

Here is the latest edition of the Sepsis Bulletin. The bulletin covers the latest information on sepsis and comes out monthly. Next edition is due November 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)

Please let me know if there is anything you would like to see highlighted in the bulletin

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SEPSIS BULLETIN October 2019

NEWS2

[Do Patients Suffering an Out-of-Hospital Cardiac Arrest Present to the Ambulance Service With Symptoms in the Preceding 48hrs?](#)

Deakin CD et al

Eur Heart J Qual Care Clin Outcomes. 2019 Oct 4. pii: qcz054.

In-hospital cardiac arrests are often preceded by a period of physiological deterioration that has often gone unnoticed. We proposed that the same might be true for out-of-hospital cardiac arrests (OHCA) where ambulance crews leave patients at home who then subsequently go on to suffer a cardiac arrest. We identified all OHCA over a 12-month period that had been seen and assessed by an ambulance crew within the 48 hrs preceding their cardiac arrest. We retrospectively calculated the patient's NEWS2 score at the time of their initial assessment as a marker of their

Adult sepsis (cont.)

[Effect of Vitamin C Infusion on Organ Failure and Biomarkers of Inflammation and Vascular Injury in Patients With Sepsis and Severe Acute Respiratory Failure: The CITRIS-ALI Randomized Clinical Trial.](#)

Fowler A.A. et al

JAMA. 2019 Oct 1;322(13):1261-1270.

Experimental data suggest that intravenous vitamin C may attenuate inflammation and vascular injury associated with sepsis and acute respiratory distress syndrome (ARDS). We aim to determine the effect of intravenous vitamin C infusion on organ failure scores and biological markers of inflammation and vascular injury in patients with sepsis and ARDS. In this preliminary study of patients with sepsis and ARDS, a 96-hour infusion of vitamin C compared with placebo did not significantly improve organ dysfunction scores or alter markers of inflammation and vascular injury.

physiological status and need for hospital admission. 1.7% of all OHCA had been assessed in the previous 48 hrs and inappropriately left at home by ambulance crews. This represents a missed opportunity to avert cardiac arrest. NEWS scoring has the potential to improve pre-hospital triage of these patients and avoid missing the deteriorating patient.

[Comparison of early warning scores in patients with COPD exacerbation: DECAF and NEWS score.](#)

Echevarria C et al

Thorax. 2019 Oct;74(10):941-946.

The National Early Warning Score 2 (NEWS2) includes two oxygen saturation scales; the second adjusts target saturations to 88%-92% for those with hypercapnic respiratory failure. Using this second scale in all patients with COPD exacerbation ('NEWS2All COPD') would simplify practice, but the impact on alert frequency and prognostic performance is unknown. Admission NEWS2 score has not been compared with DECAF (dyspnoea, eosinopenia, consolidation, acidaemia, atrial fibrillation) for inpatient mortality prediction. NEWS2All COPD safely reduces the alert frequency compared with NEWS2. DECAF offers superior prognostic performance to guide clinical decision-making on admission, but does not replace repeated measures of NEWS2 during hospitalisation to detect the deteriorating patient.

Neonatal and paediatric sepsis

[Day-1 PELOD-2 and day-1 "quick" PELOD-2 scores in children with sepsis in the PICU.](#)

Zhong M et al

J Pediatr (Rio J). 2019 Sep 30. pii: S0021-7557(19)30011-7

This study aimed to evaluate the predictive validity of the day-1 PELOD-2 and day-1 "quick" PELOD-2 (qPELOD-2) scores for in-hospital mortality in children with sepsis in a pediatric intensive care unit (PICU) of a developing country. Both the day-1 PELOD-2 score and day-1 qPELOD-2 score were effective and able to assess the prognosis of children with sepsis in a PICU of a developing country. Additionally, the day-1 PELOD-2 score was superior to the day-1 qPELOD-2 score. Further studies are needed to verify the usefulness of the day-1 qPELOD-2 score, particularly outside of the PICU.

[Vancomycin drug monitoring in infants with CoNS](#)

Further research is needed to evaluate the potential role of vitamin C for other outcomes in sepsis and ARDS.

[Blood Culture Results Before and After Antimicrobial Administration in Patients With Severe Manifestations of Sepsis: A Diagnostic Study.](#)

Cheng MP et al

Ann Intern Med. 2019 Sep 17

Administering antimicrobial agents before obtaining blood cultures could potentially decrease time to treatment and improve outcomes, but it is unclear how this strategy affects diagnostic sensitivity. We looked to determine the sensitivity of blood cultures obtained shortly after initiation of antimicrobial therapy in patients with severe manifestations of sepsis. Among patients with severe manifestations of sepsis, initiation of empirical antimicrobial therapy significantly reduces the sensitivity of blood cultures drawn shortly after treatment initiation.

