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Requested Date: 29 August 2019

Sources Searched: Medline, Embase, CINAHL.

Maternal Sepsis

[See full search strategy](#)

1. Sepsis in Obstetrics: Treatment, Prognosis, and Prevention.

Author(s): Parfitt, Sheryl E; Bogat, Mary L; Roth, Cheryl

Source: MCN. The American journal of maternal child nursing; ; vol. 42 (no. 4); p. 206-209

Publication Type(s): Journal Article

PubMedID: 28398913

Available at [MCN. The American journal of maternal child nursing](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:Sepsis during pregnancy is one of the five leading causes of maternal mortality worldwide. Early recognition and prompt treatment of maternal sepsis is necessary to improve patient outcomes. Patient education on practices that reduce infections may be helpful in decreasing rates of sepsis. Education of nurses about early signs and symptoms of sepsis in pregnancy and use of obstetric-specific tools can assist in timely identification and better outcomes. Although the Surviving Sepsis Campaign (SSC) criteria for diagnosis of sepsis in the general population are not pertinent for obstetric patients, their treatment bundles (guidelines) are applicable and can be used to guide care of obstetric patients who develop sepsis. This article is the third in a series of three that discuss the importance of sepsis and septic shock in pregnancy. This article includes case studies, treatment, prognosis, education, and prevention of maternal sepsis.

Database: Medline

2. Sepsis in Obstetrics: Clinical Features and Early Warning Tools.

Author(s): Parfitt, Sheryl E; Bogat, Mary L; Hering, Sandra L; Ottley, Charlotte; Roth, Cheryl

Source: MCN. The American journal of maternal child nursing; ; vol. 42 (no. 4); p. 199-205

Publication Type(s): Journal Article

PubMedID: 28301336

Available at [MCN. The American journal of maternal child nursing](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract: Morbidity and mortality associated with sepsis has gained widespread attention on a local, state, and national level, yet, it remains a complicated disorder that can be difficult to identify in a timely manner. Sepsis in obstetric patients further complicates the diagnosis as alterations in physiology related to pregnancy can mask sepsis indicators normally seen in the general population. If early signs of sepsis go unrecognized, septic shock can develop, leading to organ dysfunction and potential death. Maternal early warning tools have been designed to assist clinicians in recognizing early indications of illness. Through use of clinical pathway-specific tools, disease processes may be detected early, subsequently benefitting patients with aggressive treatment management and intervention. This article is the second in a series of three that discuss the importance of sepsis and septic shock in pregnancy. Risk factors, causes of sepsis, signs and symptoms, and maternal early warning tools are discussed.

Database: Medline

3. Sepsis in Obstetrics: Pathophysiology and Diagnostic Definitions.

Author(s): Parfitt, Sheryl E; Bogat, Mary L; Hering, Sandra L; Roth, Cheryl

Source: MCN. The American journal of maternal child nursing; ; vol. 42 (no. 4); p. 194-198

Publication Type(s): Editorial

PubMedID: 28654446

Available at [MCN. The American journal of maternal child nursing](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract: In spite of many medical breakthroughs, sepsis continues to be challenging to identify, treat, and successfully resolve, including among the obstetric population. Sepsis is the result of an overactive, complex inflammatory response that is not completely understood. Currently there are no nationally agreed-upon criteria for systemic inflammatory response syndrome or sepsis in pregnant or peripartum women, as the physiologic changes of pregnancy have not been taken into consideration. This article is the first in a series of three that discuss the importance of sepsis and septic shock in pregnancy. The focus of this article is to understand the proposed pathophysiology of sepsis and new definitions associated with sepsis and septic shock. Knowledge of these conditions can assist in better identification of sepsis in the obstetric population.

Database: Medline

4. Shock index thresholds to predict adverse outcomes in maternal hemorrhage and sepsis: A prospective cohort study.

Author(s): Nathan, Hannah L; Seed, Paul T; Hezelgrave, Natasha L; De Greeff, Annemarie; Lawley, Elodie; Anthony, John; Steyn, Wilhelm; Hall, David R; Chappell, Lucy C; Shennan, Andrew H

Source: Acta obstetrica et gynecologica Scandinavica; Sep 2019; vol. 98 (no. 9); p. 1178-1186

Publication Date: Sep 2019

Publication Type(s): Journal Article

PubMedID: 31001814

Available at [Acta Obstetrica et Gynecologica Scandinavica](#) - from Wiley Online Library

Abstract:INTRODUCTIONShock index (SI) is a predictor of hemodynamic compromise in obstetric patients. The SI threshold for action is not well understood. We aimed to evaluate SI thresholds as predictors of outcomes in obstetric patients.MATERIAL AND METHODSWe undertook a prospective cohort study at three South African hospitals of women with postpartum hemorrhage (n = 283) or maternal sepsis (n = 126). The "first" and "worst" SI following diagnosis were recorded. SI was compared with conventional vital signs as predictors of outcomes. The performance of SI <.9, SI .9-1.69 and SI ≥1.7 to predict outcomes (maternal death; Critical Care Unit admission; major procedure; hysterectomy) and hemorrhage-specific outcomes (lowest hemoglobin <70 g/l; blood transfusion ≥4 IU) were evaluated.RESULTS"First" SI was one of two best performing vital signs for every outcome in postpartum hemorrhage and sepsis. In hemorrhage, risk of all outcomes increased with increasing "first" SI; for blood transfusion ≥4 IU odds ratio was 4.24 (95% confidence interval 1.25-14.36) for SI ≥1.7 vs SI .9-1.69. In sepsis, risk of all outcomes increased with increasing "worst" SI. Sensitivity, specificity, positive and negative predictive values of "first" SI <.9 vs SI ≥.9 for maternal death were 100.0%, 55.2%, 4.6% and 100.0%, respectively, in hemorrhage and 80.0%, 50.4%, 12.3% and 96.7%, respectively, in sepsis.CONCLUSIONSThe shock index was a consistent predictor of outcomes compared with conventional vital signs in postpartum hemorrhage and sepsis. SI <.9 performed well as a rule-out test and SI .9-1.69 and SI ≥1.7 indicated increased risk of all outcomes in both cohorts. These thresholds may alert to the need for urgent intervention and prevent maternal deaths.

Database: Medline

5. Secondary analysis of the WOMAN trial to explore the risk of sepsis after invasive treatments for postpartum hemorrhage

Author(s): Cornelissen L.; Woodd S.; Shakur-Still H.; Roberts I.; Fawole B.; Noor S.; Etuk S.; Akintan A.L.; Chaudhri R.

Source: International Journal of Gynecology and Obstetrics; Aug 2019; vol. 146 (no. 2); p. 231-237

Publication Date: Aug 2019

Publication Type(s): Article

PubMedID: 31081140

Available at [International Journal of Gynecology and Obstetrics](#) - from Wiley Online Library

Available at [International Journal of Gynecology and Obstetrics](#) - from Unpaywall

Abstract:Objective: To examine the association between the use of invasive treatments for postpartum hemorrhage and the risk of sepsis and severe sepsis. Method(s): Secondary data analysis of the WOMAN randomized controlled trial, including 20 060 women with postpartum hemorrhage in 21 countries. Logistic regression with random effects was used. Result(s): The cumulative incidence was 1.8% for sepsis and 0.5% for severe sepsis. All-cause mortality was 40.4% in women with severe sepsis versus 2.2% for women without. After adjusting for bleeding severity and other confounders, intrauterine tamponade, hysterectomy, and laparotomy increased the risk of sepsis (aOR 1.77 [95% CI 1.21-2.59], $P=0.004$; aOR 1.97 [95% CI 1.49-2.65], $P<0.001$; and aOR 6.63 [95% CI 4.29-10.24], $P<0.001$, respectively) and severe sepsis (aOR 2.60 [95% CI 1.47-4.59], $P=0.002$; aOR 1.97 [95% CI 0.83-2.46], $P=0.033$; and aOR 5.35 [95% CI 2.61-10.98], $P<0.001$, respectively).

Conclusion(s): In this secondary data analysis, certain invasive treatments for postpartum hemorrhage appear to increase the risk of sepsis. Further research is needed to confirm this finding and investigate the role of prophylactic antibiotics during these procedures. The harms and benefits of such interventions must be carefully weighed, both in treatment guidelines and during individual patient management. Trial Registration: ISRCTN76912190. Copyright © 2019 The Authors.

International Journal of Gynecology & Obstetrics published by John Wiley & Sons Ltd on behalf of International Federation of Gynecology and Obstetrics

Database: EMBASE

6. Screening asymptomatic households for *Streptococcus pyogenes* pharyngeal carriage as a part of in-hospital investigation of puerperal sepsis.

Author(s): Cohen, Regev; Cohen, Shoshana; Afraimov, Marina; Finn, Talya; Babushkin, Frida; Geller, Keren; Paikin, Svetlana; Yoffe, Irena; Valinsky, Lea; Ron, Merav; Rokney, Assaf

Source: American journal of infection control; Jul 2019

Publication Date: Jul 2019

Publication Type(s): Journal Article

PubMedID: 31296346

Abstract:BACKGROUND Invasive group A streptococcal (iGAS) infection in the peripartum setting is a rare but devastating disease occasionally occurring as a health care-associated infection (HAI). Current guidelines suggest enhanced surveillance and streptococcal isolate storage after a single case of iGAS, as well as a full epidemiological investigation that includes screening health care workers (HCWs) from several sites after 2 cases. Current guidelines do not recommend routine screening of household members of a patient with iGAS. METHODS We conducted studies of 3 patients with iGAS puerperal sepsis and related epidemiologic and molecular investigations. RESULTS Identical GAS emm gene types were found in pharyngeal cultures of 3 asymptomatic spouses of patients with iGAS puerperal sepsis. HCWs screened negative for GAS, and emm typing indicated that other iGAS cases from this hospital were sporadic and not related to the puerperal cases. CONCLUSION The concurrent presence of the same emm type in a household member practically excludes the option of an inadvertent HAI or facility outbreak. Hence, we suggest that screening close family members for asymptomatic GAS carriage should be performed early as a part of infection prevention measures, as doing so would have significant utility in saving time and resources related to a full epidemiological inquiry.

Database: Medline

7. Maternal sepsis is an evolving challenge.

Author(s): Turner, Michael J

Source: International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics; Jul 2019; vol. 146 (no. 1); p. 39-42

Publication Date: Jul 2019

Publication Type(s): Journal Article Review

PubMedID: 31037723

Available at [International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics](#) - from Wiley Online Library

Available at [International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics](#) - from Unpaywall

Abstract: Despite major advances in the last century, particularly in high resource settings, maternal sepsis remains a common and potentially preventable cause of direct maternal death globally. A barrier to further progress has been the lack of consensus on the definition of maternal sepsis. Publications from two recent multidisciplinary consensus conferences, one on sepsis in the non-pregnant adult and the other on sepsis in the pregnant woman, concluded that the criteria for diagnosing sepsis should be clinically-based, applicable at the bedside, and should not be laboratory-based. Informed by reviews of the evidence, in 2017 WHO published a new definition of maternal sepsis based on the presence of suspected or confirmed infection. It also announced a Global Maternal and Neonatal Sepsis Initiative to identify the diagnostic criteria for the early identification,

epidemiology, and disease classification of maternal sepsis. Standardizing the criteria for maternal sepsis optimizes clinical audit and research. It may facilitate the evaluation of the role of different clinical parameters and biomarkers in the diagnosis, earlier recognition and management of maternal infection and sepsis. Further work is required to develop an international consensus on the criteria for diagnosing maternal sepsis and any associated organ dysfunction.

Database: Medline

8. The midwife's role in recognising, diagnosing and treating maternal sepsis postnatally.

Author(s): Rossiter, Hollie

Source: MIDIRS Midwifery Digest; Jun 2019; vol. 29 (no. 2); p. 211-214

Publication Date: Jun 2019

Publication Type(s): Academic Journal

Abstract:Midwives are autonomous, specialist lead professionals in normality, caring for low-risk women. Occasionally when maternal deviations from normality arise, it is within the midwife's role and responsibility to act accordingly by recognising the aberration and referring to the appropriate relevant services or senior, specialist professionals, such as obstetricians (Nursing and Midwifery Council (NMC) 2015a). Within the midwife's role, it is vital to recognise complex medical and obstetric conditions early as initial diagnosis and treatment can significantly affect the health and/or well-being of the woman and her family. This paper aims to explore the role of the midwife in contemporary practice in relation to recognising, diagnosing and treating maternal sepsis postnatally. References to both local and national policies and guidance are included. Legal and ethical issues that relate to midwifery practice are also referred to, underpinning the fundamental professional standards of practice and values that midwives must adhere to, as advised by the NMC (2015b).

Database: CINAHL

9. Quality Improvement Opportunities Identified Through Case Review of Pregnancy-Related Deaths From Sepsis

Author(s): Seacrist M.J.; Morton C.H.; VanOtterloo L.R.; Main E.K.

Source: Journal of obstetric, gynecologic, and neonatal nursing : JOGNN; May 2019; vol. 48 (no. 3); p. 311-320

Publication Date: May 2019

Publication Type(s): Article

PubMedID: 30974075

Abstract:OBJECTIVE: To analyze quality improvement opportunities (QIOs) identified through review of cases of maternal death from sepsis by the California Pregnancy-Associated Mortality Review Committee. DESIGN: Qualitative descriptive design using thematic analysis. SAMPLE: A total of 118 QIOs identified from 27 cases of pregnancy-related deaths from sepsis in California from 2002 to 2007. METHOD(S): We coded and thematically organized the 118 QIOs using three of the four domains commonly applied in quality improvement initiatives for maternal health care: Readiness, Recognition, and Response. Data did not include reporting issues, so the Reporting domain was excluded from the analysis. RESULT(S): Women's delay in seeking care was the central theme in the Readiness domain. In the Recognition domain, health care providers missed the signs and symptoms of sepsis, including elevated temperature, elevated white blood cell count, increased heart rate, decreased blood pressure, mottled skin, preterm labor, headache, and pain. For Response, late antibiotic administration was a central theme; multiple emergent themes included administration of the wrong antibiotics, failure to investigate women's complaints of pain, lack of nurse/provider communication, and lack of follow-up care after hospital discharge. CONCLUSION(S): To reverse the contribution of sepsis to the rising rate of maternal mortality in the United States, health care facilities and providers need to reduce barriers for women who seek care, recognize early symptoms, and respond with appropriate treatment. This could be achieved by implementation of the Maternal Early Warning Criteria, standardized guidelines such as those from the Surviving Sepsis campaign, and comprehensive discharge education. Copyright © 2019 AWHONN, the Association of Women's Health, Obstetric and Neonatal Nurses. Published by Elsevier Inc. All rights reserved.

Database: EMBASE

10. Development of a novel bedside index for the early identification of severe maternal infection.

Author(s): O'Regan, Catherine; O'Malley, Eimer G; Power, Karen A; Reynolds, Ciara M E; Sheehan, Sharon R; Turner, Michael J

Source: European journal of obstetrics, gynecology, and reproductive biology; Apr 2019; vol. 235 ; p. 26-29

Publication Date: Apr 2019

Publication Type(s): Journal Article Evaluation Studies

PubMedID: 30784824

Abstract:OBJECTIVESInternational consensus reports have recently recommended that the Systemic Inflammatory Response Syndrome (SIRS) criteria for the diagnosis of sepsis should cease and that new bedside criteria need to be developed to improve prevention, early diagnosis and treatment. The aim of this retrospective audit was to evaluate a suite of four bedside clinical criteria, called the Early Maternal Infection Prompts (EMIP), in helping to identify women with a suspected severe infection who were admitted to a High Dependency Unit (HDU) in a large tertiary referral stand-alone maternity hospital. STUDY DESIGNThe four EMIP criteria were decided based on existing national obstetric guidelines and a review of the recent literature on maternal critical illnesses. Cases were identified from the HDU registry for the three years 2015-2017. Individual charts were retrieved, and the four EMIP parameters were measured at the time of the clinical assessment that led to the HDU admission. Clinical and sociodemographic details were computerised for analysis. RESULTSOf 73 women admitted with suspected severe maternal infection, the handwritten records were available in 69. The mean age was 31.3 years, 71% were multiparous and 26.1% were obese. Three quarters of cases were antenatal admissions. Infection was confirmed microbiologically in 56 (81.1%) of cases. There were no maternal deaths. There was no case of organ dysfunction diagnosed but two women required vasopressors to maintain blood pressure. Recordings of the maternal vital signs were not always fully completed before admission. In 69.1% (n = 47) of cases the temperature was elevated ≥ 37.5 C, in 81.2% (n = 56) of cases the heart rate was increased ≥ 100 bpm, in 51.9% (n = 27) cases the respiratory rate was increased ≥ 20 bpm, and in 25.4% (n = 17) cases the systolic blood pressure was ≤ 100 mmHg. At least one of the four EMIP criteria was abnormal in 91.3% (n = 63) of cases of suspected severe infection. CONCLUSIONThe audit confirmed that this bedside index has potential in helping to identify maternal infection early before sepsis develops. Prospective studies are required to evaluate the index in different settings, for different infections and at the different stages of maternal infection.

Database: Medline

11. Maternal sepsis: new concepts, new practices.

Author(s): Foeller, Megan E; Gibbs, Ronald S

Source: Current opinion in obstetrics & gynecology; Apr 2019; vol. 31 (no. 2); p. 90-96

Publication Date: Apr 2019

Publication Type(s): Journal Article

PubMedID: 30789841

Available at [Current opinion in obstetrics & gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:**PURPOSE OF REVIEW**Sepsis is a leading cause of severe maternal morbidity and maternal death. As pregnancy-related sepsis can be difficult to recognize, clinicians should maintain a low threshold for early evaluation and treatment.**RECENT FINDINGS**Definitions and treatment guidelines for maternal sepsis were recently revised in 2016 and 2017 by the Surviving Sepsis Campaign and WHO. Multiple clinical decision tools have been created to aid clinicians in early recognition and risk prediction for sepsis in obstetric populations, but currently, an optimal screening tool does not exist. Early recognition and urgent treatment is paramount for patient survival. Antibiotics should be started within 1 h and fluid resuscitation should be initiated if sepsis-induced hypoperfusion is present. Care should be escalated to appropriate settings and source control provided.**SUMMARY**Obstetricians have a heightened understanding of the physiologic changes in pregnancy and play a vital role in coordinating patient care and improving outcomes. The recent 2016 and 2017 revisions of definitions for maternal sepsis and treatment should be incorporated into clinical practice.

Database: Medline

12. SMFM Consult Series #47: Sepsis during pregnancy and the puerperium

Author(s): Plante L.A.; Pacheco L.D.; Louis J.M.

Source: American Journal of Obstetrics and Gynecology; Apr 2019; vol. 220 (no. 4)

Publication Date: Apr 2019

Publication Type(s): Article

PubMedID: 30684460

Available at [American Journal of Obstetrics and Gynecology](#) - from Unpaywall

Abstract:Maternal sepsis is a significant cause of maternal morbidity and mortality and is a preventable cause of maternal death. The purpose of this guideline is to summarize what is known about sepsis and to provide guidance for the management of sepsis in pregnancy and the postpartum period. The following are SMFM recommendations: (1) we recommend that sepsis and septic shock be considered medical emergencies and that treatment and resuscitation begin immediately (GRADE 1B); (2) we recommend that providers consider the diagnosis of sepsis in pregnant patients with otherwise unexplained end-organ damage in the presence of an infectious process, regardless of the presence of fever (GRADE 1B); (3) we recommend that empiric broad-spectrum antibiotics be administered as soon as possible, ideally within 1 hour, in any pregnant woman in whom sepsis is suspected (GRADE 1B); (4) we recommend obtaining cultures (blood, urine, respiratory, and others as indicated) and serum lactate levels in pregnant or postpartum women in whom sepsis is suspected or identified, and early source control should be completed as soon as possible (GRADE 1C); (5) we recommend early administration of 1-2 L of crystalloid solutions in sepsis complicated by hypotension or suspected organ hypoperfusion (GRADE 1C); (6) we recommend the use of norepinephrine as the first-line vasopressor during pregnancy and the postpartum period in sepsis with persistent hypotension and/or hypoperfusion despite fluid

resuscitation (GRADE 1C); (7) we recommend against immediate delivery for the sole indication of sepsis and that delivery should be dictated by obstetric indications (GRADE 1B).Copyright © 2019

Database: EMBASE

13. Sepsis during pregnancy and the puerperium.

Author(s):

Source: Contemporary OB/GYN; Apr 2019; vol. 64 (no. 4); p. 33-36

Publication Date: Apr 2019

Publication Type(s): Academic Journal

Available at [Contemporary OB/GYN](#) - from ProQuest (Health Research Premium) - NHS Version

Abstract:The article presents questions and answers related to sepsis during pregnancy, including the clinical and pathophysiology of sepsis, as well as the most common infectious etiologies of the disease.

Database: CINAHL

14. Operative vaginal delivery and post-partum infection.

Author(s): Mohamed-Ahmed, Olaa; Hinshaw, Kim; Knight, Marian

Source: Best practice & research. Clinical obstetrics & gynaecology; Apr 2019; vol. 56 ; p. 93-106

Publication Date: Apr 2019

Publication Type(s): Journal Article Review

PubMedID: 30992125

Abstract:During the past decade, there has been an increase in the awareness of infections associated with pregnancy and delivery. The most significant cause of post-partum infection is caesarean section; 20-25% of operations are followed by wound infections, endometritis or urinary tract infections. Approximately 13% of women in the UK undergo operative vaginal delivery (OVD) with forceps or vacuum, which is also associated with an increased risk of infection, estimated at 0.7%-16% of these deliveries. Despite this, previous reviews have identified only one small trial of antibiotic prophylaxis in 393 women and concluded that there was insufficient evidence to support the routine use of prophylactic antibiotics after OVD. The ANODE trial, a multicentre, blinded, placebo-controlled trial from the UK, is due to report findings from more than 3400 women in 2019 and will be the largest study to date of antibiotic prophylaxis following OVD.

Database: Medline

15. Maternal Sepsis: Recognition, Treatment, and Escalation of Care

Author(s): Naoum E.E.; Bauer M.E.

