

4, Obstetrical provider should inform the patient of their GBS status and the recommended interventions.

5. Antibiotics should not be used before the intrapartum period to treat asymptomatic GBS colonization.

Intrapartum management recommendations:

1. If there is concern for chorioamnionitis or sepsis in the birthing person:
 - a. Administer broad spectrum antibiotics
 - b. Alert pediatric provider to evaluate infant for risk of neonatal infection
2. Intrapartum prophylaxis is indicated if there is:
 - a. Positive (+) GBS vaginal and/or rectal culture at 36 0/7 week to 37 6/7 weeks gestation;
 - b. GBS bacteriuria in any concentration during current pregnancy;
 - c. History of previous infant with invasive GBS disease, or
 - d. Unknown GBS status and presence of one of the following risk factors:
 - i. Delivery <37 weeks gestation
 - ii. Rupture of Membranes (ROM) 18 hours or greater
 - iii. Maternal temperature 100.4° F (38°C) or more
 - iv. Positive NAAT
3. Intrapartum prophylaxis is not indicated if:
 - a. The birthing person had a previous pregnancy with positive (+) GBS screening culture and has a negative (-) screening culture this pregnancy.
 - b. Delivery is via cesarean section without rupture of membranes (ROM) or onset of labor, (regardless of GBS status and gestational age of the pregnancy).
 - c. There were negative (-) vaginal and rectal GBS screening cultures at 36 0/7 and 36 6/7 weeks gestation during current pregnancy, regardless of intrapartum risk factors unless chorioamnionitis is suspected.
4. Intrapartum antibiotic prophylaxis recommendations (see Appendix 1):
 - a. Penicillin G 5 million units IV, then 2.5 to 3 million units IV every 4 hours until delivery or;
 - b. If Penicillin is not available, Ampicillin 2 grams IV, then 1 gram IV every 4 hours until delivery.
 - c. If birthing person is penicillin-allergic with no history of anaphylaxis, angioedema, respiratory distress or urticaria following administration of a penicillin or cephalosporin: Cefazolin 2 grams IV, then 1 gram IV every 8 hours until delivery.
 - d. If birthing person is penicillin-allergic with a history of anaphylaxis, angioedema, respiratory distress or urticaria following administration of a penicillin or cephalosporin:
 - i. Clindamycin 900 mg IV every 8 hours until delivery if GBS isolate is susceptible to Clindamycin and erythromycin or if GBS isolate is susceptible to clindamycin, resistant to erythromycin and inducible clindamycin resistance is negative
 - ii. Vancomycin if GBS isolate is resistant to clindamycin, has inducible resistance to clindamycin, or if susceptibility to both agents is unknown.
 - iii. Erythromycin is no longer an acceptable alternative for intrapartum GBS prophylaxis

Threatened preterm delivery recommendations:

Spontaneous Preterm Labor (see Appendix 2):

1. If no GBS culture has been performed within last 5 weeks or results are not available:
 - a. Obtain vaginal and rectal GBS culture at hospital admission.
 - b. Initiate prophylaxis for GBS. GBS prophylaxis may be discontinued immediately if GBS screen is negative after 48 hours or if the birthing person is determined not to be in true labor.
 - c. Persons with threatened preterm delivery who have a negative GBS screen but do not deliver at that time should have repeat screening at 35-37 weeks gestation
2. If positive GBS culture:
 - a. IV penicillin for 48 hours (during tocolysis).
 - b. Reinitiate antibiotics when labor is likely to proceed to delivery.
3. If negative GBS culture:
 - a. Prophylaxis for GBS is not indicated.
 - b. Repeat culture if delivery has not occurred within 4 weeks.

Preterm Premature Rupture of Membranes (see Appendix 3):

1. If no GBS culture has been performed within last 5 weeks or results are not available:

- a. Obtain vaginal and rectal GBS culture at hospital admission.
- b. Initiate prophylaxis for latency or GBS prophylaxis. If the birthing person is determined not to be in labor, continue antibiotics per standard of care if receiving for latency or continue antibiotics for 48 hours if receiving for GBS prophylaxis. Initiate antibiotic prophylaxis at onset of true labor if GBS positive or results unknown. No GBS prophylaxis indicated if GBS negative. Repeat GBS screen if birthing person reaches 35-37 weeks and has not yet delivered.

