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## Update on Chorioamnionitis

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## Objectives and Disclosures

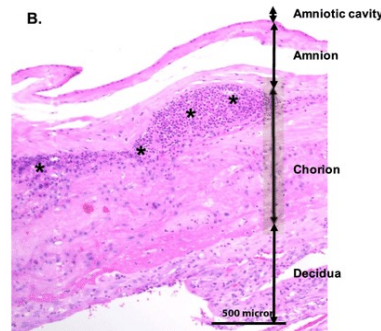
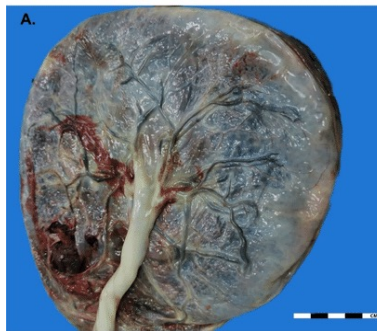
- Describe the range of definitions and terms used for chorioamnionitis
- Understand the maternal and fetal consequences of fever in labor
- Identify the relationship between chorioamnionitis and sepsis

Conflicts/Disclosures: None

Supported by: NICHD UG3-HD108053: Large-scale Implementation of Community Co-led Maternal Sepsis Care Practices to Reduce Morbidity and Mortality from Maternal Infection

## Chorioamnionitis

- Intraamniotic Infection / Chorioamnionitis:  
Defined by clinical signs? Histology? Or Microbiology?



### Incidence

- Term Labor: 3-4%
- Term PROM >24hr: 40%
- Preterm Labor or PROM: 40-70%  
(depends on definitions used)

Woodd SL, Montoya A, Barreix M, et al. Incidence of maternal peripartum infection: A systematic review and meta-analysis. PLoS Med 2019; 16:e1002984.

## Terms used by ACOG

**“Intraamniotic Infection”**- an infection with resultant inflammation of any combination of the amniotic fluid, placenta, fetus, fetal membranes, or decidua.

**“Chorioamnionitis”** – Intraamniotic infection is “also known as chorioamnionitis”

**“Suspected intraamniotic infection”** – “temperature  $\geq 39^{\circ}\text{C}$  or  $38.0\text{--}38.9^{\circ}\text{C}$  and one additional clinical risk factor is present.”

**“Isolated maternal fever”** - “any maternal temperature between  $38.0$  and  $38.9^{\circ}\text{C}$  with no additional risk factor present, and with or without persistent temperature elevation.”

## Chorioamnionitis: Gibbs Criteria—“T+2”

- Initial validated criteria for intra-amniotic infection/chorioamnionitis at term
- Fever:  $T \geq 100^{\circ}\text{F}$  ( $37.8^{\circ}\text{C}$ ) plus 2 or more clinical criteria (see list)
- Controls were matched for GA, and duration of ROM

Gibbs RS, et al. Quantitative bacteriology of amniotic fluid from women with clinical intraamniotic infection at term. J Infect Disease 1982; 145:1-8.

**Table 2.** Criteria used in the diagnosis of intraamniotic infection.

Criterion	Women with intraamniotic infection ( <i>n</i> = 52)	Control subjects ( <i>n</i> = 52)
Rupture of amniotic membranes before delivery	52 (100)	52 (100)
Fever ( $\geq 37.8^{\circ}\text{C}$ )	52 (100)	1 (2)
Maternal tachycardia (pulse rate, $>100/\text{min}$ )	43 (83)	7 (13)
Leukocytosis ( $\geq 15,000$ cells/ $\text{mm}^3$ )	36 (69)	11 (21)
Fetal tachycardia (pulse rate, $\geq 160/\text{min}$ )	31 (60)	1 (2)
Uterine tenderness	9 (17)	0
Fetal distress	4 (8)	0
Foul amniotic fluid	4 (8)	0



*Executive Summary*

## Evaluation and Management of Women and Newborns With a Maternal Diagnosis of Chorioamnionitis

### *Summary of a Workshop*

*Rosemary D. Higgins, MD, George Saade, MD, Richard A. Polin, MD, William A. Grobman, MD, MBA, Irina A. Buhimschi, MD, Kristi Watterberg, MD, Robert M. Silver, MD, and Tonse N.K. Raju, MD, for the Chorioamnionitis Workshop Participants\**

In January 2015, the Eunice Kennedy Shriver National Institute of Child Health and Human Development invited an expert panel to a workshop to address numerous knowledge gaps and to provide evidence-based guidelines for the diagnosis and management of pregnant women with what had been commonly called chorioamnionitis and the neonates born to these women. The panel noted that the term chorioamnionitis has been used to label a heterogeneous array of conditions characterized by infection and inflammation or both with a consequent great variation in clinical practice for mothers and their newborns. Therefore, the panel proposed to replace the term chorioamnionitis with a more general, descriptive term: “intrauterine inflammation or infection or both,” abbreviated as “Triple I.” The panel proposed a classification for Triple I and recommended approaches to evaluation and management of pregnant women and their newborns with a diagnosis of Triple I. It

is particularly important to recognize that an isolated maternal fever is not synonymous with chorioamnionitis. A research agenda was proposed to further refine the definition and management of this complex group of conditions. This article provides a summary of the workshop presentations and discussions.

*(Obstet Gynecol 2016;127:426–36)*

DOI: 10.1097/AOG.0000000000001246

The term “chorioamnionitis” has been in existence for several decades.<sup>1</sup> In the strictest sense, the term implies that a pregnant woman has an “inflammatory or an infectious” disorder of the chorion, amnion, or both. This diagnosis often implies that the mother and her fetus may be at an increased risk for developing serious infectious consequences. Because of its connotation, the mere entry of chorioamnionitis in the patient’s record triggers a series of investigations and management decisions in the mother and in the neonate, irrespective of probable cause or clinical findings. As a result of the imprecise nature of

See related editorial on page 423.