Source: Current Anesthesiology Reports; Mar 2019; vol. 9 (no. 1); p. 55-59

Publication Date: Mar 2019

Publication Type(s): Review

Available at [Current Anesthesiology Reports](#) - from SpringerLink - Medicine

Abstract: Purpose of Review: The purpose of this article is to provide a brief review of maternal sepsis and the supporting literature for recognition and management. Recent Findings: Recent findings suggest that there is significant room for improvement in identifying patients at risk, expeditiously providing appropriate intervention, and developing action plans to best care for these patients and prevent morbidity and mortality. Summary: Improved education and understanding of the unique presentation of sepsis during pregnancy may help to improve detection, timely treatment, and expedite appropriate transfer to higher levels of care. Copyright © 2019, Springer Science+Business Media, LLC, part of Springer Nature.

Database: EMBASE

16. Recognition and Management of Sepsis in the Obstetric Patient.

Author(s): Parfitt, Sheryl E; Hering, Sandra L

Source: AACN advanced critical care; 2018; vol. 29 (no. 3); p. 303-315

Publication Date: 2018

Publication Type(s): Journal Article

PubMedID: 30185497

Abstract: Sepsis is one of the principal causes of maternal mortality in obstetrics. Physiologic changes that occur during pregnancy create a vulnerable environment, predisposing pregnant patients to the development of sepsis. Furthermore, these changes can mask sepsis indicators normally seen in the nonobstetric population, making it difficult to recognize and treat sepsis in a timely manner. The use of maternal-specific early warning tools for sepsis identification and knowledge of appropriate interventions and their effects on the mother and fetus can help clinicians obtain the best patient outcomes in acute care settings. This article outlines the signs and symptoms of sepsis in obstetric patients and discusses treatment options used in critical care settings.

Database: Medline

17. Severe maternal morbidity due to sepsis: The burden and preventability of disease in New Zealand.

Author(s): Lepine, Sam; Lawton, Beverley; Geller, Stacie; Abels, Peter; MacDonald, Evelyn J

Source: The Australian & New Zealand journal of obstetrics & gynaecology; Dec 2018; vol. 58 (no. 6); p. 648-653

Publication Date: Dec 2018

Publication Type(s): Journal Article

PubMedID: 29460453

Available at [The Australian & New Zealand journal of obstetrics & gynaecology](#) - from Wiley Online Library

Abstract:BACKGROUND Sepsis is a life-threatening systemic condition that appears to be increasing in the obstetric population. Clinical detection can be difficult and may result in increased morbidity via delays in the continuum of patient care. AIMSTo describe the burden of severe maternal morbidity (SMM) caused by sepsis in New Zealand and investigate the potential preventability. METHODSA multidisciplinary expert review panel was established to review cases of obstetric sepsis admitted to intensive care or high-dependency units over an 18 month span in New Zealand. Cases were then analysed for the characteristics of infection and their preventability. RESULTS Fifty cases met the inclusion criteria, most commonly due to uterine, respiratory or kidney infection. Fifty per cent (25) of these cases were deemed potentially preventable, predominantly due to delays in diagnosis and treatment. CONCLUSIONS A high index of suspicion, development of early recognition systems and multi-disciplinary training are recommended to decrease preventable cases of maternal sepsis.

Database: Medline

18. Sepsis in pregnancy and the puerperium.

Author(s): Burlinson, C E G; Sirounis, D; Walley, K R; Chau, A

Source: International journal of obstetric anesthesia; Nov 2018; vol. 36 ; p. 96-107

Publication Date: Nov 2018

Publication Type(s): Journal Article Review

PubMedID: 29921485

Abstract:Sepsis remains a leading cause of maternal morbidity and mortality. Recognition and treatment of maternal sepsis are often delayed due to the physiological adaptations of pregnancy and vague or absent signs and symptoms during its initial presentation. Over the past decade, our understanding of sepsis has evolved and maternal early warning systems have been developed in an effort to help providers promptly identify and stratify parturients who are at risk. In addition, new consensus definitions and care bundles have recently been published by the World Health Organization and the Surviving Sepsis Campaign to facilitate earlier recognition and timely management of sepsis. In this narrative review, we summarize the available evidence about sepsis and provide an overview of the research efforts focused on maternal sepsis to date. Controversies and challenges surrounding the anesthetic management of parturients with sepsis or at risk of developing sepsis during pregnancy or the puerperium will be highlighted.

Database: Medline

19. Selective or universal screening for GBS in pregnancy (review).

Author(s): Brown, Andrew P; Denison, Fiona C

Source: Early human development; Nov 2018; vol. 126 ; p. 18-22

Publication Date: Nov 2018

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article Review

PubMedID: 30241898

Abstract:Group B streptococcus (GBS) is the most common cause of early-onset neonatal sepsis in many countries and responsible for significant perinatal morbidity and mortality worldwide. Intrapartum antibiotic prophylaxis has been the mainstay of efforts to prevent early-onset GBS disease in recent decades, however it is unclear if women should be targeted based on the presence of clinical risk factors or by screening for GBS colonisation during pregnancy. Universal bacteriological screening of women in late pregnancy has been widely adopted but questions remain regarding its benefits and potential harms. Newer approaches to screening based on rapid point-of-care testing require further evaluation in randomised controlled trials to inform evidence-based practice. Given current preventive strategies do not protect against late onset disease and other sequelae of infection, maternal vaccination against GBS may present the best opportunity to reduce the global burden of invasive GBS disease in the future.

Database: Medline

20. Case Fatality and Adverse Outcomes Are Reduced in Pregnant Women With Severe Sepsis or Septic Shock Compared With Age-Matched Comorbid-Matched Nonpregnant Women.

Author(s): Kidson, Kristen M; Henderson, William R; Hutcheon, Jennifer A

Source: Critical care medicine; Nov 2018; vol. 46 (no. 11); p. 1775-1782

Publication Date: Nov 2018

Publication Type(s): Journal Article

PubMedID: 30096100

Available at [Critical care medicine](#) - from Ovid (Journals @ Ovid) - Remote Access

Abstract:**OBJECTIVE**Case fatality in pregnancy-associated severe sepsis or septic shock appears reduced compared with nonpregnant women with severe sepsis or septic shock. It remains unclear if this difference is due to pregnancy or better baseline health status, among others. Our study compared adverse outcomes of pregnancy-associated severe sepsis or septic shock with nonpregnant women with severe sepsis or septic shock while controlling for age and chronic comorbidities.**DESIGN**Retrospective cohort study.**SETTING**Nationwide Inpatient Sample, a stratified sample of 20% acute care hospital admissions in the United States. Each entry includes patient and hospital characteristics as well as International Classification of Diseases, 9th revision, Clinical Modification, diagnoses and procedures.**SUBJECTS**Women of childbearing age (15-44 yr) with severe sepsis or septic shock-related hospitalizations during 1998-2012 identified using International Classification of Diseases, 9th revision, Clinical Modification, codes.**OUTCOME**Case fatality, hospital length of stay, length of stay until death, number of organ failures, rates of mechanical ventilation, and hemodialysis were compared in women according to pregnancy status, controlling for age, and chronic comorbidities.**MEASUREMENTS AND MAIN RESULTS**We identified 5,968 pregnancy-associated severe sepsis or septic shock and 85,240 nonpregnant women with severe sepsis or septic shock hospitalizations. Crude case fatality of pregnancy-associated severe sepsis or septic shock (9.6%) was lower than nonpregnant women with severe sepsis or septic shock (16.8%). The rate ratio for case fatality adjusted for socioeconomic status and race was 0.57 (95% CI, 0.52-0.62) while sequential adjustments for age and chronic comorbidities did not eliminate the association (rate

ratio, 0.62 [95% CI, 0.57-0.68]) and 0.63 [95% CI, 0.57-0.68], respectively). Pregnancy-associated severe sepsis or septic shock was associated with shorter hospital length of stay (-0.83 d [95% CI, -1.32 to -0.34 d]), longer length of stay until death (2.61 d; [95% CI, 1.28-3.94 d]), and fewer organ failures (rate ratio, 0.95 [95% CI, 0.94-0.97]).CONCLUSIONS Case fatality and adverse outcomes are reduced in women with pregnancy-associated severe sepsis or septic shock compared with nonpregnant women with severe sepsis or septic shock, and this is not explained by differences in age or chronic comorbidities alone. A less severe presentation of sepsis or protective effect of pregnancy may account for the difference observed with pregnancy-associated severe sepsis or septic shock.

Database: Medline

21. Sepsis in the Obstetric Client.

Author(s): Adorno, Marie

Source: Critical care nursing clinics of North America; Sep 2018; vol. 30 (no. 3); p. 415-422

Publication Date: Sep 2018

Publication Type(s): Journal Article Review

PubMedID: 30098745

Abstract:Maternal sepsis is the third most common direct cause of maternal mortality following maternal hemorrhage and maternal hypertension. Undetected and poorly managed maternal infections can lead to sepsis, death, or disability for the mother and an increased likelihood of early neonatal infection and other adverse outcomes. When caring for obstetric patients, it is important to identify the stages of antepartum, intrapartum, and postpartum care. Sepsis occurs at any stage of obstetric care.

Database: Medline

22. Risk Factors, Etiologies, and Screening Tools for Sepsis in Pregnant Women: A Multicenter Case-Control Study.

Author(s): Bauer, Melissa E; Housey, Michelle; Bauer, Samuel T; Behrmann, Sydney; Chau, Anthony; Clancy, Caitlin; Clark, Erin A S; Einav, Sharon; Langen, Elizabeth; Leffert, Lisa; Lin, Stephanie; Madapu, Manokanth; Maile, Michael D; McQuaid-Hanson, Emily; Priessnitz, Kristina; Sela, Hen Y; Shah, Anuj; Sobolewski, Paul; Toledo, Paloma; Tsen, Lawrence C; Bateman, Brian T

Source: Anesthesia and analgesia; Aug 2018

Publication Date: Aug 2018

Publication Type(s): Journal Article

PubMedID: 30169408

Available at [Anesthesia and analgesia](#) - from Free Medical Journals . com

Available at [Anesthesia and analgesia](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:BACKGROUND Given the significant morbidity and mortality of maternal sepsis, early identification is key to improve outcomes. This study aims to evaluate the performance characteristics of the systemic inflammatory response syndrome (SIRS), quick Sequential [Sepsis-related] Organ Failure Assessment (qSOFA), and maternal early warning (MEW) criteria for identifying cases of impending sepsis in parturients. The secondary objective of this study is to identify etiologies and risk factors for maternal sepsis and to assess timing of antibiotics in patients diagnosed with sepsis. METHODS Validated maternal sepsis cases during the delivery hospitalization from 1995 to 2012 were retrospectively identified at 7 academic medical centers in the United States and Israel. Control patients were matched by date of delivery in a 1:4 ratio. The sensitivity and specificity of SIRS, qSOFA, and MEW criteria for identifying sepsis were calculated. Data including potential risk factors, vital signs, laboratory values, and clinical management were collected for cases and controls. RESULTS Eighty-two sepsis cases during the delivery hospitalization were identified and matched to 328 controls. The most common causes of sepsis were the following: chorioamnionitis 20 (24.4%), endometritis 19 (23.2%), and pneumonia 9 (11.0%). Escherichia coli 12 (14.6%), other Gram-negative rods 8 (9.8%), and group A Streptococcus 6 (7.3%) were the most commonly found pathogens. The sensitivities and specificities for meeting criteria for screening tools were as follows: (1) SIRS (0.93, 0.63); (2) qSOFA (0.50, 0.95); and (3) MEW criteria for identifying sepsis (0.82, 0.87). Of 82 women with sepsis, 10 (12.2%) died. The mortality rate for those who received antibiotics within 1 hour of diagnosis was 8.3%. The mortality rate was 20% for the patients who received antibiotics after >1 hour. CONCLUSIONS Chorioamnionitis and endometritis were the most common causes of sepsis, together accounting for about half of cases. Notable differences were observed in the sensitivity and specificity of sepsis screening tools with the highest to lowest sensitivity being SIRS, MEW, and qSOFA criteria, and the highest to lowest specificity being qSOFA, MEW, and SIRS. Mortality was doubled in the cohort of patients who received antibiotics after >1 hour. Clinicians need to be vigilant to identify cases of peripartum sepsis early in its course and prioritize timely antibiotic therapy.

Database: Medline

23. Microbiology and clinical outcomes of puerperal sepsis: a prospective cohort study.

Author(s): Majangara, Rumbidzai; Gidiri, Muchabayiwa Francis; Chirenje, Zvavahera Mike

Source: Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology; Jul 2018; vol. 38 (no. 5); p. 635-641

Publication Date: Jul 2018

Publication Type(s): Journal Article

PubMedID: 29447024

Abstract:The objectives of this study were to determine the identity and antibacterial susceptibility profiles of bacteria colonising the female genital tract and blood stream and their association with clinical outcomes in women with puerperal sepsis. A prospective descriptive cohort study was conducted at two tertiary hospitals in Zimbabwe. Endocervical swabs and blood were collected for culture and susceptibility testing from 151 consecutive women who met the World Health Organisation criteria for puerperal sepsis. Medical records were reviewed for assessment of clinical outcomes. The commonest bacterial isolates were *Escherichia coli* (30.6%) and *Klebsiella pneumoniae* (15.3%). Multidrug-resistant organisms (MDRO) accounted for 10.9% of all isolates. MDRO were associated with prolonged hospital stay, 23.0 days compared to 10.5 days in women without MDRO ($p = .009$). Puerperal sepsis case fatality rate was 7.3%. Clinical culture surveillance to monitor epidemiologic trends, identify MDRO, robust infection control strategies and emphasis on rational drug use are recommended. Impact statement What is already known? Puerperal sepsis is often a polymicrobial infection. *Escherichia coli* has been reported as a common cause of severe maternal sepsis originating from the genital tract. Other bacteria include Group A *Streptococcus*, *S. aureus*, *Streptococcus* spp. *Klebsiellae* spp, *Pseudomonas* spp. and anaerobes. What does this study add? This study confirms *Escherichia coli* as the commonest cause of sepsis in Harare. There is high level resistance to first-line antibiotic regimens on most Gram-negative isolates from the endocervix among women with puerperal sepsis. Emerging resistance to carbapenems is demonstrated. MDRO significantly increased length of hospital stay, and there was a clinically important trend towards higher rates of pelvic abscess, septic shock, death, need for laparotomy and ICU admission specific to puerperal sepsis. What are the implications for clinical practice and further research? Clinical culture surveillance to monitor epidemiologic trends in conjunction with robust infection control strategies and rational drug use may assist in prevention of community acquired and nosocomial multidrug-resistant infections.

Database: Medline

24. A View From the UK: The UK and Ireland Confidential Enquiry into Maternal Deaths and Morbidity.

Author(s): Knight, Marian; Tuffnell, Derek

Source: Clinical obstetrics and gynecology; Jun 2018; vol. 61 (no. 2); p. 347-358

Publication Date: Jun 2018

Publication Type(s): Journal Article

PubMedID: 29346120

Available at [Clinical obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:The UK Confidential Enquiry into Maternal Deaths has been in operation for more than 60 years, during which time maternal mortality rates have fallen 10-fold. The program includes two aspects, surveillance and confidential case review, providing different information to aid quality improvement in maternity care. The enquiry now also reviews the care of women with specific severe morbidities. Recommendations have very clearly led to improved outcomes for women, most notably shown in the very low mortality rate due to hypertensive and related disorders of pregnancy. Maternal cardiac disease and mental health problems remain the major areas still to be addressed.

Database: Medline

25. Recognition and Treatment of Sepsis in Pregnancy.

Author(s): Kendle, Anthony M; Louis, Judette

Source: Journal of midwifery & women's health; May 2018; vol. 63 (no. 3); p. 347-351

Publication Date: May 2018

Publication Type(s): Case Reports Journal Article

PubMedID: 29733491

Available at [Journal of Midwifery & Women's Health](#) - from Wiley Online Library

Abstract:Sepsis that occurs in the context of pregnancy is associated with significant maternal morbidity and mortality. International and multidisciplinary organizations have advocated for expedient diagnosis and initiation of treatment in patients with sepsis. However, the physiologic changes of pregnancy complicate both identification and treatment of maternal sepsis. This article describes a case of a woman presenting with symptoms of sepsis progressing to septic shock. Strategies for identifying and treating women with presumed sepsis are reviewed, and recent data regarding maternal and fetal outcomes are discussed.

Database: Medline

26. Maternal sepsis.

Author(s): Vaught, Arthur Jason

Source: Seminars in perinatology; Feb 2018; vol. 42 (no. 1); p. 9-12

Publication Date: Feb 2018

Publication Type(s): Journal Article Review

PubMedID: 29463391

Abstract:Sepsis is a leading cause of maternal morbidity and mortality in developed and developing nations. Obstetric practitioners should be familiar with guidelines that promote the safe and expeditious recovery of those affected. This article will provide the reader with rational steps to aid in the recovery of such a patient.

Database: Medline

27. Maternal sepsis in the era of genomic medicine.

Author(s): Kouskouti, C; Evangelatos, N; Brand, A; Kainer, F

Source: Archives of gynecology and obstetrics; Jan 2018; vol. 297 (no. 1); p. 49-60

Publication Date: Jan 2018

Publication Type(s): Journal Article Review

PubMedID: 29103195

Available at [Archives of gynecology and obstetrics](#) - from SpringerLink - Medicine

Abstract:**PURPOSE**Maternal sepsis remains one of the leading causes of direct and indirect maternal mortality both in high- and low-income environments. In the last two decades, systems biology approaches, based on '-omics' technologies, have started revolutionizing the diagnosis and management of the septic syndrome. The scope of this narrative review is to present an overview of the basic '-omics' technologies, exemplified by cases relevant to maternal sepsis.**METHODS**Narrative review of the new '-omics' technologies based on a detailed review of the literature.**RESULTS**After presenting the main 'omics' technologies, we discuss their limitations and the need for integrated approaches that encompass research efforts across multiple '-omics' layers in the '-omics' cascade between the genome and the phenome.**CONCLUSION**Systems biology approaches are revolutionizing the research landscape in maternal sepsis. There is a need for increased awareness, from the side of health practitioners, as a requirement for the effective implementation of the new technologies in the research and clinical practice in maternal sepsis.

Database: Medline

28. The global maternal sepsis study and awareness campaign (GLOSS): study protocol.

Author(s): Bonet, Mercedes; Souza, Joao Paulo; Abalos, Edgardo; Fawole, Bukola; Knight, Marian; Kouanda, Seni; Lumbiganon, Pisake; Nabhan, Ashraf; Nadisauskiene, Ruta; Brizuela, Vanessa; Metin Gülmezoglu, A

Source: Reproductive health; Jan 2018; vol. 15 (no. 1); p. 16

Publication Date: Jan 2018

Publication Type(s): Journal Article

PubMedID: 29382352

Available at [Reproductive health](#) - from BioMed Central

Available at [Reproductive health](#) - from SpringerLink - Medicine

Available at [Reproductive health](#) - from ProQuest (Health Research Premium) - NHS Version

Available at [Reproductive health](#) - from Unpaywall

Abstract:BACKGROUND 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. METHODS This is a facility-based, prospective, one-week inception cohort study. This study will be implemented in health care facilities located in pre-specified geographical areas of participating countries across the WHO regions of Africa, Americas, Eastern Mediterranean, Europe, South East Asia, and Western Pacific. During a seven-day period, all women admitted to or already hospitalised in participating facilities with suspected or confirmed infection during any stage of pregnancy through the 42nd day after abortion or childbirth will be included in the study. Included women will be followed during their stay in the facilities until hospital discharge, death or transfer to another health facility. The maximum intra-hospital follow-up period will be 42 days. DISCUSSION 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.

Database: Medline

29. Maternal Disease with Group B Streptococcus and Serotype Distribution Worldwide: Systematic Review and Meta-analyses

Author(s): Hall J.; Adams N.H.; Bartlett L.; Seale A.C.; Bianchi-Jassir F.; Lawn J.E.; Lamagni T.; Baker C.J.; Cutland C.; Madhi S.A.; Heath P.T.; Le Doare K.; Ip M.; Rubens C.E.; Gravett M.G.; Saha S.K.; Schrag S.; Sobanjo-Ter Meulen A.; Vekemans J.

Source: Clinical Infectious Diseases; 2017; vol. 65

Publication Date: 2017

Publication Type(s): Review

PubMedID: 29117328

Available at [Clinical Infectious Diseases](#) - from Oxford Journals - Medicine

Available at [Clinical Infectious Diseases](#) - from Unpaywall

Abstract:Background. Infections such as group B Streptococcus (GBS) are an important cause of maternal sepsis, yet limited data on epidemiology exist. This article, the third of 11, estimates the incidence of maternal GBS disease worldwide. Methods. We conducted systematic literature reviews (PubMed/Medline, Embase, Latin American and Caribbean Health Sciences Literature [LILACS], World Health Organization Library Information System [WHOLIS], and Scopus) and sought unpublished data on invasive GBS disease in women pregnant or within 42 days postpartum. We undertook meta-analyses to derive pooled estimates of the incidence of maternal GBS disease. We examined maternal and perinatal outcomes and GBS serotypes. Results. Fifteen studies and 1 unpublished dataset were identified, all from United Nations-defined developed regions. From a single study with pregnancies as the denominator, the incidence of maternal GBS disease was 0.38 (95% confidence interval [CI], .28-.48) per 1000 pregnancies. From 3 studies reporting cases by the number of maternities (pregnancies resulting in live/still birth), the incidence was 0.23 (95% CI, .09-.37). Five studies reported serotypes, with Ia being the most common (31%). Most maternal GBS disease was detected at or after delivery. Conclusions. Incidence data on maternal GBS disease in developing regions are lacking. In developed regions the incidence is low, as are the sequelae for the mother, but the risk to the fetus and newborn is substantial. The timing of GBS disease suggests that a maternal vaccine given in the late second or early third trimester of pregnancy would prevent most maternal cases. Copyright © 2017 The Author.

Database: EMBASE

30. Maternal sepsis: Opportunity for improvement.

Author(s): Firoz, Tabassum; Woodd, Susannah L.

