maternal intrapartum fever yields a robust net monetary benefit, largely by preventing unnecessary antibiotic treatment.

[A Comparative Evaluation of Presepsin with Procalcitonin and CRP in Diagnosing Neonatal Sepsis](#)

Kumar, N. et al.

Many treatments and diagnostic tools still lack supporting evidence. We conducted a retrospective population-based cohort study with propensity score matched subcohorts based on a prospectively collected national longitudinal health insurance database in Taiwan.

[Intra-abdominal sepsis: new definitions and current clinical standards](#)

Hecker, A. et al

Langenbeck's archives of surgery, 26 January 2019

The abdomen is the second most common source of sepsis and is associated with unacceptably high morbidity and mortality. Recently, the essential definitions of sepsis and septic shock were updated (Third International Consensus Definitions for Sepsis and Septic Shock, Sepsis-3) and modified. The purpose of this review is to provide an overview of the changes introduced by Sepsis-3 and the current state of the art regarding the treatment of abdominal sepsis.

[Immature granulocytes as a sepsis predictor in patients undergoing cardiac surgery](#)

Porizka, M. et al.

Interactive cardiovascular and thoracic surgery, 23 January 2019

Usefulness of immature granulocyte percentage (IG%) to discriminate between postoperative non-infective systemic inflammatory response syndrome (SIRS) and sepsis was tested in cardiac surgical patients. In cardiac surgical patients, IG% is a helpful marker with the moderate ability to discriminate between sepsis and non-infective SIRS, comparable to serum PCT. A combination of these parameters increased the test's overall predictive ability by improving its specificity.

[Sepsis](#)

Arwyn-Jones, James ; Brent, Andrew J.

Surgery (Oxford), Volume 37, Issue 1, January 2019, Pages 1-8

Sepsis is a clinical syndrome that requires prompt recognition and control in order to optimize clinical outcomes in patients. It is very relevant to surgical practice, as it can affect perioperative patients and those recovering on surgical wards. A working knowledge of sepsis is essential to any medical or surgical practitioner, and here we cover the topic with relevance to surgery and the MRCS examination

[Emergency nurses' knowledge and understanding of their role in recognising and responding to patients with sepsis: A qualitative study](#)

Harley, A. et al.

International Emergency Nursing 2019 Feb 4

The Indian Journal of Pediatrics, 2/2019, Vol.86(2), pp.177-179

The objectives of this study were to study the clinical and biochemical profile of neonates with sepsis and to evaluate the diagnostic role of presepsin and its comparison with C-reactive protein (CRP) and Procalcitonin (PCT). Presepsin, in comparison with CRP and PCT has better sensitivity and negative predictive value (NPV).

[Global Case-Fatality Rates in Pediatric Severe Sepsis and Septic Shock: A Systematic Review and Meta-analysis.](#)

Tan B. et al.

JAMA Pediatr. 2019 Feb 11.

We performed a systematic review and meta-analysis of studies of children with severe sepsis and septic shock to elucidate the patterns of CFRs in developing and developed countries over time. We also described factors associated with CFRs. Despite the declining trend of pediatric severe sepsis and septic shock CFRs, the disparity between developing and developed countries persists. Further characterizations of vulnerable populations and collaborations between developed and developing countries are warranted to reduce the burden of pediatric sepsis globally.

[Low-risk factors for severe bacterial infection and acute chest syndrome in children with sickle cell disease.](#)

Rincón-López E.M. et al

Pediatr Blood Cancer. 2019 Feb 10:e27667.

To determine the rate of severe bacterial infection (SBI) in a cohort of children with SCD and to describe low-risk factors for confirmed SBI (CSBI) and acute chest syndrome (ACS). In this cohort of children with SCD who were well vaccinated and received adequate prophylaxis, we found a low rate of bacteremia and CSBI. We described several low-risk factors for CSBI and ACS, all of them with a high NPV. These findings may help to develop a risk score to safely select the patients that could be managed with a more conservative approach.

[A meta-analysis of interleukin-6 as a valid and accurate index in diagnosing early neonatal sepsis](#)

Bo Sun, L-F.L. et al

International Wound Journal 2019 February 7

We aimed to systematically assess the overall value of interleukin 6 (IL-6) in diagnosing neonates with sepsis. Our results suggested that IL-6 is a valid and accurate index in diagnosing early neonatal sepsis, but it still needs to be combined with other laboratory tests and specific clinical manifestations.

