Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

CMQCC
California Maternal
Quality Care Collaborative

Obstetric Sepsis Implementation Sprint

Session 3: Patient and Family Education and Support; Navigating CMS SEP-1 with OB Patients

March 17, 2026

Welcome and FAQs

- **Will this webinar be recorded? Will the slides be available?**
  - YES. Both the recording and slides from each session will be available within 1 week on the CMQCC Sepsis webpage: https://www.cmqcc.org/toolkits-quality-improvement/sepsis
- **Do I need to attend all four sessions?**
  - We encourage you to attend all four webinars in this series because each covers different topics, key to implementation.
- **How do I ask questions?**
  - During this webinar, you may drop your questions into the Q&A box at any time. Presenters will write out answers to your questions during the webinar and we will have time at the end to address questions live.
  - If you have remaining questions after the webinar, please email rnath@stanford.edu and the team would be happy to follow-up with an answer.
- **What type of implementation support will your team be providing after the webinar?**
  - The team is unable to provide direct support for individual hospital implementation challenges. However, we are happy to answer any general sepsis implementation questions.
- **There will be a two question poll during the Q&A to evaluate this session! We want your feedback!**

Objectives and Disclosures for the Sepsis Sprint

- Prepare staff and facilities to implement improvements in screening, diagnosis, and treatment of obstetric sepsis
- Prepare staff and facilities to implement improvements in listening and supporting patients and families

Conflicts/Disclosures: None

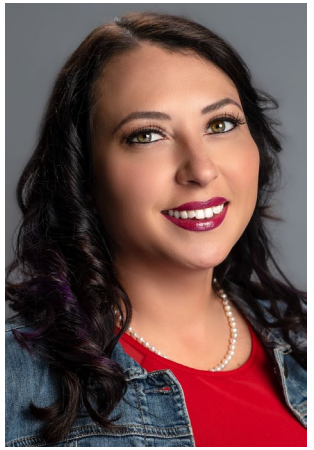
Supported by: NICHD UG3-HD108053: Large-scale Implementation of Community Co-led Maternal Sepsis Care Practices to Reduce Morbidity and Mortality from Maternal Infection

Obstetric Sepsis Implementation Sprint Team

Elliott K. Main, MD
Clinical Professor, MFM
Department of OBGYN
Stanford University

Melissa E. Bauer, DO
Associate Professor of
Anesthesiology
Duke University

Ruhi Nath, MPH
Program Manager
Department of OBGYN
Stanford University



Christa Walczak, MSN RN
Clinical Lead
California Maternal Quality
Care Collaborative
Stanford University

Session 3 Agenda: Patient Education and Support and SEP-1 in the Obstetric Patient

- Improving Maternal Sepsis Care through Patient Education and Community Outreach
- Implementing Patient Support after an Adverse Event
- Navigating CMS SEP-1 with OB Patients

There are references throughout this slide set to the CMQCC OB Sepsis Toolkit: CMQCC Improving Diagnosis and Treatment of Obstetric Sepsis, V2.0 (2025) and links to specific Appendix Resources.

(1) Why are we doing poorly with Maternal Sepsis?

after all, we know how to treat infections…

- Relatively rare (but deadly when it happens)
- Definition of Maternal Sepsis is not standardized
- Diagnostic approach is not established
- Treatment often delayed and piecemeal

(2) Why are we doing poorly with Maternal Sepsis?

after all, we know how to treat sepsis…

- Patients and family members do not know the signs and symptoms of sepsis
- Sepsis not on patient's or doctor's mind: symptoms are dismissed
- Patients do not know how to best advocate for themselves

Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

CMQCC
California Maternal
Quality Care Collaborative

Improving Maternal Sepsis Care through Patient Education and Community Outreach

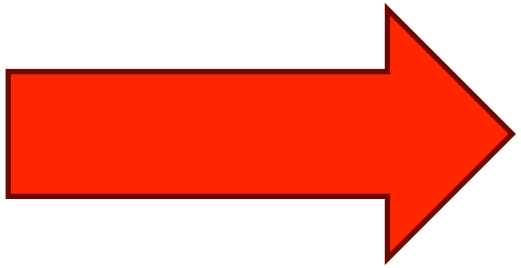
Melissa E. Bauer, DO
Associate Professor of Anesthesiology and Population Health Sciences
Duke University

Vernice Anthony, BSN, MPH
Southeast Michigan Pernatal Quality Improvement Coalition (SEMPQIC) Lead Consultant

Stephanie Ingram, BSN, RN, C-EFM
Clinical Nurse Manager, Corewell Health – Trenton Family Birth Center

Sepsis cases outside of the hospital

- Sepsis cases most commonly occur *outside of the hospital*
- Maternal mortality sepsis cases
  - Many patients died at home or presented late to care



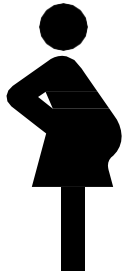
We need to do more to educate patients and their support persons to know when to seek care

AND

Thoroughly assess concerns when they present to care

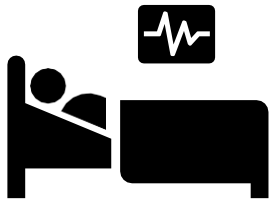
Hensley et al. JAMA 2019
Liu et al. Obstet Gynecol 2024
Carmichael et al. Obstet Gynecol 2022
Bauer et al. Obstet Gynecol 2015
Seacrist et al. *JOGNN* 2019

How to address?



(280 days)

(365 days)



(3-4 days)

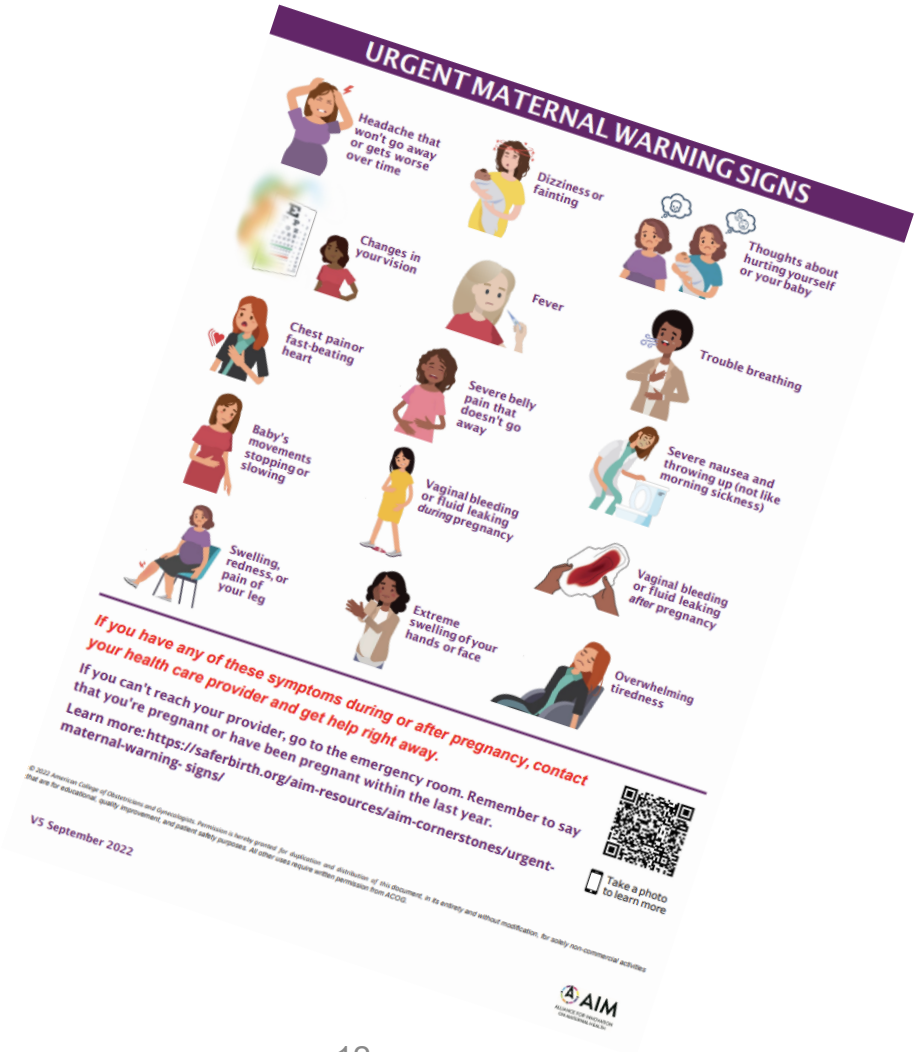
Patients did not remember education about warning signs

"I think if when they discharged me, if they had said be on the lookout for these symptoms, if you have any of them, call and check in. If they had taken five minutes to do that, I think it would've made a huge difference."

Bauer et al., Eur J Obstet Gynecol Reprod Biol.2024

Urgent Maternal Warning Signs

- AIM Cornerstone resource, originally developed by the Council for Patient Safety in Women's Health Care
- Translated into 90 languages
- Standardized patient education

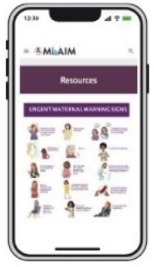


www.saferbirth.org/aim-resources/aim-cornerstones/urgent-maternal-warning-signs/

12

KNOW THE SIGNS. SAVE YOUR LIFE.

Complications during or after pregnancy can be serious and life-threatening.



Scan the QR code to access life-saving info in seconds.

SCAN HERE

- Urgent Maternal Warning Signs- symptoms to know and contact your health care provider to get help right away
- Advocacy Language - words to help you speak up and be heard when seeking care
- Real Stories – hear from people who've been through it
- And More!

