# SEPSIS IN OBSTETRICS

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# Learning Objectives

1. Identify the differences in screening criteria between maternal and adult sepsis
2. Recognize the differences in determining end organ damage for maternal versus adult sepsis
3. Discuss the planned initiatives of the Kentucky Maternal Morbidity and Mortality Task Force related to maternal sepsis.

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# CDC Data - Causes of Pregnancy-Related Deaths 2024 in the U.S.

| Cause of death | Percentage | Count |
|---|---|---|
| Cardiovascular conditions (includes cardiomyopathy, 10.7% of all deaths, n=71) | 22.0% | 146 |
| Other noncardiovascular medical conditions | 15.2% | 101 |
| Infection or sepsis (includes COVID-19, 0.6% of all deaths, n=4) | 14.4% | 96 |
| Hemorrhage | 14.1% | 94 |
| Thrombotic pulmonary or other embolisms | 10.7% | 71 |
| Hypertensive disorders of pregnancy | 7.7% | 51 |
| Amniotic fluid embolism | 5.0% | 33 |
| Cerebrovascular accidents | 3.8% | 25 |
| Anesthesia complications | 0.3% | 2 |

https://www.cdc.gov/maternal-mortality/php/pregnancy-mortality-surveillance-data/?CDC_AAref_Val=https%3A%2F%2Fwww.cdc.gov%2Fmaternal-mortality%2Fphp%2Fpregnancy-mortality-surveillance%2F%3FCDC_AAref_Val%3Dhttps%3A%2F%2Fwww.cdc.gov&cove-tab=2

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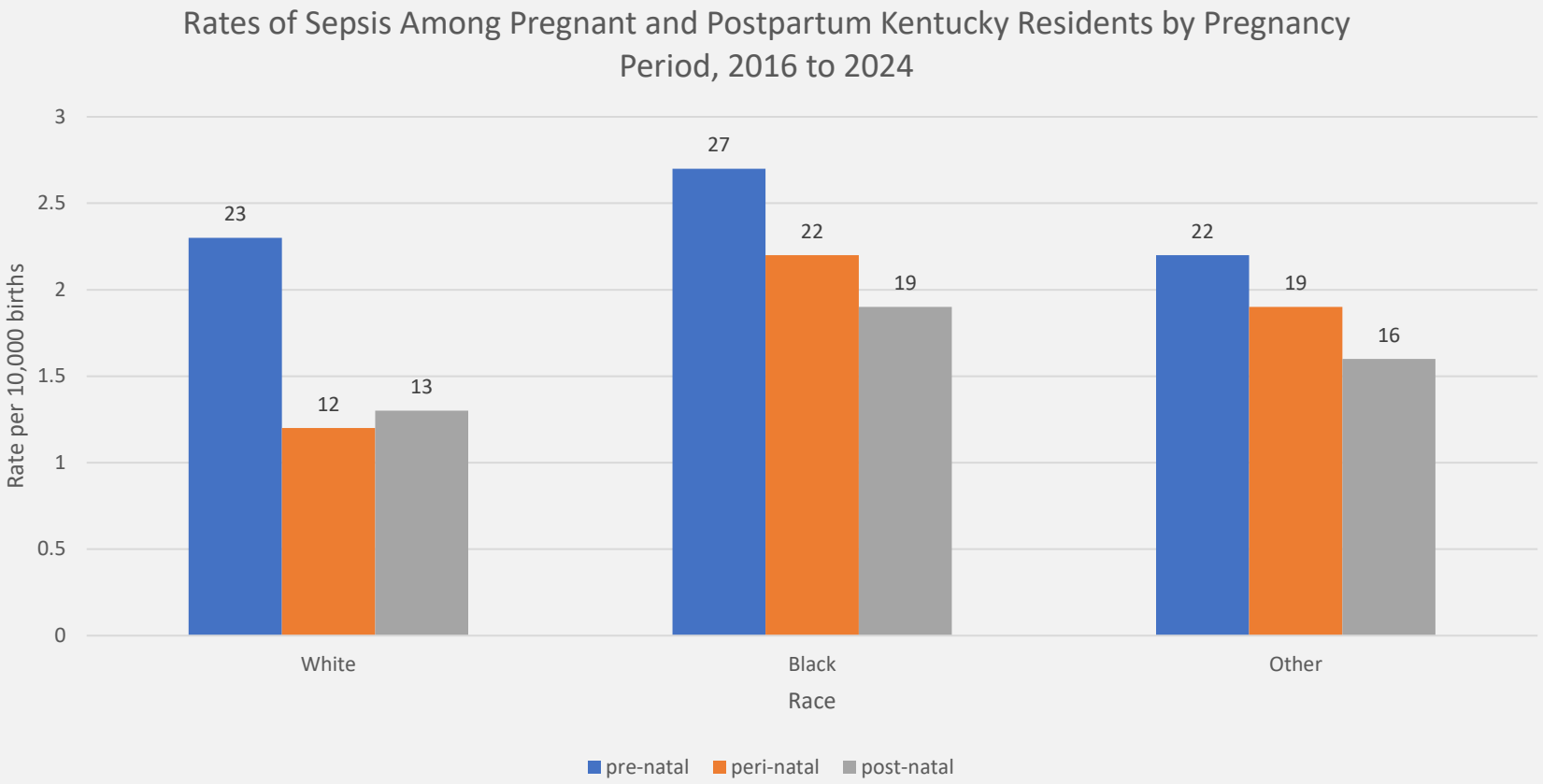
# OB Sepsis Incidence in Kentucky