GUIDELINES FOR NEONATAL CARE TEAM

Management of infants at risk for early-onset GBS Disease: (see Appendices 4, 5, 6 & 7)

1. All newborns, regardless of the birthing person's GBS status, will have their early onset neonatal sepsis (EONS) risk score calculated and documented in the electronic health record (EHR).
2. At any time during the birth hospitalization, a neonatal provider should be notified with any of the following vital sign abnormalities:
 - a. Tachycardia (Heart rate 160 or greater)
 - b. Tachypnea (Respiratory rate 60 or greater)
 - c. Temperature instability (100.4°F or greater or 97.4°F or less)
3. Any newborn with clinical illness or EONS risk in the red zone should receive a full diagnostic evaluation and receive antibiotic therapy pending the results of the evaluation. This requires transfer to the Neonatal Intensive Care Unit (NICU) for treatment (refer to Appendix 8, *Neonatal Sepsis Reference Guide, Order Set: Neonatal ICU Admission (Katherine F Hirsch, APNP – MHM NICU Admission v09-2022)*).
4. Any newborn who has a baseline EONS risk in the yellow zone should be evaluated by a neonatal provider when risk is identified and with any change in clinical condition. A blood culture, either from the umbilical cord or from a peripheral vein, should be considered based on EONS risk calculator guidance.
5. Newborns born to a person with suspected chorioamnionitis as diagnosed by the obstetric provider (T>100.4 and/or sustained fetal tachycardia, foul-smelling amniotic fluid, uterine tenderness) should be evaluated by a neonatal provider at the time of delivery and with any change in clinical condition.
 - a. Delivery should be paged as a C2 delivery
 - b. Newborn care provider attending the delivery is responsible for:
 - i. Initial resuscitation
 - ii. Performing a physical exam
 - iii. Verifying EONS risk in the EHR
 - iv. Communicating risk zone and plan of care to the nursing staff
 - v. Ordering blood culture if indicated
 - vi. Repeat evaluation of newborn with any change in clinical condition
 - vii. Transferring newborn to NICU if clinically ill or based on EONS risk calculator recommendations
6. Well-appearing infants whose birthing parent received ADEQUATE GBS prophylaxis (GBS positive or unknown and received 4 or more hours of penicillin, ampicillin, or cefazolin) should receive the following monitoring:
 - a. Monitor vital signs (VS) every hour x 3. If these are within normal limits, monitor VS per EONS calculator recommendations for the remainder of the birth hospitalization.
 - b. RN to perform a full head-to-toe assessment approximately every eight hours per *Birthing Center Infant Recovery and Care (35 weeks gestation or more)* – Standard of Care #4
 - c. Notify neonatal provider if infant develops signs of infection (e.g., temperature instability, lethargy, irritability, poor feeding, hypoglycemia, signs of poor perfusion, etc.) at any time.
 - d. Infants can be discharged as early as 24 hours after delivery assuming other discharge criteria have been met, ready access to medical care exists, and that a person able to comply fully with instructions for home observation will be present.

7. Infants whose birthing parent received INADEQUATE GBS prophylaxis (any antibiotic <4 hours prior to delivery or any antibiotic other than penicillin, ampicillin, or cefazolin) should receive the following monitoring:
 - a. Monitor VS every hour x 3. If these are within normal limits, monitor VS per EONS calculator recommendations.
 - b. RN to perform a full head-to-toe assessment approximately every eight hours per *Birthing Center Infant Recovery and Care (35 weeks gestation or more)* – Standard of Care #4.
 - c. Notify neonatal provider if infant develops signs of infection (e.g., temperature instability, lethargy, irritability, poor feeding, hypoglycemia, signs of poor perfusion, etc.) at any time.
 - d. Observe in hospital for minimum of 36 hours

IV. DOCUMENTATION

1. To facilitate an accurate EONS Risk score generated by the EONS calculator, OB providers/LD RNs document the following information in the EHR:
 - a. Gestational age of the neonate
 - b. Highest birthing person antepartum temperature
 - c. Duration of rupture of membranes (ROM)
 - d. Birthing person GBS status (should flow into the EHR automatically)
 - e. Administration of intrapartum antibiotics (chart as infused)
2. The EONS calculator can be found in the following locations:
 - a. LD grease boards
 - b. Patient Lists report
 - c. Sidebar Summary report (RNs)
 - d. Sidebar Summary (link in Physician Index)
 - e. Summary Activity reports:
 - i. Neonatal Sepsis Risk
 - ii. Kardex (OB, NB, NICU overview – RNs)
 - iii. Physician Overview
 - iv. Index – NICU MD and Index – MD: link in Pediatric section
3. Enter any missing documentation (e.g., GBS status) into the newborn's chart using the Neonatal Sepsis Risk flowsheet (RNs) or the Admission navigator (providers)