MtAIM
MICHIGAN ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

MtAIM
MICHIGAN ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

How to Save to Your Phone

SCAN HERE

No app.
No download.
Just one tap access.

iPhone

Scan QR code and choose: ⎙
Scroll down, select "Add to Home Screen"
Tap "Add"

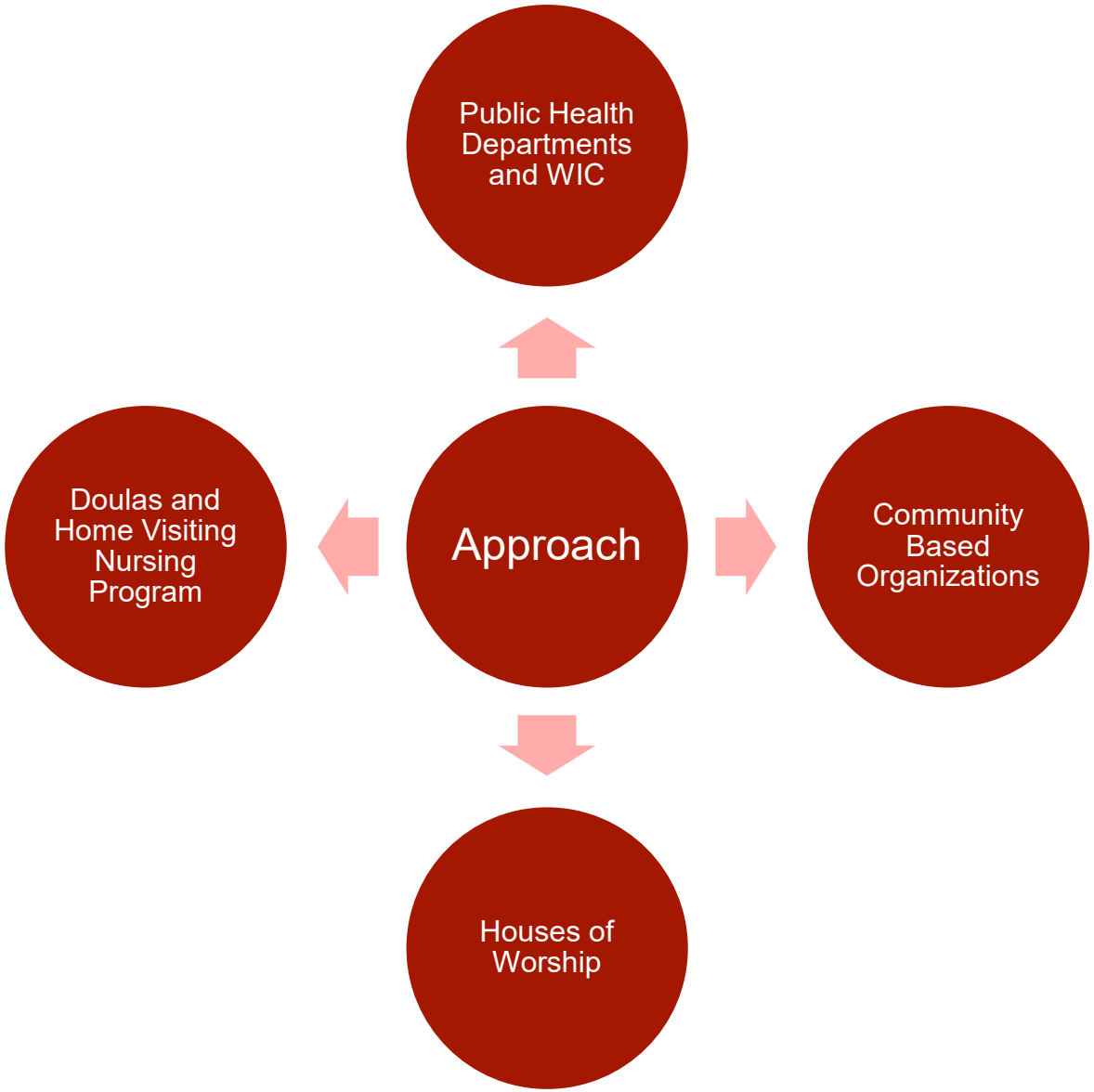
Android

Scan QR code and choose: ⋮
Scroll down, select "Add to Home Screen"
Tap "Add"

You know your body. If something feels off, don't wait- get care fast.

MtAIM
MICHIGAN ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

Community Dissemination



SEMPQIC

Southeast Michigan Perinatal Quality Improvement Coalition

Strengthening Maternal Sepsis Care Through Community

CMQCC Sepsis Sprint

March 17, 2026

Vernice Anthony, BSN, MPH

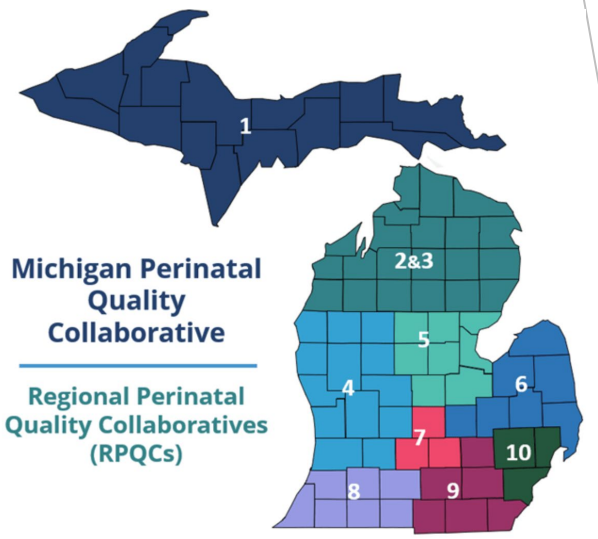
Mission and Vision

Mission

SEMPQIC is Michigan's Region 10 Perinatal Quality Collaborative. We provide leadership, coordination, and opportunities to eliminate the root causes of perinatal disparities through collective impact and system reform so that all pregnant women and babies in Wayne (includes the City of Detroit), Oakland, and Macomb Counties have optimal health outcomes.

Vision

Zero preventable deaths and zero health disparities in Wayne, Oakland and Macomb Counties.



Who We Are: Our Membership

- The core of SEMPQIC is our coalition and the members who are a part of this work. The coalition includes health plans, health systems, community-based organizations, faith-based organizations, maternal infant health programs, home visiting programs, perinatal providers, pediatricians, federally qualified health systems, mental and behavioral health, local and state public health, Great Start, non-profits, social services, academia, and more.

- SEMPQIC convenes these stakeholders at least four times a year at our coalition meetings. These meetings serve to engage the membership in contemporary issues related to our perinatal work within the region, as well as issues related to health disparities, and other relevant topics of interest.

Community Outreach and Distribution

- **Examples of how SEMPQIC has partnered with the community to support outreach and distribution include:**
  - Newsletter – Quarterly
    - An audience of 2,720, with about 1,000 openings.
  - Presented at the SEMPQIC Annual Summit – September, 2025.
    - 200 attendees representing community-based organizations, physicians, health systems, health plans and parents.

Community Outreach and Distribution Cont'd

- Social Media Posts
  - Instagram – over 200 followers
  - Facebook - over 1000 followers

- Presented at SEMPQIC Coalition meeting – June, 2024
  - 50 attendees

- Distributed cards at the Maternal Mortality Vitality Review Team meeting, which includes 42 members representing various agencies, and left an additional supply with the Review Committee.

Community and Patient Engagement

- An approach to research that involves partnership, power-sharing, and direct engagement from people the research will impact.

Maternal Sepsis Community Leadership Board

- The purpose of the Maternal Sepsis Community Leadership Board (MSCLB) is to engage in research activities designed to understand and reduce maternal morbidity and mortality from maternal sepsis while leveraging community experiences and voices.

- Membership:
  - Maternal Sepsis Survivors
  - Patient Advocates
  - Public Health Experts
  - Community members (rural, urban, tribal communities)







Maternal Sepsis Community Leadership Board







EXAMPLES OF ADVOCACY LANGUAGE

- I am very concerned and do not feel like I am being heard. What are my next steps or alternative options?
- This is really different for me. I have never felt this way in my life. For my benefit and my family's benefit I should be seen.
- I understand that some of these symptoms may be normal for pregnancy or postpartum, but I am very concerned and need to be evaluated.
- I have called a number of times and tried suggestions that have been provided, but I am not getting better.
- Can you please refer me to someone who can help me? I'm really worried.
- My doctor told me to call if I am experiencing X, Y, or Z. I am having X, Y, or Z. I would like to be seen.
- I want to speak to someone else to make sure that I do not have a serious condition. Can you please refer me to someone who will help me? I am really worried.
- I do not feel right, I am concerned that something bad is happening to me.

ADVOCACY ACTION TIPS

- Your concerns and feelings are valid, be persistent in getting the answers or care you need.
- If you have a medical emergency, please dial 911 or go to the nearest emergency room.
- Ask to speak to the charge nurse or patient relations if you are not being heard
- If you are not getting the response you need, you can go to triage or the emergency room. You do not need permission from anyone to do so.
- You can also go to a different hospital or urgent care facility if you are not receiving the care you need.
- Consider having another person to accompany you to help advocate for you (support person, family member, doula, etc.)
- Bring a list of your concerns you would like to be addressed.
- Start your concern with the effect that it is having such as the following: "I am so tired I am unable to get out of bed"; "I am having so much pain I cannot sleep"; etc.

MiAIM
MICHIGAN ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

Corewell Health™

Urgent Maternal Warning Signs Discharge Tote

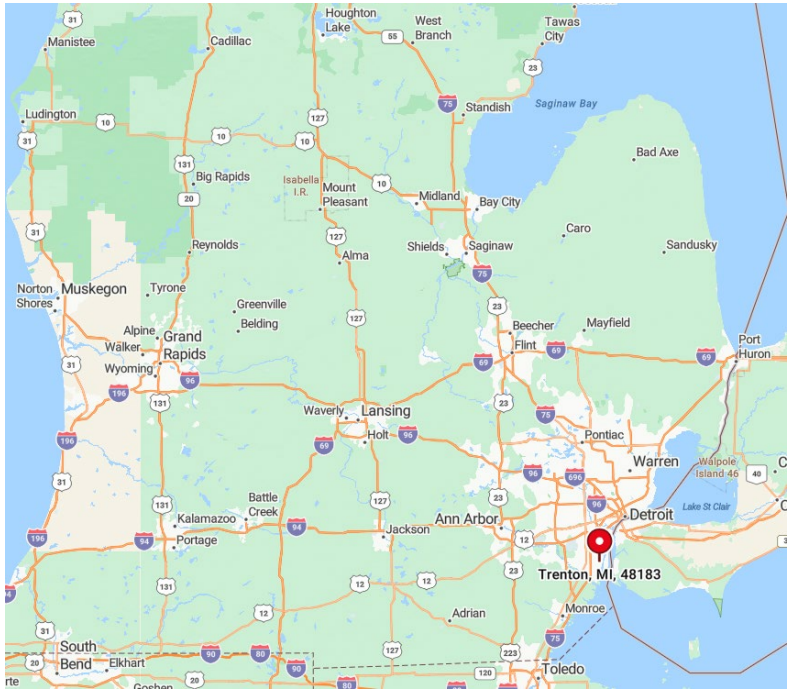
Corewell Health- Trenton

Stephanie Ingram, BSN, RN, C-EFM
Clinical Nurse Manager, Trenton Family Birth Center

Community Profile & Service Gaps

Corewell Health Trenton Hospital is located in Southeastern Michigan. 25 miles from Detroit, 20 miles from Canada and 25 miles from Ohio. Trenton Family Birth Center welcomes ~700 newborns annually.