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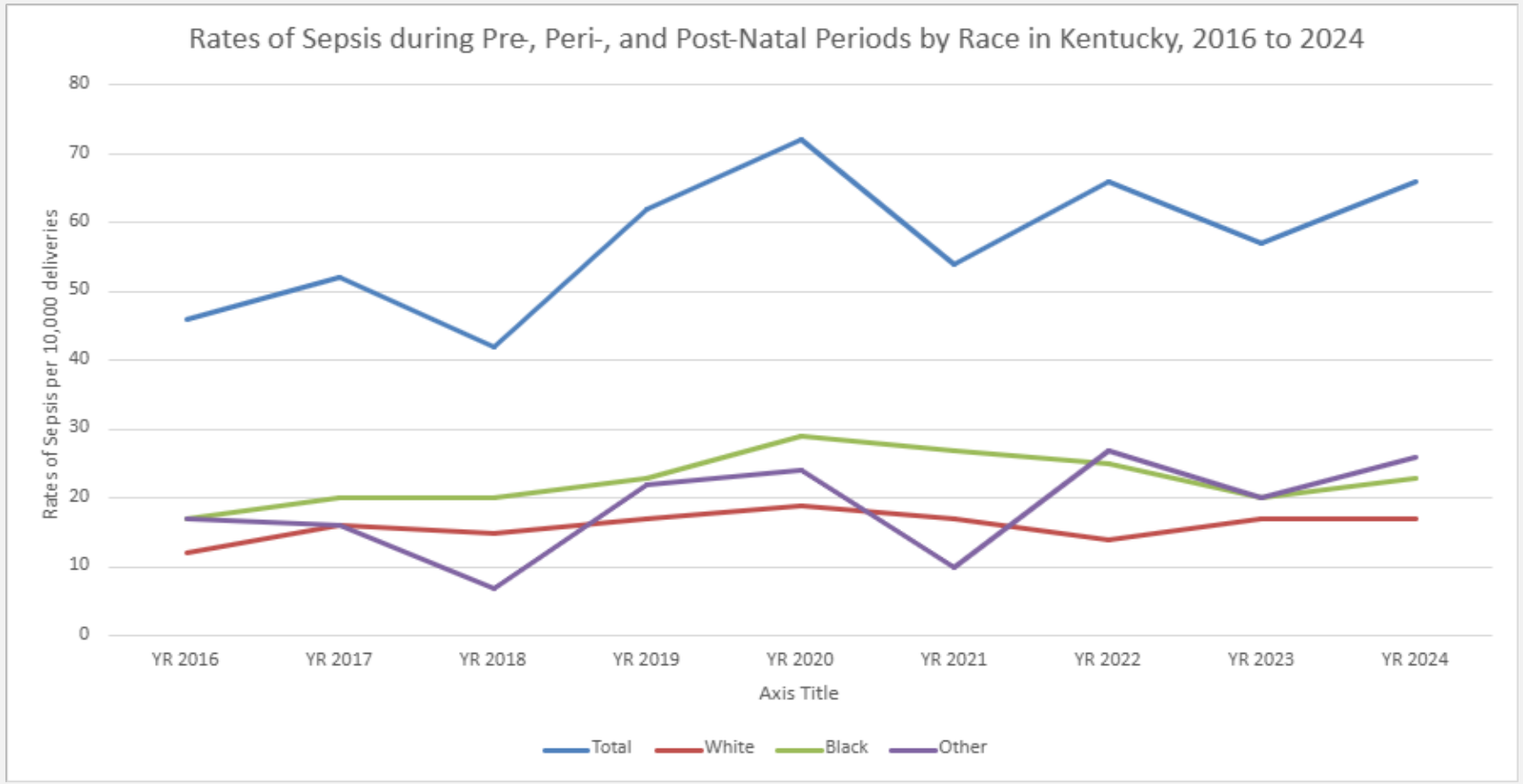
# OB Sepsis Incidence in Kentucky