V. REFERENCE/RESOURCES

- a. ACOG Committee Opinion #797: "Prevention of Group B Streptococcal Early Onset Disease in Newborns," February 2020.
- b. Karen M. Puopolo, MD, PhD, FAAP, Ruth Lynfield, MD, FAAP, James J. Cummings, MD, MS, FAAP, COMMITTEE ON FETUS AND NEWBORN, COMMITTEE ON INFECTIOUS DISEASES, "Management of Infants at Risk for Group B Streptococcal Disease," *Pediatrics*: Volume 144 Number 2, August 2019.
- c. Karen M. Puopolo, MD and Carol Baker, MD, "Group B Streptococcal Infection in Neonates and Young Infants," UpToDate, content current through June 2020, retrieved July 22, 2020.
- d. Laura Filkins, PhD, D(ABMM), Jocelyn Hauser PhD, MLS(ASCP)CM,
- e. Barbara Robinson-Dunn, PhD, D(ABMM), FAAM, Robert Tibbetts, PhD, D(ABMM), F(CCM),
- f. Bobby Boyanton, MD, Paula Revell PhD, D(ABMM) on behalf of the American Society for Microbiology Clinical and Public Health Microbiology Committee, Subcommittee on Laboratory Practices Guidelines for the Detection and Identification of Group B Streptococcus, "Guidelines for the Detection and Identification of Group B Streptococcus," American Society for Microbiology, March 10, 2020.
- g. [UPH Neonatal Sepsis Reference Guide \(042424\)](#), Order Set: Neonatal ICU Admission (Katherine F Hirsch, APNP – MHM NICU Admission v09-2022).

VI. REVIEWED/APPROVED BY

- a. Department of OB/GYN
- b. Department of Pediatrics
- c. Department of Family Medicine

