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SEPSIS BULLETIN 17 May 2018

Paediatric and Neonatal Sepsis

[Role of Serial C-Reactive Protein in Determining Duration of Antibiotic Use for Neonates with Suspected Neonatal Sepsis: A Randomised Controlled Trial](#)

Rohatgi, S. et al.

Journal of Paediatrics and Child Health; Jun 2017; vol. 53 (no. 6); p. 556

Optimal duration of parenteral antibiotics for treating neonatal sepsis ranges from 7-14 days. We compared the efficacy of 7 versus 10 days duration of intravenous antibiotics for neonatal septicaemia. Conclusion: A 7-day course of intravenous antibiotics may be sufficient to treat neonatal sepsis with the advantage of shorter hospital stay, but a larger meta-analysis would be required to state this with a degree of certainty.

[New Diagnostic Possibilities for Neonatal Sepsis.](#)

Tzialla, C. et al.

American Journal of Perinatology; May 2018; vol. 36 (no. 6); p. 575-577

Progress in neonatal care has decrease morbidity and mortality due to neonatal sepsis (NS). Although diagnosis of sepsis continues to rely on blood culture, this method is too slow and limited by false-negative results. There are numerous sepsis biomarkers that have been evaluated for the early diagnosis of NS, but, to date, there is no single ideal biomarker, though novel biomarkers are becoming more sophisticated and specific in their clinical applications. This review provides an overview of the current diagnostic approaches available or under development for diagnosing NS.

Adult Sepsis (cont)

[Long-Term Outcomes of the ADRENAL Trial – correspondence](#)

Venkatesh, B. et al.

N Engl J Med 2018; 378:1744-1745

We recently reported the primary results of the Adjunctive Corticosteroid Treatment in Critically Ill Patients with Septic Shock (ADRENAL) trial, which tested the hypothesis that hydrocortisone would result in lower mortality than placebo among patients with septic shock.¹ Further analysis of the trial data has been conducted according to a previously published statistical analysis plan, which designated death 6 months after randomization as a secondary end point.² These data are now available and are reported here.

[Barriers to implementing the Sepsis Six guidelines in an acute hospital setting](#)

Breen, S.J. et al

British Journal of Nursing Vol 27 No 9 May 2018 pp 473–478

Research has suggested that compliance with the Sepsis Six pathway remains low. Knowledge deficits, lack of resources and practical issues were barriers identified in this survey. This will inform the educational and process needs of both doctors and nurses in order to improve sepsis care.

[Hospital postnatal discharge and sepsis advice: Perspectives of women and midwifery students](#)

Haith-Cooper, M. et al

British Journal of Midwifery, April 2018, Vol 26, No 4

Women are discharged home from hospital increasingly early, but there is little evidence examining the postnatal hospital discharge process and how this may impact on the health of women and babies. In particular, there is

[Impact of a rapid molecular test for positive blood cultures from neonatal intensive care patients on clinical management: a retrospective audit](#)

Koh L.L. et al

Irish Journal of Medical Science; May 2018; vol. 187 (no. 2); p. 423-427

Both Staphylococcus aureus and coagulase negative Staphylococci are common causes of late-onset neonatal sepsis in the neonatal intensive care unit (NICU), usually relating to intravascular access device infections. This study shows that the introduction of the Xpert MRSA/SA BC test can lead to a reduction in the length of admission and duration of antimicrobials in term infants; however, the difference was not statistically significant. All nine infants with clinically significant bacteraemia were treated with the appropriate antimicrobial when the Xpert MRSA/SA BC test result was available.

[Evaluation of a real-time PCR assay for detection and quantification of bacterial DNA directly in blood of preterm neonates with suspected late-onset sepsis](#)

van den Brand M. et al.

Critical Care; Apr 2018; vol. 22 (no. 1)

Rapid and accurate diagnosis of neonatal sepsis is highly warranted because of high associated morbidity and mortality. The aim of this study was to evaluate the performance of a novel multiplex PCR assay for diagnosis of late-onset sepsis and to investigate the value of bacterial DNA load (BDL) determination as a measure of infection severity. Multiplex PCR provides a powerful assay to enhance rapid identification of the causative pathogen in late-onset sepsis. BDL measurement may be a useful indicator of severity of infection

[Bilirubin exposure is associated with neonatal sepsis in the eight days preceding symptoms: a retrospective study](#)

