



# MATERNAL SEPSIS RESOURCE WORKBOOK







# Acknowledgements

Improving the health outcomes of maternal and infant populations is a critical priority in Missouri. The Missouri Perinatal Quality Collaborative serves as a statewide convener, resource, and change agent to support decreased variations in care and outcomes, support optimized use of evidence-based practice, and support clinical-community integration — all noted gaps in achieving equitable and improved health.

These efforts would not be possible without the collective vision and collaboration of the Missouri Department of Health and Senior Services, Missouri Hospital Association, and members of the Missouri Maternal-Child Learning and Action Network. MC LAN members represent a diverse group of stakeholders from clinical backgrounds, professional associations, government agencies, community-based organizations and community representatives who have committed support to reducing maternal morbidity and mortality in Missouri, including the March of Dimes, Missouri Section of American College of Obstetricians and Gynecologists, Missouri Chapter of the American Academy of Pediatrics, Missouri Primary Care Association, Missouri DHSS, Missouri Department of Social Services MO HealthNet Division, Missouri Foundation for Health, Missouri Chapter of the Association of Women's Health, Obstetric and Neonatal Nurses, Nurse Practitioners in Women's Health Association, Missouri Chapter of the Amniotic Fluid Embolism Foundation, Generate Health, St. Louis Integrated Health Network, Bootheel Perinatal Network, Healthy Blue MO, Home State Health, United Healthcare, Nurture KC, Promise 1000, M-Brace Birthing, SafiMoms365, the Doula Foundation and Simply Strategy. These partners successfully aligned efforts to bring Alliance for Innovation on Maternal Health initiatives to Missouri in 2019 and connect directly to the Missouri Pregnancy-Associated Mortality Review Board, which identifies leading causes of morbidity and mortality.

The MO PQC also acknowledges the contributions of AIM, the national, cross-sector commitment designed to lead in developing and implementing patient safety bundles to promote safe care for every U.S. birth. Founded in 2014 through a cooperative agreement funded by the Health Services Resources Administration, and executed by ACOG, the AIM program provides expert technical support and capacity building to multidisciplinary state-based teams, most often perinatal quality collaboratives, leading targeted rapid-cycle quality improvement via implementation of patient safety bundles. An AIM patient safety bundle is a structured way of improving the process of care and patient outcomes: a small, straightforward set of evidence-based practices that, when performed collectively and reliably, have been proven to improve patient outcomes. Patient safety bundles are developed by expert multidisciplinary working groups, supported by the AIM staff at ACOG. Working groups include representatives appointed by professional member organizations, known experts and researchers specializing in the clinical topic, and patients with lived experience. The bundle development process includes design of measure and metrics for implementation and multiple levels of review from engaged stakeholders.<sup>1,2</sup>

The MO PQC leverages AIM patient safety bundles as one option to support implementation of evidence-based practice and care delivery redesign for birthing units, providers, and communities throughout the state.

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# The Evidence

This section contains information on key evidence-based practices for improving the recognition of and response to maternal sepsis.

Sepsis is the body's overwhelming and life-threatening response to infection, which can lead to tissue damage, organ failure and death. Between 2017 and 2019, infection was the fourth leading cause of pregnancy-related death in the United States.<sup>3</sup> Black women have more than twice the risk of maternal sepsis compared to white women.<sup>4</sup> In addition, for each maternal death, there are 50 women who experience life-threatening morbidity from sepsis.<sup>5</sup> Undetected or poorly managed maternal sepsis can lead to severe complications and even death.<sup>6</sup> Long-term consequences of maternal sepsis include organ dysfunction (including kidney failure and lung problems), amputations, cognitive impairment (memory loss, anxiety or depression), post-traumatic stress disorder, muscle and joint pain, and an increased risk for preterm birth.<sup>7,8</sup>

Some key considerations in recognition and treatment of maternal sepsis include the following.