[Decreasing Time to Antibiotics for Patients with Sepsis in the Emergency Department.](#)

Emerson BL et al

Pediatr Qual Saf. 2019 May 16;4(3):e173.

Sepsis is a significant cause of morbidity and mortality. Patients may present in a spectrum, from nonsevere sepsis through septic shock. Literature supports improvement in patient outcomes with timely care. This project describes an effort to improve delays in antibiotic administration in patients with sepsis spectrum disease presenting to a pediatric emergency department (PED). This initiative improved prioritization and efficiency of care of sepsis, and overall time to antibiotics in this population. The results of this project demonstrate the effectiveness of a multidisciplinary team working to improve an essential time-driven process.

[Effect of Selepressin vs Placebo on Ventilator- and Vasopressor-Free Days in Patients With Septic Shock: The SEPSIS-ACT Randomized Clinical Trial.](#)

Laterre PF et al

JAMA. 2019 Oct 2.

Norepinephrine, the first-line vasopressor for septic shock, is not always effective and has important catecholaminergic adverse effects. Selepressin, a selective vasopressin V1a receptor agonist, is a noncatecholaminergic vasopressor that may mitigate sepsis-induced vasodilatation, vascular leakage, and

[sepsis-target attainment, microbiological response and nephrotoxicity.](#)

Viel-Thériault I et al

J Perinatol. 2019 Oct 1.

We aimed to characterize residual vancomycin concentrations (C_{min}) and assess the relationships between C_{min}, the risk of nephrotoxicity and persistent CoNS sepsis. The majority of infants achieved targeted levels of vancomycin, but persistent bacteremia was common. We did not identify a C_{min} threshold associated with nephrotoxicity, nor with microbiological clearance.

[Early Experience with a Novel Strategy for Assessment of Sepsis Risk: The Shock Huddle.](#)

Stinson HR et al

Pediatr Qual Saf. 2019 Jul 22;4(4):e197.

Severe sepsis/septic shock (SS), a leading cause of death in children, is a complex clinical syndrome that can be challenging to diagnose. To assist with the early and accurate diagnosis of this illness, we instituted an electronic scoring tool and developed a novel strategy for the assessment of currently hospitalized children at risk for SS. Implementation of an electronic medical record-based sepsis recognition tool paired with a novel strategy for rapid assessment of at-risk patients by a Shock RN is feasible and offers an alternative strategy to a traditional medical emergency team for the delivery of sepsis-related care. Further study is needed to describe the impact of this process on patient outcomes.

[The role of the preterm intestinal microbiome in sepsis and necrotising enterocolitis.](#)

Masi AC, Stewart CJ.

Early Hum Dev. 2019 Aug 31:104854.

Late-onset sepsis (LOS) and necrotising enterocolitis (NEC) account for the highest number of deaths in premature infants and often cause severe morbidity in survivors. NEC is an inflammatory mediated condition, but its pathophysiology remains poorly understood. There is increasing evidence that in LOS the causative organism most often translocates from the gut. No causative microorganism has been consistently associated with either LOS or NEC, but an aberrant gut microbiome development could play a pivotal role. A low bacterial diversity and a delay in anaerobic bacteria colonization may predispose preterm infants to disease development. Conversely, a predominance of Bifidobacterium species and breast milk feeding might

edema, with fewer adverse effects. We aimed to test whether selepressin improves outcome in septic shock. Among patients with septic shock receiving norepinephrine, administration of selepressin, compared with placebo, did not result in improvement in vasopressor- and ventilator-free days within 30 days. Further research would be needed to evaluate the potential role of selepressin for other patient-centered outcomes in septic shock.

[Immune checkpoint inhibition in sepsis: a Phase 1b randomized study to evaluate the safety, tolerability, pharmacokinetics, and pharmacodynamics of nivolumab.](#)

Hotchkiss RS et al

Intensive Care Med. 2019 Oct;45(10):1360-1371.