d. Nursery Committee

VII. LINKS TO OTHER MERITER POLICIES/STANDARDS/PROTOCOLS/GUIDELINES

A. *Birth Center Infant Recovery and Care (35 weeks gestation or more)* – Standard of Care #4

VIII. FORMERLY KNOWN AS

A. *Perinatal Group B Streptococcal Disease* – Perinatal Medical Practice Guideline

B. *Chorioamnionitis* – Birth Center Patient Care Policy/Procedure #26

IX. APPENDICES

A. Appendix 1: Determination of Antibiotic Regimen for GBS Prophylaxis in Labor

B. Appendix 2: Management of Women with Preterm Labor <37-0/7 Weeks Gestation

C. Appendix 3: Management of Women with Preterm Prelabor ROM

D. Appendix 4: EONS Calculator/Risk Score Summary

E. Appendix 5: EONS Treatment Algorithm

F. Appendix 6: EONS Lumbar Puncture Guidelines

G. Appendix 7: RN SBAR Script when calling Provider for Sepsis evaluation

H. Appendix 8: Neonatal Sepsis Reference Guide, Order Set

APPENDIX 1

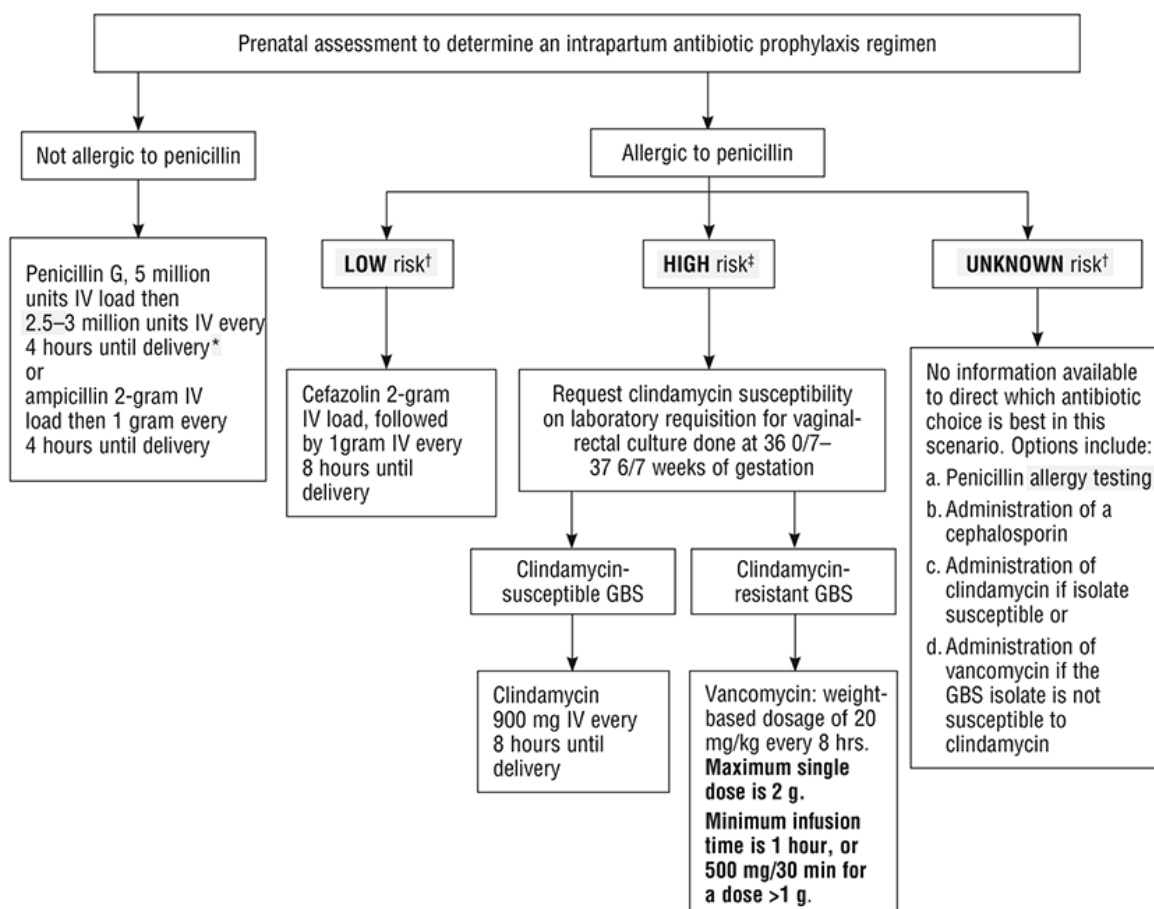


Figure 3. Determination of Antibiotic Regimen for Group B Streptococcus Prophylaxis in Labor. Abbreviations: GBS, group B streptococcus; IV, intravenous. *Doses ranging from 2.5 to 3.0 million units are acceptable for the doses administered every 4 hours following the initial dose. The choice of dose within that range should be guided by which formulations of penicillin G are readily available in order to reduce the need for pharmacies to specially prepare doses. †Individuals with a history of any of the following: nonspecific symptoms unlikely to be allergic (gastrointestinal distress, headaches, yeast vaginitis), nonurticarial maculopapular (morbilliform) rash without systemic symptoms, pruritis without rash, family history of penicillin allergy but no personal history, or patient reports history but has no recollection of symptoms or treatment. ‡Individuals with a history of any of the following after administration of a penicillin: a history suggestive of an IgE-mediated event: pruritic rash, urticaria (hives), immediate flushing, hypotension, angioedema, respiratory distress or anaphylaxis; recurrent reactions, reactions to multiple beta-lactam antibiotics, or positive penicillin allergy test; or severe rare delayed-onset cutaneous or systemic reactions, such as eosinophilia and systemic symptoms/drug-induced hypersensitivity syndrome, Stevens-Johnson syndrome, or toxic epidermal necrolysis. (Modified from Verani JR, McGee L, Schrag SJ. Prevention of perinatal group B streptococcal disease: revised guidelines from CDC, 2010. Division of Bacterial Diseases, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention [CDC]. MMWR Recomm Rep 2010;59(RR-10):1–36.) (This Committee Opinion, including Table 1, Box 2, and Figures 1–3, updates and replaces the obstetric components of the CDC 2010 guidelines, “Prevention of Perinatal Group B Streptococcal Disease: Revised Guidelines From CDC, 2010.”)

