

# Sepsis Protocol in the Obstetric Patient

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# Objectives

At the conclusion of this learning activity, the learner will be able to:

- Apply the key recommendations of the sepsis protocol to the care of the obstetric patient.
- Describe the special considerations for care of obstetric sepsis patients and the differences from adult patients.

Length – 15 minutes

Target Audience – This lesson is intended for providers and RNs caring for patients on the Birthplace.

# Sepsis

- Sepsis is a leading cause of death in the US and the #1 cause of death in the ICU
- Severe sepsis and septic shock are important contributors to maternal mortality
- Early detection and the application of time-sensitive and standard therapies can improve outcome and survivability

# Maternal Sepsis: Incidence

- Septic shock: 0.002-0.01% of all deliveries
- 0.3-0.6% of all septic patients are pregnant
- Has increased over the last decade
  - Older maternal age at delivery
    - Obesity, diabetes, chronic HTN, placental abruption and placenta accreta
    - Infertility and multi-fetal gestation
  - Obesity
    - HTN, DM, Cesarean, cardiopulmonary complications

# Definitions

- Systemic Inflammatory Response Syndrome (SIRS)
  - Inflammatory process that can be generated by infection or by non-infectious causes (burns, trauma)
- Sepsis
  - The systemic inflammatory response syndrome that occurs during infection (Society Critical Care Medicine 2001 consensus statement)
- Septic shock
  - Vascular collapse secondary to an infectious process
  - Usually components of hypovolemic and cardiogenic shock

# Severe Sepsis and Septic Shock Causes in Pregnancy

**Sepsis and Septic Shock in Pregnancy can be caused by:**

- Pyelonephritis
- Retained products of conception
  - Septic abortion
  - Placenta accreta or percreta
- Neglected chorioamnionitis
- Pneumonia
- Necrotizing fasciitis from abdominal incision, episiotomy, perineal laceration
- Intraperitoneal etiology
  - Appendicitis
  - Bowel infarction
  - Cholecystitis
  - Necrotizing pancreatitis

# Pathophysiology of Septic Shock

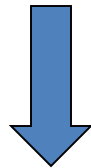
Decreased functional intravascular blood volume



Decreased BP and tissue perfusion



Cellular acidosis and hypoxia



End-organ tissue dysfunction and death

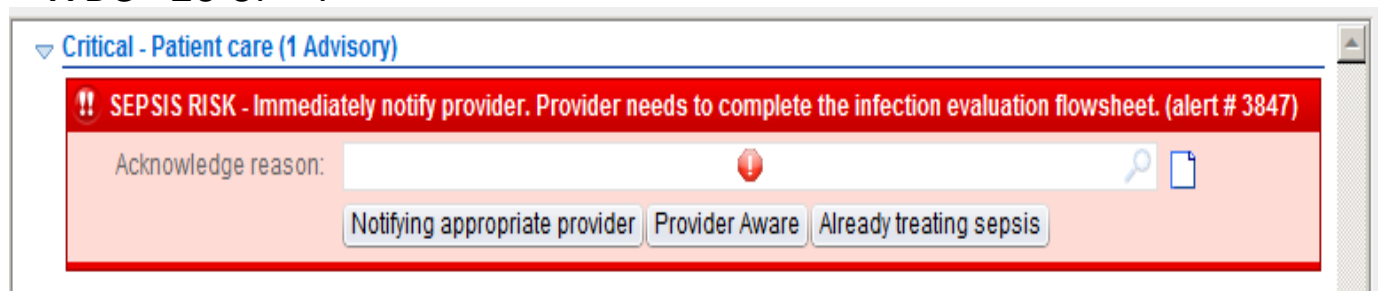
# Sepsis looks Different in the Obstetric Patient

- Key indicators for Sepsis in NON-PREGNANT adults in the Fairview system includes 2 or more of the following
  - SBP < 90
  - Temperature < 95 or > 101
  - HR > 100 beats/min
  - RR > 20 breaths/min
  - WBC < 4 or > 12
- Since these indicators may be abnormal in the PREGNANT PATIENT WITHOUT SEPSIS, different indicators were developed for the pregnant patient (see next slide).



