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## Reducing maternal sepsis

Despite significant advances in the diagnosis and management of sepsis, sepsis in the puerperium remains an important cause of maternal death (Royal College of Obstetricians and Gynaecologists (RCOG) 2012). To ensure the best outcome for women who are septic, timely diagnosis and treatment is required, together with the appropriate management by midwives and other members of the multidisciplinary team. As the rates of maternal death due to sepsis are decreasing, midwives should be aware of how to educate women in the prevention of sepsis, using national recommendations. This article addresses the need for health care professionals to be aware of the signs and symptoms of sepsis and the importance of a prompt referral to an appropriate place to initiate treatment of the septic woman.

### DEFINITION AND SYMPTOMS

Sepsis is defined as the body's overwhelming response to infection: this response can include tissue damage, organ damage or even death, in some circumstances (RCOG 2012). The signs and symptoms of sepsis can range from pyrexia, tachycardia and pain through to non-specific symptoms such as lethargy or loss of appetite. The symptoms of sepsis in pregnant or postpartum women can be less obvious than in non-pregnant women, so midwives and other health professionals need to be mindful of any symptoms that women may report, and be aware of the possibility of sepsis in all circumstances (RCOG 2012). Although the rates of sepsis remain low, sepsis can occur at any time during pregnancy or during the puerperium. The altered immunity of women in response to pregnancy and the puerperium predisposes them to sepsis, particularly following birth. Their risk is approximately 50 per cent higher than that in young adults who are not pregnant (Mason and Aronoff 2012). Pregnant or postpartum women can appear well until the point of collapse, which can occur with little warning. However, more often than not a woman's physiological vital signs – the pulse, blood pressure, temperature and respiratory rate – will give an indication of the early stages of sepsis (MBRRACE-UK 2014).

### SEPSIS AND MORTALITY

Despite global initiatives, the maternal mortality rate has not been cut by the three quarters predicted by the United Nations (UN) millennium development goals (UN 2015). Globally, the majority of maternal deaths are due to sepsis, with group A streptococcus being the leading cause of severe sepsis in the puerperium (Mason and Aronoff 2012). Within the UK, the Centre for Maternal and Child Enquiries (CMACE) report (2011) noted a dramatic increase in the number of maternal deaths, particularly from community acquired streptococcus A. For the first time in the history of the report, sepsis became the leading cause of maternal mortality. The most common site for sepsis to occur in women in the puerperium, was the genital tract, particularly within the uterus (RCOG 2012). The raw placental bed presents a ready site for ascending and blood-borne infections, increasing the risk of widespread sepsis for women in the puerperium. Recommendations from the report aim to reduce the rate of sepsis by raising awareness among women and health care professionals, of the risks of genital tract sepsis. With sepsis claiming more lives than bowel cancer, prostate cancer and breast cancer combined, it is a concern that the dangers of sepsis have not received as much attention as other leading causes of mortality. By raising public awareness of the dangers

#### PRACTICE CHALLENGE

Take a look at a recent hand hygiene audit at your place of work. What were the results? Could any improvements be made? If there has not been a recent audit, organise one. These pocket guides from the WHO are useful reminders to staff

<http://tinyurl.com/j4fg5qe>

of sepsis and informing women based on the recommendations from the CMACE report (2011), it is hoped that maternal mortality due to sepsis can be reduced.

### ACTIONS TO PREVENT SEPSIS

It is important that women should be given verbal and written information about the signs and symptoms of genital tract sepsis and the need to seek help if they have any concerns. Women should also be advised of the importance of good hand hygiene. This includes avoiding contamination of the perineum by washing hands before and after using the lavatory or changing sanitary towels, particularly if they, or any family members have a sore throat (CMACE 2011). This is due to streptococcus A usually being carried within the throat, increasing the risk of streptococcus A transmitting from throat to hand and on to the genital tract. Advice for health care professionals includes the need to urgently refer women for assessment if they are displaying the signs and symptoms of sepsis. Adhering to local infection control guidelines is also important, particularly hand hygiene, in line with the World Health Organization (WHO) guidelines (2009a; 2009b).

Since the CMACE report was published in 2011, it would appear that the recommendations have successfully reduced the rates of maternal mortality from genital tract sepsis (MBRRACE-UK 2015). However, it should be remembered that genital tract sepsis can often be a preventable cause of mortality. By acting on the recommendations offered within these reports, with the correct information and education, midwives and other health care professionals can reduce this rate of mortality further. The WHO (2009a; 2009b) guidelines have recommendations that are beneficial to women and health care professionals, offering advice about 'five moments' of hand hygiene. Correct hand hygiene for women and health care professionals is well known to be a preventative factor when it comes to the spread of infection. Despite the recommendations and evidence, the National Institute for Health and Care Excellence (NICE) (2014) has noted that good hand hygiene practice is still not universal across all health care settings. Hand hygiene is a basic principle of care and it is years since NICE (2012) recommended that all health care workers should be educated about correct hand hygiene and the correct use of handwashing facilities, including the use of hand rubs to prevent the spread of infection.