- Workshop: Jan 2015, published Mar 2016
- Key concept “Triple I”
- New terminology: Intrauterine Inflammation or Infection or both
- Useful concept but has not been adopted widely
- **Criteria: “T+1”**  
T≥39C x1 or ≥38C x2  
FHR>160 x10min  
WBC>15k

## Laboratory testing has low clinical value

- To help distinguish true infection from non-infectious fever in labor, research studies have employed:
  - Amniotic fluid: glucose, white count, gram stain, cultures
  - More recently, Amniotic fluid inflammatory markers: IL-6, IL-8, MMP
- None have proven to be useful in clinical practice,
  - Possible exception if an amniocentesis was being performed for other reasons in a preterm pregnancy with anticipated prolonged ROM
- Histopathology possible only after delivery and often delayed several days
  - Inflammatory findings consistent with chorioamnionitis can be seen in placentas from afebrile and otherwise uncomplicated deliveries





The American College of  
Obstetricians and Gynecologists  
WOMEN'S HEALTH CARE PHYSICIANS

## ACOG COMMITTEE OPINION

Number 712 • August 2017

### Committee on Obstetric Practice

*The Society for Maternal-Fetal Medicine endorses this document. This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Obstetric Practice in collaboration with R. Phillips Heine, MD; American Academy of Pediatrics member Karen M. Puopolo, MD, PhD; Richard Beigi, MD; Neil S. Silverman, MD; and Yasser Y. El-Sayed, MD.*

### Intrapartum Management of Intraamniotic Infection

**ABSTRACT:** Intraamniotic infection, also known as chorioamnionitis, is an infection with resultant inflammation of any combination of the amniotic fluid, placenta, fetus, fetal membranes, or decidua. Intraamniotic infection is a common condition noted among preterm and term parturients. However, most cases of intraamniotic infection detected and managed by obstetrician-gynecologists or other obstetric care providers will be noted among term patients in labor. Intraamniotic infection can be associated with acute neonatal morbidity, including neonatal pneumonia, meningitis, sepsis, and death. Maternal morbidity from intraamniotic infection also can be significant, and may include dysfunctional labor requiring increased intervention, postpartum uterine atony with hemorrhage, endometritis, peritonitis, sepsis, adult respiratory distress syndrome and, rarely, death. Recognition of intrapartum intraamniotic infection and implementation of treatment recommendations are essential steps that effectively can minimize morbidity and mortality for women and newborns. Timely maternal management together with notification of the neonatal health care providers will facilitate appropriate evaluation and empiric antibiotic treatment when indicated. Intraamniotic infection alone is rarely, if ever, an indication for cesarean delivery.

- Committee Opinion:  
published Aug 2017
- Carefully balanced
- Intraamniotic infection  
(aka chorioamnionitis):  
**Criteria: "T+1"**  
T $\geq$ 39C x1 or  
T $\geq$ 38C x1 with either  
FHR>160 x10min  
WBC>15k
- **Isolated fever** in labor  
deserves equal attention  
and treatment: **"T+0"**



## Does Fever Severity Matter for Outcomes?

Prospectively collected data on term patients admitted in a single institution  
(Wash. Univ., St Louis)

Sample sizes—

Afeb: 7,780

Mild Fever: 278 (3.6%)

Severe Fever: 74 (1.0%)

all patients with fever were diagnosed as chorio

**TABLE 2**

### Neonatal outcomes across fever groups

Outcome	Afebrile (<38.0°C)	Mild fever (38.0°C –39.0°C)	Severe fever (>39.0°C)	Pvalue
Composite neonatal morbidity	419 (5.4)	50 (18.0)	22 (29.7)	<.01 <sup>a</sup>
UA pH <7.1	101 (1.31)	4 (1.5)	7 (9.5)	<.01 <sup>a</sup>
Mechanical ventilation	36 (0.5)	5 (1.8)	1 (1.4)	.01 <sup>a</sup>
Respiratory distress	241 (3.10)	29 (10.4)	14 (18.9)	<.01 <sup>a</sup>
Meconium aspiration	14 (0.2)	1 (0.4)	1 (1.4)	.06
Hypoglycemia	43 (0.55)	4 (1.44)	2 (2.7)	.01 <sup>a</sup>
NICU admission	96 (1.2)	16 (5.8)	5 (6.8)	<.01 <sup>a</sup>
Apgar <7 at 5 min	141 (1.8)	24 (8.6)	12 (16.2)	<.01 <sup>a</sup>
Composite neurologic morbidity	36 (0.46) <sup>a</sup>	5 (1.8) <sup>a</sup>	3 (4.1) <sup>a</sup>	<.01 <sup>a</sup>
Hypoxic-ischemic encephalopathy	26 (0.33)	3 (1.1)	3 (4.1)	<.01 <sup>a</sup>
Therapeutic hypothermia	30 (0.4)	3 (1.1)	3 (4.1)	<.01 <sup>a</sup>
Seizures	14 (0.2)	1 (0.4)	2 (2.7)	<.01 <sup>a</sup>

Data represent number (percentage).

NICU, neonatal intensive care unit; UA, umbilical artery.

<sup>a</sup> Demarcates statistically significant difference in neonatal outcomes across fever groups.

Hensel. Fever severity and neonatal morbidity. *Am J Obstet Gynecol* 2022.

## Is fever harmful for fetuses?

- Neonatal encephalopathy is the greatest worry
  - Fever > 39°C is greater risk than 38-39°C (1.1% vs 4.4%)<sup>1</sup>
  - Combination of Fever + Acidosis compounds risk

**TABLE 1**

**Risk of neonatal encephalopathy based on intrapartum factors at term**

	Afebrile	Intrapartum fever
Fetal acidosis (cord pH <7.05)	1.58%	12.50%
No fetal acidosis	0.12 %	1.58%

*Goetzl. Maternal fever in labor. Am J Obstet Gynecol 2023.*

<sup>1</sup>Hensel D, Zhang F, Carter EB, et al. Severity of intrapartum fever and neonatal outcomes. Am J Obstet Gynecol 2022;227:513.e1–8.



## Does Fever Severity Matter for Maternal Outcomes?

TABLE 5

Maternal outcomes across fever groups

Outcome	Afebrile (<38.0°C)	Mild fever (38.0°C—39.0°C)	Severe fever (>39.0°C)	Pvalue
Composite maternal morbidity	455 (5.9) <sup>a</sup>	53 (19.1) <sup>a</sup>	15 (20.3) <sup>a</sup>	<.01 <sup>a</sup>
EBL >1000 mL	386 (5.1)	50 (18.3)	14 (19.4)	<.01 <sup>a</sup>
Endometritis	14 (0.2)	3 (1.1)	1 (1.4)	.01
Blood transfusion	120 (1.5)	12 (4.3)	6 (8.1)	<.01 <sup>a</sup>

EBL, estimated blood loss.

<sup>a</sup> Demarcates statistically significant difference in maternal outcomes across fever groups.

Hensel. Fever severity and neonatal morbidity. Am J Obstet Gynecol 2022.