# OB Sepsis Protocol Workflow

- When the obstetric patient has 2 of the following signs, an alert will fire to the Nurse or NST
  - Temperature >38.3C (101 F) or less than 36C
  - Respiratory rate > 24 breaths per minute
  - Blood glucose > 140 in a known non diabetic condition and has not received betamethasone
  - Extremely altered mental status (determined by nurse charting mental status as confused, obtunded, semicomatose, unresponsive, or somnolent)
  - Heart rate > 110 bpm
  - WBC >20 or <4



- After the trigger has fired in Epic the RN will acknowledge that either the provider has been notified, is aware, or is already treating the sepsis.

# OB and Adult Sepsis Protocols

- If the obstetric patient is being cared for on a Non-OB Medical/Surgical unit, and meets criteria for sepsis, the Adult Sepsis Protocol will be fired, not the OB Sepsis Protocol.

# OB Sepsis Protocol Workflow

- When the provider opens the chart the provider will be notified that the patient has at least 2 OB Modified SIRS Criteria
- The OB sepsis protocol will initiate in Epic if the obstetric patient has 2 of the following OB indicators

The provider must complete the Infection Evaluation screen

BestPractice Advisory - Raasch, Jessica

▼ Critical - Patient care (1 Advisory)

**!! SEPSIS RISK - OB patient: (alert # 3800)**

Patient has at least 2 OB Modified SIRS Criteria.

- Temperature >38.3C (101 F) or less than 36C
- Respiratory rate > 24 breaths per minute
- Blood glucose > 140 in a known non diabetic condition and has not received betamethasone
- Extremely altered mental status
- Heart rate > 110bpm
- WBC >20 or <4

Temp: 102 °F (38.9 °C) (10/29 1600)  
Oximeter Heart Rate: 93 bpm (10/29 0459)  
Resp: 120 (10/29 1600)  
BP: 108/65 mmHg (10/29 0459)  
WBC 7.2 7/27/2015

No results found for this basename: GLC  
No results found for this basename: BGM

**Click Hyperlink to complete infection screening (REQUIRED).**  
**\* IF you do NOT want to complete the infection screening, choose a reason button.**

Acknowledge reason:

[Infection Evaluation \(REQUIRED\)](#)

# OB Sepsis Protocol Workflow

- The alert will not fire if the provider has already completed the Infection screen in the last 4 hours, or if the patient has a medication order from the Sepsis Order Set (presumably, already being treated for sepsis).
- If the provider chooses the notifying provider acknowledgement button, the alert is suppressed for that user for 1 hour.
- If the provider chooses the already treating Sepsis button, the alert is suppressed for 4 days.
- When the provider clicks the Infection Evaluation hyperlink, the provider is taken to the navigator flow sheet
- To prevent the alert from firing again the next time the chart is opened, follow the infection evaluation hyperlink OR choose an acknowledge reason button.

BestPractice Advisory - Raasch, Jessica

▼ Critical - Patient care (1 Advisory)

**!! SEPSIS RISK - OB patient: (alert # 3800)**

Patient has at least 2 OB Modified SIRS Criteria.

- Temperature  $>38.3C$  (101 F) or less than 36C
- Respiratory rate  $> 24$  breaths per minute
- Blood glucose  $> 140$  in a known non diabetic condition and has not received betamethasone
- Extremely altered mental status
- Heart rate  $> 110$ bpm
- WBC  $>20$  or  $<4$

Temp: 102 °F (38.9 °C) (10/29 1600)  
Oximeter Heart Rate: 93 bpm (10/29 0459)  
Resp: 120 (10/29 1600)  
BP: 108/65 mmHg (10/29 0459)  
WBC 7.2 7/27/2015

No results found for this basename: GLC  
No results found for this basename: BGM

**Click Hyperlink to complete infection screening (REQUIRED).**  
**\* IF you do NOT want to complete the infection screening, choose a reason button.**

Acknowledge reason:

[Infection Evaluation \(REQUIRED\)](#)

# OB Sepsis Protocol Workflow

- After clicking on New Reading, the provider will be prompted to complete the OB Infection Screening for sepsis risk

