

Early Detection of Maternal Sepsis



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Background

- Sepsis is a severe infection that activates a system-wide inflammatory response.
- The Centers for Disease Control and Prevention (CDC) found that the number of pregnancy related deaths in the United States is 17.3 per 100,000 births.
- Sepsis accounts for 12.7% of all maternal deaths.
- Up to 2/3 of sepsis related maternal deaths are considered preventable.
- Factors that place maternal patients at risk for sepsis are health inequity, multiple births, cesarean section, primiparity, and history of chronic illness.
- A two-step process has been initiated by the California Maternal Quality Care Collaborative (CMQCC) to first screen for SIRS criteria with modified vital signs and then confirm with laboratory studies.

Methods

- St. Joseph Hospital, Orange (SJO) is a large birth volume hospital with more than 3,000 deliveries per year. All postpartum patients with deliveries within 30 days of hospital visit were evaluated.
- Patient chart audits were completed for 12 months (06/22-05/23) to assess for sepsis or SIRS criteria, antibiotic order times, and initiation of therapy.
- A poster and case study regarding maternal sepsis criteria was developed for Mother Baby Unit (MBU) nursing staff and disseminated by small teaching groups.

Results

- Thirteen postpartum patients were identified with a diagnosis of sepsis from 06/22-05/23.
- All patients presented to the ED or OB Triage with SIRS criteria present on arrival. Patients were evaluated by a LIP on average 40.5 min from arrival.
- Antibiotic treatment was initiated on average 49 minutes from order time.
- 38% of postpartum septic infections were caused by pyelonephritis.

Discussion

- Sepsis is not a common diagnosis for postpartum patients at SJO.
- The study data was limited to postpartum patients with a coded diagnosis of sepsis.
- Patients may have been missed that had positive SIRS criteria and were not diagnosed with sepsis or the provider was not notified.

Purpose

- Pregnant and postpartum patients naturally have altered vital signs due to the physiological effects of pregnancy and delivery, making it easy to miss early warning signs or triggering concern for sepsis inappropriately.
- Educating Postpartum nursing staff will improve confidence about early recognition and treatment of sepsis, reducing morbidity and mortality in this patient population.

Maternal Sepsis Evaluation Flow Chart
Based on the CMQCC Algorithm

Sepsis Criteria

Step 1: Patient must meet TWO SIRS criteria

Vital Signs	SIRS Criteria
Temperature	>100.4F or <96.8F
Heart Rate	>110 for greater than 15 min
Respiratory Rate	>24 for greater than 15 min
WBC	>12,000
Immature neutrophils (Bands)	>10%

Step 2: Confirmation

Lab Test	Abnormal Result
CBC	WBC >12,000
CMP	Creatinine >1.1 AST (>40U/L) ALT (>80U/L)
D-dimer	>0.4 µg/L
Lactate	>2.0 mmol (sepsis) >4.0 mmol (severe sepsis)
Procalcitonin	>2.0µg/L

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Implications for Practice

- Early detection of SIRS criteria and sepsis leads to the initiation of early treatment.
- Decreased morbidity and mortality is associated with early treatment.
- Educating MBU RN staff about sepsis (although not highly prevalent) will improve outcomes of our postpartum population.
- This education can be adjusted to include early sepsis recognition for newborns.

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References available upon request.