Trenton's demographic characteristics are socioeconomically diverse with a mix of middle to low-income households. Patient's have high chronic disease burdens including mental health, cardiovascular, and substance use conditions. Often resources directed at the Wayne County families are focused in the population dense areas of Detroit, subsequently creating barriers to obtaining resources for those residents located farther south. Although, positioned in the heart of the automotive industry, up to 20% of our families struggle with transportation. This lack of transportation is cited as one of the top 3 SDOH health barriers when seeking access to healthcare and health related resources.



Identified Gaps: Equitable Community Resources, Accessible Education, Transportation Limitations.

Our Response Strategy

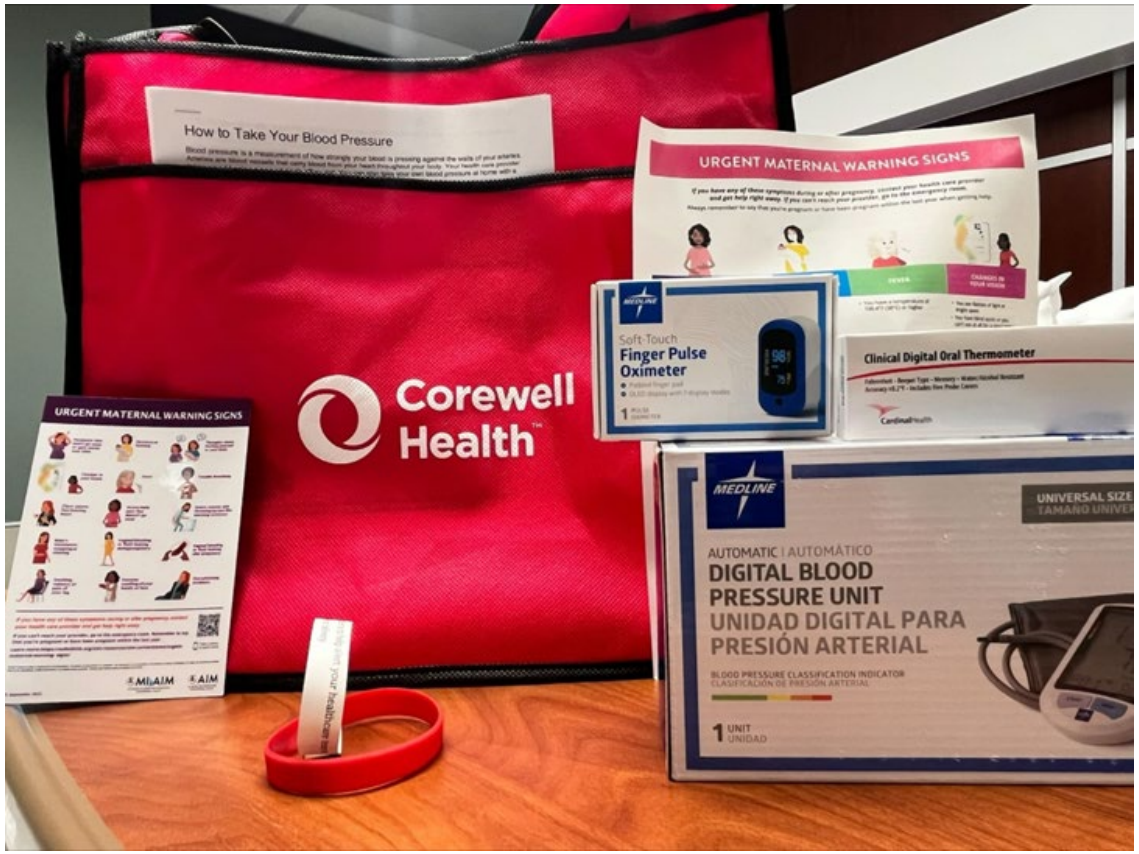
Project Outline:
Provide all patients with Urgent Maternal Warning Signs Education and monitoring devices at discharge. Tote contents include Urgent Maternal Warning Signs Education, Magnet, Blood Pressure Monitor, Thermometer, Pulse Oximeter, Red “I JUST DELIVERED” alert bracelet, and “How to” monitor your blood pressure education.

Implementation Timeline: Jan 1, 2025, until resource exhaustion or 765 births.

Impact Metrics:

- **Anticipated:** 3&7day HTN follow up target 100% compliance (from 34%). 2.5% Reduction in Readmissions.
- **Actual:** 3&7day HTN follow up at 95% compliance. 1.52% Increase in Readmissions.

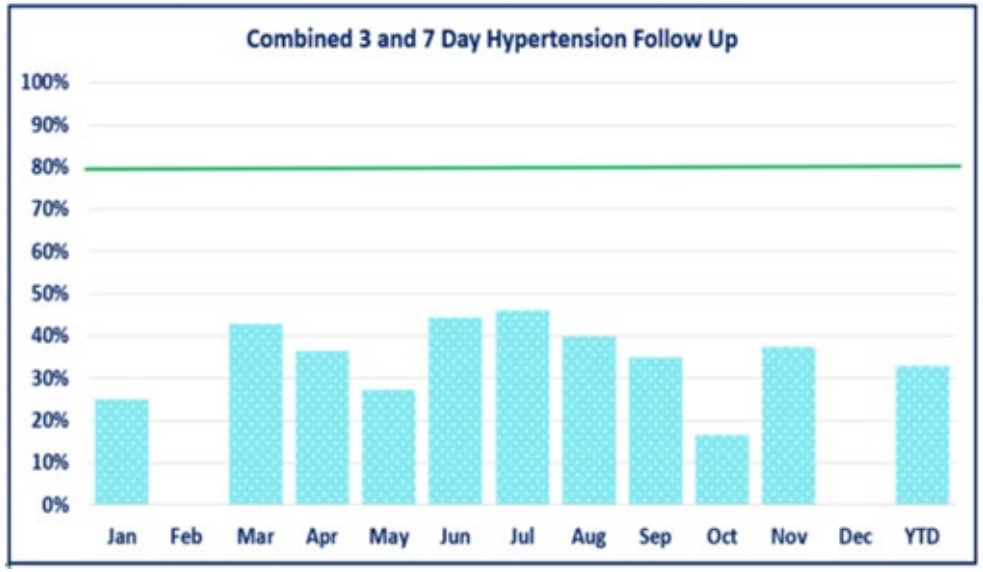
Funding: Southeast Michigan Perinatal Quality Improvement Coalition Grant Acquisition aimed to improve maternal health outcomes by reducing the impact of severe maternal morbidity and mortality.



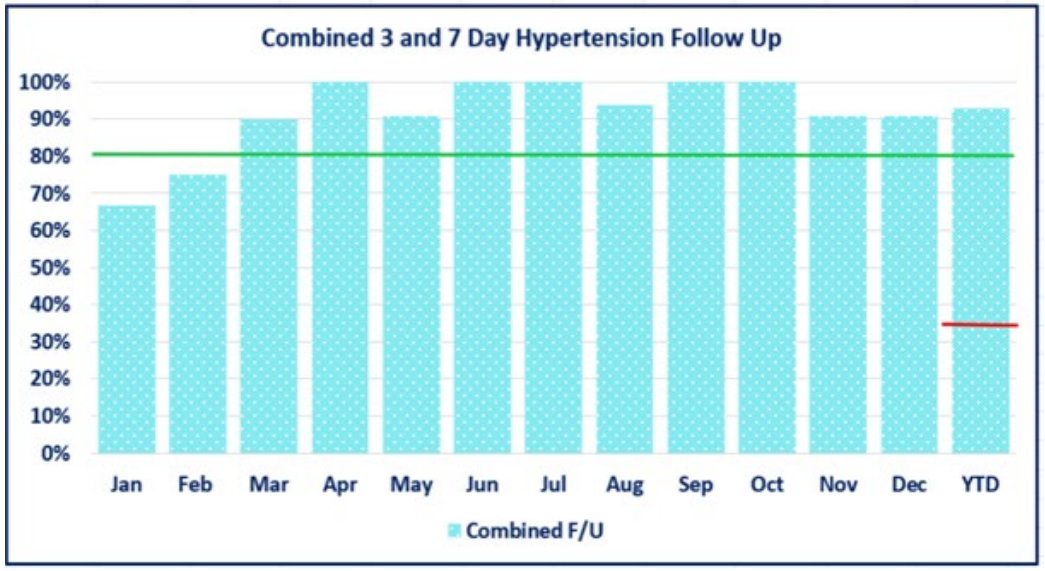
SEMPQIC
Southeast Michigan Perinatal Quality Improvement Coalition

Data:

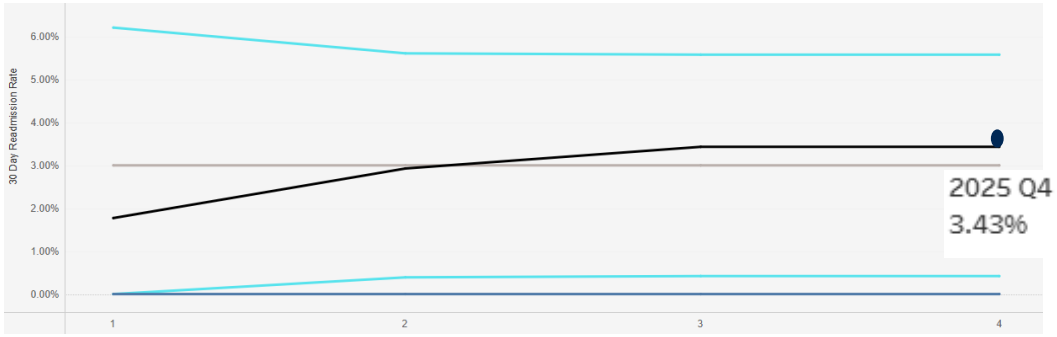
2024



2025



Readmissions:



Reflections and Lessons Learned

- **Workflow integration matters**: Engaging nursing early and incorporating SmartPhrases improved the efficiency of documentation without disrupting established workflows.
- **Be willing to reframe outcomes metrics**: While the initial target focused on reducing readmissions, data quickly indicated that educated patients were able to recognize warning signs and sought timely care.
- **Interdisciplinary Inclusion:** Expanding engagement to ED services with Red Postpartum Bracelets enhanced community education and reinforced messaging across care settings.