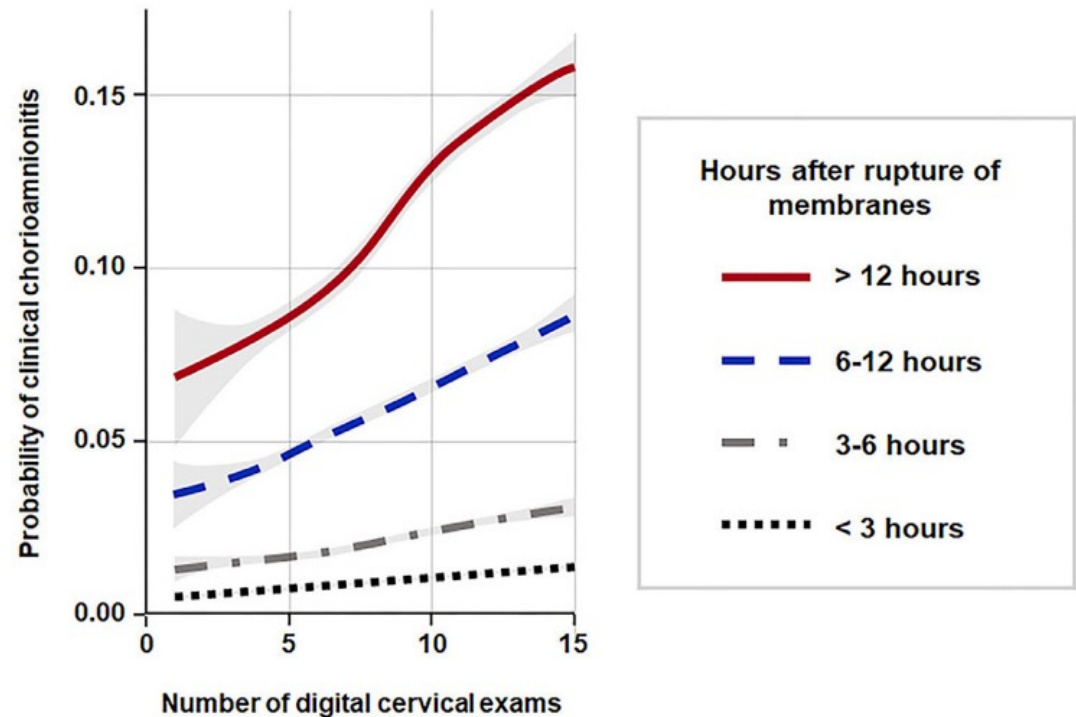
- Severe fever was associated with increased risk of composite neonatal morbidity compared with mild fever, *even after accounting for the duration between reaching maximum intrapartum temperature and delivery*.
- Labor management decisions should not be affected by the anticipated interval until delivery because the duration between reaching maximum temperature and delivery does not seem to affect neonatal outcomes.

Risk of Chorioamnionitis  
is related to a  
combination of:

- (1) Time after ROM
- (2) Number of Cervical Exams

**FIGURE 7**

**Probability of clinical chorioamnionitis by the number of digital cervical examinations and by the number of hours after rupture of membranes**



Each additional cervical examination confers an incremental risk of clinical chorioamnionitis. A greater length of time from rupture to delivery is associated with an increased risk of clinical chorioamnionitis. Modified from Gomez Slagle et al.<sup>176</sup>

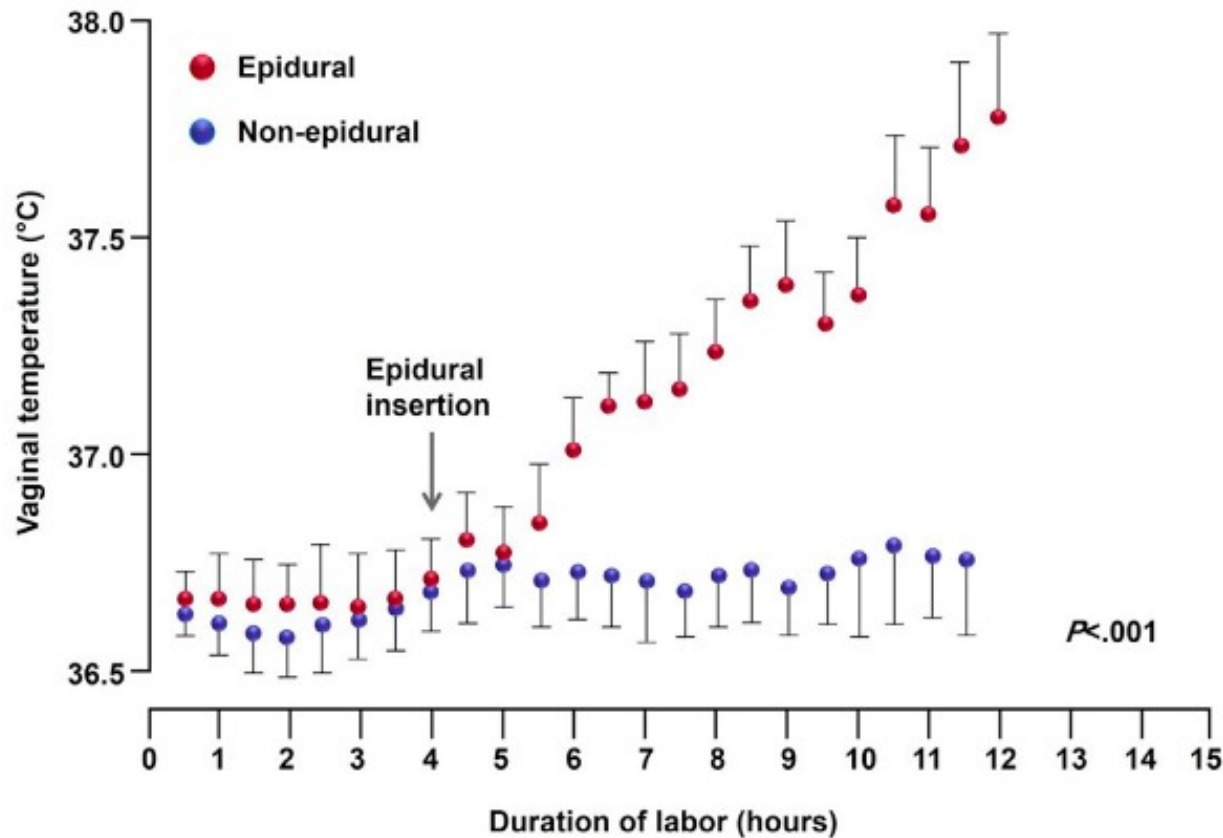
Jung. Clinical chorioamnionitis at term: definition, pathogenesis, microbiology, diagnosis, and treatment. Am J Obstet Gynecol 2024.