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# State and National Organizations Working to Address Maternal Mortality

Alliance for Innovation on Maternal Health (AIM) –

- 8 patient safety bundles addressing drivers of maternal mortality including sepsis

California Maternal Quality Collaborative (CMQCC) –

- 9 downloadable "Toolkits" addressing drivers of maternal morbidity including sepsis

Kentucky Maternal Morbidity and Mortality Task Force (KyMMM) – https://kymmm.org/

- 12 subcommittees that address both obstetric and social drivers of maternal morbidity including sepsis

Kentucky Perinatal Quality Collaborative (KyPQC) – https://kypqc.org/

- In conjunction with KyMMM, provides resources and data submission on AIM safety bundles

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# AIM Consensus Bundle on Sepsis in Obstetric Care

- Maternal death due to sepsis has remained unchanged since 1987
- Maternal sepsis deaths are preventable in 73% of cases
- Delays in recognition, treatment, and escalation of care

Bauer ME, Albright C, Prabhu M, Heine RP, Lennox C, Allen C, Burke C, Chavez A, Hughes BL, Kendig S, Le Boeuf M, Main E, Messerall T, Pacheco LD, Riley L, Solnick R, Youmans A, Gibbs R. Alliance for Innovation on Maternal Health: Consensus Bundle on Sepsis in Obstetric Care. Obstet Gynecol. 2023 Sep 1;142(3):481-492. doi: 10.1097/AOG.0000000000005304. Epub 2023 Aug 3. PMID: 37590980; PMCID: PMC10424822.

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# AIM Consensus Bundle on Sepsis in Obstetric Care

| | |
|---|---|
| Delay in recognition | • Physiologic changes in pregnancy + comorbidities<br>• 25% of patients do not present with fever |
| Delay in treatment | • Mortality 8% if antibiotics < 1 hour<br>• Mortality 20% if antibiotics > 1 hour |
| Delay in escalation of care | • Wellness bias |

Bauer ME, Albright C, Prabhu M, Heine RP, Lennox C, Allen C, Burke C, Chavez A, Hughes BL, Kendig S, Le Boeuf M, Main E, Messerall T, Pacheco LD, Riley L, Solnick R, Youmans A, Gibbs R. Alliance for Innovation on Maternal Health: Consensus Bundle on Sepsis in Obstetric Care. Obstet Gynecol. 2023 Sep 1;142(3):481-492. doi: 10.1097/AOG.0000000000005304. Epub 2023 Aug 3. PMID: 37590980; PMCID: PMC10424822.

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# CMS Screening Criteria Adult vs Maternal Sepsis

| Non-Pregnant Criteria | Pregnant 20 weeks through Day 3 Post-delivery Criteria |
|---|---|
| Temperature > 38.3 C (100.9 F) or < 36.0 C (96.8 F) | Temp ≥ 38 C (100.4 F) or < 36.0 C (96.8 F) |
| Heart rate > 90 bpm | HR > 110 bpm |
| Respiration > 20 per minute | Respiration > 24 per minute |
| WBC > 12,000 or < 4,000 or > 10% bands | WBC > 15,000 or < 4,000 or > 10% bands |

https://qualitynet.cms.gov/inpatient/specifications-manuals/sepsis-resources

# CMS End Organ Damage Criteria Adult vs Maternal Sepsis

| Non-Pregnant Criteria | Pregnant 20 weeks through Day 3 Post-delivery Criteria |
|---|---|
| SBP < 90 mmHg or MAP < 65 mmHg | SBP < 85mm Hg or MAP < 65mmHg |
| SBP decrease of more than 40 mmHg | SBP decrease of more than 40 mmHg |
| Acute respiratory failure as evidenced by new need for invasive or non-invasive mechanical ventilation | Acute respiratory failure as evidenced by new need ofor invasive or non-invasive mechanical ventilation |
| Creatinine > 2.0 mg/dL | Creatinine > 1.2 mg/dL |
| UOP < 0.5 mL/kh/hr for two consecutive hours | UOP < 0.5 mL/kh/hr for two consecutive hours |
| Total bilirubin > 2 mg/dL | Total bilirubin > 2 mg/dL |
| Platelet count < 100,000 | Platelet count < 100,000 |
| INR > 1.5 or aPTT > 60 sec | INR > 1.5 or aPTT > 60 sec |
| Lactate > 2 mmol/L | Lactate > 2 mmol/L. NOTE - do not use lactate obtained during active labor through delivery |