### IDENTIFICATION AND TREATMENT

The key to improving outcomes for women with sepsis is early identification and prompt treatment. Diagnosis and management of sepsis should be timely, as early recognition and identification can

save lives. Following admission to hospital, an initial assessment should be completed and treatment should be commenced as soon as possible (RCOG 2012). The most recent MBRRACE-UK report (2015) notes that a thorough clinical history should always be taken and any possible source of infection, explored. Women should be transferred to an area that can provide the appropriate level of care needed for the management of sepsis. Often the birth suite or a close observational unit, will have the facilities, equipment and expertise of senior staff, and be able to provide appropriate care for women with sepsis. However, consideration should be given to transferring women to a critical care unit, where there is an appropriate level of care, according to the woman's needs and situation. Women may require high dependency care where the necessary facilities and multidisciplinary teams are in place to provide it. A multidisciplinary approach is an important factor, when treating a woman with suspected or confirmed sepsis. This includes a daily review by the multidisciplinary team and regular updates of the management plan (Royal College of Obstetric Anaesthetists (RCoA) 2011). Effective communication and collaboration within the multidisciplinary team are increasingly seen as an essential element in good quality and safe health care (Downe et al 2010). This is especially important for women who are being cared for in an area away from the maternity department.

### OBSERVATIONS AND MOEWS

As a minimum, blood pressure, heart rate, temperature, respiratory rate and oxygen saturations should be taken at the initial assessment. MBRRACE-UK (2014) reports that often the respiratory rate is not completed during observations. Sepsis causes an increased respiratory rate to meet an increased oxygen demand of the tissues, so taking a respiratory rate is vital when identifying sepsis in a woman. If the woman is within a community setting, or within a setting that does not have the equipment to perform these observations, consideration should be taken to transferring the woman to a facility where care can be provided using a multidisciplinary approach (RCoA 2011). The RCOG (2012) recommend the use of modified obstetric early warning score (MOEWS) charts, for the documentation of observations. However, there is no standardisation of these charts or of a MOEWS across the UK. Consideration of the altered physiology of pregnancy and the puerperium should be taken into consideration when MOEWS are developed at a local level. For septic women, NICE (2006) recommend observations to be completed on admission, together with a clear written management plan that

### PRACTICE CHALLENGE

Have a look at the written information offered to women around genital tract sepsis. Recommendations from CMACE (2011) include advising women to wash their hands before and after visiting the lavatory and changing their sanitary towels. When have you seen this information given to women? Is the importance of this information explained to women, in line with national recommendations?

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**PRACTICE CHALLENGE**

Take a look at your local guidelines for treatment of women with suspected sepsis. Do the guidelines follow the recommendations from the sepsis six bundle? Is the guideline clear and easy to follow, with guidance about the importance of completing these tasks within one hour? Look up 'sepsis six bundle' for further information.

**FINAL PRACTICE CHALLENGE**

Write a reflection based on your experience of caring for a woman with sepsis. What were the positive aspects of this experience? Were there any improvements that could have been made to the care offered? If you have not previously cared for a woman with sepsis, base your reflection on points of learning that you developed from this article.

specifies which observations should be recorded and how often. For women who are found to be septic, observations should be completed as recommended by NICE, but the clinical situation should be taken into account when considering the frequency of observations. Sepsis is a progressive condition; therefore, observations may appear normal on one occasion but can rapidly become abnormal. For this reason, the clinical picture should dictate the frequency of observations and updating of the management plan accordingly.


**THE SEPSIS SIX**

Daniels et al (2011) have developed the 'sepsis six guidelines', recommending the six important tasks that should be completed within the first hour of the identification of sepsis. The main recommendation from this guideline, particularly for women who are pregnant or in the puerperium with suspected sepsis, is that broad spectrum antibiotics should be commenced within the first hour. This first hour is often referred to as the 'golden hour', where commencement of treatment of antibiotics is thought to significantly reduce the rate of mortality. It is estimated that, for every hour that antibiotics are delayed, the rate of mortality can increase by 8 per cent (Daniels et al 2011). However, Marrik (2011) has questioned the validity of the 'golden hour', stating that most of the recommendations from these guidelines are not evidence based. Despite this criticism, it is well recognised from the CMACE (2011) and MBRRACE-UK (2014) reports, that a major cause of mortality is delay in starting treatment for women with suspected sepsis. Until definitive guidance from NICE has been published (expected July 2016), the sepsis six care bundle is recommended, as it has shown to reduce mortality. The RCOG (2012) and MBRRACE-UK (2014) have included a modified approach to the sepsis six bundle as below:

- 1 Take an arterial blood gas and give high flow oxygen if required
- 2 Take blood cultures
- 3 Commence intravenous antibiotics
- 4 Start intravenous fluid resuscitation
- 5 Take blood for haemoglobin and lactate levels
- 6 Measure the urine output hourly (MBRRACE-UK 2014)

**THE FUTURE**

Despite progress towards reducing maternal mortality, sepsis remains a leading cause of preventable maternal death globally. Although progress has been made and the rates of mortality due to sepsis are reducing, there is still work to be done. Midwives can contribute to a further reduction in the rates of sepsis by raising awareness among

women and their families in the antenatal and postnatal period. If sepsis is suspected, midwives should ensure prompt transfer to a facility that can support further investigation and timely treatment, in line with national guidelines. Treatment and care for the septic woman can be further enhanced through effective working and collaboration amongst the multidisciplinary team. 

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