## Other Causes of Fever in Labor

Infections	Non-Infections
Pyelonephritis	Epidural related fever
Upper/lower respiratory infection	Dehydration
Other viral infections	Hyperthyroidism
Other infections	PGE <sub>2</sub> for induction



## Labor Epidural and Temperature Elevation



Fusi L, Steer PJ, Maresh MJ, Beard RW. Maternal pyrexia associated with the use of epidural analgesia in labour. Lancet 1989;1: 1250–2.

## Epidural-related Maternal Fever – AJOG Expert Review

- 35 studies (12 RCT): all but 3 showed a statistical association
- Effect range was huge: most between 15-25%
- Typical effect was gradual and steady:
  - 0.15°-0.18°C/hr or 1°C/6hrs
- Pathophysiology unknown but likely sterile inflammatory response leading to altered thermoregulation
  - No known way to distinguish fever related to epidural from other fevers
  - For the fetus, a fever is a fever. One study: T>38.3C was associated with 2-6X adverse neonatal effects compared to those with T<37.5C
  - Prophylactic/RX PO acetaminophen mixed at best, IV under study

Patel S, et al. Epidural-related maternal fever: incidence, pathophysiology, outcomes, and management. Am J Obstet Gynecol 2023 May Suppl:S1284-S1304.



## Key ACOG (2017) Treatment Recommendations

- Administration of intrapartum antibiotics is recommended whenever an intraamniotic infection is suspected or confirmed.
- Antibiotics should be considered in the setting of isolated maternal fever unless a source other than intraamniotic infection is identified and documented.
- Intraamniotic infection alone is rarely, if ever, an indication for cesarean delivery.

## What IV antibiotics are recommended for IAI?

<b>Primary regimen</b>	Ampicillin plus gentamicin
<b>Mild penicillin allergy</b>	Cefazolin plus gentamicin
<b>Severe penicillin allergy</b>	Clindamycin or vancomycin plus gentamicin

Add anaerobic coverage if moving to Cesarean delivery (e.g. Clindamycin)

ACOG CO #712, 2017

A Variety of  
Alternative Antibiotic  
Regimens have  
been Proposed  
But there are no  
trials...

**TABLE 5**

**Empiric antibiotic regimens proposed for the treatment of clinical chorioamnionitis**

**Antibiotic regimen proven to eradicate intraamniotic infection<sup>119-122</sup>**

Ceftriaxone 1 g IV every 24 hours plus clarithromycin 500 mg IV every 12 hours plus metronidazole 500 mg IV every 8 hours (clarithromycin is sometimes not available for intravenous administration but rather for oral administration)

**Antibiotic regimen by recommended by ACOG (alternatives for patients allergic to penicillin are described in the text)<sup>371</sup>**

Ampicillin 2 g IV every 6 hours plus gentamicin 2 mg/kg load followed by 1.5 mg/kg every 8 hours (or gentamicin 5 mg/kg IV every 24 hours)<sup>a,b</sup> (clindamycin is added if patients have a cesarean delivery after clamping of the umbilical cord)

**Alternative regimens used for the treatment of clinical chorioamnionitis<sup>368</sup>**

Cefotetan 2 g IV every 12 hours

Cefoxitin 2 g IV every 6 to 8 hours

Ceftizoxime 2 g IV every 12 hours

Cefotaxime 2 g IV every 8 to 12 hours

Cefuroxime 1.5 g IV every 8 hours

Cefazolin 1 g IV every 8 hours plus gentamicin 5 mg/kg IV every 24 hours or 1.5 mg/kg IV every 8 hours

Cefuroxime 750 mg IV every 8 hours plus metronidazole 500 mg IV every 8 hours

Mezlocillin 3-4 g IV every 6 hours

Piperacillin-Tazobactam 3.375 g IV every 6 hours

Piperacillin-Tazobactam 4 g IV every 6 hours plus clarithromycin 500 mg orally every 12 hours

Ticarcillin-clavulanic acid 3.1 g IV every 6 hours

Ertapenem 1 g IV every 24 hours

Meropenem 1 g IV every 12 hours

Imipenem-cilastatin 500 mg IV every 6 hours

Jung E, et al. Clinical chorioamnionitis at term: definition, pathogenesis, microbiology, diagnosis, and treatment. Am J Obstet Gynecol. 2024 Mar;230(3S):S807-S840.

Conde-Agudelo A, Romero R, Jung EJ, Garcia Sánchez ÁJ. Management of clinical chorioamnionitis: an evidence-based approach. Am J Obstet Gynecol 2020;223:848–69.

# Sepsis Screening Systems Evaluated

## Standard Non-Pregnant Sepsis Screen

Screening System and Criterion	Threshold
<b>SIRS</b> (Systemic Inflammatory Response Syndrome)	
WBC	< 4 or > 12
Heart rate	> 90
Respiratory rate	> 20
Temperature	< 36 or > 38
Any two	

Goal: Find the balance between Sensitivity and the Screen Positive Rate

## Pregnancy Screens for Severe Morbidity

Screening System and Criterion	Threshold
<b>MEWC (Maternal Early Warning Criteria)</b>	
Systolic BP	< 90 or > 160
Diastolic BP	> 100
Heart rate	< 50 or > 120
Respiratory Rate	< 10 or > 24
Pulse oximetry	< 95
Temperature	< 36 or > 38
WBC	< 4 or > 15
Any one	
<b>MEWT (Maternal Early Warning Triggers)</b>	
<i>Severe MEWT (1 red flag)</i>	
Pulse	> 130
Respiratory rate	> 30
MAP	< 55
SpO2	< 90
Blood Pressure	> 160/110
<i>Non-severe MEWT (2 yellow flags)</i>	
Temperature	< 36 or > 38
Blood Pressure	< 85/45
Pulse	< 50 or > 110
Respiratory rate	> 24 or < 10
Pulse oximetry	< 93
Overall MEWT	

## Pregnancy-Adjusted Screens for Sepsis

Screening System and Criterion	Threshold
<b>CMQCC (California Maternal Quality Care Collaborative Sepsis Toolkit)</b>	
WBC	< 4 or > 15
Heart rate	> 110
Respiratory rate	> 24
Temperature	< 36 or > 38
Any two	
<b>UKOSS (UK Obstetric Surveillance System)</b>	
WBC	< 4 or > 17
Heart rate	> 100
Respiratory rate	> 20
Temperature	< 36 or > 38
Any two	