- » The proportion of maternal deaths from sepsis in the U.S. (12.7%) is comparable to the proportion of deaths from obstetric hemorrhage (11.4%) and hypertensive disorders (7.4%). An estimated 63% to 73% of maternal deaths from sepsis are preventable.<sup>9</sup>
- » Maternal sepsis can be caused by infections in different parts of the body, such as the genital tract, lung, breast, gastrointestinal tract, etc. A pregnant person may be more susceptible to developing severe infections due to physiological changes in the immune system during pregnancy.<sup>10</sup>
- » Current sepsis screening tools used in other adult populations perform poorly in the pregnant population. A two-step approach that screens pregnant patients, first using vital signs and white blood cell count, then evaluates for end-organ injury (with laboratory values adjusted for pregnancy where needed), allows for increased sensitivity, fewer missed cases and greater specificity with fewer false positives.<sup>9</sup>
- » Prompt recognition of sepsis in pregnant and postpartum people usually results in good outcomes. However, this can be difficult because physiologic changes of pregnancy can mask signs of sepsis (e.g., elevated heart rate, lower blood pressure and higher white blood cell count). Labor can further impact these physiologic parameters and significantly raise lactic acid levels.<sup>11</sup>
- » Sepsis is a medical emergency. Clinicians should act quickly upon recognition of sepsis and septic shock. Early administration of antibiotics is critical and ideally should be administered within one hour of presentation to a health care facility.<sup>9</sup>
- » Blood cultures should be drawn when sepsis is confirmed, even if antibiotic therapy has been initiated.<sup>9</sup> Appropriate fluid resuscitation also should be initiated promptly.<sup>12</sup>

- » Pregnant patients with sepsis should be monitored closely for response or lack of response.
- » There are no specific indications as to the timing of delivery for a septic patient who is pregnant. Gestational age and maternal-fetal status must be taken into consideration.<sup>7</sup>
- » Postpartum patients also can develop sepsis following discharge after delivery. Every postpartum patient and support person should be educated on the signs and symptoms of infection. Education also should be given on ways to decrease infection, such as frequent handwashing.<sup>9</sup>
- » Discharge follow-up is imperative for birthing people who have been treated for sepsis.
- » A culture that promotes communication not influenced by traditional medical hierarchy should be developed so that all team members, including the patient, feel empowered to speak up about concerns.<sup>9</sup>
- » Maternal sepsis is a traumatic experience for both the birthing person and the family. Patients experiencing sepsis are at increased risk of PTSD related to birth trauma as well as other long-term consequences as mentioned above. The care team should monitor the birthing person closely for depression, dissociation or other signs of trauma so that prompt treatment and support can be provided.<sup>13</sup>

To address risks associated with maternal sepsis, birth teams are encouraged to implement the AIM Patient Safety Bundle for Sepsis in Obstetric Care. All patient safety bundle implementation tasks are listed below in the AIM Bundle Components section. Minimum standards of care for maternal sepsis include the following.

- ☐ Development of protocols and policies to care for patients experiencing maternal sepsis or suspected sepsis (hospital, emergency room, clinics and emergency medical services), including assessment, treatment and escalation of care
- ☐ Multidisciplinary education on maternal sepsis to all clinicians and staff who provide care to pregnant and postpartum people
- ☐ Utilization of an evidence-based sepsis screening tool for all pregnant and postpartum patients, in all units, which includes obstetric-specific criteria when appropriate
- ☐ Creation and fostering of nonhierarchical communication for all team members, that includes the patient and their designated support people
- ☐ Implementation of evidence-based measures to prevent infection
- ☐ In all care environments, assessment and documentation if the patient is pregnant or has been pregnant within the past year
- ☐ Patient and family education on pregnancy and postpartum complication warning signs, when to report to the medical team, and the most efficient communication channel to use.

Resources to support implementation of these patient safety bundle components are included in the Resources section of this document.





# Missouri's Call to Action

The Missouri PAMR Board reviews all deaths of birthing people while pregnant or within one year of the end of the pregnancy. Pregnancy-associated death is the overarching term used when referring to maternal deaths. Within this broad categorization are more specific terms to describe the cause of death, including pregnancy-related death, pregnancy-associated, but not related (PANR) death and pregnancy-associated, but unable to determine relatedness.<sup>16</sup> See definitions below.