Sepsis-associated immunosuppression increases hospital-acquired infection and viral reactivation risk. A key underlying mechanism is programmed cell death protein-1 (PD-1)-mediated T-cell function impairment. This is one of the first clinical safety and pharmacokinetics (PK) assessments of the anti-PD-1 antibody nivolumab and its effect on immune biomarkers in sepsis. In this sepsis population, nivolumab administration did not result in unexpected safety findings or indicate any 'cytokine storm'. The PK profile maintained RO > 90% for ≥ 28 days. Further efficacy and safety studies are warranted.

[Procalcitonin and MR-proAdrenomedullin combination in the etiological diagnosis and prognosis of sepsis and septic shock.](#)

Spoto S et al

Microb Pathog. 2019 Sep 28;137:103763.

Procalcitonin and Mid-regional pro Adrenomedullin have been proposed for sepsis diagnosis, antibiotic therapy guidance and prognosis. . A retrospective analysis of PCT and MR-proADM on 571 consecutive patients with sepsis diagnosis was performed. PCT and MR-proADM combination represents an advantage for sepsis diagnosis and for 90-days mortality risk stratification.

[Health related quality of life in sepsis survivors from the Prehospital Antibiotics Against Sepsis \(PHANTASI\) trial.](#)

Nannan Panday RS et al

PLoS One. 2019 Oct 1;14(10):e0222450.

Due to the rise in incidence, the long term effect of sepsis are becoming more evident. There is increasing

help to prevent disease onset. With numerous studies reporting conflicting results, further research is needed to better understand the role of microorganisms and type of feeding in the health status of preterm infants.

[Implementation of the Neonatal Sepsis Calculator in Early-Onset Sepsis and Maternal Chorioamnionitis.](#)

Akangire G. et al

Adv Neonatal Care. 2019 Sep 27.

Utilization of the neonatal sepsis calculator published by Kaiser Permanente is rapidly increasing. This freely available online tool can be used in assessment of early-onset sepsis (EOS) in newborns 34 weeks' gestation or more based on maternal risk factors and neonatal examination. However, many hospitals lack standard guidelines for its use, leading to provider discomfort with practice change. Staff education and systematic intervention using a PDSA model can significantly impact patient care, decreasing the administration of antibiotics to infants at risk for sepsis. Future research is needed to decrease antibiotic use in premature infants less than 34 weeks' gestation with similar risk factors and clinical features.

[A Multicenter Network Assessment of Three Inflammation Phenotypes in Pediatric Sepsis-Induced Multiple Organ Failure.](#)

Carcillo JA et al

Pediatr Crit Care Med. 2019 Sep 18

Ongoing adult sepsis clinical trials are assessing therapies that target three inflammation phenotypes including 1) immunoparalysis associated, 2) thrombotic microangiopathy driven thrombocytopenia associated, and 3) sequential liver failure associated multiple organ failure. These three phenotypes have not been assessed in the pediatric multicenter setting. We tested the hypothesis that these phenotypes are associated with increased macrophage activation syndrome and mortality in pediatric sepsis. These three inflammation phenotypes were associated with increased macrophage activation syndrome and mortality in pediatric sepsis-induced multiple organ failure. This study provides an impetus and essential baseline data for planning multicenter clinical trials targeting these inflammation phenotypes in children.

[Performance of an Automated Screening Algorithm for Early Detection of Pediatric Severe Sepsis.](#)

Eisenberg M, et al

Pediatr Crit Care Med. 2019 Sep 17.

evidence that sepsis may result in an impaired health related quality of life. The aim of this study was to investigate whether health related quality of life is impaired in sepsis survivors and which clinical parameters are associated with the affected health related quality of life. In our study we found that health related quality of life in sepsis survivors, 28 days after discharge, is severely diminished in comparison with the general Dutch population. The physical domain is severely affected, whereas the mental domain is less influenced. The length of stay, comorbidity, advancing age and female sex all have a negative effect on the Physical Component Scale of the health related quality of life.

[Community-onset Pseudomonas aeruginosa urinary sepsis in elderly people: predictive factors, adequacy of empirical therapy and outcomes.](#)

Esparcia A, et al

Int J Clin Pract. 2019 Oct 1:e13425.

We wanted to know the predictive factors for Pseudomonas aeruginosa (PA) urinary sepsis in hospitalised elderly patients coming from community, the adequacy of empirical antibiotic therapy and its outcomes. Pseudomonas aeruginosa urinary sepsis in elderly people was associated with male sex, urinary catheter and healthcare-associated infection. These infections had a higher rate of IEAT and a longer hospital stay than urinary sepsis caused by other microorganisms.