Source: Obstetric Medicine (1753-495X); Dec 2017; vol. 10 (no. 4); p. 174-176

Publication Date: Dec 2017

Publication Type(s): Academic Journal

Available at [Obstetric Medicine](#) - from Europe PubMed Central - Open Access

Available at [Obstetric Medicine](#) - from Unpaywall

Database: CINAHL

31. SOMANZ guidelines for the investigation and management sepsis in pregnancy.

Author(s): Bowyer, Lucy; Robinson, Helen L; Barrett, Helen; Crozier, Timothy M; Giles, Michelle; Idel, Irena; Lowe, Sandra; Lust, Karin; Marnoch, Catherine A; Morton, Mark R; Said, Joanne; Wong, Maggie; Makris, Angela

Source: The Australian & New Zealand journal of obstetrics & gynaecology; Oct 2017; vol. 57 (no. 5); p. 540-551

Publication Date: Oct 2017

Publication Type(s): Practice Guideline Journal Article

PubMedID: 28670748

Available at [The Australian & New Zealand journal of obstetrics & gynaecology](#) - from Wiley Online Library

Available at [The Australian & New Zealand journal of obstetrics & gynaecology](#) - from Unpaywall

Abstract:SOMANZ (Society of Obstetric Medicine Australia and New Zealand) has written a guideline to provide evidence-based guidance for the investigation and care of women with sepsis in pregnancy or the postpartum period. The guideline is evidence-based and incorporates recent changes in the definition of sepsis. The etiology, investigation and treatment of bacterial, viral and non-infective causes of sepsis are discussed. Obstetric considerations relevant to anaesthetic and intensive care treatment in sepsis are also addressed. A multi-disciplinary group of clinicians with experience in all aspects of the care of pregnant women have contributed to the development of the guidelines. This is an executive summary of the guidelines.

Database: Medline

32. Internal Validation of the Sepsis in Obstetrics Score to Identify Risk of Morbidity From Sepsis in Pregnancy.

Author(s): Albright, Catherine M; Has, Phinnara; Rouse, Dwight J; Hughes, Brenna L

Source: Obstetrics and gynecology; Oct 2017; vol. 130 (no. 4); p. 747-755

Publication Date: Oct 2017

Publication Type(s): Journal Article Validation Studies

PubMedID: 28885400

Available at [Obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:**OBJECTIVE**To prospectively validate the Sepsis in Obstetrics Score, a pregnancy-specific sepsis scoring system, to identify risk for intensive care unit (ICU) admission for sepsis in pregnancy.**METHODS**This is a prospective validation study of the Sepsis in Obstetrics Score. The primary outcome was admission to the ICU for sepsis. Secondary outcomes included admission to a telemetry unit and time to administration of antibiotic therapy. We evaluated test characteristics of a predetermined score of 6 or greater.**RESULTS**Between March 2012 and May 2015, 1,250 pregnant or postpartum women presented to the emergency department and met systemic inflammatory response syndrome criteria. Of those, 425 (34%) had a clinical suspicion or diagnosis of an infection, 14 of whom (3.3%) were admitted to the ICU. The Sepsis in Obstetrics Score had an area under the curve of 0.85 (95% CI 0.76-0.95) for prediction of ICU admission for sepsis. This is within the prespecified 15% margin of the area under the curve of 0.97 found in the derivation cohort. A score of 6 or greater had a sensitivity of 64%, specificity of 88%, positive predictive value of 15%, and negative predictive value of 98.6%. Women with a score 6 or greater were more likely to be admitted to the ICU (15% compared with 1.4%, $P<.01$), admitted to a telemetry unit (37.3% compared with 7.2%, $P<.01$), and have antibiotic therapy initiated (90% compared with 72.9%,

P<.01), initiated more quickly (3.2 compared with 3.7 hours, P=.03), although not within 1 hour (5.6 compared with 3.4%, P=.44).CONCLUSIONThe Sepsis in Obstetrics Score is a validated pregnancy-specific score to identify risk of ICU admission for sepsis with the threshold score of 6 having a negative predictive value of 98.6%. Adherence to antibiotic administration guidelines is poor.

Database: Medline

33. Clinical Risk Factors Associated With Peripartum Maternal Bacteremia.

Author(s): Easter, Sarah Rae; Molina, Rose L; Venkatesh, Kartik K; Kaimal, Anjali; Tuomala, Ruth; Riley, Laura E

Source: Obstetrics and gynecology; Oct 2017; vol. 130 (no. 4); p. 710-717

Publication Date: Oct 2017

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 28885399

Available at [Obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Available at [Obstetrics and gynecology](#) - from Patricia Bowen Library & Knowledge Service West Middlesex University Hospital NHS Trust (lib302631) Local Print Collection [location] : Patricia Bowen Library and Knowledge Service West Middlesex university Hospital.

Abstract:OBJECTIVETo evaluate risk factors associated with maternal bacteremia in febrile peripartum women.METHODSWe performed a case-control study of women with fevers occurring between 7 days before and up to 42 days after delivery of viable neonates at two academic hospitals. Women with positive blood cultures were matched with the next two febrile women meeting inclusion criteria with negative blood cultures in the microbiology data without other matching parameters. We compared maternal and neonatal characteristics and outcomes between women in the case group and those in the control group with univariate analysis. We then used logistic regression to examine the association between clinical characteristics and maternal bacteremia.RESULTSAfter excluding blood cultures positive only for contaminants, we compared 115 women in the case group with 285 in the control group. Bacteremic women were more likely to experience their initial fever during labor (40.9% compared with 22.8%, P<.01) and more likely to have fever at or above 102°F (62.6% compared with 31.6%, P<.01). These associations persisted in the adjusted analysis: multiparity (adjusted odds ratio [OR] 1.75, 95% CI 1.07-2.87), initial fever during labor (adjusted OR 2.82, 95% CI 1.70-4.70), and fever at or above 102°F (adjusted OR 3.83, 95% CI 2.37-6.19). In an analysis restricted to neonates whose mothers had initial fevers before or in the immediate 24 hours after delivery, neonates born to women in the case group had higher rates of bacteremia compared with those born to women in the control group (9.0% compared with 1.3%, P<.01). Eight of the nine bacteremic neonates born to bacteremic mothers (89%) grew the same organism as his or her mother in blood culture.CONCLUSIONMaternal bacteremia is associated with multiparity, initial fever during labor, and fever at or above 102°F; however, 37.5% of cases of bacteremia occurred in women with maximum fevers below this threshold. Obstetricians should maintain a heightened suspicion for an infectious source of fever in women with these clinical characteristics.

Database: Medline

34. Maternal obesity, obstetric interventions and post-partum anaemia increase the risk of post-partum sepsis: a population-based cohort study based on Swedish medical health registers.

Author(s): Axelsson, Daniel; Blomberg, Marie

Source: Infectious diseases (London, England); Oct 2017; vol. 49 (no. 10); p. 765-771

Publication Date: Oct 2017

Publication Type(s): Journal Article Observational Study

PubMedID: 28632072

Abstract:BACKGROUNDThe objective was to estimate whether maternal obesity and/or obstetric interventions are associated with diagnosed maternal post-partum sepsis.METHODSA retrospective observational cohort study including all deliveries in Sweden between 1997 and 2012 (N = 1,558,752). Cases of sepsis (n = 376) were identified by International Classification of Diseases, (ICD-10) codes A40, A41 and O 85 in the Medical Birth Register and the National Patient Register. The reference population was non-infected, and therefore, women with any other infection diagnosis and/or with dispensed antibiotics within eight weeks post-partum were excluded. Information on dispensed drugs was available in the prescribed drug Register. Women with sepsis were compared with non-infected women concerning maternal characteristics and obstetric interventions. Adjusted odds ratios (aOR) were determined using the Mantel-Haenszel technique. Adjustments were made for maternal age, parity and smoking.RESULTSObesse women (body mass index ≥ 30) had a doubled risk of sepsis (3.6/10,000) compared with normal weight women (2.0/10,000) (aOR 1.85 (95%CI: 1.37-2.48)). Induction of labour (aOR 1.44 (95%CI: 1.09-1.91)), caesarean section overall (aOR 3.06 (95%CI: 2.49-3.77)) and elective caesarean section (aOR 2.41 (95%CI: 1.68-3.45)) increased the risk of sepsis compared with normal vaginal delivery. Post-partum anaemia due to acute blood loss was associated with maternal sepsis (aOR 3.40 (95%CI: 2.59-4.47)).CONCLUSIONSMaternal obesity, obstetric interventions and post-partum anaemia due to acute blood loss increased the risk of diagnosed post-partum sepsis indicating that interventions in obstetric care should be considered carefully and anaemia should be treated if resources are available.

Database: Medline

35. Managing Maternal Sepsis: Early Warning Criteria to ECMO.

Author(s): Padilla, Cesar; Palanisamy, Arvind

Source: Clinical obstetrics and gynecology; Jun 2017; vol. 60 (no. 2); p. 418-424

Publication Date: Jun 2017

Publication Type(s): Journal Article Review

PubMedID: 28098573

Available at [Clinical obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:Maternal sepsis is now a leading cause of direct maternal death during pregnancy. This review addresses the latest advances in the identification and management of critically ill parturients. Specifically, this review will focus on the vulnerability of pregnant women to sepsis, the utility of early warning criteria in the identification of the septic parturient, emphasize the immediate antibiotic management of suspected sepsis, and elaborate upon the latest understanding in the ventilatory management of parturients with sepsis.

Database: Medline

36. Epidural Labor Analgesia and Maternal Fever.

Author(s): Sharpe, Emily E; Arendt, Katherine W

Source: Clinical obstetrics and gynecology; Jun 2017; vol. 60 (no. 2); p. 365-374

Publication Date: Jun 2017

Publication Type(s): Journal Article

PubMedID: 28079555

Available at [Clinical obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:Women receiving an epidural for labor analgesia are at increased risk for intrapartum fever. This relationship has been supported by observational, before and after, and randomized controlled trials. The etiology is not well understood but is likely a result of noninfectious inflammation as studies have found women with fever have higher levels of inflammatory markers. Maternal pyrexia may change obstetric management and women are more likely to receive antibiotics or undergo cesarean delivery. Maternal pyrexia is associated with adverse neonatal outcomes. With these consequences, understanding and preventing maternal fever is imperative.

Database: Medline

37. Towards a consensus definition of maternal sepsis: results of a systematic review and expert consultation.

Author(s): Bonet, Mercedes; Nogueira Pileggi, Vicky; Rijken, Marcus J; Coomarasamy, Arri; Lissauer, David; Souza, João Paulo; Gülmezoglu, Ahmet Metin

Source: Reproductive health; May 2017; vol. 14 (no. 1); p. 67

Publication Date: May 2017

Publication Type(s): Journal Article Review Systematic Review

PubMedID: 28558733

Available at [Reproductive health](#) - from BioMed Central

Available at [Reproductive health](#) - from SpringerLink - Medicine

Available at [Reproductive health](#) - from ProQuest (Health Research Premium) - NHS Version

Available at [Reproductive health](#) - from Unpaywall

Abstract:BACKGROUND There is a need for a clear and actionable definition of maternal sepsis, in order to better assess the burden of this condition, trigger timely and effective treatment and allow comparisons across facilities and countries. The objective of this study was to review maternal sepsis definitions and identification criteria and to report on the results of an expert consultation to develop a new international definition of maternal sepsis. METHODS All original and review articles and WHO documents, as well as clinical guidelines providing definitions and/or identification criteria of maternal sepsis were included. A multidisciplinary international panel of experts was surveyed through an online consultation in March-April 2016 on their opinion on the existing sepsis definitions, including new definition of sepsis proposed for the adult population (2016 Third International Consensus Definitions for Sepsis and Septic Shock) and importance of different criteria for identification of maternal sepsis. The definition was agreed using an iterative process in an expert face-to-face consensus development meeting convened by WHO and Jhpiego. RESULTS Standardizing the definition of maternal sepsis and aligning it with the current understanding of sepsis in the adult population was considered a mandatory step to improve the assessment of the burden of maternal sepsis by the expert panel. The literature review and expert consultation resulted in a new WHO consensus definition "Maternal sepsis is a life-threatening

condition defined as organ dysfunction resulting from infection during pregnancy, child-birth, post-abortion, or post-partum period". Plans are in progress to validate the new WHO definition of maternal sepsis in a large international population. **CONCLUSION** The operationalization of the new maternal sepsis definition requires generation of a set of practical criteria to identify women with sepsis. These criteria should enable clinicians to focus on the timely initiation of actionable elements of care (administration of antimicrobials and fluids, support of vital organ functions, and referral) and improve maternal outcomes.

Database: Medline

38. Severe puerperal sepsis-a simmering menace

Author(s): Marwah S.; Topden S.R.; Sharma M.; Mittal P.; Mohindra R.

Source: Journal of Clinical and Diagnostic Research; May 2017; vol. 11 (no. 5)

Publication Date: May 2017

Publication Type(s): Review

Available at [Journal of clinical and diagnostic research : JCDR](#) - from Europe PubMed Central - Open Access

Available at [Journal of clinical and diagnostic research : JCDR](#) - from Unpaywall

Abstract: Introduction: Even decades after the development of effective low-cost antibiotics, sepsis persists as the foremost cause of preventable maternal death worldwide. In developing countries like India, where the paramount impediment to intervention is poverty, maternal mortality due to sepsis is a continuing representation of maternal health inequality Aim: To determine the incidence, risk factors and mortality in women presenting with puerperal sepsis in a tertiary care health facility in India Material and Methods: This retrospective study was carried out in VMMC and Safdarjung Hospital, New Delhi, India, from January 2016 to June 2016 in Department of Obstetrics and Gynaecology. Case records of all eligible patients of puerperal sepsis were reviewed and data were extracted regarding demographic profile, clinical profile on admission, course in hospital, management, complications and cause of mortality (in case of death). Inclusion criteria were any patient presenting either immediately after delivery or miscarriage or within 42 days of these events with fever and any of the following: pain abdomen, malodorous lochia, abdominal distention, uterine tenderness, pelvic abscess, peritonitis, mechanical or foreign body injury, any system/organ failure or shock. Exclusion criteria consisted of patients presenting with fever during pregnancy or more than 42 days after delivery or miscarriage, or patients presenting with fever due to medical conditions, wound infection, mastitis, UTI or thrombophlebitis. Data were entered in predesigned proformas and analysed. A p-value of less than 0.05 was considered significant. Results: During the study period, a total of 33 cases met the inclusion criteria. Of these, ninety percent were referred cases. Anaemia, prolonged labour, delivery by an untrained person and unsafe abortion were the main identifiable risk factors. Surgical management was required in 75% cases, while 70% women succumbed to their illness, mostly due to multiorgan failure. Conclusion: Maternal mortality due to maternal sepsis is very high; Lack of safe and hygienic practices for conducting delivery and abortion are important contributory factors. Copyright © 2017, Journal of Clinical and Diagnostic Research. All rights reserved.

Database: EMBASE

39. Clinical and microbiological features of maternal sepsis: a retrospective study

Author(s): Abir G.; Akdagli S.; Butwick A.; Carvalho B.

Source: International Journal of Obstetric Anesthesia; Feb 2017; vol. 29 ; p. 26-33

Publication Date: Feb 2017

Publication Type(s): Article

PubMedID: 27793427

Abstract:Background Identifying pregnant women with sepsis is challenging because diagnostic clinical and laboratory criteria overlap with normal pregnant physiologic indices. Our primary study aim was to describe clinical and laboratory characteristics of women diagnosed with sepsis, severe sepsis and septic shock. Our secondary aim was to determine positive predictive values for International Classification of Disease (ICD)-9 billing codes for sepsis, severe sepsis, and septic shock. Methods After gaining Institutional Review Board approval, we identified women with ICD-9 codes for sepsis, severe sepsis and septic shock who were admitted to a single tertiary obstetric center from 2007-2013. Diagnoses were confirmed using criteria from the International Sepsis Definitions Conference report. Demographic, obstetric, vital signs and laboratory data were abstracted by medical chart review. Results We identified 190 women with sepsis-related ICD-9 codes: of these, 35 (18%) women met the criteria for a clinical diagnosis of sepsis, severe sepsis or septic shock. Twenty (57%) women had a sepsis-related diagnosis after cesarean delivery. Twenty-one (60%) women had one or more pre-existing medical conditions and 19 (54%) women had one or more obstetric-related conditions. The genital tract was the most common site of infection. We observed considerable heterogeneity in maternal vital signs and laboratory indices for women with ICD-9 codes for sepsis, severe sepsis, and septic shock. The positive predictive value for each sepsis-related ICD-9 code was low: 16% (95% CI 10 to 24%) for sepsis, 10% (95% CI 3 to 25%) for severe sepsis and 24% (95% CI 10 to 46%) for septic shock. Conclusion We identified marked heterogeneity in patient characteristics, clinical features, laboratory indices and microbiological findings among cohorts of women diagnosed with maternal sepsis, severe sepsis or septic shock. Based on our findings, the incidence of maternal sepsis using ICD-9 codes may be significantly overestimated. Copyright © 2016 Elsevier Ltd

Database: EMBASE

40. Multiple Organ Dysfunction Score Is Superior to the Obstetric-Specific Sepsis in Obstetrics Score in Predicting Mortality in Septic Obstetric Patients.

Author(s): Aarvold, Alice B R; Ryan, Helen M; Magee, Laura A; von Dadelszen, Peter; Fjell, Chris; Walley, Keith R

Source: Critical care medicine; Jan 2017; vol. 45 (no. 1); p. e49

Publication Date: Jan 2017

Publication Type(s): Multicenter Study Journal Article

PubMedID: 27618276

Available at [Critical care medicine](#) - from Ovid (Journals @ Ovid) - Remote Access

Available at [Critical care medicine](#) - from PubMed Central

Available at [Critical care medicine](#) - from Unpaywall

Abstract:OBJECTIVESMortality prediction scores have been used for a long time in ICUs; however, numerous studies have shown that they over-predict mortality in the obstetric population. With sepsis remaining a major cause of obstetric mortality, we aimed to look at five mortality prediction scores (one obstetric-based and four general) in the septic obstetric population and compare them to a nonobstetric septic control group.SUBJECT AND DESIGNWomen in the age group of 16-50 years with an admission diagnosis or suspicion of sepsis were included. In a multicenter obstetric population (n = 797), these included all pregnant and postpartum patients up to 6 weeks postpartum. An age- and gender-matched control nonobstetric population was drawn from a single-center general critical care population (n = 2,461). Sepsis in Obstetric Score, Acute Physiology and Chronic Health Evaluation II, Simplified Acute Physiology Score II, Sequential Organ Failure Assessment, and Multiple Organ Dysfunction Scores were all applied to patients meeting inclusion criteria in both cohorts, and their area under the receiver-operator characteristic curves was calculated to find the most accurate predictor.MEASUREMENTS AND MAIN RESULTSA total of 146 septic patients were found for the obstetric cohort and 299 patients for the nonobstetric control cohort. The Sepsis in Obstetric Score, Acute Physiology and Chronic Health Evaluation II, Simplified Acute Physiology Score II, Sequential Organ Failure Assessment, and Multiple Organ Dysfunction Scores gave area under the receiver-operator characteristic curves of 0.67, 0.68, 0.72, 0.79, and 0.84 in the obstetric cohort, respectively, and 0.64, 0.72, 0.61, 0.78, and 0.74 in the nonobstetric cohort, respectively. The Sepsis in Obstetric Score performed similarly to all the other scores with the exception of the Multiple Organ Dysfunction Score, which was significantly better ($p < 0.05$).CONCLUSIONThe Sepsis in Obstetric Score, designed specifically for sepsis in obstetric populations, was not better than general severity of illness scoring systems. Furthermore, the Sepsis in Obstetric Score performance was no different in an obstetric sepsis population compared to a nonobstetric sepsis population. The Multiple Organ Dysfunction Score is a simple organ-based score, and this result supports the use of organ-based outcome predictors in ICU even in an obstetric sepsis population.

Database: Medline

41. Sepsis in Pregnancy: Identification and Management.

Author(s): Albright, Catherine M; Mehta, Niharika D; Rouse, Dwight J; Hughes, Brenna L

Source: The Journal of perinatal & neonatal nursing; 2016; vol. 30 (no. 2); p. 95-105

Publication Date: 2016

Publication Type(s): Journal Article

PubMedID: 26825620

Available at [The Journal of perinatal & neonatal nursing](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:Sepsis accounts for up to 28% of all maternal deaths. Prompt, appropriate treatment improves maternal and fetal morbidity and mortality. To date, there are no validated tools for identification of sepsis in pregnant women, and tools used in the general population tend to overestimate mortality. Once identified, management of pregnancy-associated sepsis is goal-directed, but because of the lack of studies of sepsis management in pregnancy, it must be assumed that modifications need to be made on the basis of the physiologic changes of pregnancy. Key to management is early fluid resuscitation and early initiation of appropriate antimicrobial therapy directed toward the likely source of infection or, if the source is unknown, empiric broad-spectrum therapy. Efforts directed at identifying the source of infection and appropriate source control measures are critical. Development of an illness severity scoring system and treatment algorithms validated in pregnant women needs to be a research priority.

Database: Medline

42. Early Recognition and Management of Maternal Sepsis.

Author(s): Olvera, Lori; Dutra, Danette

Source: Nursing for women's health; 2016; vol. 20 (no. 2); p. 182

Publication Date: 2016

Publication Type(s): Journal Article Review

PubMedID: 27067934

Abstract:Although septic shock is rare in pregnancy, it is an important contributor to maternal mortality. A woman in the perinatal period can appear deceptively well before rapidly deteriorating to septic shock. We evaluated compliance with early goal-directed therapy before, during, and after the implementation of a standardized physician order set and interprofessional education. A retrospective study included 97 women with positive screening results for sepsis from April 2014 to January 2015. When comparing preintervention and postintervention results in women with sepsis, statistical significance was achieved for blood lactate level testing ($p = .029$), administering a broad-spectrum antibiotic ($p = .006$), repeat lactate level testing ($p = .034$), and administering a broad-spectrum antibiotic in women with severe sepsis and septic shock ($p = .010$). Education and a sepsis protocol using a multidisciplinary approach improves compliance with sepsis bundles, which are a group of interventions that, when used together, are intended to improve health outcomes.