Raimondi F. et al

Journal of Maternal-Fetal and Neonatal Medicine; Sep 2017; vol. 30 (no. 17); p. 2078-2080

Objective: To compare levels of bilirubin (using the area under the curve, AUC) in preterm infants before the onset of sepsis with healthy matched-controls. Conclusion: In our retrospective cohort, we found that the levels of bilirubin and the AUC in the first eight days before the onset of sepsis in preterm infants were significantly higher than the healthy controls. These data suggest that the prolonged exposition to high levels of bilirubin could increase the infection susceptibility in preterm infants

little on sepsis prevention advice, despite it being the biggest direct cause of maternal mortality. Cost effective, time-efficient and innovative ways to impart vital information are required to support the postnatal hospital discharge process.

[Updating the National Early Warning Score algorithm: saving more lives](#)

Alan Glasper

British Journal of Nursing, 2018, Vol 27, No 5

NEWS 2 update has been enhanced by reference to numerous peer-reviewed research publications that have attempted to evaluate and validate the NEWS in various clinical settings both within and without the NHS. The RCP believes that greater use of NEWS as part of clinical assessment could save nearly 2000 lives and 627 000 bed days every year

[Biomarker-guided antibiotic cessation in sepsis: evidence and future challenges](#)

Claxton, A. N. et al

British Journal of Hospital Medicine, March 2018, Vol 79, No 3

Sepsis is a medical emergency, which requires the initiation of broad-spectrum antimicrobial agents as early as possible. In the absence of positive microbiological cultures providing targeted antimicrobial advice, broad-spectrum antibiotics are commonly continued until there is clinical evidence of infection resolution. With an absence of robust evidence to inform when it is safe to stop antimicrobial agents in sepsis, the duration of antimicrobial courses may be longer than is required. Prolonged courses of potent broad-spectrum antimicrobials increase the risk of adverse drug events and contribute to the growing emergence of multidrug resistant pathogens, which is a global public health emergency. The protocolised use of protein biomarkers to guide clinical decision making can be used to help combat excessive durations of antimicrobials in patients with sepsis. This article reviews the current evidence for biomarker-guided antimicrobial discontinuation protocols in sepsis, identifies related evidence gaps and examines future innovation challenges in this field.

[The impact of organ dysfunctions on mortality in patients with severe sepsis: A multicenter prospective observational study](#)

Kudo, D. et al

Journal of Critical Care June 2018 Volume 45, Pages 178–183

Disseminated intravascular coagulations (DIC), acute respiratory distress syndrome (ARDS), and acute kidney injury (AKI) are major organ dysfunctions that occur in patients with sepsis. This study aimed to elucidate the impact of these organ dysfunctions on mortality in

[Empiric antibiotic regimens for neonatal sepsis in Australian and New Zealand neonatal intensive care units](#)

Carr J.P. et al

Journal of Paediatrics and Child Health; Jul 2017; vol. 53 (no. 7); p. 680-684

Neonatal sepsis remains an important cause of morbidity and mortality, and requires prompt empiric treatment. However, only a minority of babies who receive antibiotics for suspected sepsis have an infection. Antimicrobial exposure in infancy has important short- and long-term consequences. There is no consensus regarding empirical antimicrobial regimens. The study included a survey of empiric antimicrobial regimens in all tertiary neonatal intensive care units in Australia and New Zealand in 2013-2014.

Adult Sepsis

[Adjunctive rifampicin for Staphylococcus aureus bacteraemia \(ARREST\): a multicentre, randomised, double-blind, placebo-controlled trial](#)

Thwaites, G. E. et al

Lancet Volume 391, No. 10121, p668–678, 17 February 2018

Staphylococcus aureus bacteraemia is a common cause of severe community-acquired and hospital-acquired infection worldwide. We tested the hypothesis that adjunctive rifampicin would reduce bacteriologically confirmed treatment failure or disease recurrence, or death, by enhancing early S aureus killing, sterilising infected foci and blood faster, and reducing risks of dissemination and metastatic infection. Interpretation was that adjunctive rifampicin provided no overall benefit over standard antibiotic therapy in adults with S aureus bacteraemia.