**Pregnancy-related death:** Death occurring during or within one year of the end of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiological effects of pregnancy<sup>16</sup>

**PANR:** Death during or within one year of pregnancy from a cause that is not related to pregnancy<sup>16</sup> (e.g., pregnant person who dies in a natural disaster)

**Pregnancy-associated, but unable to determine relatedness:** Cases when the board was unable to determine if a death was pregnancy-related or PANR<sup>16</sup>

**Maternal morbidity:** Unexpected negative outcomes of childbirth resulting in short- or long-term health impacts<sup>16</sup>

**Maternal mortality:** The World Health Organization defines a maternal death as “a death while pregnant or within 42 days of the end of the pregnancy from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes.”<sup>17</sup> In Missouri, the term maternal mortality is used to describe deaths that occur during pregnancy, at delivery and up to one year after the end of a pregnancy.<sup>16</sup>



The 2023 Missouri PAMR [report](#), reviewing maternal deaths from 2018 to 2020, found infections to be the fifth leading cause of pregnancy-related deaths. Additionally, the report found that sepsis was the fourth leading indicator for severe maternal morbidity, with significant racial disparities noted.<sup>16</sup> In 63% of maternal sepsis deaths, independent reviewers found substandard care, most often a delay in recognition or management of sepsis, particularly on the OB unit, as a causal factor of the mortality.<sup>18</sup> The elements of the AIM Sepsis in Obstetric Care Patient Safety Bundle aid teams in the identification of and timely response to maternal sepsis and should be implemented as part of a comprehensive maternal-infant quality and safety plan.

The ability of clinical providers in all settings to recognize the unique presentation of maternal sepsis, intervene early, and educate patients and families on warning signs and risks of maternal sepsis directly correlates to decreased severe maternal morbidity and maternal mortality from maternal sepsis. EMS, EDs, obstetric triage units, birthing and postpartum units, as well as physician clinics should each be prepared to identify the signs and symptoms of sepsis, promote rapid treatment response, and educate patients and family on risks and symptoms.

Community birth workers and supportive organizations, as well as family members, can support early identification of maternal sepsis, educate themselves on signs to monitor for and support early access to care and intervention. This support should be applied through a culturally congruent approach and with consideration for health literacy.

The MO PQC encourages all stakeholders in maternal-infant health to take action to reduce SMM and MM from maternal sepsis. While not all infections are preventable, screening for, identifying and providing timely treatment for maternal sepsis are within the scope of control of the health care team.

Birthing organizations interested in implementing the AIM Sepsis in Obstetric Care Patient Safety Bundle may [register](#) with the MO PQC.