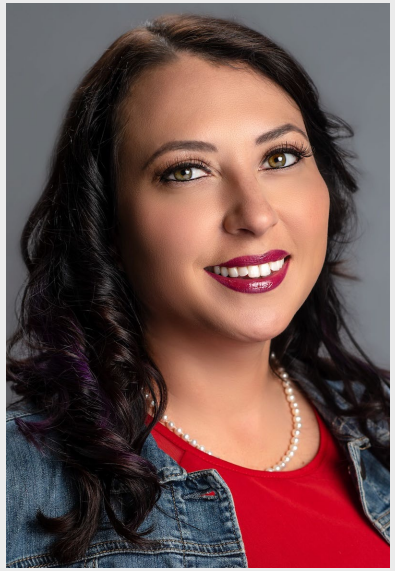
Corewell Health™

Stephanie Ingram, BSN, RN, C-EFM
Clinical Nurse Manager, Trenton Family Birth Center

Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

CMQCC
California Maternal
Quality Care Collaborative

Patient Care Discussion Debriefs and Communication to Reduce Birth Trauma



Christa Walczak, MSN, RN, C-ONQS, C-EFM, CLE
CMQCC Clinical Lead

Kayleigh Summers, LCSW
Birth trauma therapist
(AFE patient survivor)

Severe Maternal Event Debriefs: Patient Care Discussion

CMQCC
California Maternal
Quality Care Collaborative

Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Patient Care Discussion

•Processing of the Severe Maternal Event

- In depth discussion of event
  - Causes
  - Treatment
- Preparation
  - What should the patient expect in the next days/weeks?
  - What are long term considerations?

CMQCC
California Maternal
Quality Care Collaborative

Stanford MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Pre-discharge Patient Care Discussion Considerations

1. Schedule a specific time and include patient support people the patient designates
2. Confirm preferred language
   **If needed, in-person interpreters are preferred*
3. Confirm the clinical care team that will be present
4. Clarify who will lead the discussion
5. Review clinical course and documentation beforehand with the those who were involved, if they will not be present

CMQCC
California Maternal Quality Care Collaborative

Stanford MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Recommended Hospital Team Members

Effort should be made to include those present at the time of the case

- Obstetrician/Maternal Fetal Medicine Physician
- Additional physician as appropriate to the case – Anesthesiologist, Intensivist, etc.
- Nurse
- If appropriate, Social Worker and/or a Case Manager

CMQCC
California Maternal Quality Care Collaborative

Stanford MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Pre-discharge Care Discussion Guide

CMQCC
California Maternal
Quality Care Collaborative

Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Patient Summary: Severe Maternal Event Form

Patient Summary: Severe Maternal Event				
Patient Name				
Event Type & Date				
Attending Provider		**Office Phone**		
Other Key Provider		**Office Phone**		
Other Key Provider		**Office Phone**		
Follow-Up	☐ Subspecialist_____ ☐ Subspecialist_____ ☐ Support Group / Social Worker_____ ☐ Other: _____			
Clinical Summary				
Surgeries / Procedures	*Date* *Type*	*Date* *Type*	*Date* *Type*	*Date* *Type*
	Type	*Type*	*Type*	*Type*
Blood Transfusion	*Type and Number of Units of Blood Products*			
	Red Blood Cells _____ units	Platelets _____ units	Plasma _____ units	Fibrinogen/Cryo ____ units
ICU Admission	☐ No ☐ Yes Dates_____ *Notes:* _____			
Key Medications				
Patient Friendly Brief Narrative Summary (e.g., What happened?, Why did I need these interventions?, What was the final diagnosis? Anything else of importance?)				
Coordinating Resource Person		**Phone**		
This is a **person designated to be a point of contact for the patient after discharge. This individual may provide resources, answer questions, and help the patient in navigating and processing their experience.*				

CMQCC
California Maternal Quality Care Collaborative

Stanford MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Pre-Discharge Care Discussion After SME

This is a starting point for the patient to fully understand what occurred medically

- Allowing time for questions/clarification is important
- Does not replace ongoing updates to care
- Does not replace need for future debriefing in office.

CMQCC
California Maternal
Quality Care Collaborative

Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Post-discharge Follow-up After a Serious Adverse Event

Follow up within 1-2 weeks of discharge with obstetric care provider

Discharge summary/summary of hospital course sent to obstetrician/CNM and PCP

Plan for where to go if there's a need to come back to the hospital

Mental health assessment; below are examples of validated tools:

- PHQ-91 (Patient Health Questionnaire, a 9-question depression assessment
- GAD-71 (Generalized Anxiety Disorder 7-item assessment)
- PCL-52 (PTSD Checklist for DSM-5, a 20-item assessment of PTSD symptoms)

CMQCC
California Maternal
Quality Care Collaborative

Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Postpartum Visit Assessments

- Hospital discharge medication lists should be reconciled
- Contraception needs considered
- Offer referral for mental health and other formal support services and share benefits of utilizing these services
- Lactation/baby feeding needs
- Important to mobilize a support system of family and/or community social services, including doula care where available

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 CMQCC Sepsis Toolkit for 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[1]
  - 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.[2]
- ❑ 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 complicate/compound the postpartum mental health course. Examples of validated tools are provided below. All 3 areas are important to evaluate.
  - **Depression**
    PHQ-9[3] (Patient Health Questionnaire, a 9-question depression assessment)
    EPDS (Edinburgh Postnatal Depression Scale, a 10-question assessment)
  - **Anxiety**
    GAD-7[3] (Generalized Anxiety Disorder 7-item assessment)
  - **Post-Traumatic Stress Disorder (PTSD)**
    PCL-5 [4](PTSD Checklist for DSM-5, a 20-item assessment of PTSD symptoms)
- ❑ Contraception needs, in the context of medical conditions[5]
- ❑ Mobilize a support system of family, community social services and/or Doula services

---

[1] Prescott HC, Angus DC. Post Sepsis Morbidity. JAMA. 2018;319(1):91. doi:10.1001/jama.2017.19809
[2] Optimizing Postpartum Care. Accessed April 10, 2024. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2018/05/optimizing-postpartum-care
[3] Screening and Diagnosis of Mental Health Conditions During Pregnancy and Postpartum. Accessed April 10, 2024. https://www.acog.org/clinical/clinical-guidance/clinical-practice-guideline/articles/2023/06/screening-and-diagnosis-of-mental-health-conditions-during-pregnancy-and-postpartum
[4] Arora IH, Woscoboinik GG, Mokhtar S, et al. Establishing the validity of a diagnostic questionnaire for childbirth-related posttraumatic stress disorder. Am J Obstet Gynecol. 2023;0(0). doi:10.1016/j.ajog.2023.11.1229
[5] CDC Summary Chart of Medical Eligibility Criteria for Contraceptive Use (2024). https://www.cdc.gov/contraception/media/pdfs/2024/07/us-mec-summary-chart-color-508.pdf

CMQCC Stanford Medicine MI-AIM

Post-discharge After a Severe Event Guide

CMQCC
California Maternal Quality Care Collaborative

Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Implementation of the Patient Care Discussion

CMQCC
California Maternal
Quality Care Collaborative

Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Standardize the Process

Who should help inform the process?

- Social Worker?
- Psychologist specializing in birth trauma?
- Patient advisory liaison/working group?
- Community organization?

Minimum team required

When will Patient Care Discussions occur?

- Set times allow for patient support persons to be present

Resources

Resources

- What will you use to guide the discussion?
- What will you provide the patient with to anchor the discussion and serve as something to refer back to?
  - Handouts
  - Models
  - Whiteboards
- What external resources/referrals are available in your community that will standardly be shared?
- Organization of follow-up appointments

Staff/Provider Education

"We already perform debriefs"

Importance of the Patient Care Discussion

Specifics of the Established Process

The Importance of a Pre-Discharge Care Discussion

CMQCC
California Maternal
Quality Care Collaborative

Appendix X

The Importance of The Pre-discharge Care Discussion

Initiating Healing After a Severe Maternal Event (SME)

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[1]. 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.[2,3] 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.

---

[1] Beck CT, Watson S, Gable RK. Traumatic Childbirth and Its Aftermath: Is There Anything Positive? J Perinat Educ. 2018 Jun;27(3):175-184. doi: 10.1891/1058-1243.27.3.175.

[2] Lewkowitz AK, Rosenbloom JI, Keller M, López JD, Macones GA, Olsen MA, Cahill AG. Association Between Severe Maternal Morbidity and Psychiatric Illness Within 1 Year of Hospital Discharge After Delivery. Obstet Gynecol. 2019 Oct;134(4):695-707. doi: 10.1097/AOG.0000000000003434.

[3] Duval CJ, Youssefzadeh AC, Sweeney HE, McGough AM, Mandelbaum RS, Ouzounian JG, Matsuo K. Association of severe maternal morbidity and post-traumatic stress disorder. AJOG Glob Rep. 2022 Sep 28;2(4):100111. doi: 10.1016/j.xagr.2022.100111.

CMQCC California Maternal Quality Care Collaborative

Stanford MEDICINE Dunlevie Maternal-Fetal Medicine Center for Discovery, Innovation and Clinical Impact

MiAIM MICHIGAN ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

What is Birth Trauma?

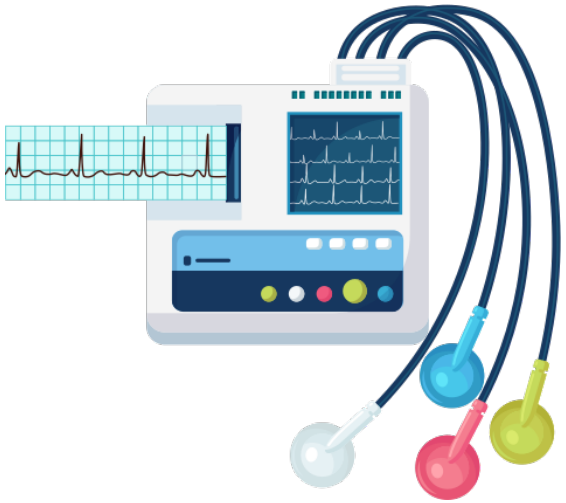
Birth trauma is any distressing event during or related to birth that overwhelms the nervous system's ability to cope and causes ongoing distress.

CMQCC
California Maternal
Quality Care Collaborative

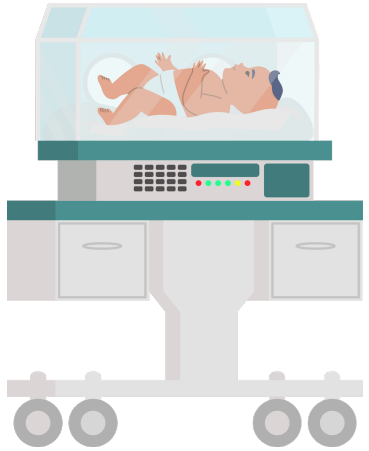
Stanford MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Birth Trauma is wide-ranging & subjective

Lack of autonomy, dignity, respect and/or informed consent.