[Post-splenectomy sepsis: preventative strategies, challenges, and solutions.](#)

Luu S. et al.

Infect Drug Resist. 2019 Sep 12;12:2839-2851.

Removal of the spleen had already been established as a routine technique to treat splenic trauma and other diseases affecting the spleen before the anatomy, physiology, and function of the spleen were known in the mid-twentieth century. It is now widely accepted that the splenectomized individual is at increased risk for infection, in particular, overwhelming post-splenectomy infection (OPSI). This article evaluates post-splenectomy sepsis by summarizing the anatomy and function of the spleen, physiological changes after splenectomy that predispose the splenectomized patient to infection, and current management and prevention strategies.

[Evaluation of a sepsis teaching rounds simulation for](#)

We wanted to create and evaluate a continuous automated alert system embedded in the electronic health record for the detection of severe sepsis among pediatric inpatient and emergency department patients. A continuous, automated electronic health record-based sepsis screening algorithm identified severe sepsis among children in the inpatient and emergency department settings and can be deployed to support early detection, although performance varied significantly by hospital location.

[Association of Use of the Neonatal Early-Onset Sepsis Calculator With Reduction in Antibiotic Therapy and Safety: A Systematic Review and Meta-analysis.](#)

Achten NB et al

JAMA Pediatr. 2019 Sep 3.

The neonatal early-onset sepsis (EOS) calculator is a clinical risk stratification tool increasingly used to guide the use of empirical antibiotics for newborns. Evidence on the effectiveness and safety of the EOS calculator is essential to inform clinicians considering implementation. Our aim was to assess the association between management of neonatal EOS guided by the neonatal EOS calculator (compared with conventional management strategies) and reduction in antibiotic therapy for newborns. Use of the neonatal EOS calculator is associated with a substantial reduction in the use of empirical antibiotics for suspected EOS. Available evidence regarding safety of the use of the EOS calculator is limited, but shows no indication of inferiority compared with conventional management strategies.

[Clinical Features and Outcomes of Community-Acquired Late-Onset Sepsis: Focusing on Group B Streptococcus and Escherichia coli.](#)

Yun KW, Park SH, Cho EY, Lee H.

Pediatr Int. 2019 Sep 27. doi: 10.1111/ped.14012.

[Epub ahead of print]

Group B streptococcus (GBS) and Escherichia coli are leading causes of late-onset sepsis (LOS) and bacterial meningitis in neonates and infants. This study aimed to describe clinical characteristics and outcomes of community-acquired (CA) LOS caused by GBS and E. coli. Neurological complications were frequently observed in GBS CA-LOS cases, although no mortality was observed. E. coli CA-LOS generally developed as urosepsis, which caused non-culture-proven meningitis and had a favorable outcome.

[pharmacy students.](#)

Jenkins Z et al

Curr Pharm Teach Learn. 2019 Sep;11(9):936-942.

The goal of this prospective, observational cohort study was to determine if simulated interdisciplinary teaching rounds improved student perceptions of confidence and attitudes towards working as part of a team. The secondary objective of this study was to investigate changes in student knowledge of the management of sepsis. A simulated interdisciplinary rounding experience may increase student confidence during teaching rounds and improve attitudes towards working alongside other healthcare professionals. Incorporating rounding simulations into pharmacy curricula may be beneficial towards student success on rounds.

[Vitamin C in surgical sepsis.](#)

Anand T et al

Curr Opin Crit Care. 2019 Sep 20.

The current review discusses the supplemental use of vitamin C as an adjunct in the management of sepsis and septic shock. The antioxidant properties of vitamin C are touted to be useful in modulating the inflammatory response, decreasing vasopressor requirements, and improving resuscitation. Current resuscitation practices are focused on addressing the hemodynamic instability and ensuring adequate oxygen delivery to tissues. The conceptual framework of the use of vitamin C during a resuscitation is to modulate in a beneficial fashion the inflammatory response to sepsis while concomitantly resuscitating and treating the infection. While there is promising animal and burn-related data on improved fluid resuscitation with the use of vitamin C as an adjunct, the most recent meta-analyses of the available data fail to show a survival benefit in sepsis, and concerns regarding nephrotoxicity remain. Although there are large number of animal studies, only a few small prospective and retrospective studies in humans address the use of vitamin C to treat sepsis. Further research in a controlled and randomized fashion is needed to determine if vitamin C is effective in this role. While there is a promise of ascorbate's addition to the sepsis bundle as an adjunct to resuscitation, the evidence is not conclusive.