# AIM Bundle Components<sup>14</sup>

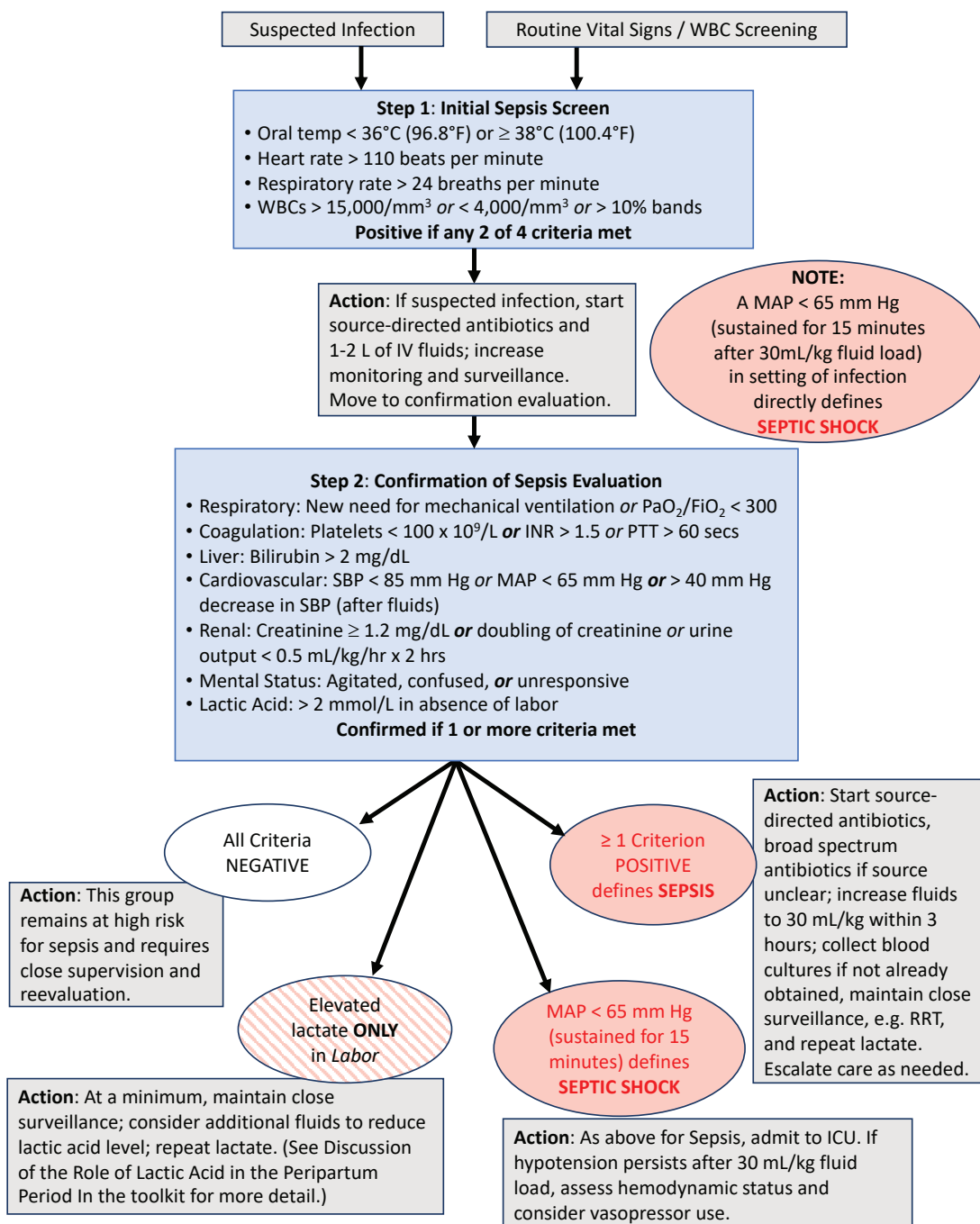
*An AIM patient safety bundle is a structured way of improving the process of care and patient outcomes: a small, straightforward set of evidence-based practices that, when performed collectively and reliably, have been proven to improve patient outcomes.*

## Readiness — Every Unit/Team

- ☐ Establish inter- and intradepartmental protocols and policies for the care of patients experiencing maternal sepsis or suspected sepsis.
  - ☐ Identify a readily available multidisciplinary team to assist with the care for people experiencing maternal sepsis or suspected sepsis. This team may differ in composition from facility to facility due to available resources but will be the same team for a variety of OB emergencies across patient safety bundles. This team might include expertise in the following areas.
    - ☐ obstetrics
    - ☐ maternal fetal medicine
    - ☐ anesthesiology
    - ☐ emergency medicine
    - ☐ critical care
    - ☐ infectious disease
    - ☐ nursing leadership
    - ☐ internal and/or family medicine
    - ☐ respiratory therapy
- ☐ Have a process to implement a rapid response protocol for the unstable patient. The protocol for maternal sepsis or suspected sepsis should include institution-specific processes to do the following.
  - ☐ antimicrobial initiation within one hour
    - ☐ Once the diagnosis of sepsis is suspected, broad-spectrum antibiotics tailored to the most likely source should be initiated within the first hour after diagnosis.
    - ☐ Consider implementing “Code Sepsis” with pharmacy services to immediately dose, prepare and deliver antibiotics to the bedside.
  - ☐ fluid resuscitation
  - ☐ vasopressor initiation, as needed
  - ☐ prioritization of laboratory results
  - ☐ bedside evaluation for escalation of care, including criteria for when a patient must be seen in person by a physician or certified nurse midwife
  - ☐ evaluation of source (cultures), severity of end-organ injury
  - ☐ in hospitals without 24/7 in-hospital obstetrician coverage, establish “first responder” protocol for when sepsis is suspected
  - ☐ establish protocol for when an obstetrician consult is needed for patients who are < 20 weeks pregnant or postpartum
  - ☐ need for higher level of care (such as ICU or transfer)



# Maternal Sepsis Evaluation Flow Chart



Rev1: 4/2020

Figure 1 Image source: California Maternal Quality Care Collaborative. (2020, January 22).

