

Key notes on:

Maternal sepsis

- Sepsis is defined as "life-threatening organ dysfunction caused by a dysregulated host response to infection" (Rhodes et al., 2017, p 488)
- The WHO defines maternal sepsis as "a life-threatening condition defined as organ dysfunction resulting from infection during pregnancy, childbirth, post-abortion, or postpartum period" (Bonet et al., 2017, p 1)
- Sepsis is a major cause of maternal death and severe morbidity in both developed and developing countries
- Urinary tract, genital tract, surgical wounds. lungs and breasts are the most common sources of infection leading to sepsis in maternity patients
- Sepsis should never be underestimated its course is often insidious and women may appear deceptively well before suddenly collapsing, often with little or no warning
- Early involvement of consultant staff and early referral to anaesthetic and critical care teams as early as possible when a woman is recognised as being seriously ill
- Care with IV fluid administration women with sepsis are prone to pulmonary oedema; if women are persistently hypotensive and tachycardic despite fluid resuscitation, they will probably need inotropic support E.g. noradrenaline to correct the vasodilation associated with sepsis
- Surviving Sepsis Campaign bundle of care applies to maternity patients

Electronic Resources

Surviving Sepsis Campaign http://www.survivingsepsis.org/Pages/default.aspx

UK Sepsis Trust https://sepsistrust.org/education/

Sepsis Alliance https://www.sepsis.org/

SOMANZ Guideline for the Investigation and Management of Sepsis in Pregnancy (2017) https://www.somanz.org/guidelines.asp

NICE Guideline - Sepsis: recognition, diagnosis and early management (NG 51) (2016) <u>https://www.nice.org.uk/guidance/ng51</u>

Royal College of Obstetrics and Gynaecology. Bacterial Sepsis in Pregnancy. Green-top Guideline 64a 2012. <u>https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg64a/</u>

Royal College of Obstetrics and Gynaecology. Bacterial Sepsis following Pregnancy. Green-top Guideline 64b 2012. <u>https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg64b/</u>

References/recommended reading

Acosta, C. D., Kurinczuk, J. J., Lucas, D. N., Tuffnell, D. J., Sellers, S., & Knight, M. Severe maternal sepsis in the UK, 2011–2012: a national case-control study. PLoS medicine. 2014;11(7):e1001672.

Albright CM, Ali TN, Lopes V, Rouse DJ, Anderson BL. The Sepsis in Obstetrics Score: A Model to Identify Risk of Morbidity from Sepsis in Pregnancy. *American Journal of Obstetrics and Gynecology*. 2014;211:39-e1.

Albright CM, Has P, Rouse DJ, Hughes BL. Internal Validation of the Sepsis in Obstetrics Score to Identify Risk of Morbidity From Sepsis in Pregnancy. *Obstetrics & Gynecology*. 2017;130(4):747-55.

Al-Ostad G, Kezouh A, Abenhaim HA. Incidence of and Risk Factors for Sepsis Mortality in Labor, Delivery, and Postpartum [291]. *Obstetrics & Gynecology*. 2015;125:93S-4S.

Bamfo J. Managing the risks of sepsis in pregnancy. *Best Practice & Research Clinical Obstetrics and Gynaecology.* 2013;27:583–595.

Bauer ME, Bateman BT, Bauer ST, Shanks AM, Mhyre JM. Maternal Sepsis Mortality and Morbidity During Hospitalization for Delivery: Temporal Trends and Independent Associations for Severe Sepsis. *Anesthesia & Analgesia*. 2013;117(4):944-950.

Bauer ME, Bauer ST, Rajala B, MacEachern MP, Polley LS, Childers D, et al. Maternal Physiologic Parameters in Relationship to Systemic Inflammatory Response Syndrome Criteria: A Systematic Review and Meta-analysis. *Obstetrics & Gynecology*. 2014;124:535-41.

Bonet M, Nogueira Pileggi V, Rijken MJ, Coomarasamy A, Lissauer D, Souza JP, et al. Towards a consensus definition of maternal sepsis: results of a systematic review and expert consultation. *Reproductive Health*. 2017;14(1):67.

Bowyer L, Robinson HL, Barrett H, Crozier TM, Giles M, Idel I, et al. SOMANZ guidelines for the investigation and management sepsis in pregnancy. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2017;57(5):540-51.