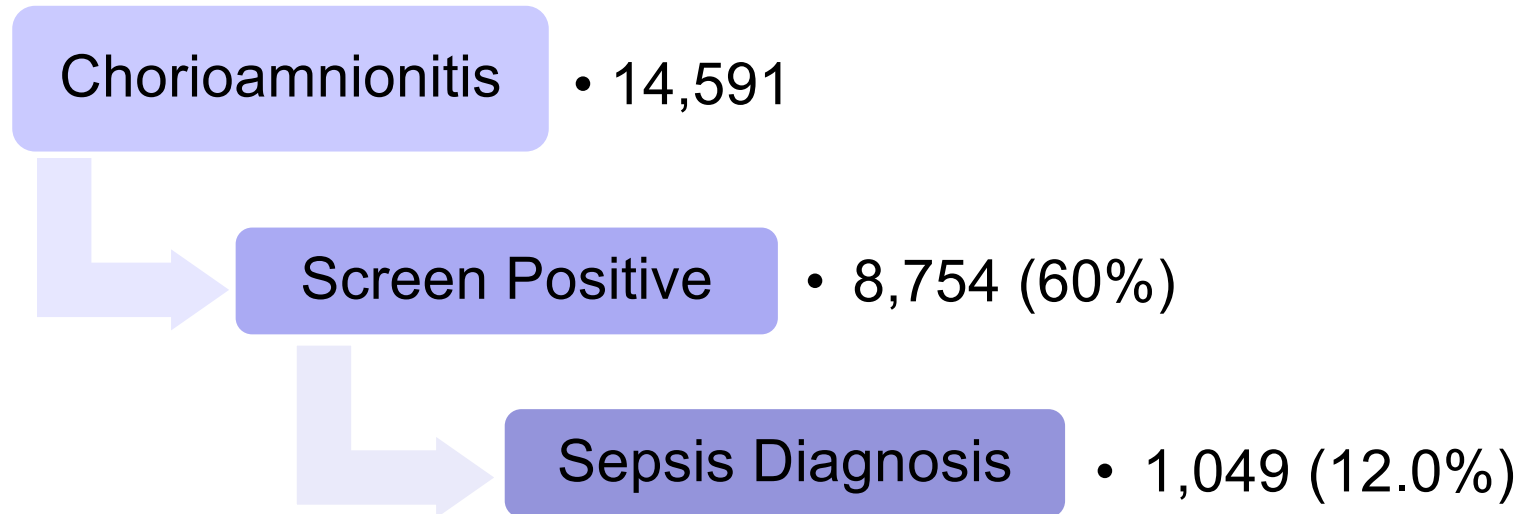
## Performance of Screening Tools for Intrapartum Sepsis and Sepsis with Organ Injury

<b>COHORT 2: Chorioamnionitis and Endometritis Cases N=14,591 (~3% rate)</b>						
	<b>Sepsis by Diagnosis Codes N=1049</b>			<b>Sepsis with End Organ Injury by Diagnosis Codes N=238</b>		
Screening System	False Positive Rate	Sensitivity % (95%CI)	C statistic (95%CI)	False Positive Rate	Sensitivity % (95%CI)	C statistic (95%CI)
<b>CMQCC</b>	60.2%	93.6% 92.0-95.0	0.67 (0.66, 0.68)	60.2%	93.7% 89.8-96.4	0.67 (0.65, 0.68)
<b>SIRS</b>	86.6%	99.4% 98.8-99.8	0.56 (0.56, 0.57)	86.6%	99.2% 97.0-99.9	0.56 (0.56, 0.57)
<b>MEWC</b>	92.3%	97.7% 96.6-98.5	0.53 (0.52, 0.53)	92.3%	97.9% 95.2-99.3	0.53 (0.52, 0.54)
<b>UKOSS</b>	67.5%	95.2% 93.2-96.0	0.64 (0.63, 0.65)	67.5%	95.0% 91.4-97.4	0.64 (0.63, 0.65)
<b>MEWT (Overall)</b>	45.7%	78.5% 75.8-80.9	0.66 (0.65, 0.68)	45.7%	87.4% 82.5-91.3	0.71 (0.69, 0.73)

Main. Sepsis Screening During Delivery Admissions. Obstet Gynecol 2024.

## Rates of Sepsis in Chorioamnionitis

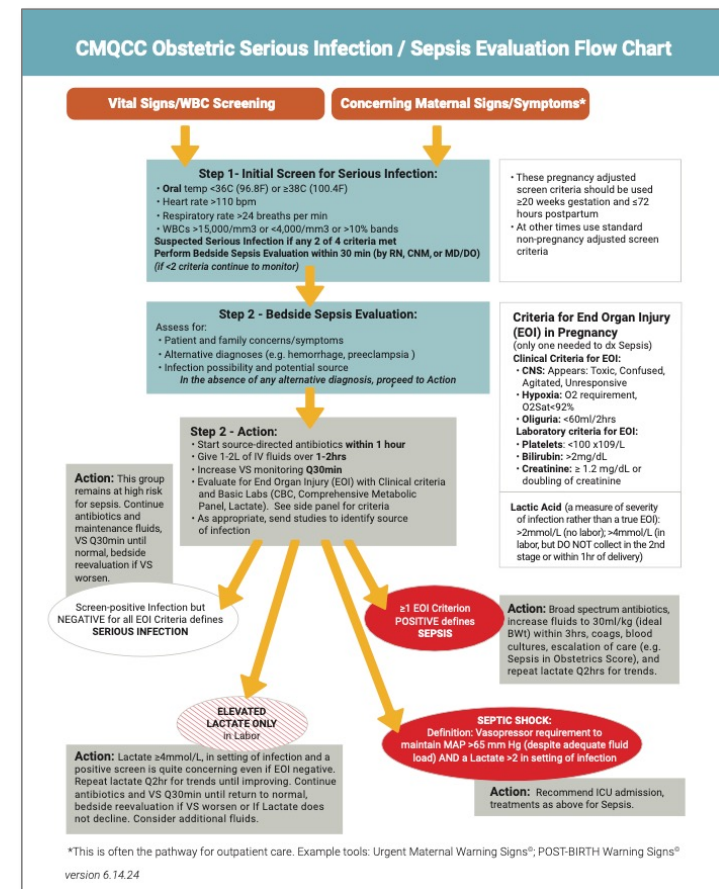
Based on clinical and EHR data from 57 hospitals