Appendix D: Maternal Sepsis Evaluation Flow Chart.

Retrieved from <https://www.cmqcc.org/content/appendix-d-maternal-sepsis-evaluation-flow-chart>

- ☐ Create a culture that utilizes nonhierarchical communication so that all team members, including the patient and family, feel empowered to speak up about a concern and know that their input is valued by the entire care team.
    - ☐ Empower nurses to speak up when they have concerns, and respect nurses' concerns.
    - ☐ Empower patients and families to speak up when they have concerns and thoroughly evaluate their concerns.
    - ☐ Empower physicians to feel safe saying, "I don't know, but I will find out," in team communications
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## Recognition and Prevention — Every Patient

- ☐ Assess and document for pregnancy.
  - ☐ Implement an ED protocol to ask all reproductive-aged (10 to 55 years old) patients if they are pregnant, could be pregnant, or have been pregnant within the last six weeks (42 days) to assess for obstetric-specific causes and consideration of an obstetric-specific screening tool.
  - ☐ Ensure gender inclusivity in the assessment.
- ☐ Implement evidence-based measures to prevent infection.
  - ☐ Measures to be instituted include the following.
    - ☐ prenatal screening for infection (such as for asymptomatic bacteriuria)
    - ☐ peripartum antibiotic indications (such as for preterm premature rupture of membranes or group B streptococcal prophylaxis)
    - ☐ cesarean delivery infection prevention (such as for prophylactic antibiotics, vaginal cleansing during labor or with ruptured membranes)
  - ☐ Build pregnancy-specific vital sign change alerts into electronic health record systems for > 20 weeks of gestation and < three days postpartum. Use nonpregnancy criteria < 20 weeks of gestation and > three days postpartum.
  - ☐ Consider concerns raised or reported by patients, doulas and patient-identified support networks to be critical information for further evaluation.



- ☐ Recognize and treat infection early to prevent progression to sepsis.
  - ☐ Conduct routine screening for asymptomatic bacteriuria to prevent maternal progression to pyelonephritis, GBS colonization and sexually transmitted infections during prenatal care to prevent fetal infection. Evaluate at admission for unresolved infections and/or the need for GBS prophylaxis, especially in patients with limited or no prenatal care.
  - ☐ Early treatment of intra-amniotic infection has both maternal and fetal benefits and the [criteria for treatment have been published by ACOG](#). Consider antibiotic treatment in cases of isolated fever during labor unless another source can be identified.
- ☐ Consider sepsis as a differential diagnosis option even in the absence of fever.
  - ☐ Even in patients who have died from maternal sepsis, fever was not always present. Absence of temperature abnormalities does not rule out sepsis.
  - ☐ Personnel in various units and care settings who do not regularly care for pregnant patients may not recognize the signs and symptoms of sepsis in pregnant and postpartum people. To avoid delays in recognition, diagnosis and treatment, collaborate across all units to have standard obstetric-specific screening and consultation as needed.
- ☐ Provide patient education on general life-threatening pregnancy and postpartum complications and early warning signs, including sepsis signs and symptoms other than fever, and instructions for who to notify with concerns.
  - ☐ Education should include the following.
    - ☐ a point of contact with medical concerns, ideally stratified by severity of condition or symptoms
    - ☐ review of warning signs/symptoms
    - ☐ reinforcement of the value of outpatient postpartum visits
    - ☐ a pathway if the patient is not feeling heard
  - ☐ Remember the following when providing education.
    - ☐ Use appropriate lay terminology.
    - ☐ Assess patient understanding using teach-back, when possible.
    - ☐ Align the information with the postpartum person's health literacy, culture, language and accessibility needs.
    - ☐ Include the patient's designated support network during teaching, or as desired by the patient.

