Chapter 42

GROUP B STREPTOCOCCAL INFECTIONS IN THE NEWBORN

Group B Streptococci (GBS) continues to be a major cause of bacterial sepsis among newborn infants. While the organism commonly inhabits the large bowel and rectum, the source of the infection in the neonate is the colonized maternal birth canal. Vertical transmission during birth is the usual mode of neonatal infection. Estimates of GBS colonization rates among pregnant women range from 10-30 percent. A Canadian population-based study demonstrated an overall incidence of neonatal GBS infection of 0.64 per 1000 live births, 57% of which were early onset disease. Two types of GBS infections occur in the newborn; early-onset and late-onset disease. Early-onset disease (< seven days of age) is more common and has a higher rate of mortality. Late-onset disease (seven days to three months of age) is less common and has a lower associated mortality. The information that follows is about early-onset disease.

Recommendations

Although intrapartum chemoprophylaxis in situations of increased risk reduces the morbidity and mortality due to early-onset GBS infection, no method prevents all GBS deaths. However, universal screening is >50% more effective than the risk-based approach at preventing perinatal GBS disease. The presence of GBS in clean-catch urine cultures reflects heavy genital tract maternal colonization, which is associated with neonatal disease.

1. Universal screening of all pregnant women at 35 to 37 weeks gestation with a single rectovaginal swab and the use of intrapartum chemoprophylaxis to all GBS-colonized women.
2. Risk-based strategy based on GBS prophylaxis is reserved for women at term with unknown GBS culture status at time of labour
3. The GBS cultures are transported to the laboratory in a non-nutritive transport medium. Standardized methods should be established in each facility for the collection, requisition, transport, testing, and reporting of these specimens. GBS antigen tests should not be used.
    - If the mother is allergic to penicillin and is at high risk for anaphylaxis this should be recorded, and request made to perform susceptibility testing, to clindamycin and erythromycin.

Indications for Intrapartum antibiotic prophylaxis (IAP) under universal prenatal screening:

- Previous infant with invasive GBS disease
- GBS bacteriuria during current pregnancy
- Positive GBS screening culture during current pregnancy (unless a planned caesarean birth, in the absence of labour or amniotic membrane rupture)
- Unknown GBS status AND any of the following:
    - Delivery at < 37 weeks' gestation
    - Amniotic membrane rupture ≥ 18 hours
    - Intrapartum temperature ≥ 100.4°F (≥38.0 C)
    - Signs of chorioamnionitis

4. **Intrapartum prophylaxis NOT indicated:**
    - Previous pregnancy with a positive GBS screening culture (unless a culture was ALSO positive during the current pregnancy)
    - Planned caesarean birth performed in the absence of labour or membrane rupture (regardless of maternal GBS culture status)
    - Negative vaginal and rectal GBS screening culture during the current pregnancy, unless intrapartum risk factors present

5. **Threatened preterm birth:**
    - Suggested algorithm for management of threatened preterm birth (labour or rupture of membranes at < 37 weeks' gestation) which does not proceed rapidly to birth:
    - Culture and start IV antibiotics x 48 hours
    - If culture positive, treat the mother when she goes into labour
    - If culture negative and undelivered within 4 weeks: re-screen at 35-37 weeks

6. **Pre-labour rupture of membranes ≥ 37 weeks, GBS +ve:**
    - Rates of neonatal infection reduced with induction of labour

7. **If GBS status is unknown, and membranes have been ruptured for greater than 18 hours administer GBS antibiotic prophylaxis**
   GBS intrapartum antibiotics prophylaxis:
    - IV Penicillin G is 1st line
        - 5 million units IV for first dose, then 2.5 million units IV every 4 hours until birth

8. **In patients allergic to Penicillin:**
   - Is the patient at high or low risk for anaphylaxis?
   - Not high risk:
     - Cefazolin 2 gm x 1, then 1 gm q8h until birth
   - At high risk of anaphlaxis

   i. GBS sensitive to clindamycin and erythromycin
   - Clindamycin 900mg IV q8h, until birth or
   - Erythromycin 500mg IV q6h, until birth

   ii. GBS not sensitive (or unknown) to clindamycin or erythromycin (must be sensitive to both to use either)
   - Vancomycin 1g IV, q12h until delivery

9. **Neonatal management (see algorithm Appendix A):**
   - **Newly born unwell term infants (≥ 37 weeks GA):**
     - Clinical signs of sepsis – respiratory distress, temperature instability, tachycardia, seizures, hypotonia, lethargy, poor peripheral perfusion, hypotension, acidosis
     - Prompt investigation - CBC , blood culture, lumbar puncture, infants with respiratory signs should have a CXR
     - Begin IV antibiotic therapy. Ampicillin and aminoglycoside
   - **Newly born well-appearing** infants **≥ 37 weeks**:
     - GBS +ve mothers with adequate intrapartum antibiotic propylaxis (IAP), no additional risk factors OR mothers who are GBS –ve or GBS unknown with one other risk factor and adequate IAP:
       - Infants do not require routine investigation or treatment for sepsis
       - They may be discharged home after 24 hours if they remain well, meet other discharge criteria and if parents understand signs of sepsis and when to seek care
     - GBS +ve mothers with inadequate IAP and no additional risk factors OR mothers who are GBS –ve or unk status; with one other risk factor and inadequate IAP
       - Infants do not require routine investigation or treatment for sepsis