[Screening acute cholangitis patients for sepsis.](#)

Beliaev AM et al

ANZ J Surg. 2019 Sep 30.

[Relationship Between Resistin Levels and Sepsis Among Children Under 12 Years of Age: A Case Control Study.](#)

Saboktakin L et al

Front Pediatr. 2019 Aug 28;7:355.

The aim of this study was to investigate the level of resistin in children with and without sepsis hospitalized in the pediatric intensive care unit (PICU) and compare them to levels in healthy subjects in order to determine the trend of resistin levels in children in PICUs and also to identify the cut-off values for positive sepsis. In the present study, resistin level can be used as an indicator of sepsis in children admitted to PICU. However, the cut-off point based upon when a prediction could be made is different and is dependent on a variety of factors, such as control group and number of days since the first signs of sepsis.

[Lactoferrin Supplementation to Prevent Late-Onset Sepsis in Preterm Infants: A Meta-Analysis.](#)

Razak A, Hussain A.

Am J Perinatol. 2019 Sep 17.

We looked to systematically review and meta-analyze the role of lactoferrin supplementation to prevent late-onset sepsis (LOS) in preterm infants. Low to moderate quality evidence suggests that lactoferrin supplementation reduces LOS in preterm infants. Further research is needed to improve the certainty in the evidence.

[Sepsis in Pregnancy: Recognition and Resuscitation.](#)

Bridwell RE et al

West J Emerg Med. 2019 Aug 6;20(5):822-832.

The normal physiologic changes of pregnancy complicate evaluation for sepsis and subsequent management. Previous sepsis studies have specifically excluded pregnant patients. This narrative review evaluates the presentation, scoring systems for risk stratification, diagnosis, and management of sepsis in pregnancy. Sepsis is potentially fatal, but literature for the evaluation and treatment of this condition in pregnancy is scarce. While the definition and considerations of sepsis have changed with large, randomized controlled trials, pregnancy has consistently been among the exclusion criteria. The two pregnancy-specific sepsis scoring systems, the modified obstetric early warning scoring system (MOEWS) and Sepsis in Obstetrics Score (SOS), present a number of limitations for application in the emergency department (ED) setting. Methods of generation and subsequently limited validation leave significant gaps in

Acute cholangitis (AC) complicated by septic shock is associated with 40% mortality. The best screening method for diagnosing sepsis in patients with AC is unknown. In this study, we aimed to compare the discriminative powers of systemic inflammatory response syndrome criteria (SIRS test) and the 2018 Tokyo Guidelines for moderate cholangitis (TG18 test) in screening AC patients for sepsis and to estimate their predictive abilities. The SIRS test had better discriminative power in identifying AC patients with sepsis than the TG18 criteria, but had a low PPV.

[An Interdisciplinary Code Sepsis Team to Improve Sepsis-Bundle Compliance: A Quality Improvement Project.](#)

Delawder JM, Hulton L.

J Emerg Nurs. 2019 Sep 25. pii: S0099-1767(19)30144-8.

Sepsis is one of the leading causes of mortality, with more than 700,000 hospitalizations and 200,000 deaths annually. Various tools exist to aid in the early identification and treatment of sepsis, including electronic alert systems, standardized order sets, nurse-initiated protocols (NIPs) and specially trained teams. Despite available guidelines, mortality rates for severe sepsis and septic shock are near 50%. Interprofessional teams can use existing knowledge, skills, and tools to improve sepsis-bundle compliance and mortality outcomes in patients with sepsis presenting to the emergency department.

[Antibiotic Delays and Feasibility of a 1-Hour-From-Triage Antibiotic Requirement: Analysis of an Emergency Department Sepsis Quality Improvement Database.](#)

Filbin MR et al

Ann Emerg Med. 2019 Sep 24. pii: S0196-0644(19)30593-1.

We identify factors associated with delayed emergency department (ED) antibiotics and determine feasibility of a 1-hour-from-triage antibiotic requirement in sepsis. The quality improvement intervention significantly reduced antibiotic delays, yet most septic patients did not receive antibiotics within 1 hour of triage. Compliance with the 2018 Surviving Sepsis Campaign would require a wholesale alteration in the management of ED patients with either vague symptoms or absence of triage hypotension.

[Sepsis diagnosis and monitoring - procalcitonin as](#)

identification of septic pregnant patients. Management requires consideration of a variety of sources in the septic pregnant patient. The underlying physiologic nature of pregnancy also highlights the need to individualize resuscitation and critical care efforts in this unique patient population. Pregnant septic patients require specific considerations and treatment goals to provide optimal care for this particular population. Guidelines and scoring systems currently exist, but further studies are required.