The screenshot shows a web-based form titled "Infection screening". On the left is a sidebar with "Infection Screen" and "OB Sepsis screeni...". The main area has a blue header with a warning icon and the text "CLICK NEW READING BUTTON TO COMPLETE INFECTION SCREENING". Below this is a "New Reading" button with a green plus icon, which is circled in blue. To the right of the button, the date "09/23/15" and the number "1147" are displayed. The form contains a list of clinical indicators for sepsis risk, each followed by a horizontal line for input. The indicators are: PROM of foul amniotic fluid, Unexplained fetal tachycardia w/o maternal tachycardia, Foul smelling lochia, Catheter or dysuria, IV line infection, Headache or neck stiffness, Endocarditis, Breast redness and/or tenderness or mastitis, Fetal demise, Cough or sputum or chest pain, Abdominal pain/distension/diarrhea, and Cellulitis, wound infection/ septic arthritis. The word "no" is entered in the input field for the last indicator.

Indicator	Response
PROM of foul amniotic fluid	
Unexplained fetal tachycardia w/o maternal tachycardia	
Foul smelling lochia	
Catheter or dysuria	
IV line infection	
Headache or neck stiffness	
Endocarditis	
Breast redness and/or tenderness or mastitis	
Fetal demise	
Cough or sputum or chest pain	
Abdominal pain/distension/diarrhea	
Cellulitis, wound infection/ septic arthritis	no

# OB Sepsis Protocol Workflow

- If the provider answers yes to any of these questions, one of 2 alerts will be fired
  - Patient may have SEPSIS or
  - Patient may have SEVERE SEPSIS
- Answer at least one of the questions to prevent alert from firing again the next time the chart is opened.

CLICK NEW READING BUTTON TO COMPLETE INFECTION SCREENING - OB Sepsis

Time taken: 1407 10/27/2015

Values By Create Note

OB Infection Screening for sepsis risk: Is there a history or sign of a

Assessment

PROM or foul amniotic fluid	<input type="button" value="yes"/>	<input type="button" value="no"/>
Unexplained fetal tachycardia w/o maternal tachycardia	<input type="button" value="yes"/>	<input type="button" value="no"/>
Recent delivery/foul smelling lochia	<input type="button" value="yes"/>	<input type="button" value="no"/>
Catheter or dysuria	<input type="button" value="yes"/>	<input type="button" value="no"/>
IV line infection	<input type="button" value="yes"/>	<input type="button" value="no"/>
Headache or neck stiffness	<input type="button" value="yes"/>	<input type="button" value="no"/>
Endocarditis	<input type="button" value="yes"/>	<input type="button" value="no"/>
Breast redness and/or tenderness or mastitis	<input type="button" value="yes"/>	<input type="button" value="no"/>
Fetal demise	<input type="button" value="yes"/>	<input type="button" value="no"/>
Cough or sputum or chest pain	<input type="button" value="yes"/>	<input type="button" value="no"/>
Abdominal pain/distension/diarrhea	<input type="button" value="yes"/>	<input type="button" value="no"/>
Cellulitis, wound infection/ septic arthritis	<input type="button" value="yes"/>	<input type="button" value="no"/>
Other suspected infection or infection source	<input type="button" value="yes"/>	<input type="button" value="no"/>

Restore Close F9 Cancel

# OB Sepsis Protocol Alert when the Patient may have SEPSIS

- The alert indicating that the patient may have SEPSIS will be fired when the provider answers yes to an infection screening question and the patient DOES NOT have a documented sign of organ dysfunction.
  - SBP<90
  - INR>1.5
  - Plt<100
  - Cr>1.5,  
Cr incr of 0.5
  - Bilirubin>2
  - Lactic acid>2

▼ Critical - Patient care (1 Advisory)



**!! Patient may have SEPSIS. Follow treatment protocol.**

Patient may have **SEPSIS**. Follow protocol (including obtaining labs to identify severe sepsis). Patient has an identified infection source, and at least 2 of the following:

- Temperature >38.3C (101 F) or less than 36C
- Respiratory rate > 24 breaths per minute
- Blood glucose > 140 in a known non diabetic condition and has not received betamethasone
- Extremely altered mental status
- Heart rate > 110bpm
- WBC >20 or <4

**JUST CLICK ACCEPT TO PLACE THE OB SEPSIS BUNDLE ORDER SET.**

**\* IF you do NOT want to place the order set, choose a reason button.**

Acknowledge reason:   

Open Order Set: RX Sepsis Bundle ADULT [preview](#)

# OB Sepsis Protocol Alert when the Patient may have SEPSIS

If the patient has medication orders from the OB Sepsis order set, the alert is suppressed.