- Infants should be examined at birth, observed closely in hospital with vital signs every 3-4 hours and reassessed before discharge home. They may be discharged home after 24 hours if they remain well, meet other discharge criteria, and parents understand signs of sepsis and when to seek care

- Multiple risk factors for sepsis and/or Chorioamnionitis
  - Infants should be investigated and treated, CBC done after 4 hours of age
  - At minimum infants should have close observation in hospital for at least 24 hours with vital signs every 3-4 hours and reassessment prior to discharge
- Well late preterm infants 35-36 weeks:
  - If stable enough to stay on a mother baby unit with their mother then they may be managed similar to an infant of ≥ 37 weeks. But should be observed in hospital for at least 48 hours

Early Signs of Neonatal Sepsis

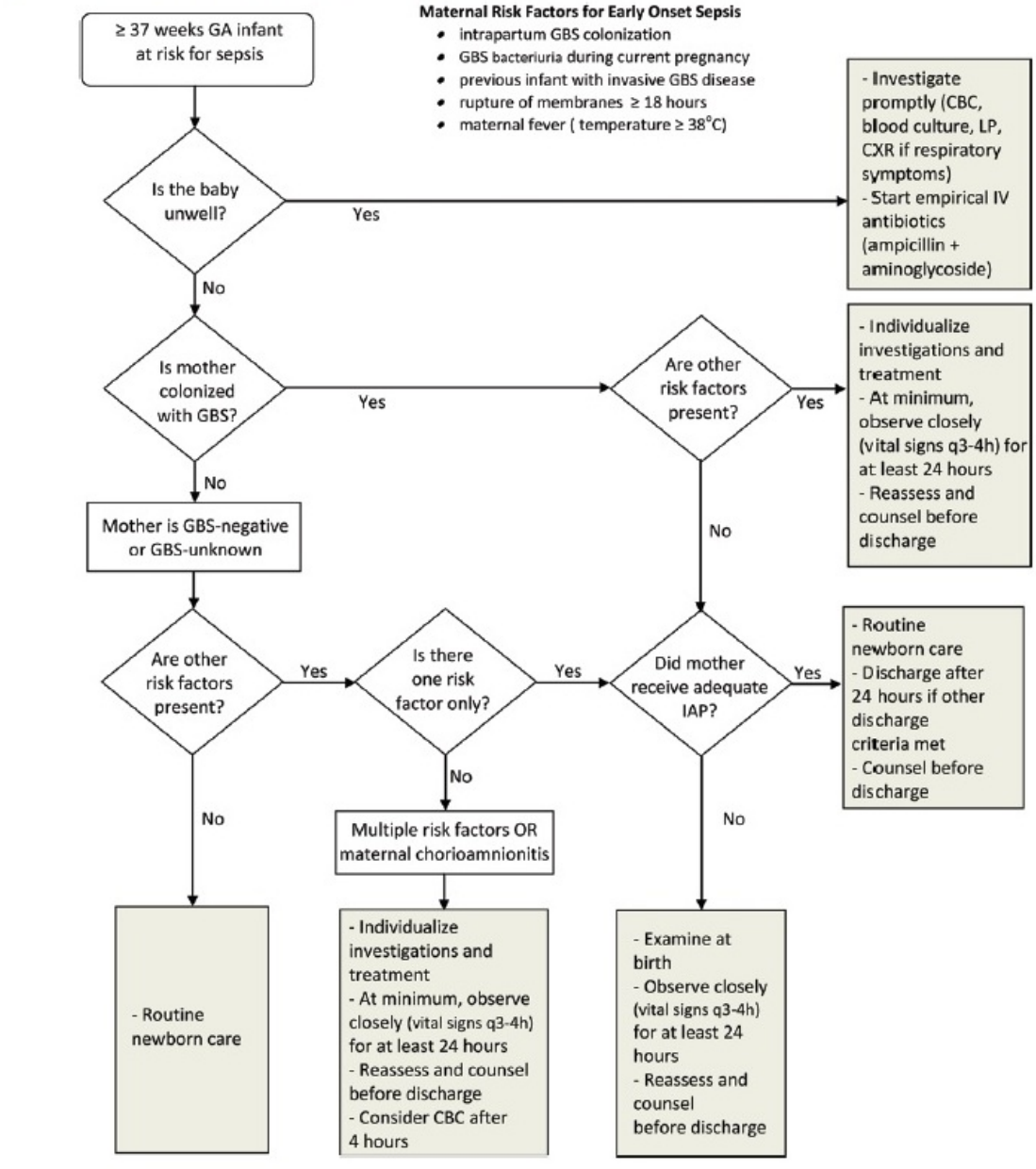
- Apnea
- Tachycardia
- Temperature instability
- Tachycardia
- Lethargy
- Poor feeding

References:

1. Canadian Paediatric Society; Position Statement, Management of term infants at increased risk for early onset bacterial sepsis. Jan 2017
2. Centers for Disease Control and Prevention **download obtained** April 2019 http://www.cdc.gov/groupbstrep
3. SOGC Clinical Practice Guideline No. 298, October 2013. The Prevention of Early-Onset Neonatal Group B Streptococcal Disease

Appendix A

Figure 1. Management of Term Infants at Risk For Early Onset Bacterial Sepsis



CBC Complete blood count; CXR chest x-ray; GA Gestational age; GBS Group B streptococcus; IAP Intrapartum antibiotic prophylaxis; LP Lumbar puncture