https://qualitynet.cms.gov/inpatient/specifications-manuals/sepsis-resources

# KHA Sepsis Badge Buddy

## Sepsis Screening Tool

1. **Suspicion of infection (Y or N)**
2. **SIRS criteria (need 2)**
   a. Temp >100.9 F (38.3 C) or <96.8 F (36.0 C)
   b. HR >90 bpm
   c. RR >20 bpm
   d. WBC >12,000 or <4,000 or 10% bands

**Pregnant 20 weeks through Day 3 Post-delivery Criteria**

a. Temp ≥100.4 F (38.0 C) or <96.8 F (36.0 C)
b. HR >110 bpm
c. RR >24 bpm
d. WBC >15,000 or <4,000 or 10% bands

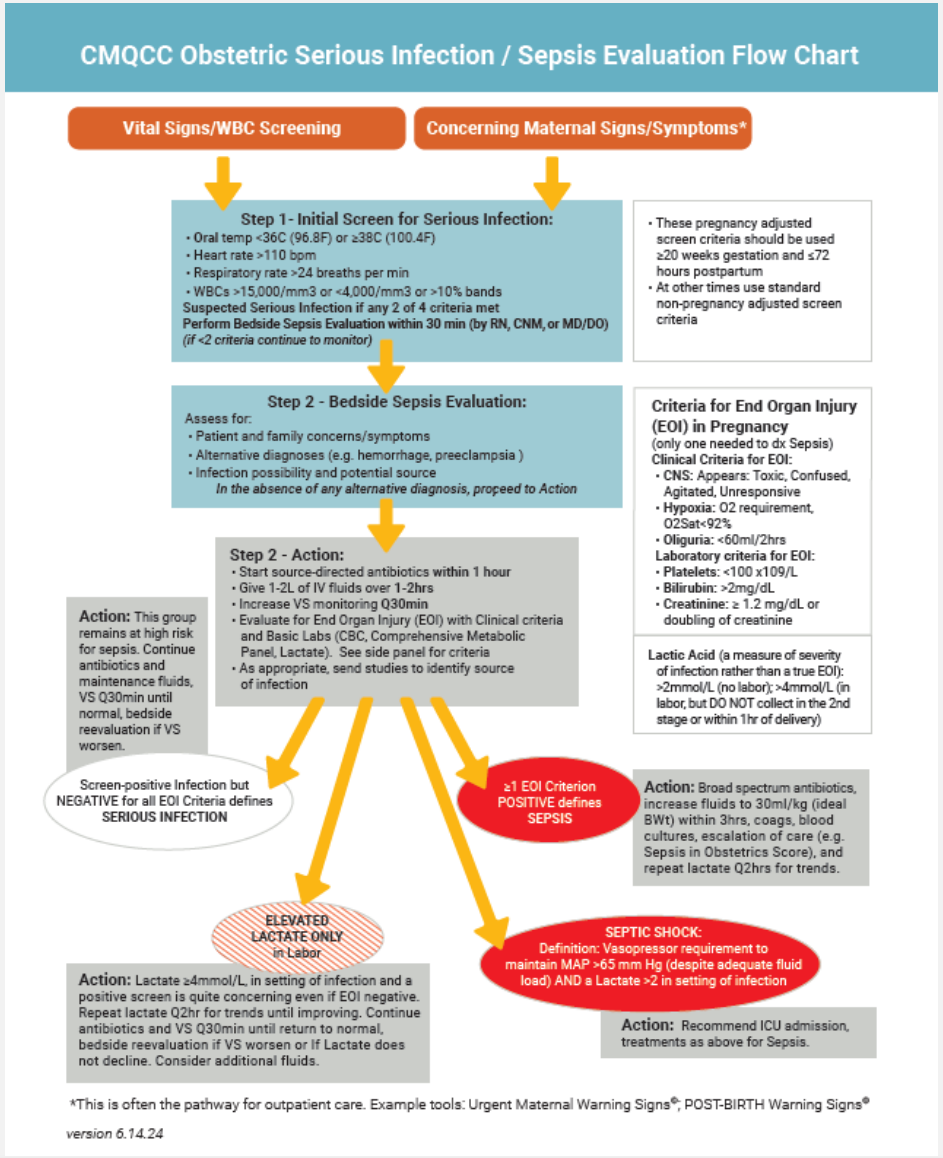
**If YES to 1 & 2 = POSITIVE sepsis screen. Order a STAT lactic acid, blood cx x2, CBC, & CMP per protocol. Notify provider.**