[Vaginal preparation with chlorhexidine at cesarean section to reduce endometritis and prevent sepsis: a randomized pilot trial \(PREPS\).](#)

Hodgetts Morton V et al

Acta Obstet Gynecol Scand. 2019 Sep 20.

Cesarean sections are the most common major operation worldwide. One in 10 women develops a surgical-site infection after cesarean section. The PREPS pilot trial was developed to assess the feasibility of a randomized controlled trial of vaginal cleansing with chlorhexidine before cesarean section, to reduce infectious morbidity. It is possible to perform a randomized controlled trial in women undergoing an elective or emergency cesarean section, using a verbal-followed-by-written consent process, while maintaining high adherence and retaining women in the trial.

[Risk Factors for Maternal Readmission with Sepsis.](#)

Foeller ME et al

Am J Perinatol. 2019 Sep 17.

Our primary objective was to identify risk factors for maternal readmission with sepsis. Our secondary objectives were to (1) assess diagnoses and infecting organisms at readmission and (2) compare early (<6 weeks) and late (6 weeks to 9 months postpartum) maternal readmission with sepsis. Maternal risk factors for both early and late readmission with sepsis included demographic characteristics, cesarean, hemorrhage, and preterm birth. Risks for sepsis after delivery persist beyond the traditional postpartum period of 6 weeks.

[The impact of the sepsis on female urogenital system: the role of pregabalin.](#)

Gunyeli I, Saygin M, Ozmen O.

Arch Gynecol Obstet. 2019 Oct;300(4):1067-1082.

The aim of the study was to investigate the oxidative damage and inflammatory effects of sepsis on the urogenital system in the Lipopolysaccharide (LPS)-induced sepsis model and ameliorating role of

[standard, but what next?](#)

Mierzczała-Pasierb M, Lipińska-Gediga M.

Anaesthesiol Intensive Ther. 2019 Sep 25. pii: 37781.

Sepsis is a life-threatening organ dysfunction caused by a systemic altered host response to infection. According to the newest guidelines the sepsis treatment should be personalized and based on an approach specified by use of biomarkers to tailor therapy to each patient's needs. The main features of such biomarkers should be high specificity, sensitivity and ability to monitor the progress of sepsis. There is limited application of procalcitonin (PCT), C-reactive protein (CRP) and interleukin-6 (IL-6) for reaching this target, because of their secretion during non-infectious processes. The purpose of this review was to introduce four biomarkers, i.e. kallistatin, testican-1, presepsin and mid-regional pro-adrenomedullin, and compare their usefulness in diagnosing sepsis with PCT, CRP and IL-6.

[What Is the Role of Nursing Homes in the Surviving Sepsis Campaign?](#)

Mylotte JM.

J Am Med Dir Assoc. 2019 Sep 16. pii: S1525-8610(19)30582-1.

Recently, there have been several publications advocating for an expansive role for nursing homes (NHs) in the Surviving Sepsis Campaign (SSC). The rationale for this effort is the problem of high rates of 30-day readmissions from NHs and a disproportionate percentage of residents with a diagnosis of sepsis in emergency departments. This article provides a brief history of the SSC and the evolution of the definition of sepsis and of the timing of interventions that make up a "sepsis bundle". There is a need for more intensive study of sepsis in the NH setting to identify screening tools with better sensitivity and identification of interventions suitable for the NH setting and that have an impact on various outcomes.

[International critical care nursing considerations and quality indicators for the 2017 surviving sepsis campaign guidelines.](#)

Kleinpell R, Blot S, Boulanger C, Fulbrook P, Blackwood B.

Intensive Care Med. 2019 Sep 18

Nurses play a pivotal role in the early identification and management of sepsis. In recognition of this, four leading international critical care organizations (the European Federation of Critical Care Nursing

Pregabalin (PGB). These findings demonstrated that sepsis caused oxidative stress and inflammation in the urogenital tissues. We have revealed that PGB ameliorated tissue damage caused by sepsis.

[Incidence of Maternal Sepsis and Sepsis-Related Maternal Deaths in the United States.](#)

Hensley MK, et al

JAMA. 2019 Sep 3;322(9):890-892.