# Need for a Two-Step Approach to Identify Sepsis

- Even with pregnancy adjusted values, the false positive rate is too high to use alone for diagnosis
- Goal is to balance not doing too many labs while still identifying those who are sick
- SMFM Consult Series highlighted the CMQCC two-step approach:



Revised June 2024






## Step 2 - Bedside Sepsis Evaluation:


Assess for:

- Patient and family concerns/symptoms
- Alternative diagnoses (e.g. hemorrhage, preeclampsia )
- Infection possibility and potential source

*In the absence of any alternative diagnosis, proceed to Action*



## Step 2 - Action:

- Start source-directed antibiotics **within 1 hour**
  - Give 1-2L of IV fluids over **1-2hrs**
  - Increase VS monitoring **Q30min**
  - Evaluate for End Organ Injury (EOI) with Clinical criteria and Basic Labs (CBC, Comprehensive Metabolic Panel, Lactate). See side panel for criteria
  - As appropriate, send studies to identify source of infection
- 

## Criteria for End Organ Injury (EOI) in Pregnancy

(only one needed to dx Sepsis)

### Clinical Criteria for EOI:

- **CNS:** Appears: Toxic, Confused, Agitated, Unresponsive
- **Hypoxia:** O2 requirement, O2Sat<92%
- **Oliguria:** <60ml/2hrs

### Laboratory criteria for EOI:

- **Platelets:** <100 x10<sup>9</sup>/L
- **Bilirubin:** >2mg/dL
- **Creatinine:** ≥ 1.2 mg/dL or doubling of creatinine

**Lactic Acid** (a measure of severity of infection rather than a true EOI):  
>2mmol/L (no labor); >4mmol/L (in labor, but DO NOT collect in the 2nd stage or within 1hr of delivery)

# Neonatal Early-Onset Sepsis Calculator (Kaiser 2023)

Please enter details below.

Predictor	Scenario
Incidence of Early-Onset Sepsis ?	<input type="text"/>
Gestational age ?	<input type="text"/> weeks <input type="text"/> days
Highest maternal antepartum temperature ?	<input type="text"/> Fahrenheit
ROM (Hours) ?	<input type="text"/>
Maternal GBS status ?	<input type="radio"/> Negative <input type="radio"/> Positive <input type="radio"/> Unknown
Type of intrapartum antibiotics ?	<input type="radio"/> Broad spectrum antibiotics > 4 hrs prior to birth <input type="radio"/> Broad spectrum antibiotics 2-3.9 hrs prior to birth <input type="radio"/> GBS specific antibiotics > 2 hrs prior to birth <input type="radio"/> No antibiotics or any antibiotics < 2 hrs prior to birth

Calculate »

Clear

Risk per 1000/births

EOS Risk @ Birth

EOS Risk after Clinical Exam

Risk per 1000/births

Clinical Recommendation

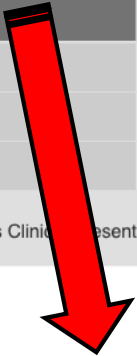
Vitals

Well Appearing

Equivocal

Clinical Illness

Classification of Infant's Clinical Presentation [Clinical Illness](#) [Equivocal](#) [Well Appearing](#)

- 
1. Standardized Clinical Evaluation
  2. Enhanced Observation

## Conclusions

- Intraamniotic infection represents a spectrum of risk: the more symptoms and the higher the temperature are associated with higher maternal and fetal risks
- ACOG:  $T > 38^{\circ}\text{C}$  alone (esp. if repeated or  $\geq 39^{\circ}\text{C}$ ) has real risk and deserves consideration of antibiotics, Tylenol and fluids
- Clinical recommendations:
  - Fewer exams, avoiding long ROM times may be helpful
  - Augmentation is often required with fever
- The rate of Sepsis is ~12% among serious infection screen positive chorioamnionitis patients—the screen promotes early antibiotics and fluid and EOI evaluation



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# Birth Trauma Resources: Guides for Communication and Pre-Discharge Care Discussion (aka Patient Debriefs)

For the Birth Trauma Work group...

Elliott K. Main, MD Sepsis Project Lead, California (Stanford University)

Supported by: NICHD UG3-HD108053: Large-scale Implementation of Community Co-led Maternal Sepsis Care Practices to Reduce Morbidity and Mortality from Maternal Infection

## Birth Trauma and Patient Debriefing Work Group



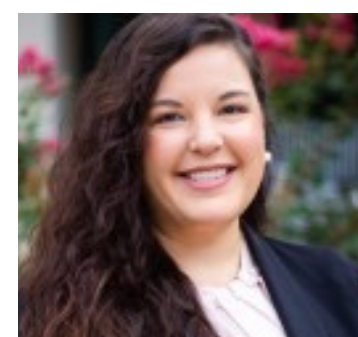
Melissa Bauer, DO  
(OB Anesthesia) Duke



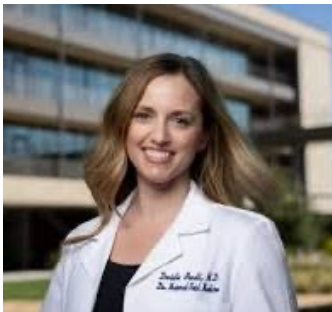
Alethia Carr, MBA, RD  
SE Michigan PQC



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April Chavez, MA  
Sepsis Survivor



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MD (MFM) Stanford



Christa Sakowski  
MSN, RN, C-ONQS,  
C-EFM, CMQCC



Beth Stephens-Hennessy  
RNC-OB, EFM, MSN, CNS  
Sutter Health



Kayleigh Summers  
LCSW, AFE Survivor

# Severe Maternal Events/ Birth Trauma

## Key Steps for Healing

- Practical “How-To” Tools for ALL types of SME:
  - 1) The Importance of the Pre-Discharge Care Discussion
  - 2) What Not to Say and Why
  - 3) Guide For Pre-Discharge Care Discussion After a SME
  - 4) Guide for Post-Discharge Care After an SME







### **The Importance of The Pre-discharge Care Discussion Initiating Healing After a Severe Maternal Event**

#### **What is birth trauma?**

Birth trauma is any experience related to birth that overwhelms the nervous system's ability to cope. Up to 45% of pregnant patients report feeling traumatized by their birth experience<sup>1</sup>. Feeling traumatized by a birth experience is not a choice, but an automatic response of the nervous system to protect the patient from a perceived threat. Birth trauma is caused by a wide range of experiences and is subjective in nature. An event that is traumatic for one patient, may not be experienced as traumatic by another. A life-threatening experience or perceived life-threatening experience during birth leaves patients at an increased risk for birth trauma.