Database: Medline

43. Management of Sepsis and Septic Shock for the Obstetrician-Gynecologist.

Author(s): Plante, Lauren A

Source: Obstetrics and gynecology clinics of North America; Dec 2016; vol. 43 (no. 4); p. 659-678

Publication Date: Dec 2016

Publication Type(s): Journal Article Review

PubMedID: 27816153

Abstract:The incidence of sepsis is increasing in the United States, both in the general adult population and among pregnant and postpartum women. Neither infection nor bacteremia are synonymous with sepsis: it is a dysregulated host response to a pathogen in which organ dysfunction is key. New clinical criteria have been released. Cornerstones of management are early suspicion and recognition, effective fluid resuscitation, and appropriate antimicrobial therapy.

Database: Medline

44. Ending preventable maternal and newborn deaths due to infection.

Author(s): Desale, Meghana; Thinkhamrop, Jadsada; Lumbiganon, Pisake; Qazi, Shamim; Anderson, Jean

Source: Best practice & research. Clinical obstetrics & gynaecology; Oct 2016; vol. 36 ; p. 116-130

Publication Date: Oct 2016

Publication Type(s): Journal Article Review

PubMedID: 27450868

Abstract:Over 300,000 maternal deaths occur each year, 11% of which are thought to be due to infectious causes, and approximately one million newborns die within the first week of life annually due to infectious causes. Infections in pregnancy may result in a variety of adverse obstetrical outcomes, including preterm delivery, pre-labor rupture of membranes, stillbirth, spontaneous abortion, congenital infection, and anomalies. This paper reviews the burden of disease due to key infections and their contribution to maternal, perinatal, and newborn morbidity and mortality, as well as key interventions to prevent maternal and newborn deaths related to these infections. Research needs include more accurate clinical and microbiologic surveillance systems, validated risk stratification strategies, better point-of-care testing, and identification of promising vaccine strategies.

Database: Medline

45. Maternal morbidity and mortality from severe sepsis: a national cohort study.

Author(s): Acosta, Colleen D; Harrison, David A; Rowan, Kathy; Lucas, D Nuala; Kurinczuk, Jennifer J; Knight, Marian

Source: BMJ open; Aug 2016; vol. 6 (no. 8); p. e012323

Publication Date: Aug 2016

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 27554107

Available at [BMJ open](#) - from Europe PubMed Central - Open Access

Available at [BMJ open](#) - from ProQuest (Health Research Premium) - NHS Version

Available at [BMJ open](#) - from Unpaywall

Abstract:OBJECTIVE To describe the incidence, characteristics and risk factors for critical care admission with severe maternal sepsis in the UK. DESIGN National cohort study. SETTING 198 critical care units in the UK. PARTICIPANTS 646 pregnant and recently pregnant women who had severe sepsis within the first 24 hours of admission in 2008-2010. PRIMARY AND SECONDARY OUTCOME MEASURES Septic shock, mortality. RESULTS Of all maternal critical care admissions, 14.4% (n=646) had severe sepsis; 10.6% (n=474) had septic shock. The absolute risk of maternal critical care admission with severe sepsis was 4.1/10 000 maternities. Pneumonia/respiratory infection (irrespective of the H1N1 pandemic influenza strain) and genital tract infection were the most common sources of sepsis (40% and 24%, respectively). We identified a significant gradient in the risk of severe maternal sepsis associated with increasing deprivation (RR=6.5; 95% CI 4.9 to 8.5 most deprived compared with most affluent women). The absolute risk of mortality was 1.8/100 000 maternities. The most common source of infection among women who died was pneumonia/respiratory infection (41%). Known risk factors for morbidity supported by this study were: younger age, multiple gestation birth and caesarean section. Significant risk factors for mortality in unadjusted analysis were: age ≥ 35 years (unadjusted OR (uOR)=3.5; 95% CI 1.1 to 10.6), ≥ 3 organ system dysfunctions (uOR=12.7; 95% CI 2.9 to 55.1), respiratory dysfunction (uOR=6.5; 95% CI 1.9 to 21.6), renal dysfunction (uOR=5.6; 95% CI 2.3 to 13.4) and haematological dysfunction (uOR=6.5; 95% CI 2.9 to 14.6). CONCLUSION This study suggests a need to improve timely recognition of severe respiratory tract and genital tract infection in the obstetric population. The social gradient associated with the risk of severe sepsis morbidity and mortality raises important questions regarding maternal health service provision and usage.

Database: Medline

46. Sepsis during pregnancy or the postpartum period.

Author(s): Galvão, Ana; Braga, António Costa; Gonçalves, Daniela Reis; Guimarães, Joana Mesquita; Braga, Jorge

Source: Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology; Aug 2016; vol. 36 (no. 6); p. 735-743

Publication Date: Aug 2016

Publication Type(s): Journal Article Review

PubMedID: 27152968

Abstract:Sepsis is an important cause of maternal morbidity and mortality worldwide. Early recognition and timely treatment are the key to ensuring a favourable outcome. This article reviews recent literature about definitions, pathophysiology, incidence, diagnosis, management, treatment, prevention and outcome of sepsis during pregnancy and the postpartum period.

Database: Medline

47. Mortality Associated with Severe Sepsis Among Age-Similar Women with and without Pregnancy-Associated Hospitalization in Texas: A Population-Based Study.

Author(s): Oud, Lavi

Source: Medical science monitor : international medical journal of experimental and clinical research; Jun 2016; vol. 22 ; p. 1976-1986

Publication Date: Jun 2016

Publication Type(s): Journal Article

PubMedID: 27286326

Available at [Medical science monitor : international medical journal of experimental and clinical research](#) - from Europe PubMed Central - Open Access

Available at [Medical science monitor : international medical journal of experimental and clinical research](#) - from Unpaywall

Abstract:BACKGROUND The reported mortality among women with pregnancy-associated severe sepsis (PASS) has been considerably lower than among severely septic patients in the general population, with the difference being attributed to the younger age and lack of chronic illness among the women with PASS. However, no comparative studies were reported to date between patients with PASS and age-similar women with severe sepsis not associated with pregnancy (NPSS). MATERIAL AND METHODS We used the Texas Inpatient Public Use Data File to compare the crude and adjusted hospital mortality between women with severe sepsis, aged 20-34 years, with and without pregnancy-associated hospitalizations during 2001-2010, following exclusion of those with reported chronic comorbidities, as well as alcohol and drug abuse. RESULTS Crude hospital mortality among PASS vs. NPSS hospitalizations was lower for the whole cohort (6.7% vs. 14.1% [$p<0.0001$]) and those with ≥ 3 organ failures (17.6% vs. 33.2% [$p=0.0100$]). Adjusted PASS mortality (odds ratio [95% CI]) was 0.57 (0.38-0.86) [$p=0.0070$]. CONCLUSIONS Hospital mortality was unexpectedly markedly and consistently lower among women with severe sepsis associated with pregnancy, as compared with contemporaneous, age-similar women with severe sepsis not associated with pregnancy, without reported chronic comorbidities. Further studies are warranted to examine the sources of the observed differences and to corroborate our findings.

Database: Medline

48. Evaluation of the systemic inflammatory response syndrome criteria for the diagnosis of sepsis due to maternal bacteremia.

Author(s): Maguire, Patrick J; Power, Karen A; Downey, Andrew F; O'Higgins, Amy C; Sheehan, Sharon R; Turner, Michael J

Source: International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics; Apr 2016; vol. 133 (no. 1); p. 116-119

Publication Date: Apr 2016

Publication Type(s): Journal Article

PubMedID: 26873128

Available at [International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics](#) - from Wiley Online Library

Abstract:OBJECTIVETo examine, in the setting of maternal bacteremia, the implications for the diagnosis of maternal sepsis of customizing the systemic inflammatory response syndrome (SIRS) criteria for physiologic changes of pregnancy.METHODSWomen with maternal bacteremia in a tertiary maternity hospital during 2009-2014 were identified. Records were retrospectively reviewed to determine whether they fulfilled the criteria for diagnosis of sepsis based on either the standard SIRS parameters derived from the Surviving Sepsis Campaign or SIRS parameters customized for pregnancy. Diagnosis of sepsis was based on the presence of two or more SIRS criteria, in conjunction with infection, during the hour before and the 6 hours after phlebotomy for blood culture.RESULTSO f 93 women with bacteremia, 61 (66%) would have been diagnosed with sepsis based on standard criteria compared with 52 (56%) based on customized criteria ($P=0.18$). Seventeen women had a diagnosis of sepsis based on the standard but not the customized criteria, while eight women had sepsis based on the customized but not the standard criteria.CONCLUSIONIn maternal bacteremia, customized SIRS criteria do not increase the rate of diagnosis of sepsis. Prospective studies should investigate whether the introduction of customized SIRS criteria can improve clinical outcomes.

Database: Medline

49. Pregnancy-associated severe sepsis.

Author(s): Oud, Lavi

Source: Current opinion in obstetrics & gynecology; Apr 2016; vol. 28 (no. 2); p. 73-78

Publication Date: Apr 2016

Publication Type(s): Journal Article Review

PubMedID: 26825182

Available at [Current opinion in obstetrics & gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:**PURPOSE OF REVIEW**This article examines the contemporary knowledge and uncertainties about the burden of pregnancy-associated severe sepsis (PASS), and its manifestations, management, and outcomes.**RECENT FINDINGS**There are relatively sparse data on PASS, related in part to infrequent reports and varying use of terminology and case definitions. PASS remains rare, although its incidence appears to be rapidly rising in some high-resource countries, affecting especially women with limited resources, minorities, and those with chronic illness. High level of clinician vigilance and rapid initiation of appropriate antimicrobial therapy, coupled with effective systemic support for organ dysfunction and correction of occult and overt hypoperfusion are the keys to limit adverse outcomes. However, timely diagnosis and provision of effective care remain a challenge, with reported prevalent delay in recognition and delivery of time-sensitive care interventions among maternal decedents. The mortality rate of PASS has been rising and its case fatality, although relatively low, has remained unchanged, in contrast to the outcome gains in the general population. The long-term sequelae of PASS remain unknown.**SUMMARY**The relatively limited contemporary data on PASS suggest a rising public health hazard in the obstetric population in high-resource countries, with ongoing challenges in assuring consistent provision of time-sensitive care.

Database: Medline

50. Maternal sepsis: Current approaches to recognition and clinical management

Author(s): Faksh A.; Martin S.

Source: Current Women's Health Reviews; Apr 2016; vol. 12 (no. 1); p. 20-38

Publication Date: Apr 2016

Publication Type(s): Review

Abstract:Sepsis represents a leading cause of maternal morbidity and mortality in the United States and worldwide. Clinical management of sepsis in pregnancy must take into consideration the unique pathophysiology of pregnancy. Etiologies of sepsis in pregnant and post-partum women differ from a patient who is non-pregnant. Moreover, the clinical diagnosis of sepsis in pregnancy can be quite challenging due to the anticipated physiologic changes that occur in pregnancy, contributing to variability in recognition. Pre-existing maternal medical conditions and other demographic factors may also predispose certain women to developing sepsis. Prompt recognition and subsequent treatment of sepsis in pregnancy can improve both maternal and neonatal outcomes. In the present review, we will summarize the perinatal implications of sepsis in the obstetric population during the antepartum and postpartum periods. Further understanding of systemic inflammation leading to multi-system organ failure, non-obstetric and obstetric etiologies of sepsis, and subsequent perinatal complications will help to expeditiously identify and treat women with this life-threatening condition to ultimately improve outcomes. Copyright © 2016 Bentham Science Publishers.

Database: EMBASE

51. Staphylococcus Infections in Pregnancy.

Author(s): Kriebs, Jan M.

Source: Journal of Perinatal & Neonatal Nursing; Apr 2016; vol. 30 (no. 2); p. 115-123

Publication Date: Apr 2016

Publication Type(s): Academic Journal

Available at [Journal of Perinatal & Neonatal Nursing](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:Staphylococcus aureus is carried by up to one third of the general population; about 2% are carriers for methicillin-resistant S. aureus (MRSA). Infections caused by the antibiotic-resistant form include skin and soft tissue infections, as well as pneumonia, sepsis, and wound infections. Although the risks of hospital-associated systemic infections have decreased with attention to infection control procedures, serious obstetric illness remains a concern. This article describes the range of MRSA infection in the setting of pregnancy and discusses risks to both mother and newborn associated with active MRSA infection during pregnancy and childbirth. Methicillin-resistant S. aureus remains a risk to mothers and newborns, requiring prompt identification and appropriate management.

Database: CINAHL

52. Group A Streptococcal Infection in Pregnancy and the Puerperium.

Author(s): Burke Sosa, Mary Ellen

Source: Journal of Perinatal & Neonatal Nursing; Apr 2016; vol. 30 (no. 2); p. 124-130

Publication Date: Apr 2016

Publication Type(s): Academic Journal

Available at [Journal of Perinatal & Neonatal Nursing](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:There has been an increasing incidence worldwide of invasive group A streptococcal disease in pregnancy and the puerperal period over the past 30 years. Group A Streptococcus (GAS) was identified as the major cause of maternal morbidity and mortality from sepsis before the identification that hand washing techniques could prevent the transmission of the bacteria. Hand washing remains the cornerstone of prevention as transmission can occur directly from an asymptomatic colonized healthcare provider, other patients, or a community-acquired source. Pregnancy and the puerperal period are associated with significant maternal physiologic changes that must be identified and clarified to identify signs and symptoms of GAS so that treatment can be initiated at the earliest moment. Treatment of group A streptococcal sepsis follows the guidelines developed under the Surviving Sepsis Campaign model. Maternal outcomes are improved by identifying risk factors and working with the perinatal team to implement rapid intervention. Even with prompt treatment of invasive group A Streptococcus, it remains the most common cause of infection that results in severe maternal morbidity and death in the world.

Database: CINAHL

53. Maternal Sepsis and Septic Shock.

Author(s): Chebbo, Ahmad; Tan, Susanna; Kassis, Christelle; Tamura, Leslie; Carlson, Richard W

Source: Critical care clinics; Jan 2016; vol. 32 (no. 1); p. 119-135

Publication Date: Jan 2016

Publication Type(s): Journal Article Review

PubMedID: 26600449

Abstract:The year 2015 marked the 200th anniversary of the birth of Ignaz Semmelweis, the Hungarian physician who identified unhygienic practices of physicians as a major cause of childbed fever or puerperal sepsis. Although such practices have largely disappeared as a factor in the development of chorioamnionitis and postpartum or puerperal endometritis, it is appropriate that this article on sepsis in pregnancy acknowledges his contributions to maternal health. This review describes the incidence and mortality of sepsis in pregnancy, methods to identify and define sepsis in this population, including scoring systems, causes, and sites of infection during pregnancy and parturition and management guidelines.

Database: Medline

54. Maternal mortality in the UK: an update.

Author(s): Kemp, Bryn; Knight, Marian

Source: Obstetrics, Gynaecology & Reproductive Medicine; Jan 2016; vol. 26 (no. 1); p. 26-28

Publication Date: Jan 2016

Publication Type(s): Academic Journal

Abstract:The latest report of the United Kingdom Confidential Enquiry into Maternal Mortality, conducted by the MBRRACE-UK collaboration, was published in December 2014. The report has moved from triennial to annual publication with a chapter on each specific cause of maternal death included once every 3 years. In 2010–12, overall maternal mortality fell to 10.1 per 100,000 maternities; a 27% decrease compared to 2003–5. Whilst the maternal mortality rate from genital tract sepsis more than halved from its 20-year high in 2006–2008, sepsis per-se accounted for almost 25% of deaths. One in 11 of all deaths were associated with sepsis related to influenza, the majority 2009/A H1N1 influenza, which, in the presence of an effective vaccine, were largely preventable. The benefits of influenza vaccination should be promoted and women offered vaccination at any stage of pregnancy. Thrombosis was the leading cause of direct death, highlighting the ongoing importance of thromboprophylaxis.

Database: CINAHL

55. Potential therapeutic targets for sepsis in women.

Author(s): Weniger, Maximilian; D'Haese, Jan G; Angele, Martin K; Chaudry, Irshad H

Source: Expert opinion on therapeutic targets; 2015; vol. 19 (no. 11); p. 1531-1543

Publication Date: 2015

Publication Type(s): Journal Article Review

PubMedID: 26083575

Abstract:INTRODUCTIONGender is increasingly recognized as a key factor in trauma and sepsis. Multiple clinical and experimental studies on sepsis have shown a distinct advantage of females in the proestrus cycle to survive sepsis compared with age-matched males. In addition, estrogen treatment is beneficial in non-proestrus cycles and also in ovariectomized females. In this manuscript, the effects of gender and sex hormones in sepsis are summarized and potential gender-specific therapeutic strategies in women are evaluated.AREAS COVEREDThis review comprises current clinical studies on the effect of gender in sepsis and gives an overview on gender and sex hormone-related effects on immune cells and organ function. Based on clinical and experimental data, potential therapeutic targets are presented.EXPERT OPINIONEstrogens and estrogen-receptor agonists have been extensively shown to be beneficial in the setting of sepsis. Clinical data, however, do not clearly support their therapeutic use. This discrepancy appears to be mainly due to insufficient study design in clinical trials conducted up to now. Therefore, improved study protocols with exact analysis of the patients' hormonal status are needed to clarify the role of gender and sex hormones in trauma and sepsis.

Database: Medline

56. Defining Physiological Predictors of Peripartum Maternal Bacteremia.

Author(s): Molina, Rose L.; Easter, Sarah Rae; Venkatesh, Kartik K.; Cantonwine, David E.; Kaimal, Anjali J.; Tuomala, Ruth E.; Riley, Laura E.

Source: American Journal of Perinatology; Dec 2015; vol. 32 (no. 14); p. 1342-1350

Publication Date: Dec 2015

Publication Type(s): Academic Journal

Abstract:Objective This study aims to examine physiological and laboratory parameters associated with peripartum maternal bacteremia. Study Design This case-control study matched 115 cases (women with fever and bacteremia during the peripartum period) to 285 controls (defined as the next two febrile women with negative blood cultures at the same institution) from two academic medical centers from 2009 to 2013. Conditional logistic regression models were used to evaluate the association of physiological and laboratory parameters with maternal bacteremia at the time of initial and maximum fever. Results At the time of initial fever, temperature > 103°F (adjusted odds ratio [aOR]: 5.58, 95% confidence interval [CI]: 2.05-15.19) and respiratory rate (RR) > 20 respirations per minute (aOR: 5.27, 95% CI: 2.32-11.96) were associated with bacteremia. At the time of maximum fever, temperature (> 102°F, aOR: 3.37, 95% CI: 1.61-7.06; > 103°F, aOR: 7.96, 95% CI: 3.56-17.82), heart rate > 110 beats per minute (aOR: 2.20, 95% CI: 1.21-3.99), and RR > 20 (aOR: 3.65, 95% CI: 1.65-8.08) were associated with bacteremia. Bandemia > 10% (aOR: 2.44, 95% CI: 1.07-5.54) was associated with bacteremia. Conclusion Physiological and laboratory parameters associated with maternal bacteremia differed from those reported with sepsis in the adult critical care population. Further studies of objective markers are needed to improve detection and treatment of peripartum bacteremia.

Database: CINAHL

57. Legionella Infection in Pregnancy: The Forgotten Pathogen in Septic Shock.

Author(s): Xu, Jack; Odibo, Imelda N; Eastham, Donna G; Dajani, Nafisa K

Source: Obstetrics and gynecology; Nov 2015; vol. 126 (no. 5); p. 1085-1087

Publication Date: Nov 2015

Publication Type(s): Case Reports Journal Article

PubMedID: 26375712

Available at [Obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:BACKGROUNDOf eight cases of Legionella infection in pregnancy reported over 35 years, there was one case of maternal septic shock with poor outcome, one recovery with good outcome, and six with poor outcome.CASEA 30-year-old woman, gravida 2 para 1, at 28 weeks of gestation presented with a high fever, cough, nausea, and vomiting. She deteriorated despite treatment for presumed urosepsis, was transferred to the intensive care unit, and remained intubated for 10 days receiving cardiovascular support, antivirals, antifungals, and multiple wide-spectrum antibiotics. Legionella infection antigen testing was performed on hospital day 1 and returned as positive. Azithromycin, started before the testing results became available, was continued for 14 days. The patient recovered, and the pregnancy progressed uneventfully to term.CONCLUSIONLegionella infection should be considered with maternal deterioration despite broad-spectrum antibiotic coverage. A favorable outcome is possible with early diagnosis and treatment.

Database: Medline

58. Severe sepsis in women with group B Streptococcus in pregnancy: an exploratory UK national case-control study.

Author(s): Kalin, Asli; Acosta, Colleen; Kurinczuk, Jennifer J; Brocklehurst, Peter; Knight, Marian

Source: BMJ open; Oct 2015; vol. 5 (no. 10); p. e007976

Publication Date: Oct 2015

Publication Type(s): Research Support, Non-u.s. Gov't Multicenter Study Journal Article

PubMedID: 26450426

Available at [BMJ open](#) - from Europe PubMed Central - Open Access

Available at [BMJ open](#) - from ProQuest (Health Research Premium) - NHS Version

Abstract:OBJECTIVETo estimate the incidence of severe maternal sepsis due to group B Streptococcus (GBS) in the UK, and to investigate the associated outcomes for mother and infant.DESIGNNational case-control study.SETTINGAll UK consultant-led maternity units.PARTICIPANTS30 women with confirmed or suspected severe GBS sepsis, and 757 control women.MAIN OUTCOME MEASURESDissease incidence, additional maternal morbidity, critical care admission, length of stay, infant infection, mortality.RESULTSThe incidences of confirmed and presumed severe maternal GBS sepsis were 1.00 and 2.75 per 100,000 maternities, respectively, giving an overall incidence of 3.75 per 100,000. Compared with controls, severe GBS sepsis was associated with higher odds of additional maternal morbidity (OR 12.35, 95% CI 3.96 to 35.0), requiring level 2 (OR 39.3, 95% CI 16.0 to 99.3) or level 3 (OR 182, 95% CI 21.0 to 8701) care and longer hospital stay (median stay in cases and controls was 7 days (range 3-29 days) and 2 days (range 0-16 days), respectively, $p < 0.001$). None of the women died. Severe maternal GBS sepsis was associated with higher odds of infant sepsis (OR 32.7, 95% CI 8.99 to 119.0); 79% of infants, however, did not develop sepsis. There were no associated stillbirths or neonatal deaths.CONCLUSIONSSevere maternal GBS sepsis is a rare occurrence in the UK. It is associated with adverse maternal and neonatal outcomes.