Threat/perceived threat to life or safety



Unexpected outcomes or events.

CMQCC
California Maternal
Quality Care Collaborative

Stanford MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Why is This Important?

- Severe Maternal Morbidity appears to be associated with an increased risk for developing mental health conditions
- SMM was associated with a 1.3-fold increased rate of hospitalization/ED visit for a mental health condition up to 13 years postpartum.

Lewkowitz AK, Rosenbloom JI, Keller M, López JD, Macones GA, Olsen MA, Cahill AG. Association Between Severe Maternal Morbidity and Psychiatric Illness Within 1 Year of Hospital Discharge After Delivery. Obstet Gynecol. 2019 Oct;134(4):695-707. doi: 10.1097/AOG.0000000000003434. PMID: 31503165; PMCID: PMC7035949.
Blackman A, Ukah UV, Platt RW, et al. Severe Maternal Morbidity and Mental Health Hospitalizations or Emergency Department Visits. JAMA Netw Open. 2024;7(4):e247983. doi:10.1001/jamanetworkopen.2024.7983

CMQCC
California Maternal
Quality Care Collaborative

Stanford MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Why is This Important?

The way medical teams speak to patients after an SME is a piece of their story that they will take with them for the rest of their lives.

Support After SME

The Goal: Mitigate further trauma and put patients on a trajectory toward healing.

Support After SME

How do we achieve this?

According to 550+ birth trauma survivors:

- **Acknowledgment**
- **Debrief**

CMQCC
California Maternal
Quality Care Collaborative

Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

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."
Why: 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.

Phrases To Avoid After a Severe Maternal Event:

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

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."
Why: 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.

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

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."
Why: 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."

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?"
Why: 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.

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.

CMQCC
California Maternal
Quality Care Collaborative

Stanford MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

MiAIM
MICHIGAN ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

CMQCC
California Maternal
Quality Care Collaborative

Stanford MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Additional Toolkit Resources

- Trauma Care Flow Chart
  - Used for staff education/guidance
  - Steps in the pathway of support after a SME
- Guide to Recognizing Acute Stress Disorder in the Hospital Setting

- Life After Experiencing Sepsis
  - Patient education regarding sepsis
  - Supportive to Patient Care Discussion
- Resources for Maternal Event Survivors

CMQCC
California Maternal Quality Care Collaborative

Stanford MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

Stanford | MEDICINE
Dunlevie Maternal-Fetal Medicine
Center for Discovery, Innovation and Clinical Impact

CMQCC
California Maternal
Quality Care Collaborative

Navigating CMS SEP-1 with OB Patients

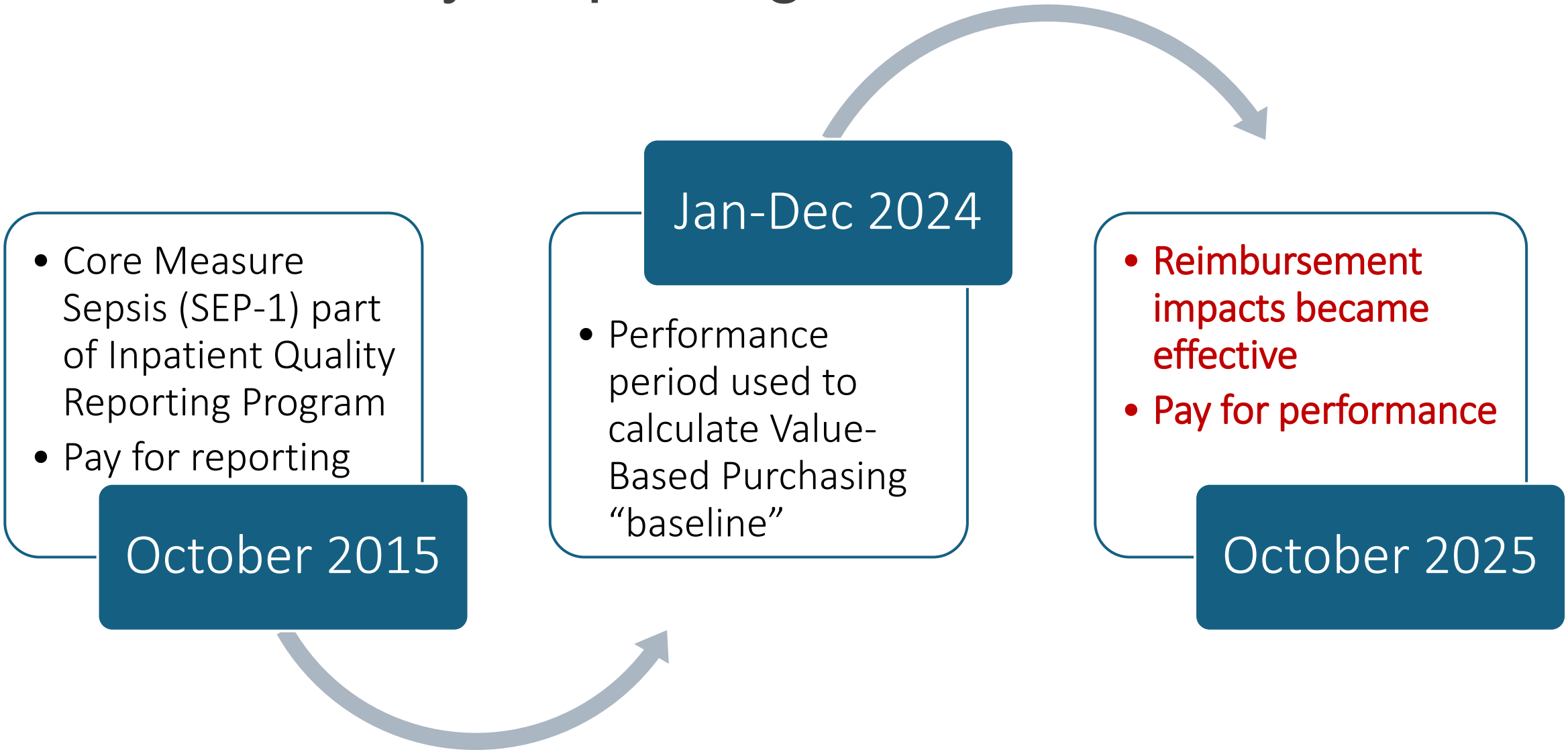
Jodee Lejnieks, MSN, RN, CCRN
Sepsis Program Manager, Hoag Hospital
Sepsis Liaison, American Association of Critical-Care Nurses

Elliott K. Main, MD
Clinical Professor, MFM
Department of OBGYN
Stanford University

What is Core Measure Sepsis (SEP-1)?

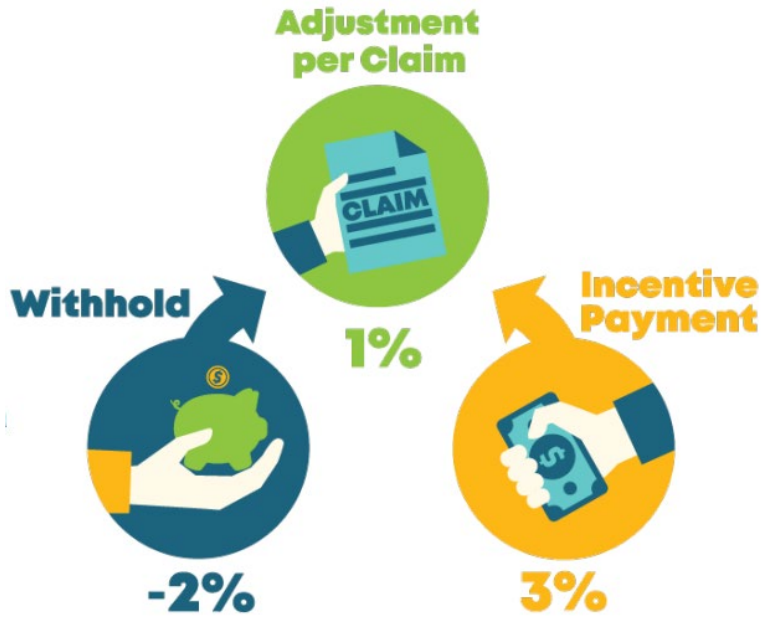
- **Intent**: ensure hospitals adhere to evidence-based care, improve outcomes
- **Scoring**: composite score of time-sensitive tasks (3- & 6-hr care bundles)
  - Severe sepsis (labs, cultures, medications, +/- repeat labs)
  - Septic shock (above +/- critical medications, reassessment)
- **Performance**: "all-or-nothing," A+ or F
- **Reporting**: publicly reported, very delayed
  - Discharges 01/2024-12/2024 reported in 10/2025

CMS Quality Reporting Timeline



What is Value-Based Purchasing (VBP)?

- **Intent**: reward hospitals for quality, safety, cost efficiency and patient experience
- **Funding: Medicare withholds 2% from all hospitals' base MS-DRG payments**
- Pooled funds redistributed based on hospital's Total Performance Score:
  - Higher score = incentive
  - Lower score = withhold
- Core Measure Sepsis (SEP-1) is included in the Safety Domain of VBP