#### **Why is birth trauma important in the context of a Severe Maternal Event?**

Research indicates that experiencing a SME increases the risk for developing PTSD as well as other mental health conditions postpartum.<sup>2,3</sup> A patient's expected outcome for their birth often lies in stark contrast to the experience of almost dying, making this reality difficult for most to comprehend. Many patients report leaving the hospital with no clear understanding about the events of their birth, which can lead to further confusion and feelings of isolation, compounding symptoms of trauma.

#### **How can you help mitigate trauma and improve mental health outcomes?**

Not all trauma within the context of severe maternal events can be prevented, but it can be mitigated through compassion, acknowledgement, and detailed care discussions. Pre-discharge care discussions play a crucial role in trauma-informed care for patients following a severe maternal event. One of the most common concerns from patients after experiencing a traumatic birth is that they do not fully understand what happened during their birth. Health care providers should take the time to meet with patients who have experienced a severe maternal event to ensure a thorough understanding of what occurred, address any questions or concerns, and plan ongoing care. By offering a care discussion, patients gain a clearer understanding of their treatment and have the opportunity to ask questions. Care discussions not only offer information, but for many patients, they provide a starting point for their physical and emotional healing after an SME.

This discussion, ideally involving familiar faces such as the senior physician, a known nurse, and a social worker, helps initiate the process of closure and provides emotional support. Providers must use clear, empathetic language, avoid assigning blame, and facilitate an open dialogue to support the patient's recovery and future health. This careful approach helps in creating a supportive environment for the patient and her family, ensuring they feel heard and understood, and preparing them for the next steps in their care journey.

## **Importance of the Pre-Discharge Care Discussion: Initiating Healing After a SME**







### Supportive Communication After a Severe Maternal Event: What Not to Say and Why

Your words matter after a severe maternal event. Patients are in an incredibly vulnerable state given what they've just experienced. The words you use and the statements you make have the potential to stick with patients for the rest of their lives, for better or worse. Providers have the power to mitigate further trauma and start patients on the path toward healing after a severe maternal event.

#### Phrases To Avoid After a Severe Maternal Event:

**Instead of:** "You almost died, but we were able to save you"

**Try:** "You were quite sick, but your body is tough and resilient."

No matter how hard the team may have worked, this comment is self-aggrandizing and takes away from the patient's strength and agency which will be needed to the patient to recover.

**Instead of:** "All that matters is a healthy mom and healthy baby."

**Try:** "I know this wasn't the birth experience you expected. It's okay to have feelings about that."

A healthy mom and baby matter, but so does the patient's experience of their birth. This statement dismisses any feelings they might be having about almost dying.

**Instead of:** "I can't believe you're alive" or "You are very lucky to be alive" or "Thank God, you're OK".

**Try:** Provide a brief overview of what happened to the patient and the interventions used.

After an SME, most patients feel unsafe in the world. They wonder when the next time the rug will be pulled out from underneath of them, and they will almost die again. When someone on their medical team expresses disbelief at their survival, it further compounds this lack of safety and dismisses the on-going trauma.

**Instead of:** "Everything happens for a reason."

**Try:** "This wasn't your fault. Here's what we know about why this may have happened to you."

This phrase is a platitude that attempts to put a positive spin on what is often a devastating experience. It is dismissive of the grief and trauma the patient has experienced.

**Instead of:** Anything that begins with "at least"

**Try:** "You've been through a lot. You are probably going to feel many complicated and conflicting emotions. That's normal after an event like this."

The term "at least" uses comparison to dismiss a patient's experience. Something can always be worse, but that doesn't mean it's not traumatic.

**Instead of:** "You should be so grateful."

**Try:** "I know this might be scary and a lot to process. What questions can I help you answer?"

There is nothing wrong with expressing gratitude, but forced gratitude is unhelpful, particularly after a severe maternal event. The provider's experience of this event often differs greatly from the patient's. For most patients, they walked into the hospital to have a baby and go home, instead they and/or their baby almost lost their lives. They are likely grateful to be alive, but they also need the space and permission to feel sad, angry, and devastated that this happened to them.

#### Summary For Why Not To Use These Phrases:

These statements are said with the intention to improve patient outcomes by helping patients move past the experience. Unfortunately, the impact can be the opposite, and these statements often dismiss or minimize a patient's experience. When a patient feels dismissed after trauma, especially by someone in a position of authority, they feel their experience of the birth and the emotions that come with it are not valid. This often leads to ignoring or suppressing emotions and inevitably delaying psychological recovery. When a patient is instead offered validation and empathy, the door is opened to access support and treatment for their experience, leading to better outcomes postpartum and longer term.

## Supportive Communications After a SME: What Not to Say and Why





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**Guide For Pre-Discharge Care Discussion (aka Patient Debrief)  
After a Severe Maternal Event**

- **Purpose:** to review what happened, answer questions, and plan on-going care with the patient and whoever she wants to invite.
- **This document** is an informal checklist to help guide the discussion. The discussion would ideally include the senior physician in her care, a nurse that she knows, and a social worker. Known faces are important for support and starting the process of healing and closure.
- **Timing** should be after she has fully recovered her awareness and near to discharge. This is not to replace earlier shorter care updates provided to the patient and family.

**Step 1: Assess Patient Understanding**

- ☐ "Now that you have had a few days to process, can you recap in your own words what you understand about what you experienced." "In a moment we will go thru your story in detail."
  - Do not stop the patient to correct information
- ☐ "What are your biggest concerns about what happened?"

**Step 2: Provide an overarching description of the condition**

- ☐ Define (in lay terms) the condition that they experienced, including how common
- ☐ Briefly review risk factors and in general the diagnosis and treatment approaches

**Step 3: What happened with this specific patient**

- ☐ Review in lay terms, how the patient presented and how the diagnosis was made
- ☐ What specific consultations and treatments were made
- ☐ How the patient responded to the treatments
- ☐ If and why they were transferred to a higher level of care (such as an ICU) and what happened there
- ☐ What has happened in the recovery phase
- ☐ Provide the summary document of the key elements of the diagnosis and care for her to share with her follow-up providers
- ☐ Stress that this was not her fault

**Step 4: Pause for questions**

- ☐ "I have just given you a lot of information  
What questions do you have?  
What are your concerns going forward?"