## Response — Every Event

- ☐ Initiate facility-wide standard protocols and policies for assessment, treatment and escalation of care for people with suspected or confirmed maternal sepsis.
  - ☐ Immediately triage patients when they present with sepsis symptoms.
    - ☐ Ask all reproductive-aged (10 to 55 years old) patients if they are pregnant, could be pregnant, or have been pregnant within the last six weeks (42 days) to assess for obstetric-specific causes and consideration of an obstetric-specific screening tool.
    - ☐ Consider utilizing a standard triage tool for all pregnant or recently pregnant patients.<sup>15</sup>
  - ☐ Utilize a standardized order set for sepsis evaluation/management. See example order sets in the Resources section.
  - ☐ Prioritize lab results to assist in identifying severity and potential source.
  - ☐ Activate a rapid response team for the unstable patient.
  - ☐ Administer antibiotics within one hour after diagnosis of sepsis.
  - ☐ Perform source control urgently when indicated, using the least invasive means. In cases requiring source control, such as dilation and curettage, abscess drainage, or laparotomy, communication about the urgency of access to the operating room or interventional radiology suite is key.
  - ☐ Include an “[equity pause](#)” to look at bias risk within multidisciplinary care planning. An equity pause gives the care team an opportunity to ask, “What are considerations to ensure respectful care without discrimination?”
  - ☐ Designate a provider to take the lead on patient and family communication during a crisis and ensure the use of an interpreter when needed.
- ☐ Initiate facility-wide standard protocols and policies for post-stabilization management of people with sepsis.
  - ☐ Transfer care to an appropriate facility if a higher level of care is needed.
  - ☐ Initiate fetal surveillance and maternal management strategies, which could include the following.
    - ☐ antenatal steroids to support fetal lung maturity in appropriate cases
    - ☐ fetal heart tracing surveillance, individualized based on gestational age and maternal status



- ☐ Implement daily multidisciplinary team communication. For any major changes in clinical care, have a designated team member provide updates to the patient and support network.
- ☐ Facilitate comprehensive post-sepsis care, including screening and proper referrals for post-sepsis syndrome.
  - ☐ Assess patients for post-sepsis syndrome, which is characterized by fatigue, cognitive decline, mobility issues, pain, weakness, depression, anxiety and post-traumatic stress disorder.
  - ☐ Assessment and proper referrals can include, but are not limited to, occupational therapy, physical therapy, speech therapy, pain clinics and psychiatry.

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## Reporting and Systems Learning — Every Unit

- ☐ Conduct multidisciplinary reviews for systems improvement of each sepsis case.
  - ☐ Use a debriefing form or checklist to ensure all options and treatments have been reviewed and discussed.
  - ☐ Case review should include the following.
    - ☐ review of all sepsis cases
    - ☐ adherence to sepsis response protocols
    - ☐ consideration of whether instances of bias may have impacted care (e.g., race, ethnicity, socioeconomic status, insurance status)
    - ☐ identification of opportunities for improvement
  - ☐ Share findings from reviews with all associated staff and involved facility stakeholders at regular staff meetings.
  - ☐ Consider the implementation of huddles, especially when the following occur.
    - ☐ there is concern for patient condition
    - ☐ worsening of patient condition
    - ☐ patient thinks concerns are not being heard

## Respectful, Equitable and Supportive Care

### — Every Unit/Provider/Team Member

- ☐ Include the patient as part of the multidisciplinary team. Patient support networks may include nonfamilial supports, such as doulas and home visitors.
  - ☐ Inclusion should involve the following.
    - ☐ establishment of trust
    - ☐ informed, bidirectional shared decision-making
    - ☐ patient values and goals as primary drivers of the process
- ☐ Use open, transparent and empathetic communication.
  - ☐ Communication should include the following.
    - ☐ alignment with the person's health literacy, culture, language and accessibility needs
    - ☐ a designated support person for all teaching with the patient's permission or as desired
- ☐ Respectful care includes bias mitigation strategies.
  - ☐ Each unit should have training in providing respectful and equitable care.
  - ☐ Units should consider providing patients with an opportunity to provide feedback on whether they experienced bias in their care and review comments with staff to promote self-awareness and eliminate biased care.