Chau A, Tsen LC. Fetal optimization during maternal sepsis: relevance and response of the obstetric anesthesiologist. *Current Opinion in Anesthesiology*. 2014;27(3):259-66.

Chebbo A, Tan S, Kassis C, Tamura L, Carlson RW. Maternal sepsis and septic shock. *Critical Care Clinics*. 2016;32(1):119-35.

Claushuis TAM, van Vught LA, Scicluna BP, Wiewel MA, Klein Klouwenberg PMC, Hoogendijk AJ, et al. Thrombocytopenia is associated with a dysregulated host response in critically ill sepsis patients. *Blood*. 2016;127(24):3062-72.

Dellinger et al., Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012. *Critical Care Medicine*. 2013;41:580-637.

Fouly H, Abdou FA, Abbas AM, Omar AM. Audit for quality of care and fate of maternal critical cases at Women's Health Hospital. *Applied Nursing Research*. 2018;39:175-81.

Galvão A, Braga AC, Gonçalves DR, Guimarães JM, Braga J. Sepsis during pregnancy or the postpartum period. *Journal of Obstetrics and Gynaecology*. 2016;36(6):735-43.

Gräff I, Goldschmidt B, Glien P, Dolscheid-Pommerich RC, Fimmers R, Grigutsch D. Validity of the Manchester Triage System in patients with sepsis presenting at the ED: a first assessment. *Emergency Medicine Journal*. 2017;34(4):212-8.

Harper A (on behalf of the Centre for Maternal and Child Enquiries). Chapter 7: Sepsis (pp 85-101). *In* Centre for Maternal and Child Enquiries (CMACE). Saving Mothers' Lives: reviewing maternal deaths to make motherhood safer: 2006–08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. *BJOG.* 2011;118(Suppl. 1):1–203.

Joseph J, Sinha A, Paech M, Walters BNJ. Sepsis in pregnancy and early goal-directed therapy. *Obstet Med.* 2009;2:93-99.

Knight M, Nair M, Tuffnell D, Shakespeare J, Kenyon S, Kurinczuk JJ (Eds.) on behalf of MBRRACE-UK. Saving Lives, Improving Mothers' Care - Lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2013-15. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2017.

Lepine S, Lawton B, Geller S, Abels P, MacDonald EJ. Severe maternal morbidity due to sepsis: The burden and preventability of disease in New Zealand. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2018 [in press – on line first].

Mohamed-Ahmed O, Nair M, Acosta C, Kurinczuk JJ, Knight M. Progression from severe sepsis in pregnancy to death: a UK population-based case-control analysis. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2015;122(11):1506-15.

Mor G. The unique immunologic and microbial aspects of pregnancy. *Placenta*. 2017;57:226.

Parfitt SE, Bogat ML, Hering SL, Roth C. Sepsis in Obstetrics: Pathophysiology and Diagnostic Definitions. *MCN: The American Journal of Maternal/Child Nursing*. 2017;42(4):194-8.

Rhodes A, Evans LE, Alhazzani W, Levy MM, Antonelli M, Ferrer R, et al. Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock 2016. *Critical Care Medicine*. 2017;45(3):486-552.

Seymour CW, Liu VX, Iwashyna TJ, et al. Assessment of clinical criteria for sepsis: For the third international consensus definitions for sepsis and septic shock (sepsis-3). JAMA. 2016;315(8):762-74.

Simpson SQ, Gaines M, Hussein Y, Badgett RG. Early goal-directed therapy for severe sepsis and septic shock: A living systematic review. *Journal of Critical Care*. 2016;36:43-8.

Singer M, Deutschman CS, Seymour C, et al. The third international consensus definitions for sepsis and septic shock (sepsis-3). *JAMA*. 2016;315(8):801-10.

Snyder CC, Barton JR, Habli M, Sibai BM. Severe sepsis and septic shock in pregnancy: indications for delivery and maternal and perinatal outcomes. *Journal of Maternal-Fetal and Neonatal Medicine*. 2013;26(5):503-506.

Yealy DM, Huang DT, Delaney A, Knight M, Randolph AG, Daniels R, et al. Recognizing and managing sepsis: what needs to be done? *BMC Medicine*. 2015;13(1):98.