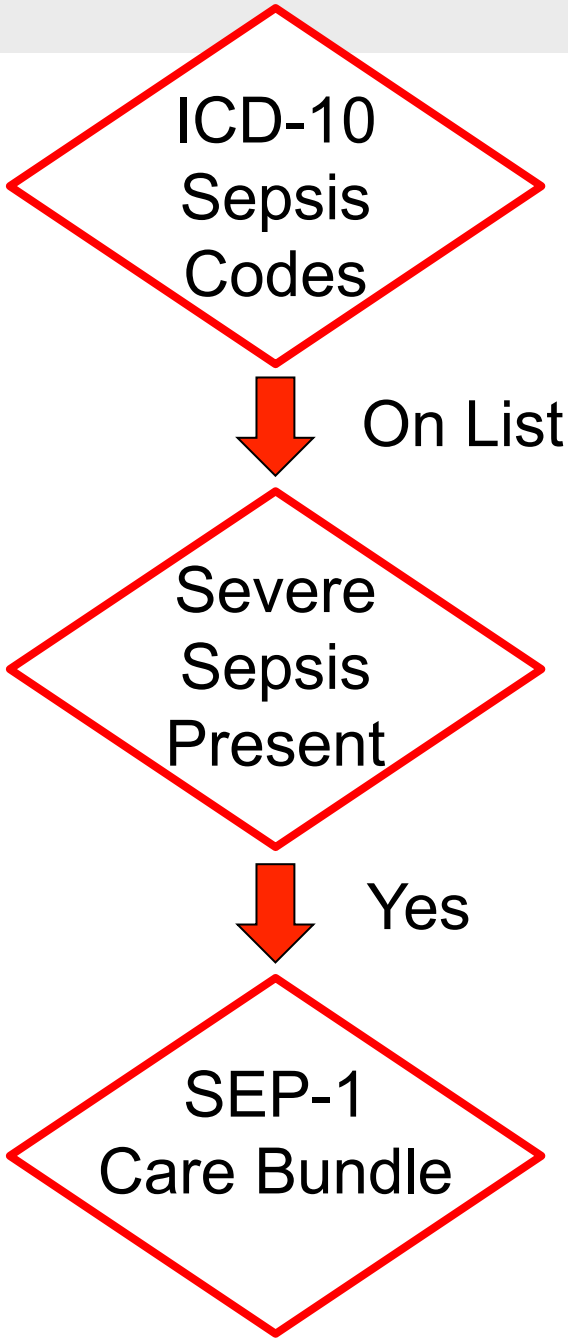


CMS. Hospital VBP Program Percentage Payment Summary Report Overview. Retrieved 3/6/26 from https://www.qualityreportingcenter.com/globalassets/iqr-2023-events/vbp082123/14_vbp_fy2024_ppsrrelease_webinar_overview_slides_vfinal508_.pdf

Flow Chart for SEP-1: Trigger Points

Goals for OB Units:

1) Provide timely care for all patients with serious infections and sepsis
2) Avoid unneeded triggering of the SEP-1 Bundle (with its VERY precise ”all or nothing” criteria)



Retrospective review of all patients with Sepsis ICD-10 codes (Table 4.01)

Were 3 clinical criteria met within 6 hours of each other?

3-hour bundle: Lactate, Blood Cultures, Broad ABX, Fluid load (if shock)

CMS SEP-1 Sepsis ICD-10 Code List

Note list does NOT include multiple OB sepsis codes:

- O75.3 Sepsis during labor
- O85 Puerperal sepsis
- O86.81 Puerperal septic thrombophlebitis
- O86.3 Obstetric pyemic and septic embolism

Specifications Manual for National Hospital Inpatient Quality Measures: Discharges 01-01-26 (1Q26) through 12-31-26 (4Q26) Appendix A.1.pdf

Table 4.01: Severe Sepsis and Septic Shock (SEP)

ICD-10-CM Code	Code Description
A021	Salmonella sepsis
A227	Anthrax sepsis
A241	Acute and fulminating melioidosis (Melioidosis sepsis)
A267	Erysipelothrix sepsis
A312	Disseminated mycobacterium avium-intracellulare complex (DMAC) (MAC sepsis)
A327	Listerial sepsis
A400	Sepsis due to streptococcus, group A
A401	Sepsis due to streptococcus, group B
A403	Sepsis due to Streptococcus pneumoniae
A408	Other streptococcal sepsis
A409	Streptococcal sepsis, unspecified
A4101	Sepsis due to Methicillin susceptible Staphylococcus aureus
A4102	Sepsis due to Methicillin resistant Staphylococcus aureus
A411	Sepsis due to other specified staphylococcus
A412	Sepsis due to unspecified staphylococcus
A413	Sepsis due to Hemophilus influenzae
A414	Sepsis due to anaerobes
A4150	Gram-negative sepsis, unspecified
A4151	Sepsis due to Escherichia coli [E. coli]
A4152	Sepsis due to Pseudomonas
A4153	Sepsis due to Serratia
A4154	Sepsis due to Acinetobacter baumannii
A4159	Other Gram-negative sepsis
A4181	Sepsis due to Enterococcus
A4189	Other specified sepsis
A419	Sepsis, unspecified organism
A427	Actinomycotic sepsis
A5486	Gonococcal sepsis
R6520	Severe sepsis without septic shock
R6521	Severe sepsis with septic shock

SEP-1 Denominator: "Severe Sepsis"

- All 3 clinical criteria: (a), (b), and (c) must be met within 6 hours of each other (in no particular order)

(a) Documented Infection (suspected or confirmed or antibiotics administered (not inclduing prophylaxis)

(b) 2 or more SIRS criteria
(using pregnancy criteria if ≥20 weeks and ≤3 days PP)

(c) Organ dysfunction, any one criteria
(using pregnancy criteria if ≥20 weeks and ≤3 days PP)
Do not use the abnormal value if caused by another condition or medication (documented)

Table 4. Systemic Inflammatory Response Syndrome (SIRS) Criteria: SEP-1 Compared to CMQCC Criteria

SEP-1 Specifications Manual[9]		CMQCC Obstetric Serious Infection Evaluation Flow Chart
Non-Pregnant Patients*	**Pregnant 20 weeks through Day 3 Post-delivery Patients**	**Pregnant 20 weeks through Day 3 Post-delivery Patients**
Oral Temperature >38.3C or <36.0C	Oral Temperature >38.0C or <36.0C	Oral Temperature >38.0C or <36.0C
Heart rate: >90 per minute	Heart rate: >110 per minute	Heart rate: >110 per minute
Respiratory rate: >20 per minute	Respiratory rate: >24 per minute	Respiratory rate: >24 per minute
WBC >12,000 or <4,000 or >10% bands	WBC >15,000 or <4,000 or >10% bands	WBC >15,000 or <4,000 or >10% bands

**Includes pregnant patients <20 weeks and after 3 days post-delivery*

From CMQCC Sepsis Toolkit v2, pp 98-104: Measuring Quality in the Care of Obstetric Sepsis / SEP-1 Measure

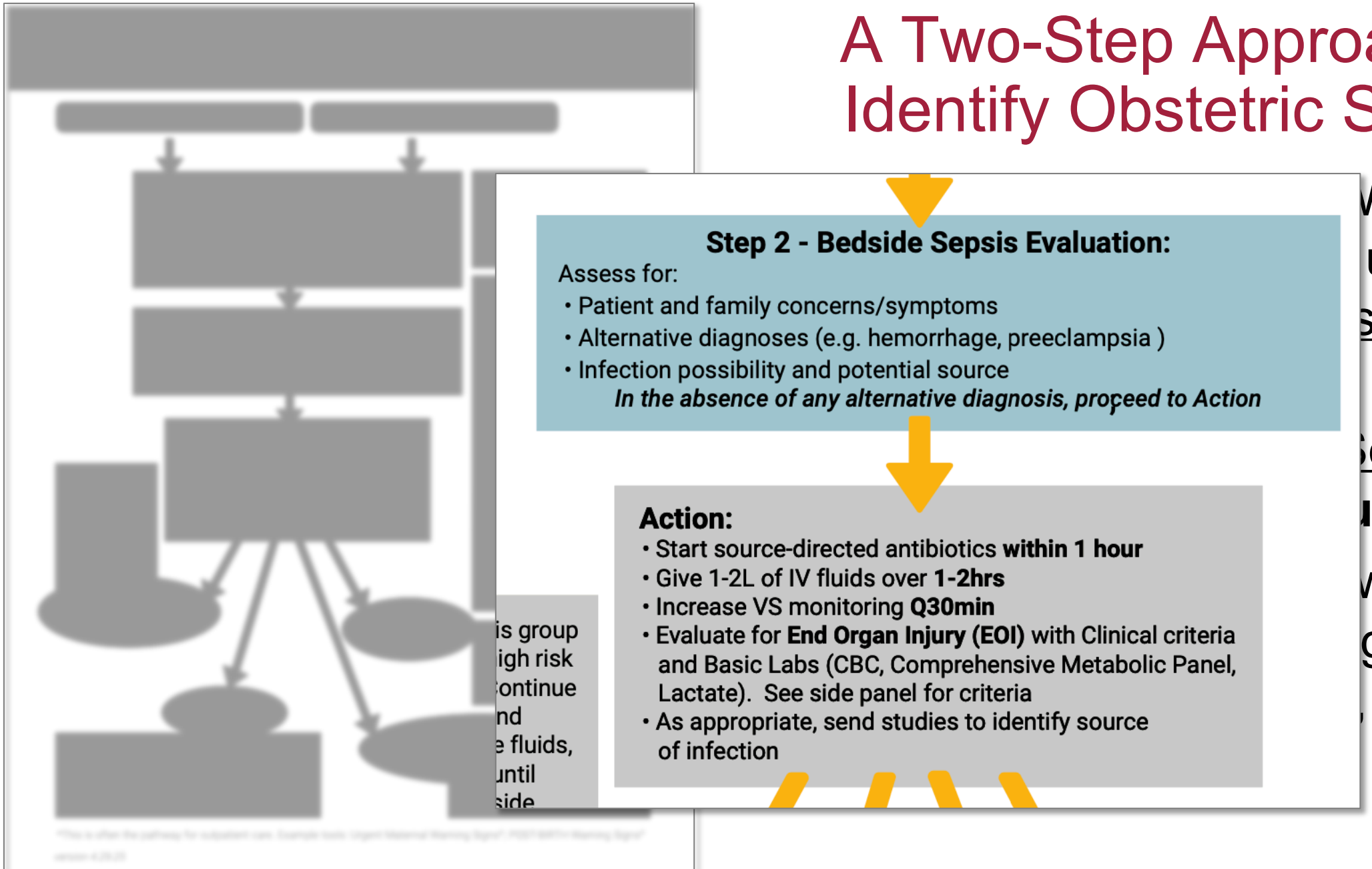
CMS SEP-1:
Criteria for Organ Dysfunction

"evidenced by any one of the following":

Non-Pregnant Criteria	Pregnant 20 weeks through Day 3 Post-delivery Criteria
Systolic blood pressure (SBP) <90 mmHg or mean arterial pressure <65 mmHg.	Systolic blood pressure (SBP) <85 mmHg or mean arterial pressure <65 mmHg.
Systolic blood pressure decrease of more than 40 mmHg.	Systolic blood pressure decrease of more than 40 mmHg.
Acute respiratory failure as evidenced by a new need for invasive or non-invasive mechanical ventilation.	Acute respiratory failure as evidenced by a new need for invasive or non-invasive mechanical ventilation.
Creatinine >2.0 mg/dL	Creatinine >1.2 mg/dL
Urine output <0.5 mL/kg/hour for two consecutive hours	Urine output <0.5 mL/kg/hour for two consecutive hours
Total Bilirubin >2 mg/dL (34.2 mmol/L)	Total Bilirubin >2 mg/dL (34.2 mmol/L)
Platelet count <100,000	Platelet count <100,000
INR >1.5 or aPTT >60 sec	INR >1.5 or PTT >60 sec
Lactate >2 mmol/L (18.0 mg/dL)	Lactate >2 mmol/L (18.0 mg/dL) NOTE: Do not use lactate obtained during active delivery defined as documentation of uterine contractions resulting in cervical change (dilation or effacement) through delivery or childbirth.