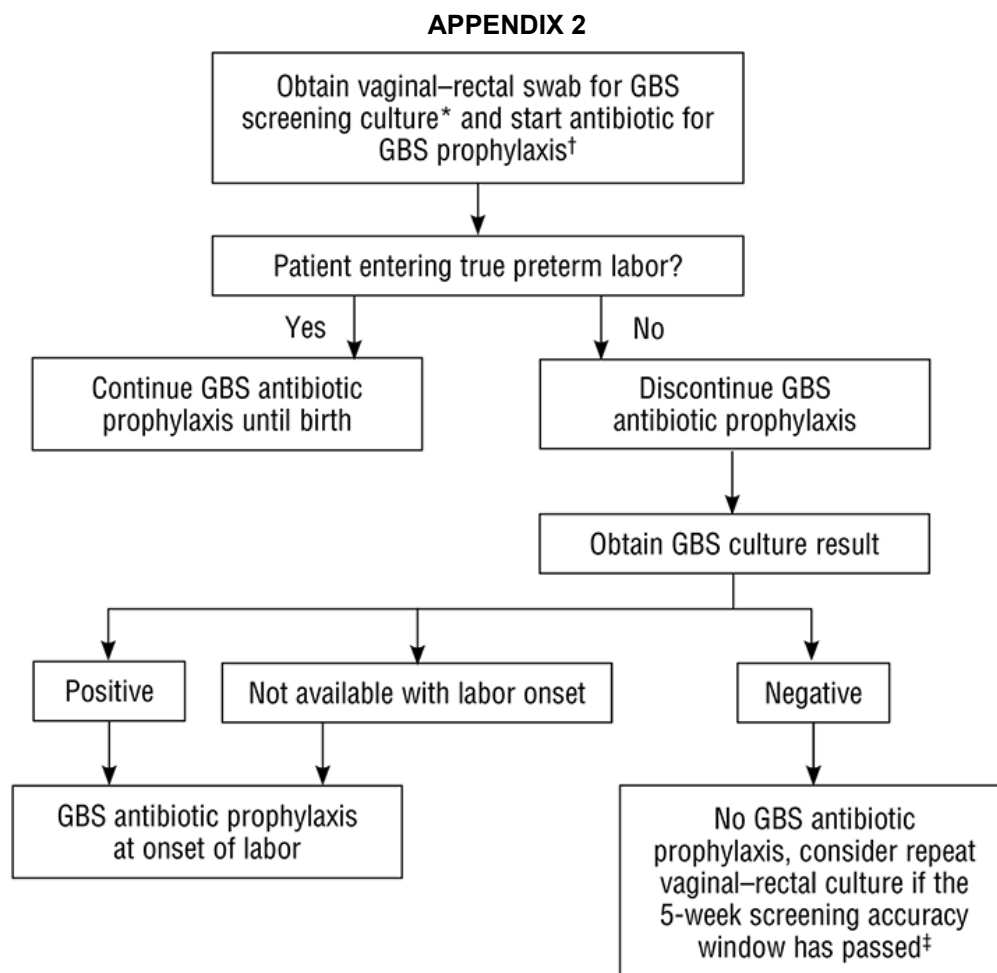


Figure 1. Management of Women With Preterm Labor <37 0/7 Weeks of Gestation. Abbreviation: GBS, group B streptococcus. *If a patient has undergone vaginal-rectal GBS screening culture within the preceding 5 weeks, the results of that culture should guide management. Women colonized with GBS should receive intrapartum antibiotic prophylaxis. Although a negative GBS culture is considered valid for 5 weeks, the number of weeks is based on early-term screening and data in preterm gestations is lacking. † See Figure 3 for recommended antibiotic regimens. ‡A negative GBS culture is considered valid for 5 weeks. However, the number of weeks is based on early-term screening and data in preterm gestations is lacking. If a patient with preterm labor is entering true labor and had a negative GBS culture more than 5 weeks previously, she should be rescreened and treated according to this algorithm at that time. (Modified from Verani JR, McGee L, Schrag SJ. Prevention of perinatal group B streptococcal disease: revised guidelines from CDC, 2010. Division of Bacterial Diseases, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention [CDC]. MMWR Recomm Rep 2010;59(RR-10):1–36.) (This Committee Opinion, including Table 1, Box 2, and Figures 1–3, updates and replaces the obstetric components of the CDC 2010 guidelines, “Prevention of Perinatal Group B Streptococcal Disease: Revised Guidelines From CDC, 2010.”)