## Acknowledge reason buttons suppress the alert:

- Already treating sepsis: Suppresses alert for 4 days
- Patient not septic: Suppresses alert for at least 4 hours.

In 4 hours, if the patient still meets the SIRS criteria for 'initial OB sepsis risk alert' to fire and the patient isn't being treated for sepsis, the cycle of alerts will start again. (The reason for this is that if the SIRS criteria are still present in 4 hours, the infection may have progressed to Sepsis and should be reevaluated).

The screenshot shows a clinical alert dialog box titled "Critical - Patient care (1 Advisory)". The alert message is: "Patient may have SEPSIS. Follow treatment protocol. Patient may have SEPSIS. Follow protocol (including obtaining labs to identify severe sepsis). Patient has an identified infection source, and at least 2 of the following: Temperature >38.3C (101 F) or less than 36C, Respiratory rate > 24 breaths per minute, Blood glucose > 140 in a known non diabetic condition and has not received betamethasone, Extremely altered mental status, Heart rate > 110bpm, WBC >20 or <4." Below the message, there is a section titled "JUST CLICK ACCEPT TO PLACE THE OB SEPSIS BUNDLE ORDER SET." followed by the instruction "\* IF you do NOT want to place the order set, choose a reason button." There is a text input field for "Acknowledge reason:" with a search icon and a document icon. Below the input field are two buttons: "Already treating sepsis" and "Patient not septic". At the bottom left, there is a checked checkbox for "Open Order Set: RX Sepsis Bundle ADULT preview". At the bottom right, there are "Accept" and "Cancel" buttons.

▼ Critical - Patient care (1 Advisory)

!! Patient may have SEPSIS. Follow treatment protocol.

Patient may have **SEPSIS**. Follow protocol (including obtaining labs to identify severe sepsis). Patient has an identified infection source, and at least 2 of the following:

- Temperature >38.3C (101 F) or less than 36C
- Respiratory rate > 24 breaths per minute
- Blood glucose > 140 in a known non diabetic condition and has not received betamethasone
- Extremely altered mental status
- Heart rate > 110bpm
- WBC >20 or <4

**JUST CLICK ACCEPT TO PLACE THE OB SEPSIS BUNDLE ORDER SET.**

**\* IF you do NOT want to place the order set, choose a reason button.**

Acknowledge reason:  🔍 📄

Open Order Set: RX Sepsis Bundle ADULT preview



# Signs of Organ Dysfunction

- When the OB patient has 2 SIRS criteria and at least 1 OB Infection Screening sign, the provider will be prompted to order the OB Sepsis Bundle Set in order to obtain these labs (INR, Platelets, Creatinine, Bilirubin, Lactic Acid)
- Organ Dysfunction includes one or more of the following
  - SBP<90
  - INR>1.5
  - Plt<100
  - Cr>1.5, Cr incr of 0.5
  - Bilirubin>2
  - Lactic acid>2

# OB Sepsis Protocol when the Patient may have SEVERE SEPSIS

- The alert indicating that the patient may have SEVERE SEPSIS will be fired when the provider answers yes to an infection screening question and the patient HAS a documented sign of organ dysfunction
  - SBP<90
  - INR>1.5
  - Plt<100
  - Cr>1.5, Cr incr of 0.5
  - Bilirubin>2
  - Lactic acid>2

OR

- Fires when the provider opens the chart and there is a new lab result or SBP indicating the patient has SEVERE SEPSIS
- If the patient has medication orders from the OB Sepsis order set, the alert should be suppressed.

## **Acknowledge reason buttons suppress the alert:**

- Already treating sepsis: Suppresses alert for 4 days
- Patient not septic: Suppresses alert for at least 4 hours.

In 4 hours, if the patient still meets the criteria for Alert #1 to fire and the patient isn't being treated for sepsis, the cycle of alerts will start again. (The reason for this is that if the SIRS criteria are still present in 4 hours, the infection may have progressed to Sepsis and should be reevaluated).