Database: Medline

59. Puerperal sepsis in the 21st century: progress, new challenges and the situation worldwide.

Author(s): Buddeberg, Bigna S; Aveling, Wynne

Source: Postgraduate medical journal; Oct 2015; vol. 91 (no. 1080); p. 572-578

Publication Date: Oct 2015

Publication Type(s): Historical Article Journal Article Review

PubMedID: 26310266

Available at [Postgraduate medical journal](#) - from BMJ Journals - NHS

Available at [Postgraduate medical journal](#) - from ProQuest (Health Research Premium) - NHS Version

Abstract: Puerperal sepsis is one of the five leading causes of maternal mortality worldwide, and accounts for 15% of all maternal deaths. The WHO defined puerperal sepsis in 1992 as an infection of the genital tract occurring at any time between the rupture of membranes or labour and the 42nd day post partum; in which, two or more of the following are present: pelvic pain, fever, abnormal vaginal discharge and delay in the reduction of the size of the uterus. At the same time, the WHO introduced the term puerperal infections, which also include non-genital infections in the obstetric population. Recent epidemiological data shows that puerperal sepsis and non-genital tract infections are a major area of concern. In puerperal sepsis, group A streptococcus (GAS) is the most feared pathogen. Up to 30% of the population are asymptomatic carriers of GAS. GAS commonly causes throat infections. Women who died from GAS-positive sepsis all had signs of a throat infection themselves or one of their family members suffered from a throat infection. The pathway of infection is from the hands of the pregnant women or the mother to her perineum. In non-genital tract infections, influenza viruses and the HIV pandemic in the developing part of the world are responsible for many maternal deaths, and demand our attention. The physiological changes of pregnancy and the puerperium can obscure the signs and symptoms of sepsis in the obstetric population. A high level of suspicion is, therefore, needed in the care for the sick pregnant patient. If sepsis is suspected, timely administration of antibiotics, sepsis care bundles, multidisciplinary discussion and early involvement of senior staff members are important to improve outcome.

Database: Medline

60. Maternal Deaths Due to Sepsis in the State of Michigan, 1999-2006.

Author(s): Bauer, Melissa E; Lorenz, Robert P; Bauer, Samuel T; Rao, Krishna; Anderson, Frank W J

Source: Obstetrics and gynecology; Oct 2015; vol. 126 (no. 4); p. 747-752

Publication Date: Oct 2015

Publication Type(s): Research Support, Non-u.s. Gov't Research Support, N.i.h., Extramural Journal Article

PubMedID: 26348189

Available at [Obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Available at [Obstetrics and gynecology](#) - from Unpaywall

Abstract:OBJECTIVETo identify maternal deaths due to sepsis in the state of Michigan, review the events leading to diagnosis, and evaluate treatment to identify areas for improvement.METHODSA case series was collected for maternal deaths due to sepsis from a cohort of maternal deaths in the state of Michigan. The study period was 1999-2006 and included deaths during pregnancy and up to 42 days postpartum. Cases were identified using Maternal Mortality Surveillance records from the Michigan Department of Community Health. Each case was reviewed by all authors.RESULTSMaternal sepsis was the cause of death in 15% (22/151) of pregnancy-related deaths. Of 22 deaths, 13 women presented to the hospital with sepsis, two developed sepsis during hospitalization, and seven developed sepsis at home without admission to the hospital for care. Review of available hospital records (n=15) revealed delays in initial appropriate antibiotic treatment occurred in 73% (11/15) of patients. Delay in escalation of care also occurred and was identified in 53% (8/15) of patients.CONCLUSIONCommon elements in these deaths illustrate three key delays that may have contributed to the deaths: in recognition of sepsis, in administration of appropriate antibiotics, and in escalation of care.LEVEL OF EVIDENCEIII.

Database: Medline

61. Progression from severe sepsis in pregnancy to death: a UK population-based case-control analysis.

Author(s): Mohamed-Ahmed, O; Nair, M; Acosta, C; Kurinczuk, J J; Knight, M

Source: BJOG : an international journal of obstetrics and gynaecology; Oct 2015; vol. 122 (no. 11); p. 1506-1515

Publication Date: Oct 2015

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 26213333

Available at [BJOG : an international journal of obstetrics and gynaecology](#) - from Wiley Online Library

Available at [BJOG : an international journal of obstetrics and gynaecology](#) - from Unpaywall

Abstract:OBJECTIVETo identify factors associated with progression from pregnancy-associated severe sepsis to death in the UK.DESIGNA population-based case-control analysis using data from the UK Obstetric Surveillance System (UKOSS) and the UK Confidential Enquiry into Maternal Death (CEMD).SETTINGAll pregnancy care and death settings in UK hospitals.POPULATIONAll non-influenza sepsis-related maternal deaths (January 2009 to December 2012) were included as cases (n = 43), and all women who survived severe non-influenza sepsis in pregnancy (June 2011 to May 2012) were included as controls (n = 358).METHODSCases and controls were identified using the CEMD and UKOSS. Multivariable logistic regression was used to estimate adjusted odds ratios (aOR) with

95% confidence intervals. **MAIN OUTCOME MEASURES** Odds ratios for socio-demographic, medical, obstetric and management factors in women who died from sepsis, compared with those who survived. **RESULTS** Four factors were included in the final regression model. Women who died were more likely to have never received antibiotics [aOR = 22.7, 95% confidence interval (CI) 3.64-141.6], to have medical comorbidities (aOR = 2.53, 95%CI 1.23-5.23) and to be multiparous (aOR = 3.57, 95%CI 1.62-7.89). Anaemia (aOR = 13.5, 95%CI 3.17-57.6) and immunosuppression (aOR = 15.0, 95%CI 1.93-116.9) were the two most important factors driving the association between medical comorbidities and progression to death. **CONCLUSIONS** There must be continued vigilance for the risks of infection in pregnant women with medical comorbidities. Improved adherence to national guidelines, alongside prompt recognition and treatment with antibiotics, may reduce the burden from sepsis-related maternal deaths. **TWEETABLE ABSTRACT** Medical comorbidities, multiparity and antibiotic delays increase the risk of death from maternal sepsis.

Database: Medline

62. Contemporary Trends of Reported Sepsis Among Maternal Decedents in Texas: A Population-Based Study.

Author(s): Oud, Lavi

Source: Infectious diseases and therapy; Sep 2015; vol. 4 (no. 3); p. 321-335

Publication Date: Sep 2015

Publication Type(s): Journal Article

PubMedID: 26334239

Available at [Infectious diseases and therapy](#) - from SpringerLink - Medicine

Available at [Infectious diseases and therapy](#) - from Europe PubMed Central - Open Access

Available at [Infectious diseases and therapy](#) - from ProQuest (Health Research Premium) - NHS Version

Abstract: **INTRODUCTION** Recent studies indicate that death certificate-based single-cause-of-death diagnoses can substantially underestimate the contribution of sepsis to mortality in the general population and among maternal decedents. There are no population-based data in the United States on the patterns of the contribution of sepsis to pregnancy-associated deaths. **METHODS** We studied the Texas Inpatient Public Use Data File to identify pregnancy-associated hospitalizations with reported hospital death during 2001-2010. We then examined the annual reporting of sepsis, and that of other reported most common causes of maternal death, including hemorrhage, embolism, preeclampsia/eclampsia, cardiovascular conditions, cardiomyopathy, cerebrovascular accidents, and anesthesia complications. The annual rate of sepsis among decedents, its trend over time, and changes of its annual rank among other examined potential causes of maternal death were assessed. **RESULTS** There were 557 pregnancy-associated hospital deaths during study period. Sepsis was reported in 131 (23.5%) decedents. Sepsis has been increasingly reported among decedents, rising by 9.1%/year ($P = 0.0025$). The rank of sepsis, as compared to the other examined potential causes of maternal death rose from the 5th in 2001 to 1st since 2008. At the end of the last decade, sepsis has been reported in 28.1% of pregnancy-associated deaths. More than one potential cause of maternal death was reported in 39% of decedents. **CONCLUSIONS** Sepsis has become the most commonly reported potential cause of death among maternal decedents in the present cohort, noted in over 1 in 4 fatal hospitalizations by the end of the last decade. Although causality cannot be inferred from administrative data, given its known contribution to maternal death, it is likely that sepsis plays an increasing role in fatal maternal hospital outcomes. The prevalent co-reporting of multiple potential causes of maternal death in the present cohort underscores the complexity of determining the sources of evolving rise of maternal mortality.

Database: Medline

63. Incidence and risk factors of sepsis mortality in labor, delivery and after birth: population-based study in the USA.

Author(s): Al-Ostad, Ghassan; Kezouh, Abbas; Spence, Andrea R; Abenhaim, Haim A

Source: The journal of obstetrics and gynaecology research; Aug 2015; vol. 41 (no. 8); p. 1201-1206

Publication Date: Aug 2015

Publication Type(s): Journal Article

PubMedID: 25976287

Available at [The journal of obstetrics and gynaecology research](#) - from Wiley Online Library

Abstract:AIM Maternal sepsis is one of the leading causes of maternal mortality around the world. The aim of this study was to estimate the incidence and mortality rate of sepsis, and the associated risk factors for their development during pregnancy, labor, delivery and the post-partum period. METHODS We conducted a population-based cohort study consisting of 5 million births that occurred in the USA. Data were obtained from the Healthcare Cost and Utilization Project-Nationwide Inpatient Sample (HCUP-NIS) database from 1998 to 2008. Logistic regression was used to calculate the adjusted odds ratio and corresponding 95% confidence intervals (95%CI) for sepsis development and sepsis-related death during admission for delivery. RESULTS The overall incidence of maternal sepsis was 29.4 per 100 000 births (95%CI: 28.0-30.9) with a sepsis case fatality rate of 4.4 per 100 births (95%CI: 3.5-5.6). Both the incidence of maternal sepsis and sepsis-related death rate have increased over the last decade. Women who are black, older than 35 years and who smoke were more likely to experience maternal sepsis. An association was also found between maternal sepsis and diabetes mellitus, cardiovascular disease, eclampsia, preterm birth, hysterectomy, puerperal infection, post-partum hemorrhage, transfusion and chorioamnionitis. CONCLUSIONS Mortality from maternal sepsis during labor and delivery is an increasing and important problem in westernized countries. Initiatives aimed at improving early recognition and effective management may help reduce the occurrence and outcomes of maternal sepsis at time of labor and delivery.

Database: Medline

64. Selected maternal morbidities in women with a prior caesarean delivery planning vaginal birth or elective repeat caesarean section: a retrospective cohort analysis using data from the UK Obstetric Surveillance System.

Author(s): Nair, Manisha; Soffer, Kate; Noor, Nudrat; Knight, Marian; Griffiths, Malcolm

Source: BMJ open; Jun 2015; vol. 5 (no. 6); p. e007434

Publication Date: Jun 2015

Publication Type(s): Research Support, Non-u.s. Gov't Multicenter Study Journal Article

PubMedID: 26038358

Available at [BMJ open](#) - from Europe PubMed Central - Open Access

Available at [BMJ open](#) - from HighWire - Free Full Text

Available at [BMJ open](#) - from ProQuest (Health Research Premium) - NHS Version

Available at [BMJ open](#) - from Unpaywall

Abstract:OBJECTIVETo conduct a secondary analysis of data from the UK Obstetric Surveillance System (UKOSS) to estimate the rates of specific maternal risks associated with planned vaginal birth after caesarean (VBAC) and elective repeat caesarean section (ERCS).DESIGNA retrospective cohort analysis using UKOSS data from 4 studies conducted between 2005 and 2012.SETTINGAll hospitals with consultant-led maternity units in the UK.POPULATIONPregnant women who had a previous caesarean section.METHODWomen who had undergone a previous caesarean section were divided into 2 exposure groups: planned VBAC and ERCS. We calculated the incidence of each of the 4 outcomes of interest with 95% CIs for the 2 exposure groups using proxy denominators (total estimated VBAC and ERCS maternities in a given year). Incidences were compared between groups using χ^2 test or Fisher's exact test and risk ratios with 95% CI.MAIN OUTCOME MEASURESSevere maternal morbidities: peripartum hysterectomy, severe sepsis, peripartum haemorrhage and failed tracheal intubation.RESULTSThe risks of all complications examined in both groups were low. The rates of peripartum hysterectomy, severe sepsis, peripartum haemorrhage and failed tracheal intubation were not significantly different between the 2 groups in absolute or relative terms.CONCLUSIONSWhile the risk of uterine rupture in the VBAC and ERCS groups is well understood, this national study did not demonstrate any other clear differences in the outcomes we examined. The absolute and relative risks of maternal complications were small in both groups. Large epidemiological studies could further help to assess whether the incidence of these rare outcomes would significantly differ between the VBAC and ERCS groups if a larger number of cases were to be examined. In the interim, this study provides important information to help pregnant women in their decision-making process.

Database: Medline

65. Maternal bacteremia and the Irish maternity early warning system.

Author(s): Maguire, Patrick J; O'Higgins, Amy C; Power, Karen A; Daly, Niamh; McKeating, Aoife; Turner, Michael J

Source: International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics; May 2015; vol. 129 (no. 2); p. 142-145

Publication Date: May 2015

Publication Type(s): Journal Article Evaluation Studies

PubMedID: 25670063

Available at [International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics](#) - from Wiley Online Library

Abstract:OBJECTIVE To assess whether introduction of the Irish maternity early warning system (IMEWS) in 2013 has improved the recording of vital signs among women with proven maternal bacteremia. METHODS In a mixed retrospective and prospective study at a single center in Dublin, Ireland, the patient records of all cases of maternal bacteremia between January 1, 2009, and March 31, 2014, were reviewed. The IMEWS chart was applied retrospectively to records of vital signs from January 2009 to March 2013, and prospectively from April 2013 to March 2014. RESULTS For the 61 cases from the period before IMEWS introduction, vital signs were recorded inconsistently on multiple pages. The frequency of recordings was not standardized. Respiratory rate, in particular, was under-recorded. Among the 17 cases between April 2013 and March 2014 that were eligible for IMEWS chart use, 14 women had vital signs recorded on an IMEWS chart. As compared with the period before IMEWS introduction, there was an improvement in respiratory rate recording as part of the first set of observations. CONCLUSION Among pregnant women with proven bacteremia, introduction of IMEWS has been associated with an improvement in the recording of vital signs, particularly respiratory rate.

Database: Medline

66. Maternal sepsis incidence, aetiology and outcome for mother and fetus: a prospective study.

Author(s): Knowles, S J; O'Sullivan, N P; Meenan, A M; Hanniffy, R; Robson, M

Source: BJOG : an international journal of obstetrics and gynaecology; Apr 2015; vol. 122 (no. 5); p. 663-671

Publication Date: Apr 2015

Publication Type(s): Multicenter Study Journal Article Review

PubMedID: 24862293

Available at [BJOG : an international journal of obstetrics and gynaecology](#) - from Wiley Online Library

Available at [BJOG : an international journal of obstetrics and gynaecology](#) - from Unpaywall

Abstract:OBJECTIVE To determine the incidence of maternal bacteraemia during pregnancy and for 6 weeks postpartum, describe the gestation/stage at which sepsis occurs, the causative microorganisms, antibiotic resistance and review maternal, fetal and neonatal outcome. DESIGN Prospective review. SETTING Two tertiary referral, maternity hospitals in Dublin, Ireland. POPULATION During 2005-2012 inclusive, 150 043 pregnant women attended and 24.4% of infants born in Ireland were delivered at the hospitals. METHODS Demographic, clinical, microbiological and outcome data was collected from women with sepsis and compared with controls. MAIN OUTCOME MEASURES Incidence, bacterial aetiology, gestation/stage at delivery, mode of delivery, antibiotic resistance, admission to augmented care, maternal, fetal and neonatal outcome. RESULTS The sepsis rate was 1.81 per 1000 pregnant women. Escherichia coli was the

predominant pathogen, followed by Group B Streptococcus. Sepsis was more frequent among nulliparous women (odds ratio [OR] 1.39; 95% confidence interval [CI] 1.07-1.79) and multiple births (OR 2.04; 95% CI 0.98-4.08). Seventeen percent of sepsis episodes occurred antenatally, 36% intrapartum and 47% postpartum. The source of infection was the genital tract in 61% (95% CI 55.1-66.6) of patients and the urinary tract in 25% (95% CI 20.2-30.5). Sepsis was associated with preterm delivery (OR 2.81; 95% CI 1.99-3.96) and a high perinatal mortality rate (OR =5.78; 95% CI 2.89-11.21). Almost 14% of women required admission to augmented care. The most virulent organisms were Group A Streptococcus linked to postpartum sepsis at term and preterm Escherichia coli sepsis. CONCLUSIONS Maternal sepsis is associated with preterm birth, a high perinatal mortality rate and nulliparous women.

Database: Medline

67. Sepsis in obese pregnant women.

Author(s): Orr, Katrine; Chien, Patrick

Source: Best practice & research. Clinical obstetrics & gynaecology; Apr 2015; vol. 29 (no. 3); p. 377-393

Publication Date: Apr 2015

Publication Type(s): Journal Article Review

PubMedID: 25467427

Abstract:Animal, epidemiological and limited human studies have reported that obesity increases susceptibility to both bacterial and viral infections. Obesity has now reached worldwide epidemic proportions with a recent study estimating that there are currently 2.1 billion obese adults in the world. The rates of sepsis in both the non-pregnant and pregnant population are also increasing. Obesity is an independent risk factor for both infection and sepsis in pregnancy. This review article addresses the epidemiology, immunological factors, infection sites, investigation, management, specific intrapartum care and postnatal care of the obese pregnant woman with infection.

Database: Medline

8. Lactic acid measurement to identify risk of morbidity from sepsis in pregnancy.

Author(s): Albright, Catherine M; Ali, Tariq N; Lopes, Vrishali; Rouse, Dwight J; Anderson, Brenna L

Source: American journal of perinatology; Apr 2015; vol. 32 (no. 5); p. 481-486

Publication Date: Apr 2015

Publication Type(s): Journal Article

PubMedID: 25486284

Abstract:OBJECTIVEThis study aims to assess the risk of morbidity associated with maternal lactic acid concentration in women with possible sepsis in pregnancy.STUDY DESIGNRetrospective cohort of pregnant and postpartum patients with signs of sepsis. Morbidity outcomes were compared by lactic acid concentration. Linear regression was used to evaluate the association between lactic acid and adverse outcomes.RESULTSOut of the 850 women included, 159 had lactic acid measured. Patients with lactic acid measured had higher morbidity: positive blood cultures (16.8 vs. 5.5%, $p = 0.04$), admission to the intensive care unit (5 vs. 0.1%, $p < 0.01$) or acute monitoring unit (17.2 vs. 0.9%, $p < 0.01$), longer hospital stay (median 3 vs. 2 days, $p < 0.01$), and preterm delivery (18.3 vs. 10.9%, $p = 0.05$). The mean lactic concentration was higher in patients admitted to the intensive care (2.6 vs. 1.6 mmol/L, $p = 0.04$) and telemetry unit (2.0 vs. 1.6, $p = 0.03$), and in those with positive blood cultures (2.2 vs. 1.6, $p < 0.01$). Lactic acid was positively associated with intensive care or telemetry unit admission, adjusted odds ratio per 1 mmol/L increase in lactic acid 2.34 (95% confidence interval, 1.33-4.12).CONCLUSIONElevated lactic acid in pregnancy is associated with adverse maternal outcomes from presumed sepsis. In this cohort, lactic acid measurement was a marker of more severe infection.

Database: Medline

69. Modified obstetric early warning scoring systems (MOEWS): validating the diagnostic performance for severe sepsis in women with chorioamnionitis.

Author(s): Edwards, Sian E; Grobman, William A; Lappen, Justin R; Winter, Cathy; Fox, Robert; Lenguerrand, Erik; Draycott, Timothy

Source: American journal of obstetrics and gynecology; Apr 2015; vol. 212 (no. 4); p. 536

Publication Date: Apr 2015

Publication Type(s): Journal Article Evaluation Studies

PubMedID: 25446705

Abstract:OBJECTIVEWe sought to compare the predictive power of published modified obstetric early warning scoring systems (MOEWS) for the development of severe sepsis in women with chorioamnionitis.STUDY DESIGNThis was a retrospective cohort study using prospectively collected clinical observations at a single tertiary unit (Chicago, IL). Hospital databases and patient records were searched to identify and verify cases with clinically diagnosed chorioamnionitis during the study period (June 2006 through November 2007). Vital sign data (heart rate, respiratory rate, blood pressure, temperature, mental state) for these cases were extracted from an electronic database and the single worst composite recording was identified for analysis. Global literature databases were searched (2014) to identify examples of MOEWS. Scores for each identified MOEWS were derived from each set of vital sign recordings during the presentation with chorioamnionitis. The performance of these MOEWS (the primary outcome) was then analyzed and compared using their sensitivity, specificity, positive and negative predictive values, and receiver-operating characteristic curve for severe sepsis.RESULTSSix MOEWS were identified. There was wide variation in design and pathophysiological thresholds used for clinical alerts. In all, 913 women with chorioamnionitis were

identified from the clinical database. In all, 364 cases with complete data for all physiological indicators were included in analysis. Five women developed severe sepsis, including 1 woman who died. The sensitivities of the MOEWS in predicting the severe deterioration ranged from 40-100% and the specificities varied even more ranging from 4-97%. The positive predictive values were low for all MOEWS ranging from <2-15%. The MOEWS with simpler designs tended to be more sensitive, whereas the more complex MOEWS were more specific, but failed to identify some of the women who developed severe sepsis. **CONCLUSION** Currently used MOEWS vary widely in terms of alert thresholds, format, and accuracy. Most MOEWS have not been validated. The MOEWS generally performed poorly in predicting severe sepsis in obstetric patients; in general severe sepsis was overdetected. Simple MOEWS with high sensitivity followed with more specific secondary testing is likely to be the best way forward. Further research is required to develop early warning systems for use in this setting.