Specifications Manual for National Hospital Inpatient Quality Measures: Discharges 01-01-26 (1Q26) through 12-31-26 (4Q26)
1b-AlphaDD.pdf "Data Element Definitions", page 1-137

A Two-Step Approach to Identify Obstetric Sepsis



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

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

VS, MERT,
used but
st Step

econd
uation.

wo-Step
gnoses in
, Cervical

What does SEP-1 require?

3-HOUR BUNDLE

- **Initial Lactate**
  - Lactate > 2.0 drawn during labor **cannot** be used for organ dysfunction
- **Blood Cultures** *(before IV antibiotic)*
  - Acceptable delay if antibiotics were started **before** severe sepsis time zero (SSTZ)
- **IV Antibiotic** *(any)*
  - IO/IM route acceptable with documentation that IV access was unobtainable
- **30ml/kg Fluid Bolus** *(if initial hypotension, lactate ≥ 4.0, or shock present)*
  - Initial hypotension = 2 low BP/MAPs within 6hrs of SSTZ and ≤ 3hrs apart
  - Lactate ≥ 4.0 drawn during labor **cannot** be used to define shock

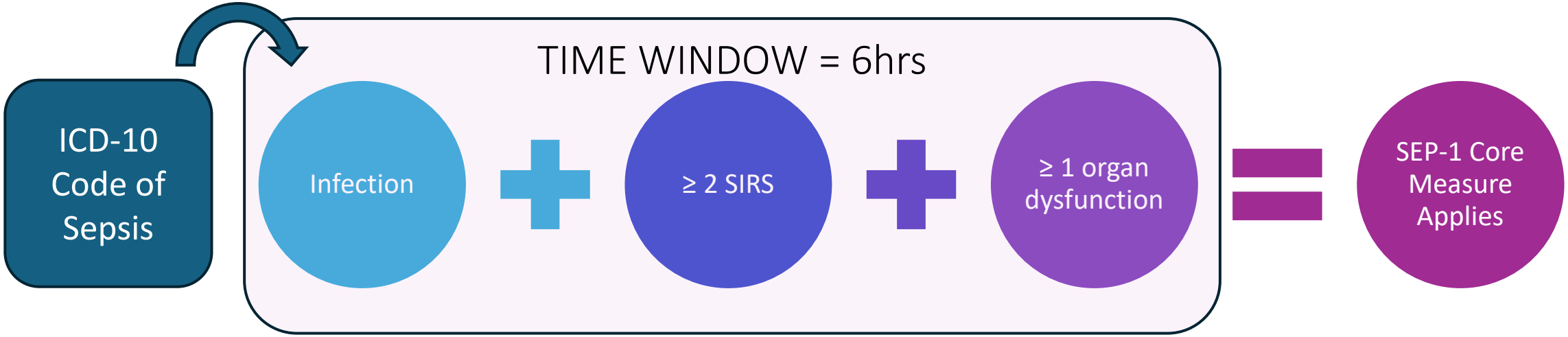
What does SEP-1 require?

6-HOUR BUNDLE

- **Repeat lactate**
  - Required if initial lactate > 2.0
  - If initial lactate was drawn during labor with result > 2.0, a repeat is not required
- **Vasopressors**
  - Required if persistent hypotension post-bolus
- **Provider reassessment of volume status & tissue perfusion**
  - Required if shock present: persistent hypotension post-bolus, lactate ≥ 4.0, or provider documentation

How is SEP-1 applied to OB cases?

- **Trigger:** final ICD-10 code of sepsis
- **Retrospective analysis:** looks for the earliest clinical signs or sepsis documentation
- **Lookback window**: infection + clinical signs present ≤ 6hrs, or provider documentation
- **"Time zero":** the moment when SEP-1 tasks must start based on last required sign

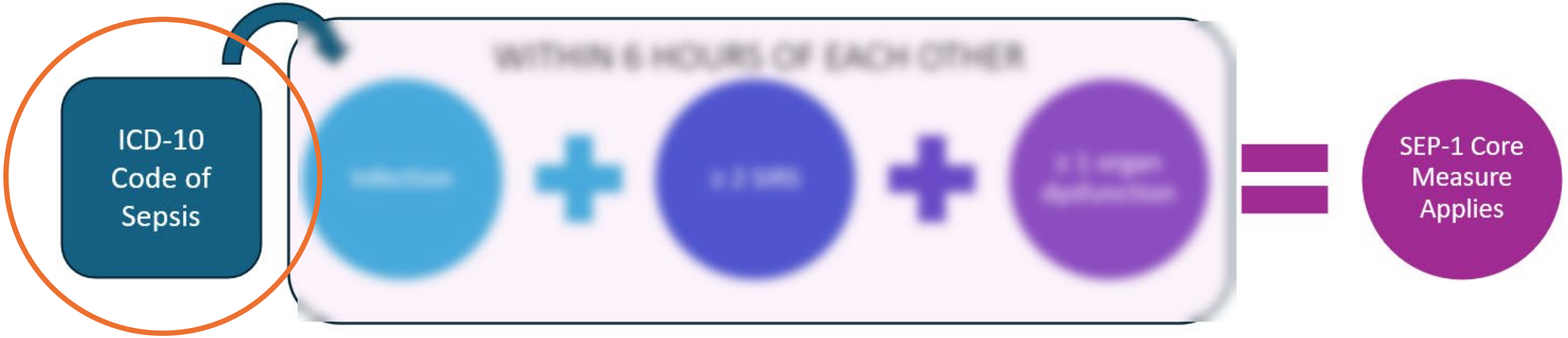


Pitfall #1: Inappropriate Sepsis documentation

- Provider documents “sepsis” or “possible sepsis” despite lack of clinical signs
- Case is coded as sepsis → core measure elements apply

  AVOID: documenting sepsis when acute organ dysfunction is absent
- Clinical pearl: use specific language like “suspected serious infection”

  AVOID: “rule out”, “suspect”, “possible” – uncertain diagnoses require clarification

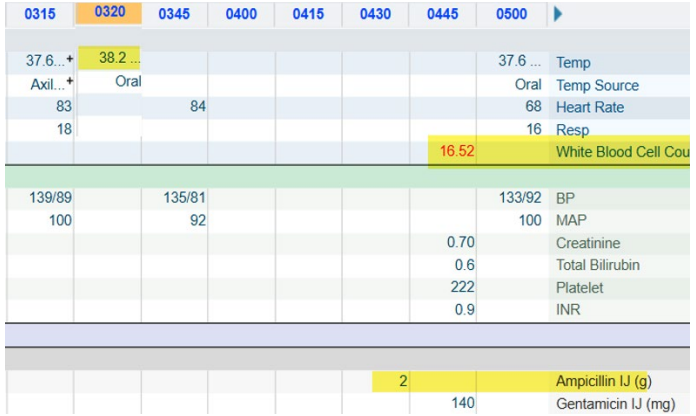


Pitfall #1: Inappropriate Sepsis documentation

Ex: Laboring patient with T 38.2C, WBC 16.52 (*SIRS*); Amp/Gent for chorio (*infection*)

- **No organ dysfunction appreciated**
- Provider documents concern for "possible sepsis"

> Based on the above findings we are suspecting possible sepsis and proceeding with a fluid bolus, starting appropriate antibiotics based upon the source and have ordered the following workup: CBC with differential, PT/INR, PTT, Comprehensive metabolic panel, Lactic acid



- Within 6hrs there are now x2 isolated low MAPs *(organ dysfunction)* *(SSTZ now)*

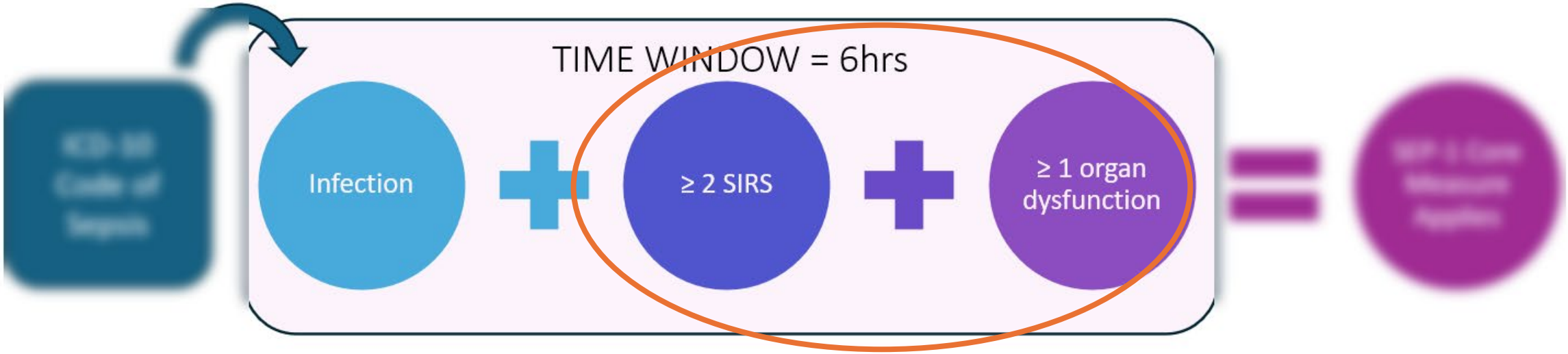
  No provider documentation linking low MAPs to non-infectious cause

- "Possible sepsis" is uncertain diagnosis – not clarified as ruled in/out at discharge
  - Case coded as sepsis, Core Measure Sepsis FAIL: no BC drawn, no 30ml/kg fluids

Pitfall #2: “Expected” Abnormal

- Documentation of abnormal vital signs or lab results, that are:
  - Normal for patient
  - Due to a chronic condition
  - Due to a medication
- No provider documentation linking the clinical signs to one of the above
- Clinical pearl: report abnormal to provider, **provider** document expected-but-abnormal

  AVOID: nursing notes; do not qualify



Pitfall #2: “Expected” Abnormal

Ex: Laboring patient, epidural, low MAPs, push dose epi, 500ml bolus *(organ dysfunction)*

- Hours later T 38.3C and HR > 110 *(SIRS)*
- Amp/Gent given for chorioamnionitis *(infection)* ***(SSTZ now)***
- Prior low MAPs “counted” as earliest organ dysfunction, even though due to medication