Sepsis is a significant and time-sensitive clinical concern for patients who present to Emergency Departments (EDs). Existing guidelines do not define nurses' roles in managing sepsis. This study explored ED nurses' experiences and perceptions around recognising and responding to patients with sepsis, and their awareness of sepsis screening and prognostic tools. The knowledge and insights gained from this study may be used to inform local and international ED policies, and enrich nursing educational packages that may be used to improve quality of patient care and patient outcomes. ED nurses' identified deficits in their capacity to recognise and respond to patients with sepsis, despite their vital role within the multidisciplinary team that cares for patients with sepsis. The knowledge and insights gained from this study can be used to inform ED policies, to enrich context-specific educational packages that aim to improve quality of patient care and outcomes and identify areas for further research. Development and implementation of a nurse-inclusive sepsis pathway may address many deficits identified in this study.

[Using local clinical and microbiological data to develop an institution specific carbapenem-sparing strategy in sepsis: a nested case-control study](#)

Lambregts, M.M.C. et al

Antimicrobial resistance and infection control, 2019, Vol.8, pp.19

From a stewardship perspective it is recommended that antibiotic guidelines are adjusted to the local setting, accounting for the local epidemiology of pathogens. In many settings the prevalence of Gram-negative pathogens with resistance to empiric sepsis therapy is increasing. How and when to escalate standard sepsis therapy to a reserve antimicrobial agent, is a recurrent dilemma. The study objective was to develop decision strategies for empiric sepsis therapy based on local microbiological and clinical data, and estimate the number needed to treat with a carbapenem to avoid mismatch of empiric therapy in one patient (NNTC). A risk-based approach in empiric sepsis therapy has the potential to better target the use of reserve antimicrobial agents aimed at multi-resistant Gram-negative pathogens. A structured evaluation of the expected antimicrobial consumption and antibiotic adequacy rates is essential to be able to weigh the costs and benefits of potential antibiotic strategies and select the most appropriate approach.

[Incision & Drainage of Perianal Sepsis in the Immunocompromised: A Need for Heightened Postoperative Awareness](#)

Mckenna, N.P. et al.

The American Journal of Surgery Jan 2019

Adult sepsis

[Sepsis - thoughtful management for the non-expert](#)

Tidswell, R ; Singer, M

Clinical Medicine , 18 (1) pp. 62-68. (2018)

Sepsis is a common and often devastating medical emergency with a high mortality rate and, in many survivors, long-term morbidity. It is defined as the dysregulated host response to infection resulting in organ dysfunction, and its incidence is increasing as the population ages. However, it is a treatable and potentially reversible condition, especially if identified and treated promptly. A sound understanding of sepsis is crucial for optimal care. Although general guidelines are available for management, here we provide a foundation of understanding to encourage thoughtful, personalised management of sepsis during the acute phase. We provide an overview of the epidemiology, the new Sepsis-3 definitions, pathophysiology, clinical presentations, and investigation and management of sepsis for the non-expert.

[ATP in red blood cells as biomarker for sepsis in humans](#)

Yixian Li, J.Z. et al

Medical Hypotheses, Volume 124, March 2019, Pages 84-86

Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to an infection. Due to the lack of causative immune treatment, mortality of sepsis remains at a high level and represents one of the main disease burdens globally. Adenosine 5' triphosphate (ATP) levels in red blood cells (RBC) are modulated by various factors during sepsis, including a decrease in ATP production, an increase in ATP catabolism and alterations in ATP release. Therefore, we hypothesize that intracellular ATP levels in RBC can serve as potential biomarker for sepsis and support sepsis diagnosis. This will facilitate early treatment and could improve the outcome of this serious condition.

Incision and drainage of perianal sepsis has appreciable success in the immunocompetent population, but outcomes after incision and drainage in the immunosuppressed population are unknown.

Immunosuppression is an independent risk factor for major morbidity, return to the operating room, and mortality. With post-operative sepsis the most common complication, inpatient admission and extended duration antibiotic therapy is warranted in immunosuppressed patients.

[Left ventricular systolic function evaluated by strain echocardiography and relationship with mortality in patients with severe sepsis or septic shock: a systematic review and meta-analysis](#)

Sanfilippo, F. et al.

Critical Care, 12/2018, Vol.22(1)

Sepsis-induced myocardial dysfunction is associated with poor outcomes, but traditional measurements of systolic function such as left ventricular ejection fraction (LVEF) do not directly correlate with prognosis. Global longitudinal strain (GLS) utilizing speckle-tracking echocardiography (STE) could be a better marker of intrinsic left ventricular (LV) function, reflecting myocardial deformation rather than displacement and volume changes. We sought to investigate the prognostic value of GLS in patients with sepsis and/or septic shock. Worse GLS (less negative) values are associated with higher mortality in patients with severe sepsis or septic shock, while such association is not valid for LVEF. More critical care research is warranted to confirm the better ability of STE in demonstrating underlying intrinsic myocardial disease compared to LVEF.

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