The screenshot shows a clinical alert window titled "Critical - Patient care (1 Advisory)". The main heading is "!! Patient may have Severe Sepsis". The text inside the alert reads: "Patient may have SEVERE SEPSIS. Follow protocol. Patient meets these 3 criteria indicating severe sepsis: \*Identified infection source, \*At least 1 sign of organ dysfunction ( SBP<90, INR>1.5,Plt <100, PTT>60, Cr>1.5, Cr incr of 0.5, Billirubin >2, Lactic acid >2), \*At least 2 of the following: • Temperature >38.3C (101 F) or less than 36C • Respiratory rate > 24 breaths per minute • Blood glucose > 140 in a known non diabetic condition and has not received betamethasone • Extremely altered mental status • Heart rate > 110bpm • WBC >20 or <4". Below this text, there is a blue instruction: "JUST CLICK ACCEPT TO PLACE THE OB SEPSIS BUNDLE ORDER SET." and a note: "\* IF you do NOT want to place the order set, choose a reason button." At the bottom, there is a text input field for "Acknowledge reason:" with a search icon and a document icon. Below the input field are two buttons: "Already treating sepsis" and "Patient not septic". At the very bottom, there is a checked checkbox and the text "Open Order Set: RX OB Sepsis Bundle OBSTETRIC preview".

# OB Sepsis Protocol when the Patient may have SEVERE SEPSIS

The Sepsis Bundle order set is attached to the alert, and the box is pre-checked. [JUST CLICK ACCEPT TO PLACE THE OB SEPSIS BUNDLE ORDER SET](#)

You can also open the order set later by entering "sepsis" in the Order Sets box from the Orders Navigator.

\*To prevent the alert from firing again the next time the chart is opened, choose an acknowledge reason OR place a medication order in the Sepsis Bundle order set.

▼ Critical - Patient care (1 Advisory)

**!! Patient may have Severe Sepsis**

Patient may have **SEVERE SEPSIS**. Follow protocol  
Patient meets these 3 criteria indicating severe sepsis:  
\*Identified infection source,  
\*At least 1 sign of organ dysfunction ( SBP<90, INR>1.5,Pit <100, PTT>60, Cr >1.5, Cr incr of 0.5, Bilirubin >2, Lactic acid >2)  
\*At least 2 of the following:

- Temperature >38.3C (101 F) or less than 36C
- Respiratory rate > 24 breaths per minute
- Blood glucose > 140 in a known non diabetic condition and has not received betamethasone
- Extremely altered mental status
- Heart rate > 110bpm
- WBC >20 or <4

**JUST CLICK ACCEPT TO PLACE THE OB SEPSIS BUNDLE ORDER SET.**

**\* IF you do NOT want to place the order set, choose a reason button.**

Acknowledge reason:

Open Order Set: RX OB Sepsis Bundle OBSTETRIC [preview](#)

# Treatment for OB Sepsis






- Rapid Response Team Management
- Rapid fluid infusion
- Antibiotics
- Monitoring vital signs
- Transfer to a higher level of care

The next slides show the details of the OB Sepsis  
Bundle Order Set

The OB Order Set slightly differs from the Adult  
Sepsis Order Set

# OB Sepsis Bundle Order Set

Order Set Preview

← Back     

**RX OB Sepsis Bundle OBSTETRIC [3048011755]**  
Version: 2015-Oct-27 (3048011736)

**PATIENT CARE**

**Sepsis Monitoring**






<input checked="" type="checkbox"/> Pulse oximetry nursing	STAT, CONTINUOUS Sepsis monitoring. Keep SaO2 above 95%
<input checked="" type="checkbox"/> Oxygen	STAT, CONTINUOUS Oxygen device: Other Specify: Non-rebreather mask. Keep SaO2 above: 95% Liters per minute: 15 FIO2:
<input type="checkbox"/> Cardiac Continuous Monitoring	Sepsis monitoring STAT, CONTINUOUS
<input type="checkbox"/> Telemetry Monitoring Med/Surg	Sepsis monitoring STAT, CONTINUOUS Travel to Tests: Off cardiac monitor May shower off telemetry: Yes Notify Provider if pulse/heart rate less than: 40 Notify Provider if pulse/heart rate greater than: 120 Notify Provider if: Third Degree Heart Block Notify Provider if: New Onset of Atrial Fibrillation/Atrial Flutter Notify Provider if: V-Fib or V-Tach greater than 10 beats Sepsis monitoring