# Resources Section

## General Resources

AIM: [Sepsis in Obstetric Care Patient Safety Bundle](#)  
AIM: [Sepsis in Obstetric Care Element Implementation Details](#)  
AIM: [Sepsis in Obstetric Care Implementation Resources](#)  
AIM: [Sepsis in Obstetric Care Change Package](#)  
ACOG: [Maternal Safety Bundle for Sepsis in Pregnancy](#)  
CMQCC: [Improving Diagnosis and Treatment of Maternal Sepsis Toolkit](#)  
Institute for Healthcare Improvement: [Sepsis in Obstetric Care Change Package](#)  
Society for Maternal-Fetal Medicine: [Maternal Sepsis](#)

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## Educational Resources

CMQCC: [Collecting a Urine Specimen From a Foley Catheter](#)  
CMQCC: [The Importance of Taking a Respiratory Rate](#)  
CMQCC: [How to Take an Oral Temperature Measurement](#)  
CMQCC: [Maternal Sepsis Sample Education Outline](#)

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## Simulation-based Training

AIM: [Obstetric In-Situ Drill Program Manual](#)  
CMQCC: [UC Davis Health Maternal Sepsis Drill Scenario](#)  
Society for Obstetric Anesthesia and Perinatology: [Maternal Sepsis Presenting to L&D Triage](#)

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## Debriefing Forms

CMQCC: [Sample Maternal Sepsis Debriefing Form](#)

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## Triage Assessment/Sepsis Screens

*Archives of Academic Emergency Medicine:* [A Review of Obstetric Triage Scales](#)  
AWHONN: [Maternal Fetal Triage Index \(MFTI\)](#)  
Focus Information Technology: [Sepsis in Obstetrics Score \(S.O.S.\)](#), a validated pregnancy-specific score to identify risk of ICU admission for sepsis  
CMQCC: [Maternal Sepsis Evaluation Flow Chart](#)  
Saskatchewan Health Authority: [Maternal Sepsis Clinical Algorithm](#)

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## Order Set/Protocol Examples

UNC School of Medicine: [Prophylactic Antibiotics for Intrapartum/Postpartum Procedures](#)  
UNC School of Medicine: [GBS for Preterm and Term Pregnancies/Penicillin Allergy](#)  
ACOG: [Urinary Tract Infections in Pregnant Individuals](#)  
CMQCC: [Sample Sutter Health Sepsis Order Set](#)  
Saskatchewan Health Authority: [Maternal Sepsis Order Set](#)  
University of Washington: [Identification and Management of Sepsis in Pregnancy](#)

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## Respectful, Equitable and Supportive Care

UW Medicine: [Equity Pause Toolkit](#)