Database: Medline

70. Factors associated with maternal death from direct pregnancy complications: a UK national case-control study.

Author(s): Nair, M; Kurinczuk, J J; Brocklehurst, P; Sellers, S; Lewis, G; Knight, M

Source: BJOG: An International Journal of Obstetrics & Gynaecology; Apr 2015; vol. 122 (no. 5); p. 653-662

Publication Date: Apr 2015

Publication Type(s): Academic Journal

PubMedID: 25573167

Available at [BJOG: An International Journal of Obstetrics & Gynaecology](#) - from Wiley Online Library

Abstract: Objective: To investigate the factors associated with maternal death from direct pregnancy complications in the UK. Design: Unmatched case-control analysis. Setting: All hospitals caring for pregnant women in the UK. Population: A total of 135 women who died (cases) between 2009 and 2012 from eclampsia, pulmonary embolism, severe sepsis, amniotic fluid embolism, and peripartum haemorrhage, using data from the Confidential Enquiry into Maternal Death, and another 1661 women who survived severe complications (controls) caused by these conditions (2005-2013), using data from the UK Obstetric Surveillance System. Methods: Multivariable regression analyses were undertaken to identify the factors that were associated with maternal deaths and to estimate the additive odds associated with the presence of one or more of these factors. Main Outcome Measures: Odds ratios associated with maternal death and population-attributable fractions, with 95% confidence intervals. Incremental risk of death associated with the factors using a 'risk factors' score. Results: Six factors were independently associated with maternal death: inadequate use of antenatal care (adjusted odds ratio, aOR 15.87, 95% CI 6.73-37.41); substance misuse (aOR 10.16, 95% CI 1.81-57.04); medical comorbidities (aOR 4.82, 95% CI 3.14-7.40); previous pregnancy problems (aOR 2.21, 95% CI 1.34-3.62); hypertensive disorders of pregnancy (aOR 2.44, 95% CI 1.31-4.52); and Indian ethnicity (aOR 2.70, 95% CI 1.14-6.43). Of the increased risk associated with maternal death, 70% (95% CI 66-73%) could be attributed to these factors. Odds associated with maternal death increased by three and a half times per unit increase in the 'risk factor' score (aOR 3.59, 95% CI 2.83-4.56). Conclusions: This study shows that medical comorbidities are importantly associated with direct (obstetric) deaths. Further studies are required to understand whether specific aspects of care could be improved to reduce maternal deaths among women with medical comorbidities in the UK.

Database: CINAHL

71. Diagnosis and management of group B streptococcus in pregnancy.

Author(s): Ahmadzia, Homa K; Heine, R Phillips

Source: Obstetrics and gynecology clinics of North America; Dec 2014; vol. 41 (no. 4); p. 629-647

Publication Date: Dec 2014

Publication Type(s): Journal Article Review

PubMedID: 25454995

Abstract:Group B streptococcus (GBS) can cause significant maternal and neonatal morbidity. Over the past 30 years, reductions in early-onset GBS neonatal sepsis in the United States have been attributable to the guidelines from the Centers for Disease Control and Prevention for antepartum screening and treating this organism during labor. This article highlights the clinical implications, screening, diagnosis, prophylactic interventions, and future therapies for mothers with GBS during the peripartum period.

Database: Medline

72. Severe sepsis during pregnancy.

Author(s): Pacheco, Luis D; Saade, George R; Hankins, Gary D V

Source: Clinical obstetrics and gynecology; Dec 2014; vol. 57 (no. 4); p. 827-834

Publication Date: Dec 2014

Publication Type(s): Journal Article Review

PubMedID: 25286297

Available at [Clinical obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:Severe sepsis is a major cause of mortality among critically ill patients. Early recognition accompanied by early initiation of broad-spectrum antibiotics with source control and fluid resuscitation improves outcomes. Hemodynamic resuscitation starts with fluid therapy followed by vasopressors if necessary. Cases refractory to first-line vasopressors (norepinephrine) will require second-line vasopressors (epinephrine or vasopressin) and low-dose steroid therapy. Resuscitation goals should include optimization of central venous oxygenation and serum lactate.

Database: Medline

73. The DISPARITY-II study: delays to antibiotic administration in women with severe sepsis or septic shock.

Author(s): Madsen, Tracy E; Napoli, Anthony M

Source: Academic emergency medicine : official journal of the Society for Academic Emergency Medicine; Dec 2014; vol. 21 (no. 12); p. 1499-1502

Publication Date: Dec 2014

Publication Type(s): Journal Article

PubMedID: 25424151

Available at [Academic emergency medicine : official journal of the Society for Academic Emergency Medicine](#) - from Wiley Online Library

Available at [Academic emergency medicine : official journal of the Society for Academic Emergency Medicine](#) - from Unpaywall

Abstract:BACKGROUND Early antibiotics reduce mortality in patients with severe sepsis and septic shock. Recent work demonstrated that women experience greater delays to antibiotic administration, but it is unknown if this relationship remains after adjusting for factors such as source of infection. OBJECTIVES The objective was to investigate whether gender and/or source of infection are associated with delays to antibiotics in patients with severe sepsis or septic shock. METHODS This was a retrospective, observational study in an urban academic emergency department and national Surviving Sepsis Campaign (SSC) database study site. Consecutive patients age 18 years and older admitted to intensive care with severe sepsis or septic shock and entered into the SSC database from October 2005 to March 2012 were included. Two trained research assistants, blinded to the primary outcome, used a standardized abstraction form to obtain patient demographic and clinical data, including the Sequential Organ Failure Assessment (SOFA) scores and comorbidities. Time to first antibiotic and presumed source of infection were extracted from the SSC database. Univariate analyses were performed with Pearson chi-square tests and t-tests. Linear regression was performed with time to first antibiotic as the primary outcome. Covariates, chosen a priori by study authors, included age, race, ethnicity, source of infection, SOFA score, and lactate. RESULTS A total of 771 patients were included. Women were 45.3% of the sample, the mean age was 66 years (95% confidence interval [CI] = 65.1 to 67.5 years), 19.4% were nonwhite, and 8% were Hispanic. Mean time to first antibiotic was 153 minutes (95% CI = 143 to 163 minutes) for men and 184 minutes (95% CI = 171 to 197 minutes) for women ($p < 0.001$). The urinary tract was source of infection for 35.2% of women (95% CI = 30.2% to 40.3%) versus 23.7% (95% CI = 19.6% to 27.8%) of men. Pneumonia was present in 46.9% of men (95% CI = 42.1% to 51.7%) versus 35.8% (95% CI = 30.8% to 40.8%) of women. The mean time to antibiotics in women was longer than in men (adjusted odds ratio [aOR] = 1.18, 95% CI = 1.07 to 1.30), even after adjusting for age, race, ethnicity, presumed source of infection, SOFA score, and lactate ($p = 0.001$). Those with pneumonia compared to other infections received antibiotics faster (aOR = 0.73, 95% CI = 0.66 to 0.81). There was no significant association between other sources of infection and time to antibiotics in either univariate or multivariate analysis. CONCLUSIONS Women experience longer delays to initial antibiotics among patients with severe sepsis or septic shock, even after adjusting for infectious source. Pneumonia was associated with shorter times to antibiotic administration. Future research is necessary to investigate contributors to delayed antibiotic administration in women.

Database: Medline

74. Pregnancy-Associated Severe Sepsis: Contemporary State and Future Challenges

Author(s): Oud L.

Source: Infectious Diseases and Therapy; Dec 2014; vol. 3 (no. 2); p. 175-189

Publication Date: Dec 2014

Publication Type(s): Review

Available at [Infectious Diseases and Therapy](#) - from SpringerLink - Medicine

Available at [Infectious Diseases and Therapy](#) - from Europe PubMed Central - Open Access

Available at [Infectious Diseases and Therapy](#) - from ProQuest (Health Research Premium) - NHS Version

Available at [Infectious Diseases and Therapy](#) - from Unpaywall

Abstract: Pregnancy is associated with an increased risk of infection related to its associated mechanical and physiological changes. Sepsis remains among the top causes of maternal death worldwide and is associated with substantial maternal morbidity. However, there are sparse data on pregnancy-associated severe sepsis (PASS), related in part to infrequent reports, varying case definitions and methodological approach, small cohort size, and often limited focus on severe sepsis in selected phases of pregnancy outcomes. Available reports vary, but indicate that PASS is a rare but likely increasing complication, and it is more likely to develop with increased maternal age, among minority women, the poor, those lacking health insurance, those with chronic illness or pregnancy-associated complications, and following invasive procedures. Obstetric sites of infection are the most prevalent, but non-obstetric infections often underlie pregnancy-associated severe sepsis, though the source of infection is often not readily apparent during initial care. Women with PASS can have a rapidly fatal course and require heightened clinician vigilance for early diagnosis and timely effective intervention. Nevertheless, available reports raise concerns about prevalent substandard care of these patients, contributing to adverse outcomes. The case fatality of PASS appears lower than that in the general population with severe sepsis, while the long-term outcomes of survivors remain unknown. Copyright © 2014, The Author(s).

Database: EMBASE

75. A review of critical care management of maternal sepsis

Author(s): Hashmi M.; Khan F.H.

Source: Anaesthesia, Pain and Intensive Care; Oct 2014; vol. 18 (no. 4); p. 436-442

Publication Date: Oct 2014

Publication Type(s): Review

Abstract: Sepsis is a leading cause of preventable maternal mortality in developing countries due to poverty, home deliveries by untrained persons in unhygienic conditions, limited access to healthcare facilities and lack of availability of antibiotics. Recent confidential enquiries into maternal deaths from the developed nations have revealed an increase in maternal mortality secondary to genital tract sepsis and provision of suboptimal critical care. Early recognition of critical illness in obstetric patients, involvement of intensive care teams earlier and provision of same standard of critical care to pregnant women as non-pregnant patients while being mindful of the altered maternal physiology and fetal wellbeing is necessary to improve outcome of this vulnerable population. This article reviews the definitions and risk factors of maternal sepsis and describes the standards recommended for efficient delivery of maternal critical care and sepsis management.

Database: EMBASE

76. Severe maternal sepsis in the UK, 2011-2012: a national case-control study.

Author(s): Acosta, Colleen D; Kurinczuk, Jennifer J; Lucas, D Nuala; Tuffnell, Derek J; Sellers, Susan; Knight, Marian; United Kingdom Obstetric Surveillance System

Source: PLoS medicine; Jul 2014; vol. 11 (no. 7); p. e1001672

Publication Date: Jul 2014

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 25003759

Available at [PLoS medicine](#) - from Europe PubMed Central - Open Access

Available at [PLoS medicine](#) - from Public Library of Science (PLOS)

Available at [PLoS medicine](#) - from ProQuest (Health Research Premium) - NHS Version

Available at [PLoS medicine](#) - from Unpaywall

Abstract:BACKGROUNDIn light of increasing rates and severity of sepsis worldwide, this study aimed to estimate the incidence of, and describe the causative organisms, sources of infection, and risk factors for, severe maternal sepsis in the UK.METHODS AND FINDINGSA prospective case-control study included 365 confirmed cases of severe maternal sepsis and 757 controls from all UK obstetrician-led maternity units from June 1, 2011, to May 31, 2012. Incidence of severe sepsis was 4.7 (95% CI 4.2-5.2) per 10,000 maternities; 71 (19.5%) women developed septic shock; and five (1.4%) women died. Genital tract infection (31.0%) and the organism *Escherichia coli* (21.1%) were most common. Women had significantly increased adjusted odds ratios (aORs) of severe sepsis if they were black or other ethnic minority (aOR=1.82; 95% CI 1.82-2.51), were primiparous (aOR=1.60; 95% CI 1.17-2.20), had a pre-existing medical problem (aOR=1.40; 95% CI 1.01-1.94), had febrile illness or were taking antibiotics in the 2 wk prior to presentation (aOR=12.07; 95% CI 8.11-17.97), or had an operative vaginal delivery (aOR=2.49; 95% CI 1.32-4.70), pre-labour cesarean (aOR=3.83; 95% CI 2.24-6.56), or cesarean after labour onset (aOR=8.06; 95% CI 4.65-13.97). Median time between delivery and sepsis was 3 d (interquartile range=1-7 d). Multiple pregnancy (aOR=5.75; 95% CI 1.54-21.45) and infection with group A streptococcus (aOR=4.84; 2.17-10.78) were associated with progression to septic shock; for 16 (50%) women with a group A streptococcal infection there was <2 h-and for 24 (75%) women, <9 h-between the first sign of systemic inflammatory response syndrome and a diagnosis of severe sepsis. A limitation of this study was the proportion of women with sepsis without an identified organism or infection source (16.4%).CONCLUSIONSFor each maternal sepsis death, approximately 50 women have life-threatening morbidity from sepsis. Follow-up to ensure infection is eradicated is important. The rapid progression to severe sepsis highlights the importance of following the international Surviving Sepsis Campaign guideline of early administration of high-dose intravenous antibiotics within 1 h of admission to hospital for anyone with suspected sepsis. Signs of severe sepsis in peripartum women, particularly with confirmed or suspected group A streptococcal infection, should be regarded as an obstetric emergency. Please see later in the article for the Editors' Summary.

Database: Medline

77. The Sepsis in Obstetrics Score: a model to identify risk of morbidity from sepsis in pregnancy.

Author(s): Albright, Catherine M; Ali, Tariq N; Lopes, Vrishali; Rouse, Dwight J; Anderson, Brenna L

Source: American journal of obstetrics and gynecology; Jul 2014; vol. 211 (no. 1); p. 39

Publication Date: Jul 2014

Publication Type(s): Journal Article Evaluation Studies

PubMedID: 24613756

Abstract:OBJECTIVEWe sought to design an emergency department sepsis scoring system to identify risk of intensive care unit (ICU) admission in pregnant and postpartum women.STUDY DESIGNThe Sepsis in Obstetrics Score (S.O.S.) was created by modifying validated scoring systems in accordance with recognized physiologic changes of pregnancy. The S.O.S. was applied to a retrospective cohort of pregnant and postpartum patients from February 2009 through May 2011 with clinical suspicion of sepsis. The primary outcome was ICU admission. Secondary outcomes were telemetry unit admission, length of stay, positive blood cultures, positive influenza swabs, perinatal outcome, and maternal mortality. Receiver operating characteristic curves were constructed to estimate the optimal score for identification of risk of ICU admission.RESULTSIn all, 850 eligible women were included. There were 9 ICU (1.1%) and 32 telemetry (3.8%) admissions, and no maternal deaths. The S.O.S. had an area under the curve of 0.97 for ICU admission. An S.O.S. ≥ 6 (maximum score 28) had an area under the curve of 0.92 with sensitivity of 88.9%, specificity of 95.2%, positive predictive value of 16.7%, and negative predictive value of 99.9% for ICU admission, with an adjusted odds ratio of 109 (95% confidence interval, 18-661). An S.O.S. ≥ 6 was independently associated with increased ICU or telemetry unit admissions, positive blood cultures, and fetal tachycardia.CONCLUSIONA sepsis scoring system designed specifically for an obstetric population appears to reliably identify patients at high risk for admission to the ICU. Prospective validation is warranted.

Database: Medline

78. Sepsis in obstetrics: cause, prevention, and treatment.

Author(s): Ford, Jonathan M; Scholefield, Helen

Source: Current opinion in anaesthesiology; Jun 2014; vol. 27 (no. 3); p. 253-258

Publication Date: Jun 2014

Publication Type(s): Journal Article Review

PubMedID: 24751792

Available at [Current opinion in anaesthesiology](#) - from Ovid (Journals @ Ovid) - London Health Libraries

Abstract:**PURPOSE OF REVIEW**The aim of the study was to provide a summary of recent guidance on sepsis in obstetrics.**RECENT FINDINGS**Morbidity and mortality from sepsis is increasing in the UK and other developed countries. In many cases, care has been found to be substandard. Common themes are a failure to recognize and respond to the sick woman and inadequate antibiotic and fluid management in the septic parturient.**SUMMARY**Increased awareness of obstetric sepsis is required. Women and their families need to be informed about it and staff must have the skills and competencies to recognize this early. The management of severe sepsis in obstetrics is multidisciplinary. Implementation of the goals of the Surviving Sepsis Campaign into obstetric practice is important to improve outcomes. More research is needed to validate the parameters used in this and early warning scores for the obstetric population.

Database: Medline

79. Fetal optimization during maternal sepsis: Relevance and response of the obstetric anesthesiologist

Author(s): Chau A.; Tsen L.C.

Source: Current Opinion in Anaesthesiology; Jun 2014; vol. 27 (no. 3); p. 259-266

Publication Date: Jun 2014

Publication Type(s): Review

PubMedID: 24709666

Available at [Current opinion in anaesthesiology](#) - from Ovid (Journals @ Ovid) - London Health Libraries

Abstract:**Purpose of Review:** In many labor and delivery units, the obstetric anesthesiologist is often responsible for managing and stabilizing the acutely septic parturient. The management of maternal sepsis has been summarized previously; this study will focus on the implications of maternal sepsis on the fetus, and ways to optimize fetal outcomes. **RECENT FINDINGS:** Although the complex pathophysiology of sepsis is being better understood, the incidence of maternal severe sepsis and deaths continues to increase. The differential sensitivities of systemic and uterine vasculature to catecholamines during pregnancy and the role of fetal inflammatory responses have recently been further elucidated. Additional investigations on methods of fetal monitoring are needed to assist in early identification of the compromised fetus. Despite decades of research, management of a septic parturient and her fetus, including the most appropriate resuscitation fluids, vasopressors and hemodynamic monitoring systems to maximize maternal and fetal outcomes, remain controversial. **SUMMARY:** In the setting of maternal sepsis, fetal optimization is frequently best accomplished by meeting maternal hemodynamic, oxygenization, and infection treatment goals. Understanding the circulatory and pathophysiologic changes that occur within the uteroplacental unit and fetus is essential to identifying and resolving potential conflicts between maternal and fetal management goals. © 2014 Wolters Kluwer Health | Lippincott Williams & Wilkins.

Database: EMBASE

80. Code Sepsis: Development of a Sepsis Protocol for the Obstetric Patient.

Author(s): Bural, Kelli; Rich, Diana

Source: JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing; Jun 2014; vol. 43 (no. Supp 1)

Publication Date: Jun 2014

Publication Type(s): Academic Journal

Abstract: Purpose for the Program In 2003, the Surviving Sepsis Campaign partnered with the Institute for Healthcare Improvement (IHI), which led to Surviving Sepsis Campaign Bundles for quality improvement techniques to treat sepsis and decrease mortality. Although great strides have been made in early recognition and intervention for sepsis in the general population, there has been little focus on the obstetric population and their unique considerations. The labor and delivery (L&D) nurses at Baylor University Medical Center (BUMC) identified an improvement opportunity in the area of promoting the health and safety of the obstetric patients. A screening tool, protocol, and sepsis bundle were developed and implemented for the obstetric population aiding in early detection and reducing sepsis mortality. Proposed Change A process was developed to facilitate early recognition and prompt intervention for sepsis in the obstetric patient. Implementation steps included establishing a screening tool and protocol for sepsis in L&D, incorporating a sepsis bundle, and educating and training all staff. Implementation, Outcomes, and Evaluation BUMC has implemented sepsis bundles in the emergency department and the intensive care units (ICUs); however, the staff at Women and Children's recognized that sepsis presentation in the obstetric population was unique and would require specific bundles. As frontline caregivers who perform initial assessments, the nurses in L&D are a critical part of the health care team responsible for early identification and timely intervention. Using the Iowa model, benchmarking, and a current literature review, a multidisciplinary team collaborated to establish a protocol and a sepsis screening tool specific to the obstetric patient. Preeducational and posteducational surveys were created to identify knowledge deficits surrounding sepsis, and educational in-services were presented to staff. Posteducational surveys showed improvements in early identification and recognition to promptly treat sepsis in the hospital setting. Implications for Nursing Practice In many cases, sepsis-related deaths and additional severe comorbidities are preventable through swift detection and treatment. The first 24 hours in sepsis treatment are critical because mortality increases with each passing hour sepsis goes unrecognized and untreated. Implementation of standardized sepsis education, initiation of a sepsis screening tool, and a sepsis protocol can improve the care provided to patients. Incorporating a standardized, multidisciplinary approach will ensure that patients receive the best care to promote optimal outcomes.

Database: CINAHL

81. Early detection of severe maternal morbidity: a retrospective assessment of the role of an Early Warning Score System.

Author(s): Austin, Diana M; Sadler, Lynn; McIntock, Claire; McArthur, Colin; Masson, Vicki; Farquhar, Cindy; Rhodes, Sharon

Source: The Australian & New Zealand journal of obstetrics & gynaecology; Apr 2014; vol. 54 (no. 2); p. 152-155

Publication Date: Apr 2014

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 24359235

Available at [The Australian & New Zealand journal of obstetrics & gynaecology](#) - from Wiley Online Library

Abstract:BACKGROUNDThe Early Warning Scoring (EWS) surveillance system is used to identify deteriorating patients and enable appropriate staff to be called promptly. However, there is a lack of evidence that EWS surveillance systems lead to a reduction in severe morbidity.AIMSTo determine whether as EWS may have improved the detection of severe maternal morbidity or lessened the severity of illness among women with severe morbidity at a large tertiary maternity unit at Auckland City Hospital (ACH), New Zealand.METHODSAdmissions to intensive care, cardiothoracic and vascular intensive care, or an obstetric high-dependency unit (HDU) were identified from clinical and hospital administrative databases. Case reviews and transcribed observation charts were presented to a multidisciplinary review group who, through group consensus, determined whether an EWS might have hastened recognition and/or escalation and effective treatment.RESULTSThe multidisciplinary review team determined that an EWS might have reduced the seriousness of maternal morbidity in five cases (7.6%), including three admissions for obstetric sepsis to intensive care unit and two to obstetric HDU for post-partum haemorrhage. No patient had a complete set of respiratory rate, heart rate, blood pressure and temperature recordings at every time period.CONCLUSIONSThese findings have been used to support introduction of an EWS to the maternity unit at ACH.