[Adding the extra antibiotic rifampicin did not improve cure rates after sepsis](#)

NIHR Signal 17 April 2018

Summary and appraisal of above [Adjunctive rifampicin for Staphylococcus aureus bacteraemia \(ARREST\): a multicentre, randomised, double-blind, placebo-controlled trial](#)

[The Surviving Sepsis Campaign Bundle: 2018 update](#)

Levy, M. M. et al

Intensive Care Med April 2018

The “sepsis bundle” has been central to the implementation of the Surviving Sepsis Campaign (SSC) from the first publication of its evidence-based guidelines in 2004 through subsequent editions. In response to the publication of “Surviving Sepsis

patients with severe sepsis. DIC and AKI are frequent complications in patients with severe sepsis. In this study, DIC, and AKI stage 3 were independent risk factors of in-hospital mortality.

[Early glycemia and mortality in critically ill septic patients: Interaction with insulin-treated diabetes](#)

Magee, F. et al.

Journal of Critical Care June 2018 Volume 45, Pages 170–177

A pre-admission diagnosis of insulin treated diabetes mellitus (ITDM) modified the relationship between dysglycemia and mortality in over 90,000 ICU patients with sepsis. In patients with a pre-admission diagnosis of ITDM, a higher peak blood glucose in the first 24 hours was associated with lower mortality. In patients without a pre-admission diagnosis of ITDM, hospital mortality increased as peak blood glucose in the first 24 hours increased by quintile. A diabetic-specific approach to the management of blood glucose levels in the ICU may be justified

[Reduced circulating B cells and plasma IgM levels are associated with decreased survival in sepsis - A meta-analysis](#)

Krautz, C. et al.

Journal of Critical Care; Jun 2018; vol. 45 ; p. 71

B cell function and antibody production are crucial factors in host protection during inflammation. We aimed to synthesize the available evidence on the association between the reduction of circulating B cells and plasma immunoglobulin (IgM) levels and decreased survival during sepsis. Results suggest that a reduction of circulating B cells and IgM levels at sepsis onset are associated with decreased sepsis survival. However, there are methodological limitations and the risk of bias.

[Sepsis recognition tools in acute ambulatory care: associations with process of care and clinical outcomes in a service evaluation of an Emergency Multidisciplinary Unit in Oxfordshire](#)

Fielder Camm, C. et al

BMJ Open 2018;8:e020497

Assessment of the performance of currently available sepsis recognition tools in patients referred to a community-based acute ambulatory care unit. Acute ambulatory care clinicians should use caution in applying the new NICE endorsed criteria for determining the need for intravenous therapy and hospital-based location of care. NICE criteria have poorer performance when compared against NEWS and SIRS and new-onset confusion was prevalent in patients aged ≥ 85 years without infection.

Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016" [12, 13], a revised "hour-1 bundle" has been developed and is presented

[Value of the combination of renal resistance index and central venous pressure in the early prediction of sepsis-induced acute kidney injury](#)

Song, J. et al.

Journal of Critical Care June 2018 Volume 45, Pages 204–208

Early prediction of acute kidney injury (AKI) in septic patients is difficult. This study aimed to assess the values of renal resistive index (RI), central venous pressure (CVP), and their combination in the early prediction of sepsis-induced AKI. The combination of RI and CVP was more valuable than either of the two parameters in the early prediction for sepsis-induced AKI.

[Early Goal-Directed Therapy in Severe Sepsis and Septic Shock: A Meta-Analysis and Trial Sequential Analysis of Randomized Controlled Trials.](#)

Lu Y, et al.

J Intensive Care Med. May 2018; 33(5):296-309

The Surviving Sepsis Campaign guidelines recommend early goal-directed therapy (EGDT) for the resuscitation of patients with sepsis; however, the recent evidences quickly evolve and convey conflicting results. We performed a meta-analysis to evaluate the effect of EGDT on mortality in adults with severe sepsis and septic shock.

[Long-Term Cognitive Outcomes After Sepsis: a Translational Systematic Review](#)

Barichello, T. et al.

Mol Neurobiol. 2018 Apr 23.

Sepsis is systemic inflammatory response syndrome with a life-threatening organ dysfunction that is caused by an unbalanced host immune response in an attempt to eliminate invasive microorganisms. We posed questions, "Does sepsis survivor patients have increased risk of neuropsychiatric manifestations?" and "What is the mechanism by which sepsis induces long-term neurological sequelae, particularly substantial cognitive function decline in survivor patients and in pre-clinical sepsis models?" Clinical studies have showed that sepsis survivors presented increased bodily symptoms such as fatigue, pain, visual disturbances, gastrointestinal problems, and neuropsychiatric problems compared to before sepsis. Sepsis leaves the survivors with an aftermath of physiological, neuropsychiatric, and functional impairment.

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