**LABORATORY**

Close

# Lab test section

Order Set Preview

← Back     

### Lab - Sepsis Bundle

<input checked="" type="checkbox"/> Lactic acid	STAT For 1 Occurrences, Blood
<input checked="" type="checkbox"/> CBC with platelets differential	STAT For 1 Occurrences, Blood
<input checked="" type="checkbox"/> Comprehensive metabolic panel	STAT For 1 Occurrences, Blood
<input type="checkbox"/> Hepatic panel	STAT For 1 Occurrences, Blood
<input type="checkbox"/> Basic metabolic panel	STAT For 1 Occurrences, Blood
<input type="checkbox"/> Procalcitonin	STAT For 1 Occurrences, Blood

### UA Testing

UA Testing Panel - UU, UR, UA, SH, RH, WY, HI (Single Response)

<input type="radio"/> UA without Microscopic	STAT For 1 Occurrences, Urine
<input type="radio"/> UA reflex to Microscopic	STAT For 1 Occurrences, Urine
<input checked="" type="radio"/> UA reflex to Microscopic and Culture	STAT For 1 Occurrences, Urine
<input type="radio"/> UA with Microscopic	STAT For 1 Occurrences, Urine
<input type="radio"/> UA with Microscopic reflex to Culture	STAT For 1 Occurrences, Urine
<input type="radio"/> Urine Culture Aerobic Bacterial	STAT For 1 Occurrences, Urine

### Lab - Microbiology

<input checked="" type="checkbox"/> Blood Culture - 2 Sites	
<input checked="" type="checkbox"/> Blood culture	STAT For 1 Occurrences, Blood Collect prior to antibiotic administration.
<input checked="" type="checkbox"/> Blood culture	STAT For 1 Occurrences, Blood Collect prior to antibiotic administration.

**PHARMACY RX OR Sepsis Bundle OBSTETRIC**

Close

# Fluid Resuscitation Section

## PHARMACY RX OB Sepsis Bundle OBSTETRIC

### Fluids

<input checked="" type="checkbox"/> Sepsis Bundle Fluid Bolus	
<input checked="" type="checkbox"/> lactated ringers BOLUS	Intravenous, 30 mL/kg, ONCE, For 1 Doses Infuse 1 L at a time as rapidly as possible until MAP greater than or equal to 65 mmHg, then 150 mL/hr.
<input checked="" type="checkbox"/> lactated ringers infusion	at 150 mL/hr, Intravenous, CONTINUOUS Start after LR bolus. CONTINUOUS
<input type="checkbox"/> 0.9% sodium chloride BOLUS	Intravenous, 30 mL/kg, ONCE, For 1 Doses Infuse 1 L at a time as rapidly as possible until MAP greater than or equal to 65 mmHg, then 150 mL/hr
<input type="checkbox"/> 0.9% sodium chloride infusion	at 150 mL/hr, Intravenous, CONTINUOUS Start after NS bolus. CONTINUOUS
<input type="checkbox"/> Patient does not need fluid bolus	CONTINUOUS PRN Patient does not need fluid bolus because ***
<input type="checkbox"/> Patient has already received fluid bolus of 30 mL/kg in the last hour	CONTINUOUS PRN Patient has already received fluid bolus of 30 mL/kg in the last hour.

### Antibiotics (Single Response)

Barton, J., and Sibai, B., Severe Sepsis and Septic Shock in Pregnancy, Obstet Gynecol 2012;120:689-706 DOI:  
<http://10.1097/AOG.0b013e318263a52d>

<input checked="" type="radio"/> Sepsis Obstetric Bundle Antibiotics	
<input checked="" type="checkbox"/> gentamicin (GARAMCYIN) intermittent infusion	2 mg/kg, Intravenous, ONCE, For 1 Doses Pharmacy to send dose STAT, then dosing per pharmacy. (Sepsis Indication 1st dose)

Close

# MAP? What is that?

MAP is defined as the average (mean) arterial blood pressure during a single cardiac cycle.