APPENDIX 3

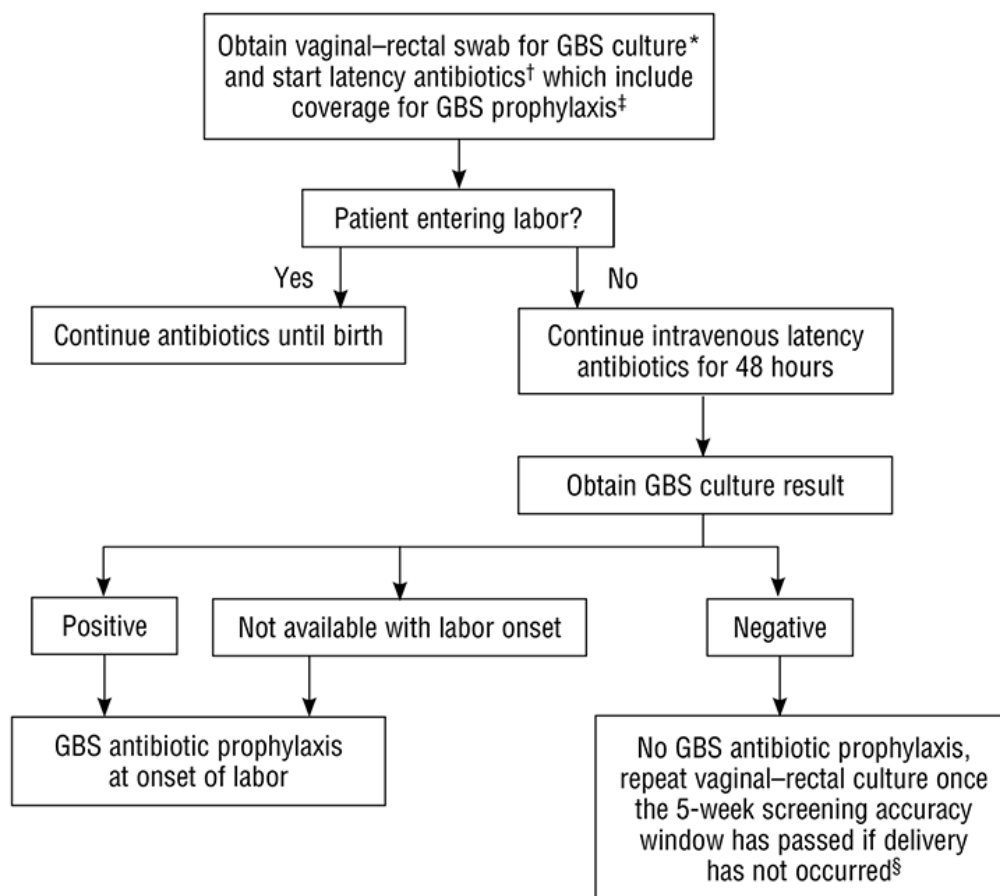


Figure 2. Management of Women With Preterm Prelabor Rupture of Membranes. Abbreviation: GBS, group B streptococcus.

*If a patient has undergone vaginal-rectal GBS culture within the preceding 5 weeks, the results of that culture should guide management. Women colonized with GBS should receive intrapartum antibiotic prophylaxis. Although a negative GBS culture is considered valid for 5 weeks, the number of weeks is based on early-term screening and data in preterm gestations is lacking.

†Latency antibiotics that include ampicillin given in the setting of preterm prelabor rupture of membranes are adequate for GBS prophylaxis. The optimal latency antibiotic regimen is unclear but one of the published protocols should be used (See ACOG Practice Bulletin No. 188, Prelabor Rupture of Membranes [Obstet Gynecol 2018;131:e1–14.]). If other regimens are used that do not provide appropriate GBS coverage, GBS prophylaxis should be initiated in addition. ‡See Figure 3 for recommended antibiotic regimens. §A negative GBS culture is considered valid for 5 weeks. However, the number of weeks is based on early-term screening and data in preterm gestations is lacking.

If a patient with preterm prelabor rupture of membranes is entering labor and had a negative GBS culture more than 5 weeks previously, she should be rescreened and managed according to this algorithm at that time. (Modified from Verani JR, McGee L, Schrag SJ. Prevention of perinatal group B streptococcal disease: revised guidelines from CDC, 2010. Division of Bacterial Diseases, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention [CDC]. MMWR Recomm Rep 2010;59(RR-10):1–36.) (This Committee Opinion, including Table 1, Box 2, and Figures 1–3, updates and replaces the obstetric components of the CDC 2010 guidelines, “Prevention of Perinatal Group B Streptococcal Disease: Revised Guidelines From CDC, 2010.”).

APPENDIX 4

Neonatal Sepsis Scores

Flowsheet Row	Admission (Current) from 3/24/2022 in OB NICU
Well Appearing	0.11 per 1000 live births @ 03/24/2022 1211
Equivocal	1.39 per 1000 live births @ 03/24/2022 1211
Clinical Illness	5.88 per 1000 live births @ 03/24/2022 1211

Well Appearing | Clinical Recommendation: No culture, no antibiotics | Routine Vitals

Equivocal | Clinical Recommendation: Blood Culture | Vitals every 4 hours for 24 hours

Clinical Illness | Clinical Recommendation: Empiric antibiotics | Vitals per NICU

Neonatal Sepsis Information - Automated

Note - The following table lists values used by the Neonatal Sepsis batch scoring system to calculate a risk score. Values listed as '0' may represent data that could not be found on the patient's chart and could impact the accuracy of the score.

Early Onset Sepsis Risk	0.6/1000 (03/24/22 1211 : Wetmore, Cal)
Gestational Age (Weeks) (Min: 34 Max: 43)	37 weeks (03/24/22 1211 : Wetmore, Cal)
Gestational Age (Days)	1 days (03/24/22 1211 : Wetmore, Cal)
Highest Maternal Antepartum Temperature	101 F (03/24/22 1211 : Wetmore, Cal)
Rupture of Membranes Duration	0.5 hours (03/24/22 1211 : Wetmore, Cal)
Maternal GBS Status	2 (03/24/22 1211 : Wetmore, Cal)
	Key 0 - Unknown 1 - Positive 2 - Negative
Type of Intrapartum Antibiotics Administered During Labor	3 (03/24/22 1211 : Wetmore, Cal)
Antibiotic Definition - GBS Specific: penicillin g, ampicillin, or cefazolin. - Broad-Spectrum Antibiotics: other cephalosporins, fluoroquinolone, extended spectrum beta-lactam, or any IAP antibiotic plus an aminoglycoside	Key 0 - No antibiotics or any antibiotics less than 2 hrs prior to birth 1 - Group B strep specific antibiotics more than 2 hrs prior to birth 2 - Broad spectrum antibiotics 2-3.9 hrs prior to birth 3 - Broad spectrum antibiotics more than 4 hrs prior to birth