Maternal sepsis is a leading cause of maternal morbidity and mortality. However, population-based estimates of maternal sepsis occurring after delivery hospitalization have been limited because previous studies have focused on select populations or have not followed up patients longitudinally. Thus, the burden of maternal sepsis and sepsis-related deaths may be underestimated. We assessed the nationwide incidence and outcomes of maternal sepsis within 42 days of delivery hospitalization discharge using all-payer data.

Adult sepsis

[Prognostic and predictive enrichment in sepsis.](#)

Stanski NL, Wong HR.

Nat Rev Nephrol. 2019 Sep 11.

Sepsis is a heterogeneous disease state that is both common and consequential in critically ill patients. Unfortunately, the heterogeneity of sepsis at the individual patient level has hindered advances in the field beyond the current therapeutic standards, which consist of supportive care and antibiotics. This complexity has prompted attempts to develop a precision medicine approach, with research aimed towards stratifying patients into more homogeneous cohorts with shared biological features, potentially facilitating the identification of new therapies. Several investigators have successfully utilized leukocyte-derived mRNA and discovery-based approaches to subgroup patients on the basis of biological similarities defined by transcriptomic signatures. A critical next step is to develop a consensus sepsis subclassification system, which includes transcriptomic signatures as well as other biological and clinical data. This goal will require collaboration among various investigative groups, and validation in both existing data sets and prospective studies. Such studies are required to bring precision medicine to the bedside of critically ill patients with sepsis.

[The Diagnostic and Prognostic Value of Supar in](#)

Associations, EfCCNa, the European Society of Intensive Care Medicine Nursing and Allied Healthcare Professionals Section; the SCCM, and the World Federation of Critical Care Nurses, WFCCN) collaborated to outline considerations for nursing care based on the revised SSC guidelines. The President or Chair of the organizations (authors) formed the core group and engaged with, and drew upon, nursing members with expertise on sepsis care. Consensus on quality indicators was gained through face to face communication with committees at organizational meetings and via email among the leadership. Nurse-sensitive actions and quality indicators were identified based on key areas of nursing care as outlined in the guidelines.

[Obesity and 1-Year Mortality in Adults After Sepsis: A Systematic Review.](#)

Robinson J, Swift-Scanlan T, Salyer J.

Biol Res Nurs. 2019 Sep 18:1099800419876070.

At least 25 % of adults admitted to intensive care units (ICU) in the United States have an overweight, obese or morbidly obese body mass index (BMI). The effect of BMI on adjusted mortality in adults requiring ICU treatment for sepsis is unclear. We performed a systematic review of adjusted all-cause mortality for underweight, overweight, obese and morbidly obese BMIs relative to normal BMI for adults admitted to the ICU with sepsis, severe sepsis, and septic shock. This is the first meta-analysis to show that overweight or obese BMIs reduce adjusted mortality in adults admitted to the ICU with sepsis, severe sepsis, or septic shock. More rigorous studies that address these limitations are needed to clarify the impact of BMI on sepsis ICU outcomes.

[Blood Culture Results Before and After Antimicrobial Administration in Patients With Severe Manifestations of Sepsis: A Diagnostic Study.](#)

Cheng MP et al

Ann Intern Med. 2019 Sep 17.

Administering antimicrobial agents before obtaining blood cultures could potentially decrease time to treatment and improve outcomes, but it is unclear how this strategy affects diagnostic sensitivity. We wanted to determine the sensitivity of blood cultures obtained shortly after initiation of antimicrobial therapy in patients with severe manifestations of sepsis. Among patients with severe manifestations of sepsis, initiation of empirical antimicrobial therapy

[Patients With Sepsis: A Systematic Review and Meta-Analysis.](#)

Huang Q et al

Shock. 2019 Sep 3.

Soluble urokinase-type plasminogen activator receptor (suPAR) has the potential to diagnose infectious diseases. Due to the lack of reliable biomarkers and the importance of timely diagnosis for sepsis treatment, we conducted this systematic review and meta-analysis to evaluate the value of suPAR diagnosis and prognosis for sepsis. suPAR is a feasible biomarker for timely diagnosis and prognosis of sepsis. Compared to effective value of procalcitonin (PCT) identified by previous meta-analysis, suPAR has similar clinical guiding value, while suPAR exhibits higher specificity, which can facilitate the deficiencies of PCT. suPAR also shows a diagnostic value in differentiating sepsis from SIRS. Considering the lack of biomarkers for sepsis and the similar clinical value of suPAR and PCT, suPAR should be considered as a biomarker in clinical practice for sepsis.