Database: Medline

82. A clinical review of maternal bacteremia.

Author(s): O'Higgins, Amy C; Egan, Aileen F; Murphy, Olivia C; Fitzpatrick, Christopher; Sheehan, Sharon R; Turner, Michael J

Source: International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics; Mar 2014; vol. 124 (no. 3); p. 226-229

Publication Date: Mar 2014

Publication Type(s): Journal Article

PubMedID: 24438699

Available at [International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics](#) - from Wiley Online Library

Abstract:OBJECTIVETo carry out a 4-year review of cases of bacteremia among obstetric patients.METHODSIn a retrospective review, all cases of maternal bacteremia between 2009 and 2012 were identified from the laboratory database of Coombe Women and Infants University Hospital, Dublin, Ireland. The clinical records of each case were assessed.RESULTSDuring the study period, 37,584 obstetric patients attended the hospital. There were 58 cases of bacteremia: 19 were diagnosed prepartum, 20 intrapartum, and 19 postpartum. There were no maternal deaths. Two cases resulted in septic shock. Four cases were associated with early pregnancy loss, and 2 with stillbirth. Fifty-four cases occurred among 34,956 women who delivered a neonate weighing 500 g or more (0.15%). Escherichia coli most frequently caused prepartum and postpartum bacteremia, whereas Streptococcus agalactiae (β -hemolytic, Lancefield group B) most frequently caused intrapartum bacteremia. There was no association between the development of bacteremia and maternal risk factors including employment status, obesity, parity, smoking status, and maternal age. Most organisms cultured were sensitive to first-line antibiotics; there were no cases of bacteremia caused by multi-drug resistant organisms.CONCLUSIONThe incidence of maternal bacteremia in the study population was low and was usually associated with good maternal and fetal outcomes.

Database: Medline

83. The continuum of maternal sepsis severity: incidence and risk factors in a population-based cohort study.

Author(s): Acosta, Colleen D; Knight, Marian; Lee, Henry C; Kurinczuk, Jennifer J; Gould, Jeffrey B; Lyndon, Audrey

Source: PloS one; 2013; vol. 8 (no. 7); p. e67175

Publication Date: 2013

Publication Type(s): Research Support, Non-u.s. Gov't Research Support, N.i.h., Extramural Multicenter Study Journal Article

PubMedID: 23843991

Available at [PloS one](#) - from Europe PubMed Central - Open Access

Available at [PloS one](#) - from ProQuest (Health Research Premium) - NHS Version

Available at [PloS one](#) - from Unpaywall

Abstract:OBJECTIVETo investigate the incidence and risk factors associated with uncomplicated maternal sepsis and progression to severe sepsis in a large population-based birth cohort.METHODSThis retrospective cohort study used linked hospital discharge and vital statistics records data for 1,622,474 live births in California during 2005-2007. Demographic and clinical factors were adjusted using multivariable logistic regression with robust standard

errors. RESULTS 1598 mothers developed sepsis; incidence of all sepsis was 10 per 10,000 live births (95% CI=9.4-10.3). Women had significantly increased adjusted odds (aOR) of developing sepsis if they were older (25-34 years: aOR=1.29; ≥35 years: aOR=1.41), had ≤high-school education (aOR=1.63), public/no-insurance (aOR=1.22) or a cesarean section (primary: aOR=1.99; repeat: aOR=1.25). 791 women progressed to severe sepsis; incidence of severe sepsis was 4.9 per 10,000 live births (95% CI=4.5-5.2). Women had significantly increased adjusted odds of progressing to severe sepsis if they were Black (aOR=2.09), Asian (aOR=1.59), Hispanic (aOR=1.42), had public/no-insurance (aOR=1.52), delivered in hospitals with <1,000 births/year (aOR=1.93), were primiparous (aOR=2.03), had a multiple birth (aOR=3.5), diabetes (aOR=1.47), or chronic hypertension (aOR=8.51). Preeclampsia and postpartum hemorrhage were also significantly associated with progression to severe sepsis (aOR=3.72; aOR=4.18). For every cumulative factor, risk of uncomplicated sepsis increased by 25% (95% CI=17.4-32.3) and risk of progression to severe sepsis/septic shock increased by 57% (95% CI=40.8-74.4). CONCLUSION The rate of severe sepsis was approximately twice the 1991-2003 national estimate. Risk factors identified are relevant to obstetric practice given their cumulative risk effect and the apparent increase in severe sepsis incidence.

Database: Medline

84. Sepsis and pregnancy: do we know how to treat this situation?

Author(s): Cordioli, Ricardo Luiz; Cordioli, Eduardo; Negrini, Romulo; Silva, Eliezer

Source: Revista Brasileira de terapia intensiva; 2013; vol. 25 (no. 4); p. 334-344

Publication Date: 2013

Publication Type(s): Journal Article Review

PubMedID: 24553516

Available at [Revista Brasileira de terapia intensiva](#) - from Europe PubMed Central - Open Access

Available at [Revista Brasileira de terapia intensiva](#) - from Unpaywall

Abstract: Sepsis is defined as an acute inflammatory response syndrome secondary to an infectious focus. It has a high incidence, morbidity and mortality, causing substantial financial costs, especially due to complications such as septic shock and multiple organ dysfunction. The pathogen toxins associated with individual susceptibility culminate with cytokine release, which promotes a systemic inflammatory response that can progress to multiple organ dysfunction and eventual patient death. Specifically, sepsis incidence, morbidity and mortality are lower in pregnant women, as this group is typically younger with fewer comorbidities having a polymicrobial etiology resulting in sepsis. Pregnant women exhibit physiological characteristics that may confer specific clinical presentation and laboratory patterns during the sepsis course. Thus, a better understanding of these changes is critical for better identification and management of these patients. The presence of a fetus also requires unique approaches in a pregnant woman with sepsis. Sepsis treatment is based on certain guidelines that were established after major clinical trials, which, unfortunately, all classified pregnancy as an exclusion criteria. Thus, the treatment of sepsis in the general population has been extrapolated to the pregnant population, with the following main goals: maintenance of tissue perfusion with fluid replacement and vasoactive drugs (initial resuscitation), adequate oxygenation, control of the infection source and an early start of antibiotic therapy, corticosteroid infusion and blood transfusion when properly indicated, prophylaxis, and specifically monitoring and maintenance of fetal health.

Database: Medline

85. Puerperal sepsis.

Author(s): Arulkumaran, N; Singer, M

Source: Best practice & research. Clinical obstetrics & gynaecology; Dec 2013; vol. 27 (no. 6); p. 893-902

Publication Date: Dec 2013

Publication Type(s): Journal Article Review

PubMedID: 23993724

Abstract:Infections during pregnancy are relatively prevalent, and the majority of cases are managed well in the community. Occasionally, however, infections may be life-threatening. Sepsis may be associated with multiple organ dysfunction and a high mortality. The treatment of sepsis is time critical and requires early fluid resuscitation and antibiotics. Early involvement of other specialties and allied health-care professionals to provide a multidisciplinary approach to patient care is important. Continuous monitoring of maternal vital signs and provision of supportive care for multiple organ dysfunction are best done within the intensive care unit. Despite advances in patient care, the mortality rate associated with maternal sepsis remains high. Health-care services in low-income countries face particular problems that account for an increased incidence of puerperal sepsis and maternal mortality. These include lack of access to health care, septic abortions and a greater incidence of human immunodeficiency virus. The key to management of sepsis is early recognition, aggressive resuscitation, antibiotic administration and source control.

Database: Medline

86. Maternal sepsis mortality and morbidity during hospitalization for delivery: temporal trends and independent associations for severe sepsis.

Author(s): Bauer, Melissa E; Bateman, Brian T; Bauer, Samuel T; Shanks, Amy M; Mhyre, Jill M

Source: Anesthesia and analgesia; Oct 2013; vol. 117 (no. 4); p. 944-950

Publication Date: Oct 2013

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 24023020

Available at [Anesthesia and analgesia](#) - from Free Medical Journals . com

Available at [Anesthesia and analgesia](#) - from Ovid (Journals @ Ovid) - Remote Access

Abstract:BACKGROUND Sepsis is currently the leading cause of direct maternal death in the United Kingdom. In this study, we aimed to determine frequency, temporal trends, and independent associations for severe sepsis during hospitalization for delivery in the United States. METHODS Data were obtained from the Nationwide Inpatient Sample for the years 1998 through 2008. The presence of severe sepsis was identified by the appropriate International Classification of Diseases, Ninth Revision, Clinical Modification codes. Logistic regression analysis was used to assess temporal trends for sepsis, severe sepsis, and sepsis-related death and also to identify independent associations of severe sepsis. RESULTS Of an estimated 44,999,260 hospitalizations for delivery, sepsis complicated 1:3333 (95% confidence interval [CI], 1:3151-1:3540) deliveries, severe sepsis complicated 1:10,823 (95% CI, 1:10,000-1:11,792) deliveries, and sepsis-related death complicated 1:105,263 (95% CI, 1:83,333-1:131,579) deliveries. While the overall frequency of sepsis was stable ($P = 0.95$), the risk of severe sepsis and sepsis-related death increased during the study period, ($P < 0.001$) and ($P = 0.02$), respectively. Independent associations for severe sepsis, with an adjusted odds ratio and lower bound 95% CI higher than 3, include congestive heart failure, chronic liver disease, chronic renal disease, systemic lupus erythematosus, and rescue cerclage placement. CONCLUSIONS Maternal severe sepsis and sepsis-related deaths are increasing in the

United States. Severe sepsis often occurs in the absence of a recognized risk factor and underscores the need for developing systems of care that increase sensitivity for disease detection across the entire population. Physicians should enhance surveillance in patients with congestive heart failure, chronic liver disease, chronic renal disease, and systemic lupus erythematosus and institute early treatment when signs of sepsis are emerging.

Database: Medline

87. Managing the risks of sepsis in pregnancy.

Author(s): Bamfo, Jacqueline E A K

Source: Best practice & research. Clinical obstetrics & gynaecology; Aug 2013; vol. 27 (no. 4); p. 583-595

Publication Date: Aug 2013

Publication Type(s): Journal Article Review

PubMedID: 23639681

Abstract:Sepsis is a major cause of maternal mortality and morbidity worldwide. In the UK, sepsis is now the leading cause of direct maternal deaths. Raising awareness among healthcare professionals about the risks of maternal sepsis and the importance of early management is urgently needed. The challenge in the management of maternal sepsis is the translation of the vast knowledge gained from sequential confidential enquiries into maternal death and research findings, into clinical practice, to ensure an improvement in patient quality of care and maternal mortality and morbidity. In this chapter, I give an overview of the management of the risks of sepsis, and discuss implementation strategies that may reduce these risks.

Database: Medline

88. Early-onset sepsis: a predictive model based on maternal risk factors.

Author(s): Puopolo, Karen M; Escobar, Gabriel J

Source: Current opinion in pediatrics; Apr 2013; vol. 25 (no. 2); p. 161-166

Publication Date: Apr 2013

Publication Type(s): Research Support, N.i.h., Extramural Journal Article Review

PubMedID: 23407183

Available at [Current opinion in pediatrics](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:**PURPOSE OF REVIEW**Neonatal early-onset sepsis (EOS) is a very low-incidence, but potentially fatal condition among term and late preterm newborns. EOS algorithms based on risk-factor threshold values result in evaluation and empiric antibiotic treatment of large numbers of uninfected newborns, leading to unnecessary antibiotic exposures and maternal/infant separation. Ideally, risk stratification should be quantitative, employ information conserving strategies, and be readily transferable to modern comprehensive electronic medical records.**RECENT FINDINGS**We performed a case-control study of infants born at or above 34 weeks' gestation with blood culture-proven EOS. We defined the relationship of established predictors to the risk of EOS, then used multivariate analyses and split validation to develop a predictive model using objective data. The model provides an estimation of sepsis risk that can identify the same proportion of EOS cases by evaluating fewer infants, as compared with algorithms based on subjective diagnoses and cut-off values for continuous predictors.**SUMMARY**An alternative approach to EOS risk assessment based only on objective data could decrease the number of infants evaluated and empirically treated for EOS, compared with currently recommended algorithms. Prospective evaluation is needed to determine the accuracy and safety of using the sepsis risk model to guide clinical decision-making.

Database: Medline

89. Sepsis and maternal mortality.

Author(s): Acosta, Colleen D; Knight, Marian

Source: Current opinion in obstetrics & gynecology; Apr 2013; vol. 25 (no. 2); p. 109-116

Publication Date: Apr 2013

Publication Type(s): Research Support, N.i.h., Extramural Journal Article Review

PubMedID: 23385771

Available at [Current opinion in obstetrics & gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:**PURPOSE OF REVIEW**Despite global progress towards reducing maternal mortality, sepsis remains a leading cause of preventable maternal death. This review focuses on current measurement challenges, trends, causes and efforts to curb maternal death from sepsis in high and low-income countries.**RECENT FINDINGS**Under-reporting using routine registration data, compounded by misclassification and unreported deaths, results in significant underestimation of the burden of maternal death from sepsis. In the UK and the Netherlands the recent increase in maternal death from sepsis is mainly attributed to an increase in invasive group A streptococcal infections. Susceptibility to infection may be complicated by modulation of maternal immune response and increasing rates of risk factors such as caesarean section and obesity. Failure to recognize severity of infection is a major universal risk factor. Standardized Surviving Sepsis Campaign (SSC) recommendations for management of severe maternal sepsis are continuing to be implemented worldwide; however, outcomes differ according to models of intensive care resourcing and use.**SUMMARY**The need for robust data with subsequent analyses is apparent. This will

significantly increase our understanding of risk factors and their causal pathways, which are critical to informing effective treatment strategies in consideration of resource availability.

Database: Medline

90. Maternal sepsis.

Author(s): Morgan, Jamie; Roberts, Scott

Source: Obstetrics and gynecology clinics of North America; Mar 2013; vol. 40 (no. 1); p. 69-87

Publication Date: Mar 2013

Publication Type(s): Journal Article Review

PubMedID: 23466138

Abstract:Maternal sepsis is relatively common. Most of these infections are the result of tissue damage during labor and delivery and physiologic changes normally occurring during pregnancy. These infections, whether directly pregnancy-related or simply aggravated by normal pregnancy physiology, ultimately have the potential to progress to severe sepsis and septic shock. This article discusses commonly encountered entities and septic shock. The expeditious recognition of common maternal sepsis and meticulous attention to appropriate management to prevent the progression to severe sepsis and septic shock are emphasized. Also discussed are principles and new approaches for the management of septic shock.

Database: Medline

91. Severe sepsis and septic shock in pregnancy: indications for delivery and maternal and perinatal outcomes.

Author(s): Snyder, Candice C; Barton, John R; Habli, Mounira; Sibai, Baha M

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Mar 2013; vol. 26 (no. 5); p. 503-506

Publication Date: Mar 2013

Publication Type(s): Comparative Study Journal Article

PubMedID: 23075279

Abstract:OBJECTIVETo report maternal and perinatal outcomes in obstetric patients with severe sepsis and septic shock.METHODSWe performed a retrospective study of obstetric patients admitted to an intensive care unit (ICU) for severe sepsis/septic shock. Maternal clinical characteristics, hemodynamic profiles, laboratory findings, and perinatal outcomes were evaluated. Patients with severe sepsis (N = 20) and septic shock (N = 10) were compared using Fisher's Exact and Mann-Whitney U tests.RESULTSPyelonephritis was the most common etiology overall (37%) and acute respiratory distress syndrome (ARDS) was the most common organ injury in both severe sepsis (50%) and septic shock (80%). Liver dysfunction was present in cases with increased morbidity as a late finding and was the least frequent organ injury. Patients with septic shock had significantly higher rates of disseminated intravascular coagulation (DIC) (p = 0.01), altered mental status (p ≤ 0.001), total bilirubin >4 mg/dl (p = 0.04), failure in ≥3 organ systems (70% vs. 15%, p = 0.005), and maternal death (30% vs. 0%, p = 0.03). All patients with septic shock were delivered during hospitalization vs. 40% with severe sepsis. 71% of viable pregnancies required emergent cesarean delivery, and 50% of these for worsening respiratory function.CONCLUSIONSARDS is frequently found in critically ill obstetric patients with severe sepsis/septic shock and is associated with a high risk of emergent cesarean delivery.

Database: Medline

92. Effects of intentional delivery on maternal and neonatal outcomes in pregnancies with preterm prelabour rupture of membranes between 28 and 34 weeks of gestation: a systematic review and meta-analysis.

Author(s): Al-Mandeel, Hazem; Alhindi, Mohammed Y; Sauve, Reg

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Jan 2013; vol. 26 (no. 1); p. 83-89

Publication Date: Jan 2013

Publication Type(s): Meta-analysis Comparative Study Journal Article Review Systematic Review

PubMedID: 22882130

Abstract:OBJECTIVE To assess the effects of intentional delivery (ID) over expectant management (EM) in pregnancies complicated by preterm prelabour rupture of membranes (PPROM) between 28 and 34 weeks of gestation on maternal and neonatal outcomes. METHODS We searched Ovid MEDLINE, EMBASE, CINAHL, CENTRAL and Science Citation Index; contacted experts and checked reference lists of relevant studies. Studies were included if they were randomized controlled trials in all languages. RESULTS Five randomized trials were included and 488 subjects were analyzed. Overall, the results showed significant heterogeneity. Maternal infection as well as respiratory distress syndrome (RDS) & neonatal sepsis (NS) were not different between the two groups. Neonatal death, however, was significantly higher (risk ratio: 5.81; 95% CI: 1.35-25.08; $p = 0.03$) in the ID group after excluding studies that gave antenatal steroids. Incidence of cesarean section was significantly higher in the intentional delivery group, as well (risk ratio: 1.35; 95% CI: 1.02-1.80; $p = 0.03$). CONCLUSION Based on the available evidence, ID in pregnancies complicated with PPRM between 28 and 34 weeks carries some maternal and neonatal risks with no added benefits. Thus, this treatment should not be considered as an option for women with PPRM before 34 weeks of gestation in the absence of other indications for early delivery.

Database: Medline

93. Severe sepsis and septic shock in pregnancy.

Author(s): Barton, John R; Sibai, Baha M

Source: Obstetrics and gynecology; Sep 2012; vol. 120 (no. 3); p. 689-706

Publication Date: Sep 2012

Publication Type(s): Journal Article Review

PubMedID: 22914482

Available at [Obstetrics and gynecology](#) - from Ovid (Journals @ Ovid) - Remote Access

Abstract: Pregnancies complicated by severe sepsis and septic shock are associated with increased rates of preterm labor, fetal infection, and preterm delivery. Sepsis onset in pregnancy can be insidious, and patients may appear deceptively well before rapidly deteriorating with the development of septic shock, multiple organ dysfunction syndrome, or death. The outcome and survivability in severe sepsis and septic shock in pregnancy are improved with early detection, prompt recognition of the source of infection, and targeted therapy. This improvement can be achieved by formulating a stepwise approach that consists of early provision of time-sensitive interventions such as: aggressive hydration (20 mL/kg of normal saline over the first hour), initiation of appropriate empiric intravenous antibiotics (gentamicin, clindamycin, and penicillin) within 1 hour of diagnosis, central hemodynamic monitoring, and the involvement of infectious disease specialists and critical care specialists familiar with the physiologic changes in pregnancy. Thorough physical examination and imaging techniques or empiric exploratory laparotomy are suggested to identify the septic source. Even with appropriate antibiotic therapy, patients may continue to deteriorate unless septic foci (ie, abscess, necrotic tissue) are surgically excised. The decision for delivery in the setting of antepartum severe sepsis or septic shock can be challenging but must be based on gestational age, maternal status, and fetal status. The natural inclination is to proceed with emergent delivery for a concerning fetal status, but it is imperative to stabilize the mother first, because in doing so the fetal status will likewise improve. Aggressive [corrected] treatment of sepsis can be expected to reduce the progression to severe sepsis and septic shock and prevention strategies can include preoperative skin preparations and prophylactic antibiotic therapy as well as appropriate immunizations.

Database: Medline

94. Intrapartum evidence of early-onset group B streptococcus.

Author(s): Tudela, Carmen M; Stewart, Robert D; Roberts, Scott W; Wendel, George D; Stafford, Irene A; McIntire, Donald D; Sheffield, Jeanne S

Source: Obstetrics and gynecology; Mar 2012; vol. 119 (no. 3); p. 626-629

Publication Date: Mar 2012

Publication Type(s): Journal Article

PubMedID: 22353962

Available at [Obstetrics and gynecology](#) - from Ovid (Journals @ Ovid) - Remote Access

Abstract:OBJECTIVETo estimate if neonates with early-onset group B streptococcus (GBS) sepsis have clinical evidence of fetal infection during labor or at delivery.METHODSRetrospective cohort study of all neonates diagnosed with GBS sepsis by culture and clinical findings within the first 72 hours of life from January 1, 2000, through December 31, 2008, at Parkland Health and Hospital System. Medical records were reviewed and maternal, neonatal, and delivery data were ascertained. These neonates then were compared with all neonates delivered during the same time period.RESULTSDuring the study period, 143,384 live-born neonates were delivered at our institution; 94 were diagnosed with early-onset GBS sepsis. The majority of these neonates (n=93) were diagnosed with early-onset GBS within the first hour of life. Neonates with early-onset GBS sepsis had a significant increase in preterm delivery, cesarean delivery (total and for fetal distress), 1- and 5-minute Apgar scores of 3 or lower, umbilical cord pH less than 7.0, and a base deficit of 12 mmol/L or higher. In addition, nulliparity differed between those with early-onset GBS and those without (74% compared with 33%, $P<.001$) as did chorioamnionitis rates (62% compared with 8%, $P<.001$).CONCLUSIONWe believe that these findings are compelling evidence that fetuses with early-onset GBS may have signs of sepsis peripartum. We hypothesize that these data support the concept that early-onset GBS represents a spectrum of infection that often precedes birth.