The reason that it is so important is that **it reflects the hemodynamic perfusion pressure of the vital organs.**

## How is it calculated?

- The simple way to calculate the patients MAP is to use the following formula:  
**MAP = [ (2 x diastolic) + systolic ] divided by 3. Or simply look at the BP or fetal monitor for the reading.**
- The reason that the diastolic value is multiplied by 2, is that the diastolic portion of the cardiac cycle is twice as long as the systolic. Or you could say, it takes twice as long for the ventricles to fill with blood as it takes for them to pump it out..... *at a normal resting heart-rate.*



# MAP? What is that?

MAP is a vital sign to monitor anytime the patient has a potential problem with perfusion of his organs. Some examples (and there are many more) might include:

- a patient with septic shock on vasopressors
- head injured patients
- Cardiac patients on vasodilator (GTN) infusion
- Patient with a dissecting abdominal aneurysm who needs to have his BP controlled within a narrow range so as not to cause increased bleeding

# Antibiotics

## Antibiotics (Single Response)

Barton, J., and Sibai, B., Severe Sepsis and Septic Shock in Pregnancy. *Obstet Gynecol* 2012;120:689-706 DOI: <http://10.1097/AOG.0b013e318263a52d>

Sepsis Obstetric Bundle Antibiotics	
gentamicin (GARAMCYIN) intermittent infusion	2 mg/kg, Intravenous, ONCE, For 1 Doses Pharmacy to send dose STAT, then dosing per pharmacy. (Sepsis Indication-1st dose)
Pharmacy to dose gentamicin	STAT, ONE TIME, Starting today Indication (need for RPh dosing/monitoring): Sepsis "Other Indication" (free text): Recommended dose for OB Sepsis is 1.7 mg/kg IV q8hr, adjust according to renal function. Goal peak 10 mg/L, trough less than 1 mg/L
clindamycin (CLEOCIN) intermittent infusion	900 mg, Intravenous, EVERY 8 HOURS
penicillin G potassium intermittent infusion	FIRST DOSE STAT 3 Million Units, Intravenous, EVERY 4 HOURS
Sepsis Obstetric Bundle Antibiotics ACOG Alternative Regimen	
vancomycin (VANCOCIN) intermittent infusion	20 mg/kg, Intravenous, ONCE, For 1 Doses Pharmacy to send dose STAT, then dosing per pharmacy (SEPSIS indication - first dose). For an adult with peripheral catheter and dose of 2-2.5 g, infuse over 2 hours.
Pharmacy to dose vancomycin	STAT, ONE TIME, Starting today Indication (need for RPh dosing/monitoring): Sepsis "Other Indication" (free text): Send 20 mg/kg dose STAT, then dosing per pharmacy.
piperacillin-tazobactam (ZOSYN) intermittent infusion	4.5 g, Intravenous, EVERY 6 HOURS
Sepsis Obstetric Bundle Antibiotics- Use IF patient history of penicillin allergy or cephalosporin anaphylaxis For patients with Penicillin Allergy or Cephalosporin Anaphylaxis.	
vancomycin (VANCOCIN) intermittent infusion	20 mg/kg, Intravenous, ONCE, For 1 Doses Pharmacy to send dose STAT, then dosing per pharmacy (SEPSIS indication - first dose). For an adult with peripheral catheter and dose of 2-2.5 g, infuse over 2 hours.
Pharmacy to dose vancomycin	STAT, ONE TIME, Starting today Indication (need for RPh dosing/monitoring): Sepsis "Other Indication" (free text): Send 20 mg/kg dose STAT, then dosing per pharmacy.
meropenem (MERREM) intermittent infusion	500 mg, Intravenous, EVERY 6 HOURS
Patient already on appropriate antibiotic for sepsis treatment	CONTINUOUS PRN Patient already on appropriate antibiotic for sepsis treatment

# Conclusion

- Severe sepsis and septic shock left untreated leads to tissue hypoxia, cell death, and end-organ failure.
- Early detection and targeted therapy improves survivability
- Hospital-wide sepsis management protocols targeting the identification and treatment of severe sepsis has demonstrated mortality benefit.

# References

- Barton, J. R. & Sibai, B. M. (2012). Severe sepsis and septic shock in pregnancy. *Obstetrics & Gynecology*, 120(3), 689-706.
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- Miller, I. (2014). How to calculate your patient's mean arterial pressure. Retrieved from <http://thenursepath.com/2014/02/18/how-to-calculate-your-patients-mean-arterial-pressure/>