[Robustness of sepsis-3 criteria in critically ill patients.](#)

Verboom DM et al

J Intensive Care. 2019 Aug 29;7:46.

Early recognition of sepsis is challenging, and diagnostic criteria have changed repeatedly. We assessed the robustness of sepsis-3 criteria in intensive care unit (ICU) patients. The sepsis-3 definition lacks robustness as well as discriminatory ability, since nearly all patients presenting to ICU with suspected infection fulfill its criteria. These should therefore be specified in greater detail, and applied more consistently, during future sepsis studies.

[The association between premorbid beta blocker exposure and mortality in sepsis-a systematic review.](#)

Tan K, et al

Crit Care. 2019 Sep 4;23(1):298.

The effect of premorbid β -blocker exposure on clinical outcomes in patients with sepsis is not well characterized. We aimed to examine the association between premorbid β -blocker exposure and mortality in sepsis. This systematic review suggests that β -blocker exposure prior to sepsis is associated with reduced mortality. There was insufficient data to conduct a bona fide meta-analysis. Whether the apparent reduction in mortality may be attributed to the mitigation of catecholamine excess is unclear.

significantly reduces the sensitivity of blood cultures drawn shortly after treatment initiation.

[Comparative prognostic accuracy of sepsis scores for hospital mortality in adults with suspected infection in non-ICU and ICU at an academic public hospital.](#)

Kovach CP et al

PLoS One. 2019 Sep 16;14(9):e0222563.

Sepsis is a global healthcare challenge and reliable tools are needed to identify patients and stratify their risk. Here we compare the prognostic accuracy of the sepsis-related organ failure assessment (SOFA), quick SOFA (qSOFA), systemic inflammatory response syndrome (SIRS), and national early warning system (NEWS) scores for hospital mortality and other outcomes amongst patients with suspected infection at an academic public hospital. Multivariate prediction scores, such as SOFA and NEWS, had greater prognostic accuracy than qSOFA or SIRS for hospital mortality, ICU transfer, and ICU length of stay. Complex sepsis scores may offer enhanced prognostic performance as compared to simple sepsis scores in inpatient hospital settings where more complex scores can be readily calculated.

[Long-term courses of sepsis survivors: effects of a primary care management intervention.](#)

Schmidt KF et al

Am J Med. 2019 Sep 12. pii: S0002-9343(19)30756-9.

Sepsis survivors face mental and physical sequelae even years after discharge from the intensive care unit (ICU). The aim of this study was to evaluate the long-term courses of sepsis survivors and the effects of a primary care management intervention in sepsis aftercare. 12 months after completion, a primary care management intervention among survivors of sepsis did not improve mental health-related quality of life. Patients in the intervention group showed less posttraumatic stress symptoms.

[Clinical Decision Support for Early Recognition of Sepsis](#)

Amland RC, Hahn-Cover KE.

Am J Med Qual. 2019 Sep/Oct;34(5):494-501.

Sepsis is an inflammatory response triggered by infection, with a high in-hospital mortality rate. Early recognition and treatment can reverse the inflammatory response, with evidence of improved patient outcomes. One challenge clinicians face is identifying the inflammatory syndrome against the

[Impact of post-sepsis cardiovascular complications on mortality in sepsis survivors: a population-based study.](#)

Wu MH, et al

Crit Care. 2019 Sep 2;23(1):293.

It remains unclear whether sepsis-related cardiovascular complications have an adverse impact on survival independent of pre-existing comorbidities. To investigate the survival impact of post-sepsis cardiovascular complications among sepsis survivors, we conducted a population-based study using the National Health Insurance Database of Taiwan. Compared to sepsis patients without incident MI or stroke, sepsis patients with incident MI or stroke following hospital discharge had an increased risk of mortality for up to 365 days of follow-up. This increased risk cannot be explained by pre-sepsis comorbidities.

background of the patient's infectious illness and comorbidities. An approach to this problem is implementation of computerized early warning tools for sepsis. This multicenter retrospective study sought to determine clinimetric performance of a cloud-based computerized sepsis clinical decision support system (CDS), understand the epidemiology of sepsis, and identify opportunities for quality improvement. Data encompassed 6200 adult hospitalizations from 2012 through 2013. Of 13% patients screened-in, 51% were already suspected to have an infection when the system activated. This study focused on a patient cohort screened-in before infection was suspected; median time from arrival to CDS activation was 3.5 hours, and system activation to diagnostic collect was another 8.6 hours.

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