Database: Medline

95. Maternal sepsis: a Scottish population-based case-control study.

Author(s): Acosta, C D; Bhattacharya, S; Tuffnell, D; Kurinczuk, J J; Knight, M

Source: BJOG : an international journal of obstetrics and gynaecology; Mar 2012; vol. 119 (no. 4); p. 474-483

Publication Date: Mar 2012

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 22251396

Available at [BJOG : an international journal of obstetrics and gynaecology](#) - from Wiley Online Library

Available at [BJOG : an international journal of obstetrics and gynaecology](#) - from Unpaywall

Abstract:OBJECTIVETo describe the risk of maternal sepsis associated with obesity and other understudied risk factors such as operative vaginal delivery.DESIGNPopulation-based, case-control study.SETTINGNorth NHS region of Scotland.POPULATIONAll cases of pregnant, intrapartum and postpartum women with International Classification of Disease-9 codes for sepsis or severe sepsis recorded in the Aberdeen Maternal and Neonatal Databank (AMND) from 1986 to 2009. Four controls per case selected from the AMND were frequency matched on year-of-delivery.METHODSCases and controls were compared; significant variables from univariable regression were adjusted in a multivariable logistic regression model.MAIN OUTCOME MEASURESDependent variables were uncomplicated sepsis or severe ('near-miss') sepsis. Independent variables were demographic, medical and clinical delivery characteristics. Unadjusted

and adjusted odds ratios (OR) with 95% confidence intervals (95% CI) are reported. RESULTS Controlling for mode of delivery and demographic and clinical factors, obese women had twice the odds of uncomplicated sepsis (OR 2.12; 95% CI 1.14-3.89) compared with women of normal weight. Age <25 years (OR 5.15; 95% CI 2.43-10.90) and operative vaginal delivery (OR 2.20; 95% CI 1.02-4.87) were also significant predictors of sepsis. Known risk factors for maternal sepsis were also significant in this study (OR for uncomplicated and severe sepsis respectively): multiparity (OR 6.29, 12.04), anaemia (OR 3.43, 18.49), labour induction (OR 3.92 severe only), caesarean section (OR 3.23, 13.35), and preterm birth (OR 2.46 uncomplicated only). CONCLUSIONS Obesity, operative vaginal delivery and age <25 years are significant risk factors for sepsis and should be considered in clinical obstetric care.

Database: Medline

96. Postpartum group a Streptococcus sepsis and maternal immunology.

Author(s): Mason, Katie L; Aronoff, David M

Source: American journal of reproductive immunology (New York, N.Y. : 1989); Feb 2012; vol. 67 (no. 2); p. 91-100

Publication Date: Feb 2012

Publication Type(s): Research Support, N.i.h., Extramural Journal Article Review

PubMedID: 22023345

Available at [American journal of reproductive immunology \(New York, N.Y. : 1989\)](#) - from Wiley Online Library

Available at [American journal of reproductive immunology \(New York, N.Y. : 1989\)](#) - from Unpaywall

Abstract: Group A Streptococcus (GAS) is an historically important agent of puerperal infections and sepsis. The inception of hand-washing and improved hospital hygiene drastically reduced the incidence of puerperal sepsis, but recently the incidence and severity of postpartum GAS infections has been rising for uncertain reasons. Several epidemiological, host, and microbial factors contribute to the risk for GAS infection and mortality in postpartum women. These include the mode of delivery (vaginal versus cesarean section), the location where labor and delivery occurred, exposure to GAS carriers, the altered immune status associated with pregnancy, the genetic background of the host, the virulence of the infecting GAS strain, and highly specialized immune responses associated with female reproductive tract tissues and organs. This review will discuss the complicated factors that contribute to the increased susceptibility to GAS after delivery and potential reasons for the recent increase observed in morbidity and mortality.

Database: Medline

97. Maternal sepsis during pregnancy or the postpartum period requiring intensive care admission.

Author(s): Timezguid, N; Das, V; Hamdi, A; Ciroidi, M; Sfoggia-Besserat, D; Chelha, R; Obadia, E; Pallot, J-L

Source: International journal of obstetric anesthesia; Jan 2012; vol. 21 (no. 1); p. 51-55

Publication Date: Jan 2012

Publication Type(s): Journal Article

PubMedID: 22153279

Abstract:BACKGROUND Previous studies on severe maternal sepsis during pregnancy or the postpartum period are rare and have focused on septic abortion. Voluntary abortion was legalized in France in 1975. This study was conducted to reassess the characteristics of maternal sepsis that have been managed in a French intensive care unit. METHODS A retrospective study of 66 women admitted to an intensive care unit for sepsis from 1977-2008 was performed. Data on sources of infection, microbial agents and maternal and fetal outcomes were collected. Data from 1977-1992 and 1993-2008 were compared. RESULTS Over time, the rate of intensive care admission for maternal sepsis did not change (0.75 episodes per 1000 deliveries in 1977-1992 versus 0.72/1000 in 1993-2008, $P=1.0$). The percentage of septic abortions decreased from 14% to 0%, whereas that of antepartum infections increased from 50% to 79% ($P<0.01$). The percentage of non-bacterial infections increased from 0% to 19% ($P=0.04$), and the percentage of pelvic infections had a tendency to decrease from 54% to 27% ($P=0.06$). Pelvic infections were due to enterobacteriaceae (50%), gram-positive cocci (45%), and/or anaerobes (23%). Maternal and fetal mortality rates were 6% and 33%, respectively. CONCLUSIONS Over time, our intensive care unit has seen fewer cases of septic abortion. However, maternal sepsis remained a cause of intensive care admission and both maternal and fetal death. The percentages of antepartum and non-bacterial infections have increased over time. A prospective multicentre study is required to confirm these results and to investigate questions such as the effect of maternal sepsis on long-term fetal outcome.

Database: Medline

98. Severe peripartum sepsis

Author(s): Sriskandan S.

Source: Journal of the Royal College of Physicians of Edinburgh; 2011; vol. 41 (no. 4); p. 339-346

Publication Date: 2011

Publication Type(s): Review

PubMedID: 22184573

Available at [Journal of the Royal College of Physicians of Edinburgh](#) - from Free Medical Journals . com

Available at [Journal of the Royal College of Physicians of Edinburgh](#) - from Unpaywall

Abstract: Despite global efforts to reduce maternal mortality, maternal deaths from bacterial sepsis have actually risen in the UK. The group A streptococcus, also known as *Streptococcus pyogenes*, is the leading cause of infection-related death in pregnancy and the puerperium. Many clinicians remain unaware of the risks posed to this particular group of otherwise fit, healthy patients despite the fact that *S. pyogenes* has been the leading infective cause of puerperal deaths since records began. *S. pyogenes* has a specific but unexplained predilection for the recently pregnant woman, and has an attributable mortality greater than many other invasive bacteria. Here, the epidemiology, aetiology, and management of severe peripartum sepsis are discussed, as are potential approaches to reduce risks. While fundamental changes in healthcare access can lead to dramatic reductions in maternal deaths in developing countries, an improvement in maternal sepsis deaths in the UK will require heightened awareness among both hospital and community-based clinical staff. © 2011 Royal College of Physicians of Edinburgh.

Database: EMBASE

99. Sepsis in pregnancy

Author(s): Sung E.; George J.; Porter M.

Source: Fetal and Maternal Medicine Review; Nov 2011; vol. 22 (no. 4); p. 287-305

Publication Date: Nov 2011

Publication Type(s): Review

Available at [Fetal and Maternal Medicine Review](#) - from ProQuest (Health Research Premium) - NHS Version

Database: EMBASE

100. Maternal sepsis 2010: Early recognition and aggressive treatment with early goal directed therapy can improve maternal outcomes

Author(s): Guinn D.A.

Source: Current Women's Health Reviews; Jun 2011; vol. 7 (no. 2); p. 164-176

Publication Date: Jun 2011

Publication Type(s): Review

Abstract:Maternal sepsis remains a major preventable cause of morbidity and mortality worldwide. The current epidemic of obesity, diabetes, and cesarean delivery will most certainly increase the risk of infectious morbidity and mortality. Women who undergo cesarean are three times more likely to develop sepsis. Early recognition of cases and prompt treatment are essential to improve outcomes. Most cases of maternal sepsis are due to direct obstetrical causes and should be treated with broad spectrum antibiotics and source control measures. Early goal directed therapies should be initiated according to standardized protocols. Patients should be transferred to a critical care unit if feasible. Optimal care for the septic patient requires a multidisciplinary team with expertise in all relevant areas including critical care, infectious disease, maternal fetal medicine, obstetrics, anesthesia, pharmacology, and neonatology. This article reviews the epidemiology, microbiology, pathophysiology and treatment of obstetrical sepsis. © 2011 Bentham Science Publishers Ltd.

Database: EMBASE

101. Puerperal sepsis--still a major threat for parturient.

Author(s): Shamshad; Shamsher, Saadia; Rauf, Bushara

Source: Journal of Ayub Medical College, Abbottabad : JAMC; 2010; vol. 22 (no. 3); p. 18-21

Publication Date: 2010

Publication Type(s): Journal Article

PubMedID: 22338409

Abstract:BACKGROUND Puerperal sepsis is one of the leading causes of preventable maternal morbidity and mortality. It is still ranked as 3rd major cause of maternal deaths in our country. The objective of this study was to evaluate morbidity and mortality from puerperal sepsis and to identify its risk factors. METHODSThis observational study was carried out in Ayub Teaching Hospital over a period of three years. All patients admitted with diagnosis of puerperal sepsis secondary to genital tract infection were evaluated with thorough details of history and examination to determine their demographic details, obstetrical profiles, presenting features, state of infectious morbidity, need for intervention and mortality related to puerperal sepsis. RESULTSPuerperal sepsis was 1.7% of all obstetrical admissions and 34.4% of postnatal complications. It was seen common among young patients of 15-25 years age. 61 (66.3%), of lower parity, 58 (63.00%), low socioeconomic status, 60 (65.20%), uneducated patients, 72 (78.20%), home deliveries, 68 (73.90%), prolong labour, 54 (58.60%), prolong rupture of membranes from 48-72 hours, 68 (73.8%) and deliveries conducted by untrained birth attendants, 57 (60.5%). Puerperal sepsis morbidity was mostly foul smelling discharge, 23 (25%), retained product of conception, 41 (44.5%), peritonitis, 8 (8.60%), septicaemia, 4 (4.3%), pelvic abscess, 10 (10.80%), endotoxic shock, 4 (4.30%), disseminated intravascular coagulation, 2 (2.1%). Sepsis related mortality was 6/42 (14.2%). CONCLUSIONPuerperal sepsis is an important public health problem contributing to maternal morbidity and mortality. Majority of predisposing factors are preventable. Optimal antiseptic measures and careful monitoring are needed throughout the process of labour.

Database: Medline

102. Maternal sepsis: epidemiology, etiology and outcome.

Author(s): van Dillen, Jeroen; Zwart, Joost; Schutte, Joke; van Roosmalen, Jos

Source: Current opinion in infectious diseases; Jun 2010; vol. 23 (no. 3); p. 249-254

Publication Date: Jun 2010

Publication Type(s): Journal Article Review

PubMedID: 20375891

Available at [Current opinion in infectious diseases](#) - from Ovid (Journals @ Ovid) - London Health Libraries

Abstract:**PURPOSE OF REVIEW**Sepsis is a major cause of maternal death worldwide. Little is known on the incidence of severe maternal morbidity related to sepsis. In this review, we focus on new findings concerning epidemiology, etiology and outcome of maternal sepsis in low-income as well as high-income countries.**RECENT FINDINGS**It is estimated that puerperal sepsis causes at least 75,000 maternal deaths every year, mostly in low-income countries. Studies from high-income countries report incidence of maternal morbidity due to sepsis of 0.1-0.6 per 1000 deliveries. The causative microorganisms are generally polymicrobial with beta-haemolytic streptococci group A (GAS) often being the cause of severe cases of puerperal fever. The single most important risk factor for postpartum infection seems to be caesarean section, and prophylactic antibiotics during the procedure substantially reduce the infection risk. Improvements in service provision as promoted through the Surviving Sepsis Campaign can reduce the overall risk of mortality and morbidity from maternal sepsis in high-income as well as in low-income countries.**SUMMARY**Maternal sepsis is an infrequent, but important complication of pregnancy, childbirth and puerperium, resulting in significant maternal morbidity and mortality worldwide. Improved outcome is possible through improved service provision.

Database: Medline

103. Maternal mortality and severe morbidity from sepsis in the Netherlands.

Author(s): Kramer, Hannah M C; Schutte, Joke M; Zwart, Joost J; Schuitemaker, Nico W E; Steegers, Eric A P; van Roosmalen, Jos

Source: Acta obstetricia et gynecologica Scandinavica; 2009; vol. 88 (no. 6); p. 647-653

Publication Date: 2009

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 19412806

Available at [Acta obstetricia et gynecologica Scandinavica](#) - from Wiley Online Library

Abstract:OBJECTIVE To assess incidence and risk factors of maternal mortality and severe morbidity from sepsis in the Netherlands. DESIGN A nationwide confidential enquiry into maternal mortality from 1993 to 2006 and severe maternal morbidity from 2004 to 2006. SETTING All 98 Dutch maternity units in the Netherlands. POPULATION All pregnant women in the Netherlands from 1993 to 2006. METHODS All reported cases of maternal death from sepsis during 1993-2006 were reported to the Maternal Mortality Committee. Cases of severe maternal morbidity from sepsis from 2004 to 2006 were collected in a nationwide design. Main outcome measures. Incidence, case fatality rates, and possible risk factors. RESULTS The maternal mortality ratio from direct maternal mortality from sepsis was 0.73 per 100,000 live births (20/2,742,265). The incidence of severe maternal morbidity from sepsis was 21 per 100,000 deliveries (78/371,021), of which 79% was admitted to the intensive care unit. High age, multiple pregnancies, and the use of artificial reproduction techniques were significant risk factors for developing sepsis in univariate analysis. The overall case fatality rate for sepsis during 2004-2006 was 7.7% (6/78). Group A streptococcal infection was in 42.9% (9/21), the cause of direct maternal mortality from sepsis (1993-2006). In 31.8% (14/44), Group A streptococcal infection was the cause of obstetric morbidity from sepsis (2004-2006). CONCLUSIONS With a case fatality rate of 7.7%, sepsis is a life threatening condition for women during pregnancy, childbirth, and puerperium.

Database: Medline

104. Using proteomics in perinatal and neonatal sepsis: Hopes and challenges for the future

Author(s): Buhimschi C.S.; Dulay A.T.; Baumbusch M.A.; Buhimschi I.A.; Bhandari V.; Han Y.W.; Madri J.A.

Source: Current Opinion in Infectious Diseases; Jun 2009; vol. 22 (no. 3); p. 235-243

Publication Date: Jun 2009

Publication Type(s): Review

PubMedID: 19395960

Available at [Current Opinion in Infectious Diseases](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Available at [Current Opinion in Infectious Diseases](#) - from Unpaywall

Abstract:PURPOSE OF REVIEW: Particularities of the fetal immune response to infection cause a heightened inflammatory state that acts synergistically with microbial insult to induce damage. Proteomics offers the opportunity for detecting fetuses at risk of sepsis and neurological injury. RECENT FINDINGS: Molecular tools (16S-rRNA) demonstrate that the diversity of microbial agents of intra-amniotic infection exceeds what is suspected clinically or is documented by cultures. The resulting inflammatory process has the potential to damage the fetus in utero. Stepwise algorithms (mass restricted score) have been developed to extract proteomic profiles characteristic of amniotic fluid inflammation. The mass restricted score includes four proteomic biomarkers: defensin-2, defensin-1, S100A12, and S100A8 proteins. Other amniotic fluid biomarkers relevant for preterm

birth are S100A9 and insulin-like growth factor-binding protein 1. S100A12 - ligand for the receptor of advanced glycation end products - has the strongest association with histological chorioamnionitis and funisitis. Presence of S100A12 and S100A8 in amniotic fluid is predictive of early-onset neonatal sepsis and poor neurodevelopmental outcome. SUMMARY: Presence of amniotic fluid proteomic biomarkers of inflammation is associated with increased inflammatory status of the fetus at birth. Future challenges are to find biomarkers that provide insight into molecular mechanisms of chronic fetal and neonatal cellular damage and to identify candidates for early neuroprotection strategies. © 2009 Wolters Kluwer Health | Lippincott Williams & Wilkins.

Database: EMBASE

105. Infectious complications of pregnancy termination

Author(s): Rahangdale L.

Source: Clinical Obstetrics and Gynecology; Jun 2009; vol. 52 (no. 2); p. 198-204

Publication Date: Jun 2009

Publication Type(s): Article

PubMedID: 19407526

Available at [Clinical obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:Infectious complications are a significant source of morbidity and mortality associated with pregnancy termination worldwide. However, in areas where abortion practices are legal, the risk of infection is very low. Proper technique, prophylaxis, and initial management of septic abortion have led to a significant decrease in risk of serious complications such as sepsis and death. Clinical features, management, and prevention of postabortal infection will be reviewed in the setting of legalized abortion. © 2009 Lippincott Williams & Wilkins, Inc.

Database: EMBASE

106. Sepsis and acute renal failure in pregnancy

Author(s): Galvagno S.M.; Camann W.

Source: Anesthesia and Analgesia; Feb 2009; vol. 108 (no. 2); p. 572-575

Publication Date: Feb 2009

Publication Type(s): Review

PubMedID: 19151289

Available at [Anesthesia and Analgesia](#) - from Free Medical Journals . com

Available at [Anesthesia and Analgesia](#) - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract:The unique physiology of pregnancy poses several problems for clinicians charged with caring for critically ill pregnant patients. This focused review summarizes two problems encountered in critically ill pregnant patients: pregnancy-related sepsis and acute renal failure. Common causes, and the effects of pregnancy on diagnosis and treatment are discussed. © 2009 International Anesthesia Research Society.

Database: EMBASE

Strategy 707536

#	Database	Search term	Results
1	Medline	(maternal ADJ2 sepsis).ti	65
2	Medline	(pregnan* ADJ2 sepsis).ti	42
3	Medline	(sepsis ADJ2 (obstetric* OR Puerperal OR postpartum OR postnatal OR intrapartum)).ti	344
4	Medline	(sepsis ADJ2 childbearing).ti	0
6	Medline	(sepsis ADJ2 (women OR female*)).ti	27
7	Medline	exp "PREGNANCY COMPLICATIONS, INFECTIOUS"/	43410
8	Medline	exp SEPSIS/	117440
9	Medline	(7 AND 8)	2005
10	Medline	exp "PUERPERAL INFECTION"/	3114
11	Medline	(8 AND 10)	424
12	Medline	exp "POSTPARTUM PERIOD"/	62489
13	Medline	(8 AND 12)	153
14	Medline	exp WOMEN/	35061
15	Medline	(8 AND 14)	16
16	Medline	(1 OR 3 OR 6 OR 9 OR 11 OR 13 OR 15)	2373
17	Medline	16 [DT FROM 2009] [Languages English]	619
18	EMBASE	(maternal ADJ2 sepsis).ti	86

19	EMBASE	(pregnan* ADJ2 sepsis).ti	55
20	EMBASE	(sepsis ADJ2 (obstetric* OR Puerperal OR postpartum OR postnatal OR intrapartum)).ti	203
21	EMBASE	(sepsis ADJ2 childbearing).ti	0
22	EMBASE	(sepsis ADJ2 (women OR female*)).ti	15
23	EMBASE	*"PUERPERAL DISORDER"/	2497
24	EMBASE	*SEPSIS/	48471
25	EMBASE	(23 AND 24)	16
26	EMBASE	exp "MATERNAL DISEASE"/	27834
27	EMBASE	(24 AND 26)	153
28	EMBASE	exp "PUERPERAL INFECTION"/	2194
29	EMBASE	(24 AND 28)	95
30	EMBASE	exp "PREGNANCY COMPLICATION"/	116890
31	EMBASE	(24 AND 30)	196
32	EMBASE	*PREGNANCY/	135328
33	EMBASE	(24 AND 32)	149
34	EMBASE	exp "OBSTETRIC PATIENT"/	1688
35	EMBASE	(24 AND 34)	24
36	EMBASE	(maternal ADJ2 sepsis).ti,ab	352
37	EMBASE	*FEMALE/	97857
38	EMBASE	(24 AND 37)	92

39	EMBASE	(18 OR 19 OR 20 OR 22 OR 25 1002 OR 27 OR 29 OR 31 OR 33 OR 35 OR 36 OR 38)	
40	EMBASE	("conference abstract").pt	3548981
41	EMBASE	39 not 40	686
42	EMBASE	41 [DT FROM 2009] [English language]	268
43	EMBASE	exp "MATERNAL MORTALITY"/	20188
44	EMBASE	(24 AND 43)	179
45	EMBASE	44 not 40	110
46	EMBASE	45 [DT FROM 2009] [English language]	59
47	EMBASE	*"SEPTIC SHOCK"/	18106
48	EMBASE	(23 OR 26 OR 28 OR 30 OR 32 370577 OR 34 OR 37 OR 43)	
49	EMBASE	(47 AND 48)	189
50	EMBASE	49 not 40	131
51	EMBASE	50 [DT FROM 2009] [English language]	24
52	CINAHL	(maternal ADJ2 sepsis).ti	43
53	CINAHL	(pregnan* ADJ2 sepsis).ti	27
54	CINAHL	(sepsis ADJ2 (obstetric* OR Puerperal OR postpartum OR postnatal OR intrapartum)).ti	74
55	CINAHL	(sepsis ADJ2 childbearing).ti	0
56	CINAHL	(sepsis ADJ2 (women OR female*)).ti	11

57	CINAHL	exp SEPSIS/	23564
58	CINAHL	exp PREGNANCY/	183668
59	CINAHL	exp "PREGNANCY COMPLICATIONS, INFECTIOUS"/	5482
60	CINAHL	exp "MATERNAL MORTALITY"/	5355
61	CINAHL	exp "POSTNATAL PERIOD"/	11335
62	CINAHL	(58 OR 59 OR 60 OR 61)	190522
63	CINAHL	(57 AND 62)	1002
64	CINAHL	(52 OR 53 OR 54 OR 56 OR 63)	1049
65	CINAHL	64 [DT FROM 2009] [Languages eng]	699
66	Medline	exp "PREGNANCY OUTCOME"/	86079
67	Medline	(8 AND 66)	708
68	Medline	67 [DT FROM 2009] [Languages English]	157
69	EMBASE	*"PREGNANCY OUTCOME"/	17743
70	EMBASE	(24 AND 69)	3
71	Medline	*"SHOCK, SEPTIC"/	15443
72	Medline	(66 AND 71)	133
73	Medline	(7 AND 71)	260
74	Medline	*"PUERPERAL INFECTION"/	2318
75	Medline	74 [DT FROM 2009] [Document 24 type Review] [Languages	

English]

76	Medline	exp PREGNANCY/	869565
77	Medline	exp SEPSIS/et	18740
79	Medline	(76 AND 77)	866
80	Medline	79 [DT FROM 2009] [Languages English]	154