No provider documentation linking initial low MAPs to the epidural medication

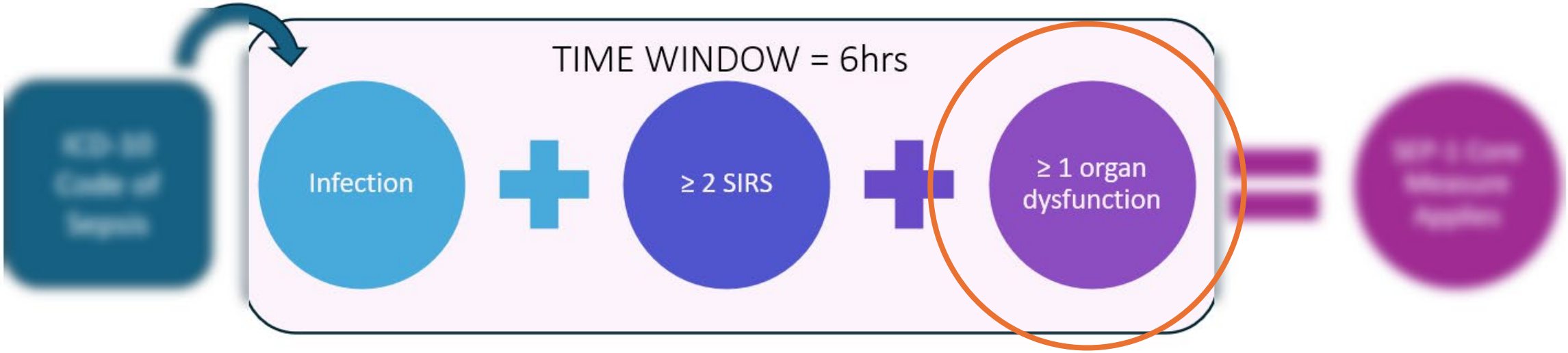
- **Core Measure Sepsis FAIL: no BC drawn, no 30ml/kg fluids within 3hrs of the low MAPs**

15 Min:	0430	0445	0500	0515	0530	0545	0600	0615	0630	0645	0700	0715	0730	0745	0800	0815	0830	0845	0900
SIRS Criteria	*Epidural																		
Temp				36.8 ...									37.4 ...			38.3 ...	*2 SIRS		
Temp Source				Oral									Oral			Oral			
Heart Rate	99	97		98+	103+	106	109	108	112				119		119	127	119	127	115
Resp	20	18		18+	18+	18	20	18	20	18	20								
White Blood Cell Count (WBC)																			12.93
Organ Perfusion																			
BP	108/50	93/54		93/46	90/47	102/53	93/55	100/58	109/60	107/61	106/54		116/93		98/57	109/64+	107/66+	112/64	99/44
MAP	64	63		57+	57+	63	64	68	71	71	66		99		67	73+	76+	75	56
Creatinine				*post-epidural													*new hypotension		0.6
Total Bilirubin																			0.9
Platelet																			107
INR																			1.1
Lactate																			1.3
Oxygenation																			
SpO2	100	100		100+	100+	100	100	100	100	100			100+		100+	100+	100+	100+	99+
Microbiology																			
Anti-Infectives																			
CefTRIAXone IJ (g)																		2	

Pitfall #3: Blood Cultures

- Blood cultures not drawn when indicated (organ dysfunction is present)
- When treating for infection cultures may be deferred if no organ dysfunction present
  - Organ dysfunction present within 6hrs of infection + SIRS (before or after) **requires cultures**
- Clinical pearl: ensure accurate nursing documentation; consider PRN culture order

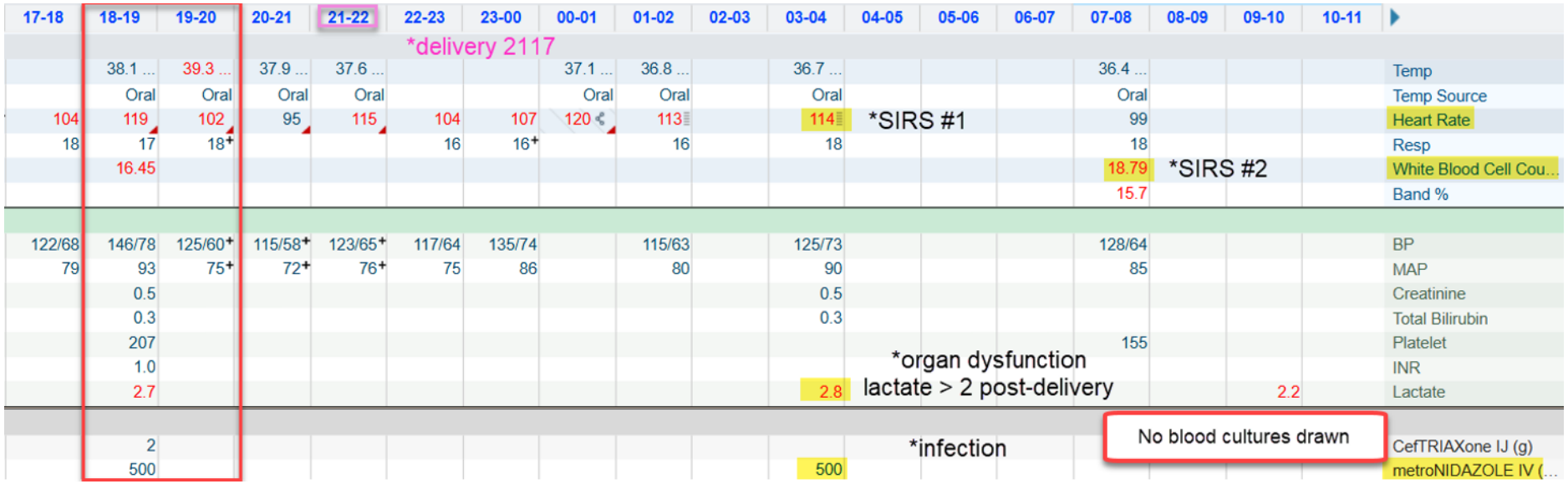
AVOID: validation of erroneous or unreliable vital signs



Pitfall #3: Blood Cultures

Ex: Laboring patient, 3hrs prior to delivery febrile, tachycardic, leukocytosis (*SIRS*)

- Given Ceftriaxone/Flagyl for chorio (*infection*); went on to deliver and improve
  - Lactate drawn but not counted as organ dysfunction
- 7hrs later tachycardia, rising lactate, rising WBC, continuing antibiotics. *(SSTZ now)*
  - Core Measure Sepsis FAIL: no BC drawn



Teaching Points for Lactate in Obstetrics

- Lactate is an assessment of anaerobic metabolism and is elevated in the setting of extended physical exertion including labor and pushing. Studies of physical exercise indicate that lactate returns to normal range within an hour with hydration but there is no data for lactate after delivery.
- In SEP-3 Consensus Guidance: Lactate is no longer considered a marker of End Organ Injury but an indicator of illness severity and poor tissue perfusion.
- CMS SEP-1 calls for Lactate measurement in Severe Sepsis evaluation BUT specifically indicates that you should NOT measure it during Labor.
- Recent analysis of 1,049 Chorio cases with ICD codes for with Sepsis found that a Lactate 2-4 mmol/L was the ONLY indicator of sepsis in 40.5%.
- If a patient has evidence of End Organ Injury (Sepsis), ALL guidelines recommend a baseline lactate, debate as to whether to wait until delivery

Key SEP-1 Take Home Lessons

- Do NOT chart the words “Sepsis” or “Septic” (or r/o sepsis) until you have full Sepsis-3 criteria: Infection + SIRS + End Organ Injury
  (prevents inadvertent coding of sepsis, starting the SEP-1 pathway)
  Use Chorioamnionitis or “serious infection” until sepsis diagnosis is made
- Document reasons for <u>all</u> episodes of sBP <85 or MAP <65! Chart hypotension due to epidural/spinal medications and normal low sBP for a given patient. Needs provider documentation (Anes or OB)
- SEP-1 specifications do not allow the use of lactate during labor to indicate organ dysfunction, (meaning any lactates drawn can not be used for this purpose) but all lactate levels obtained before labor or after delivery can be used to trigger the SEP-1 Bundle.
- BC drawn after antibiotics can be OK, if ABX given for an infection (e.g. Chorio) <u>before</u> sepsis diagnosis was made—but needs charting to that!

Where to find CMS SEP-1 Specifications

Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-26 (1Q26) through 12-31-26 (4Q26)
Available: https://qualitynet.cms.gov/inpatient/specifications-manuals

Download Complete Manual (zip) and choose files:
1b-AlphaDD.pdf "Data Element Definitions", 158 pages
(in particular see pp 1-136 to 1-148 "Severe Sepsis Present")
Appendix A.1.pdf "ICD-10 Code Tables"

Key Points

- Prevention and early recognition of sepsis starts in the outpatient/ community environment and patient education is critical.
- Community organizations are multipliers for reaching patients and families to prevent Severe Maternal Morbidity (SMM)
- All cases of SMM can lead to short or long-term trauma and there are important steps we should take for support and mitigation
- Every OB Dept should have MD/RN Infection-Antibiotic "Stewards" (aka "Champions") who should fully understand the differences in Sepsis (SEP-1) algorithm for obstetric patients—especially: Don't use the word sepsis in the medical record unless there is end-organ injury!

Action Steps

- Create a small workgroup to establish where to place educational handouts and posters around OB units and offices and link with community leaders.
- Create an on-going team (minimally inclusive of physician, nurses and social worker) to map out steps to support patients after an adverse maternal event.
- Meet with your hospital-wide Sepsis (SEP-1) team to review the differences for obstetric patients. Express your desire to partner to meet the special needs of obstetrics.

Final Session

- April 21
- 12 – 1:30pm Pacific Time
- Focus: implementation science, staff education techniques, emergency department implementation
- If you would like to add any additional colleagues, please reach out to Ruhi directly rnath@stanford.edu.

Stanford | MEDICINE

CMQCC
California Maternal
Quality Care Collaborative

CPQCC
California Perinatal
Quality Care Collaborative

CE Credit for Physicians, Nurses, & Social Workers

MCCPOP Perinatal Potpourri Conference 2026

April 16–17, 2026 • Hybrid Conference

Featuring experts on maternal, fetal, and neonatal advances in care.

Rooted in Community. Transforming Care.
Supporting Black Maternal Health Week 2026

SCAN CODE TO REGISTER

This activity has been approved for *AMA PRA Category 1 Credit™*, ANCC contact hours, and ASWB Approved Continuing Education credit.