**Step 5: Review what to expect next**

- ☐ Review plans for discharge, including who and when to see for follow up (ideal to identify an "anchor" provider)
  - The Discharge Follow-up Checklist is very useful
  - Early follow-up is almost always required
- ☐ Discuss return precautions and "what to watch for", involving the patient's family and/or those who may be helping support them
  - Emphasize the need for support from providers, family, and others
- ☐ Broadly review how this event may affect future health and future pregnancies, if relevant
- ☐ Emphasize the important of continuing discussions
- ☐ Give opportunity for more questions

## Guide for Pre-Discharge Care Discussion (aka Patient Debrief) After a SME







## Guide for **Post-Discharge Care** After a Severe Maternal Event

### Follow-Up Visits Arranged

- ☐ Follow up within 1-2 weeks of hospital discharge with obstetric care provider (OB)
- ☐ Identify key contact for immediate care and support as needed
- ☐ Arrange follow-up with primary care provider (PCP) or specialist(s) as appropriate
  - Many patients will need ongoing care up to 1 year to assess on going needs (especially mental health)
- ☐ Send Discharge Summary/Summary of Hospital Course to OB, PCP, and specialists
- ☐ Give Summary of Hospital Course to patient (see example)

### Referrals (in-hospital or as outpatients)

- ☐ All patients with a Severe Maternal Event should have a referral to postpartum support group(s), either general or diagnosis specific (see resource list)
- ☐ Social Work—Medicaid or disability enrollment and transportation support as needed
- ☐ Lactation Consult—For support or suppression after major maternal illness or loss
- ☐ All patients with critical illness/ICU admission (for example: intubated, experiencing weakness) should have the following outpatient referrals placed on discharge<sup>1</sup>
  - Occupational Therapy and Physical Therapy
  - Speech/Swallow evaluation (usually done post-extubation refer if ongoing difficulties)

### Specialized Postpartum Care (beyond standard services)

- Note Postpartum visits for complications may be billed outside of the global Obstetric fee.<sup>2</sup>
  - ☐ Serial mental health assessments recommended for one year. Patients can experience continuing or new symptoms over the course of a year. There may be overlap between PTSD symptoms, trauma-related postpartum depression, postpartum anxiety and ICU-related trauma; additionally, cognitive challenges (sleep, memory and concentration disorders) may make some of the usual postpartum issues worse. Examples of validated tools are provided below. All 3 areas are important to evaluate.
    - Depression
      - PHQ-9<sup>3</sup> (Patient Health Questionnaire, a 9-question depression assessment)
      - EPDS (Edinburgh Postnatal Depression Scale, a 10-question assessment)
    - Anxiety
      - GAD-7<sup>3</sup> (Generalized Anxiety Disorder 7-item assessment)
    - Post-Traumatic Stress Disorder (PTSD)
      - PCL-5<sup>4</sup> (PTSD Checklist for DSM-5, a 20-item assessment of PTSD symptoms)
  - ☐ Contraception needs, in the context of medical conditions<sup>5</sup>
  - ☐ Mobilize a support system of family, community social services and/or Doula services

## Guide for Post-Discharge Care After a SME



# Severe Maternal Events/ Birth Trauma

## Key Steps for Healing

- Practical “How-To” Tools for ALL types of SME:
  - 1) The Importance of the Pre-Discharge Care Discussion
  - 2) What Not to Say and Why
  - 3) Guide For Pre-Discharge Care Discussion After an SME
  - 4) Guide for Post-Discharge Care After an SME





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**COVID-19 RESOURCES FOR MATERNAL AND INFANT HEALTH**

**TOOLKITS**

- Cardiovascular Disease Toolkit
- Mother & Baby Substance Exposure Initiative Toolkit
- Early Elective Deliveries Toolkit
- OB Hemorrhage Toolkit, V3.0
- Hypertensive Disorders of Pregnancy Toolkit
- Sepsis Toolkit**
  - Maternal Sepsis Task Force Advisory Group
  - Support Vaginal Birth and Reduce Primary Cesareans Toolkit
  - Venous Thromboembolism Toolkit

**WEBINARS**

**RESOURCE LIBRARY**

## Improving Diagnosis and Treatment of Maternal Sepsis

The *Improving Diagnosis and Treatment of Maternal Sepsis* toolkit was developed by the [Maternal Sepsis Task Force](#) in 2020 as a resource for obstetricians, rapid response teams, and intensive care units who interact with women during pregnancy and in the postpartum period. The toolkit introduces a new two-step screening and confirmation process to more accurately diagnose and treat maternal sepsis. This screening and diagnostic approach has been updated as part of the NICHD supported [Obstetric Sepsis Collaborative](#) active in California and Michigan. As part of the review process for the collaborative, the Sepsis toolkit is undergoing revision to update the diagnosis pages, adding the Obstetric Sepsis Flow Chart for Screening and Diagnosis and multiple patient centered resources. **These resources are now available to download directly (located in the right sidebar).**

The toolkit is available to download after logging into CMQCC's website. If you do not already have a CMQCC Account, you will need to complete a brief survey to initialize an account.

**Download (NOTE: the Toolkit will be updated in Q3 2024):**

- [Improving Diagnosis and Treatment of Maternal Sepsis Toolkit](#) (2020)
- [Frequently Asked Questions](#) (2020)
- [Slide Set for Professional Education](#) (2020)
- [Informational Webinar](#) (2020)

**Sepsis Collaborative Webinar Series (2023-2024):**

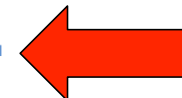
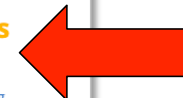
- [Obstetric Sepsis Treatment and Patient Debriefs](#) 5/15/24
- [Maternal Sepsis: Improving our Listening Skills and Update on Screening and Diagnostic Criteria](#) 2/6/24
- [Improving Diagnosis and Treatment of Obstetric Sepsis Part 1](#) 11/7/2023
- [Improving Diagnosis and Treatment of Obstetric Sepsis Part 2 - Collaborative Kick Off](#) 11/7/2023

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## Key Sepsis Resources Updated May 2024

- [Obstetric Sepsis Flow Chart for Screening and Diagnosis \(CMQCC/MI-AIM 2024\)](#)
- [Urgent Maternal Warning Signs \(AIM/ACOG and the CDC, 2024\)](#)
- [Urgent Maternal Warning Signs \(Spanish\)](#)
- [Advocacy Tips for Patients and Families \(MI-AIM/CMQCC 2024\) \(English\)](#)
- [Warning Signs Follow-up Guide for Health Care Professionals \(MI-AIM/CMQCC 2024\)](#)



Stay tuned for more tools focused on  
Support Resources

Let us know what would help you for implementation!

**Thank You !**