APPENDIX 5

Early-Onset Neonatal Sepsis Treatment Algorithm

Epic will automatically calculate risk for all newborns born at 34 0/7 or greater upon delivery if all data is present in birthing person's chart.

Review Risk Calculator Score in Epic

RN performs initial Clinical Exam within 1 hour of birth

Clinical Exam	Description
Clinical Illness	- Persistent need for NCPAP / HFNC / mechanical ventilation (outside of the delivery room) - Hemodynamic instability requiring vasoactive drugs - Neonatal encephalopathy / Perinatal depression - Seizure - Apgar Score @ 5 minutes < 5 - Need for supplemental O₂ ≥ 2 hours to maintain oxygen saturation > 90% (outside of the delivery room)
Equivocal	- Persistent physiologic abnormality ≥ 4 hrs - Tachycardia (HR ≥ 160) - Tachypnea (RR ≥ 60) - Temperature instability (≥ 100.4° F or < 97.5° F) - Respiratory distress (grunting, flaring or retracting) not requiring supplemental O₂ - Two or more physiologic abnormalities lasting for ≥ 2 hrs - Tachycardia (HR ≥ 160) - Tachypnea (RR ≥ 60) - Temperature instability (≥ 100.4° F or < 97.5° F) - Respiratory distress (grunting, flaring or retracting) not requiring supplemental O₂ Note: abnormality can be intermittent
Well Appearing	No persistent physiologic abnormalities

Source: <https://neonatalespscalculator.kaiserpermanente.org/Classification.aspx>

Green Zone

Continued monitoring per unit policy

Yellow Zone

RN notifies infant's physician/APP

Obtain blood culture per calculator recommendations

Monitor clinical status at a minimum of Q4H

No discharge until culture negative for at least 24 hours

Red Zone

RN notifies infant's physician/APP

Physician/APP notifies SCN/NICU

Transfer to SCN/NICU

Evaluate need for Lumbar Puncture (LP) (see page 2)

CBC and inflammatory markers are not helpful in absence of clinical illness for diagnosing early-onset sepsis

Begin empiric antibiotics (dosing based on NeoFax)

Ampicillin: 50mg/kg Q8H OR 100mg/kg Q8H for suspected meningitis or clinically unstable

Gentamicin:

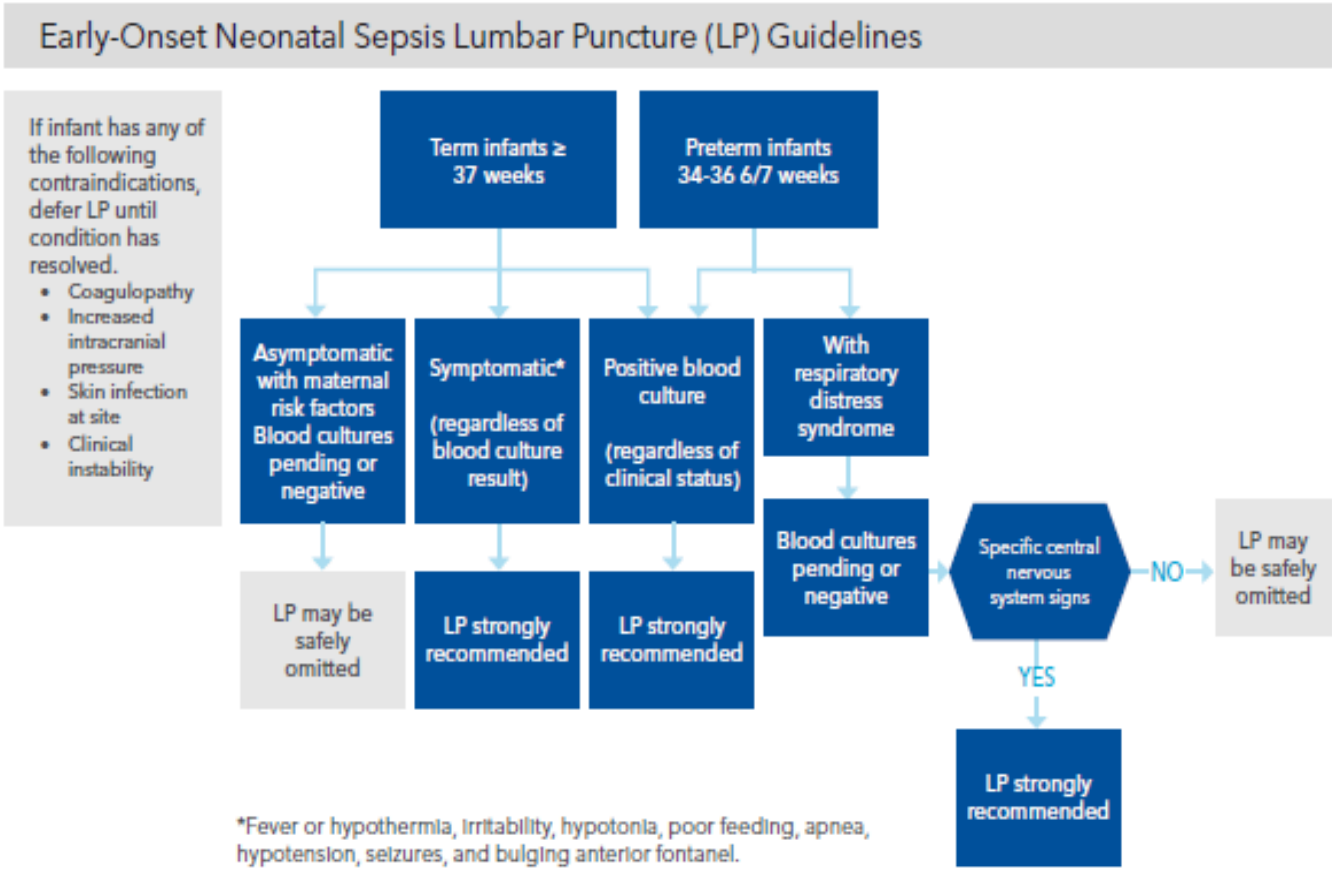
35 wks & above: 4 mg/kg Q24H

34-35 wks: 4.5 mg/kg Q36H

- If concerned about renal issues, consider Ceftazidime 30 mg/kg Q12H instead. Can do 50 mg/kg if suspected meningitis or clinically unstable

Stop at 36 hours if cultures negative and Infant is asymptomatic

APPENDIX 6



From: Hemera T, Greenberg RG. When to perform lumbar in Infants at risk for meningitis in the neonatal intensive care unit. In: Benitz WE, Smith PB, eds. Neonatology Questions and Controversies: Infectious Disease and Pharmacology. Philadelphia, PA: Elsevier; 2018.97

APPENDIX 7

RN SBAR Script when calling provider for Sepsis evaluation:

S: This is _____, the nurse caring for the newborn in Room _____.

B: Infant was born at _____ weeks and is now _____ (minutes/hours) old.

Risk factors for infection include _____ (inadequate GBS prophylaxis/ROM 18 hours or greater/maternal fever/IAI).

A: Sepsis calculator results show _____ (baseline infection risk and risk zone colors).

Vital signs are currently normal/abnormal (specify what is abnormal, if applicable).

R: Per the guideline, this infant requires evaluation. Please come to Room _____.

APPENDIX 8

▼ Antibiotics

[Early-Onset Sepsis Algorithm](#)☒ Ampicillin IV

- ☐ ampicillin IV - post menstrual age greater than 34 weeks (\$\$)
50 mg/kg, Intravenous, EVERY 8 HOURS, for 36 hours
- ☐ ampicillin IV - post menstrual age 34 weeks or less (\$\$)
50 mg/kg, Intravenous, EVERY 12 HOURS, for 36 hours
- ☐ ampicillin IV - for suspected meningitis or clinically unstable (\$\$)
100 mg/kg, Intravenous, EVERY 8 HOURS, for 36 hours

☒ Gentamicin or Ceftazidime

- ☐ gentamicin (GARAMYCIN) IV - post menstrual age 35 weeks or greater (\$\$)
4 mg/kg, Intravenous, EVERY 24 HOURS, for 36 hours
- ☐ gentamicin (GARAMYCIN) IV - post menstrual age 30-34 weeks (\$\$)
4.5 mg/kg, Intravenous, EVERY 36 HOURS, for 36 hours
- ☐ gentamicin (GARAMYCIN) IV - post menstrual age 29 weeks or less (\$\$)
5 mg/kg, Intravenous, EVERY 48 HOURS, for 36 hours
- ☐ ceftazidime IV - if suspected renal dysfunction (\$\$)
50 mg/kg, Intravenous, EVERY 12 HOURS, for 36 hours

☐ Gentamicin labs & pharmacy consult