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# References

- <sup>1</sup> Health Resources & Services Administration. (n.d.). Alliance for innovation on maternal health (AIM) capacity. Retrieved November 10, 2023, from <https://www.hrsa.gov/grants/find-funding/HRSA-23-066>
- <sup>2</sup> American College of Obstetricians & Gynecologists. (n.d.). AIM patient safety bundles. Retrieved November 10, 2023, from <https://saferbirth.org/patient-safety-bundles/>
- <sup>3</sup> Centers for Disease Control and Prevention. (2023, March 31). Pregnancy mortality surveillance system. <https://www.cdc.gov/maternal-mortality/php/pregnancy-mortality-surveillance/>
- <sup>4</sup> Mayr, F. B., Yende, S., Linde-Zwirble, W. T., Peck-Palmer, O. M., Barnato, A. E., Weissfeld, L. A. and Angus, D. C. (2010). Infection rate and acute organ dysfunction risk as explanations for racial differences in severe sepsis. *JAMA*, 303(24), 2495-2503.
- <sup>5</sup> Acosta, C. D., Kurinczuk, J. J., Lucas, D. N., Tuffnell, D. J., Sellers, S., Knight, M., & United Kingdom Obstetric Surveillance System. (2014). Severe maternal sepsis in the UK, 2011-2012: A national case-control study. *PLoS Medicine*, 11(7), e1001672.
- <sup>6</sup> Sepsis Alliance. (2019). Maternal sepsis fact sheet. [https://www.sepsis.org/wp-content/uploads/2023/09/Maternal-Sepsis-Fact-Sheet\\_2023-09-05\\_sk-1.jpg](https://www.sepsis.org/wp-content/uploads/2023/09/Maternal-Sepsis-Fact-Sheet_2023-09-05_sk-1.jpg)
- <sup>7</sup> Fan, S.-R., Liu, P., Yan, S.-M., Huang, L., & Liu, X.-P. (2020). New concept and management for sepsis in pregnancy and the puerperium. *Maternal-Fetal Medicine*, 2(4), 231-239. <https://doi.org/10.1097/fm9.0000000000000058>
- <sup>8</sup> Blauvelt, C. A., Nguyen, K. C., Cassidy, A. G., & Gaw, S. L. (2021). Perinatal outcomes among patients with sepsis during pregnancy. *JAMA Network Open*, 4(9), e2124109. <https://doi.org/10.1001/jamanetworkopen.2021.24109>
- <sup>9</sup> Gibbs, R., Bauer, M., Olvera, L., Sakowski, C., Cape, V., & Main, E. (2022). Improving diagnosis and treatment of maternal sepsis: A quality improvement toolkit. California Maternal Quality Care Collaborative. <https://www.cmqqc.org/resource/improving-diagnosis-and-treatment-maternal-sepsis-errata-712022>
- <sup>10</sup> Lapinsky, S. E. (2013). Obstetric infections. *Critical Care Clinics*, 29(3), 509-520. <https://doi.org/10.1016/j.ccc.2013.03.006>
- <sup>11</sup> Bauer, M. E., Housey, M., Bauer, S. T., Behrmann, S., Chau, A., Clancy, C., Clark, E. A. S., Einav, S., Langen, E., Leffert, L., Lin, S., Madapu, M., Maile, M. D., McQuaid-Hanson, E., Priessnitz, K., Sela, H. Y., Shah, A., Sobolewski, P., Toledo, P., Tsen, L. C., & Bateman, B. T. (2019). Risk factors, etiologies, and screening tools for sepsis in pregnant women: A multicenter case-control study. *Anesthesia & Analgesia*, 129(6), 1613-1620. <https://doi.org/10.1213/ane.00000000000003709>
- <sup>12</sup> Levy, M. M., Evans, L. E., & Rhodes, A. (2018, June). The surviving sepsis campaign bundle: 2018 update. *Intensive Care Medicine*, 44(6), 925-928. <https://doi.org/10.1007/s00134-018-5085-0>
- <sup>13</sup> Shields, A. D., Plante, L. A., Pacheco, L. D., & Louis, J. M. (2023). Society for maternal-fetal medicine consult series #67: Maternal sepsis. *American Journal of Obstetrics and Gynecology*, 229(3), B2-B19. <https://doi.org/10.1016/j.ajog.2023.05.019>
- <sup>14</sup> American College of Obstetricians & Gynecologists. (2022). Alliance for innovation on maternal health sepsis in obstetric care patient safety bundle. [https://saferbirth.org/wp-content/uploads/U3-FINAL\\_AIM\\_Bundle\\_SOC.pdf](https://saferbirth.org/wp-content/uploads/U3-FINAL_AIM_Bundle_SOC.pdf)
- <sup>15</sup> Rashidi Fakari, F., Simbar, M., Zadeh Modares, S., & Alavi Majd, H. (2019). Obstetric triage scales; a narrative review. *Archives of Academic Emergency Medicine*, 7(1), e13. <https://europepmc.org/articles/PMC6377224?pdf=render>
- <sup>16</sup> Missouri Department of Health and Senior Services. (2023, July). Missouri Pregnancy Associated Mortality Review 2018-2020 Annual Report. Retrieved from <https://health.mo.gov/data/pamr/pdf/2020-annual-report.pdf>
- <sup>17</sup> Hospital Industry Data Institute. (2023). Severe maternal morbidity and mortality monitoring and trends [PowerPoint Presentation].
- <sup>18</sup> MBRRACE-UK. (2014). Saving lives, improving mothers' care: Lessons learned to inform future maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2009-2012. National Perinatal Epidemiology Unit, University of Oxford, Oxford (United Kingdom). Retrieved from <https://www.npeu.ox.ac.uk/mbrrace-uk/presentations/saving-lives-improving-mothers-care - saving-lives-improving-mothers-care-surveillance-of-maternal-deaths-in-the-uk-2012-14-and-lessons-learned-to-inform-maternity-care-from-the-uk-and-ireland-confidential-enquiries-into-maternal-deaths-and-morbidity-2009-14>