3. **Organ dysfunction (need one)**
   a. SBP<90mmHg or MAP< 65mmHg
      **Pregnancy:** SBP< 85mmHg or MAP<65mmHg
   b. SBP decreases >40 mmHg from baseline
   c. Creatinine >2 mg/dl or urine output <0.5 ml/kg for 2 hrs
      **Pregnancy:** Creatinine>1.2mg/dl or urine output<0.5ml/kg for 2 hrs.
   d. Bili >2 mg/dl
   e. Lactate >2 mmol/L
   f. Platelet <100,000
   g. INR >1.5 or aPTT >60 sec
   h. Acute resp failure with new invasive/non-invasive mechanical ventilation

**YES to 1, 2, + 3 = POSITIVE screen suggestive of SEVERE sepsis**

# CMQCC Serious Infection/Sepsis Evaluation Flow Chart

Improving Diagnosis and Treatment of Obstetric Sepsis, V2.0, CMQCC Quality Improvement Toolkit 2025

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# Most Common Sources of OB Sepsis

**Table 1.** Leading Causes of Maternal Sepsis

| Antepartum | Intrapartum/ Immediate Postpartum | Post-discharge |
|---|---|---|
| Septic abortion | Chorioamnionitis/ intraamniotic infection | Pneumonia/influenza |
| Chorioamnionitis/ intraamniotic infection | Endometritis | Pyelonephritis |
| Pneumonia/influenza | Pneumonia/influenza | Wound Infection/ necrotizing fasciitis |
| Pyelonephritis | Pyelonephritis | Mastistis |
| Appendicitis | Wound Infection/ necrotizing fasciitis | Cholecystitis |

Improving Diagnosis and Treatment of Obstetric Sepsis, V2.0, CMQCC Quality Improvement Toolkit 2025

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# KyMMM OB Sepsis Committee Objective

Our goal is to improve recognition and timely treatment of sepsis in pregnant and postpartum patients by:

1. Increasing the number of OB providers and nursing staff trained on Obstetric Sepsis
2. Increasing the  number of facilities who have a protocol for screening and treatment of obstetric sepsis
3. Increase the number of facilities who perform multidisciplinary case reviews for obstetric sepsis

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# Planned Data Submission for KyMMM

| AIM Sepsis Bundle | Data Submission |
|---|---|
| Percent of OB Providers and Nursing Staff that were trained in the last 2 years on the recognition of and unit standard response to suspected and confirmed sepsis | Report in 10% increments – round up |
| Rate Progress –<br>Has your facility established a process to perform multidisciplinary case reviews for OB patients with sepsis? | Likert scale –<br>1 not yet started – 5 fully in place |
| Rate progress –<br>Has your facility implemented a system for screening and diagnosis of pregnant and postpartum patients for sepsis? | Likert scale –<br>1 not yet started – 5 fully in place |
| Rate Progress –<br>Has your facility established standard protocols for management of pregnant and postpartum patients with sepsis? | Likert scale –<br>1 not yet started – 5 fully in place |

# Timeline for Data Submission for KyMMM

July/August 2026 – Resources will be finalized on KyMMM website

October 2026 – Pilot facilities will begin data submission

February 2027 – Statewide implementation

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# Potential Data Collection/Partnership with Sepsis Consortium

Focus multidisciplinary reviews for maternal sepsis on the following:

1. Were there earlier signs of infection that could have allowed earlier antibiotic therapy (ie. Chorioamnionitis, UTI)
2. Did the patient receive facility standard antibiotic prophylaxis including any of the following if indicated - GBS prophylaxis, Cesarean delivery prophylaxis, 3rd or 4th degree laceration prophylaxis, Preterm prelabor rupture of membranes (PPROM)
3. Did the patient require second-line prophylactic antibiotic therapy due to allergies

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# THANK YOU

https://kymmm.org/

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# References


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