
Obstetrics Guidelines

SUBJECT: PREVENTION OF PERINATAL GROUP B STREPTOCOCCAL DISEASE

OVERVIEW

This guideline outlines a consistent, evidence-based approach to screening and routine management of Group B Streptococcus (GBS) during pregnancy.

DEFINITIONS

Group B streptococcus (GBS), or *Streptococcus agalactiae*, is a gram-positive organism, known to colonize the lower gastrointestinal tract, with the potential for secondary spread to the genitourinary tract and subsequent transmission to the fetus. GBS is a leading cause of serious neonatal infection. Up to 30% of pregnant women are colonized with GBS in the vaginal or rectal areas. Of all infants born to colonized parturients, approximately 1-2% will develop early-onset invasive GBS disease, which has a case-fatality rate reported to be as high as 20% in newborns. A recent multistate, active surveillance system in a population of 10 million persons demonstrated that 6% of early-onset GBS infections resulted in death. Intrapartum antibiotics have been shown to reduce the rate of vertical GBS transmission and early-onset neonatal sepsis, and also to decrease the rate of endomyometritis.

In 1996 the CDC recommended that one of two approaches be used to reduce neonatal GBS disease: screening or risk factor based. Since active prevention efforts have been in place, including both a screening approach and a risk factor approach, the incidence of early onset GBS disease has decreased to 0.5 cases per 1000 live births. However, a 2002 study of a sample survey of a population, reported that the screening approach was > 50% more effective than the risk factor approach for reducing neonatal GBS disease (Schrag, 2002)

The incidence of group B streptococcal disease in babies less than a week old declined by over 70% in the 1990s, coinciding with increased use of intrapartum antibiotic prophylaxis. In 1999, three years after the release of CDC guidelines in 1996, the incidence began to plateau. Studies conducted after the issuance of the 1996 guidelines prompted re-evaluation of prevention strategies by the CDC. Compelling evidence for a strong, protective effect of the screening-based strategy relative to the risk-based strategy **led to a new recommendation in 2002 for universal prenatal screening for group B strep colonization by vaginal-rectal culture at 35-37 weeks gestation.** In light of emerging clindamycin and erythromycin-resistant group B strep isolates, second line agents for penicillin-allergic women were revised. A number of additional issues related to management of threatened preterm delivery, planned cesarean section deliveries in group B strep colonized women, group B strep bacteriuria, management of newborns exposed to intrapartum chemoprophylaxis and culture collection and processing methods are also addressed. **The 2002 guidelines for perinatal group B strep prevention are comprehensive and replace the 1996 guidelines.**

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For known penicillin allergic women, SENSITIVITIES should be obtained on GBS cultures (see Appendix A – Specimen Collection Guidelines).

POSITION STATEMENTS

In August, 2002, the CDC changed their recommendations for prevention of perinatal GBS disease and recommended that the screening-based approach be implemented to minimize? Or change incidence to detection or prevention the incidence of early onset neonatal GBS disease.

Differences:

- Recommendation of universal prenatal screening for vaginal and rectal group B strep colonization of pregnant women at 35-37 weeks' gestation
- Updated prophylaxis regimens for women with penicillin allergy
- Detailed instruction on prenatal specimen collection and expanded methods of group B strep culture processing, including instructions on susceptibility testing
- Recommendation against routine intrapartum antibiotic prophylaxis for group B strep colonized women undergoing planned cesarean deliveries without preceding labor or membrane rupture
- A suggested algorithm for management of patients with threatened preterm delivery
- An updated algorithm for management of newborns exposed to intrapartum antibiotic prophylaxis

Although some important changes have been instituted, many recommendations remain the same:

- Penicillin remains the first line agent for intrapartum antibiotic prophylaxis, with ampicillin an acceptable alternative
- Women whose culture results are unknown at the time of delivery should be managed according to the risk-based approach; the obstetric risk factors remain unchanged (i.e., <37 weeks' gestation, duration of membrane rupture >18 hours, or temperature >100.4 F (>38.0 C))
- Women with negative vaginal and rectal group B strep screening cultures within 5 weeks of delivery do not require intrapartum antimicrobial prophylaxis for group B strep, even if they develop obstetric risk factors (i.e., <37 weeks' gestation, duration of membrane rupture >18 hours, or temperature >100.4 F (>38.0 C))

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- Women with group B strep bacteriuria in any concentration during their current pregnancy or who previously gave birth to an infant with early-onset group B strep disease should receive intrapartum antimicrobial prophylaxis

PROCEDURES

I. The Screening-Based Approach

Pregnant women should be screened at 35-37 weeks' gestation for vaginal and rectal GBS colonization. Patients should be informed of screening results and of potential benefits and risks of intrapartum antimicrobial prophylaxis for GBS carriers. GBS screen results should be documented in the MARS system. [Reliability of cultures is about 5-6 weeks; > 6 weeks repeat culture.]

Intrapartum (at the time of labor or rupture of membranes) prophylaxis is indicated:

1. Positive vaginal or rectal culture for GBS at 35 – 37 weeks in the current pregnancy.
2. GBS bacteriuria in the current pregnancy
3. Previous infant with invasive GBS disease (no screening is necessary for these women)
4. Unknown GBS status and delivery < 37 wks or ROM \geq 18 hours or intrapartum fever \geq 100.4 (38.0 C)
5. Prior + GBS rectovaginal culture in the current pregnancy with **NO** 35-37 week screen:

Intrapartum prophylaxis is not indicated:

1. Planned cesarean section in known GBS positive mother with no labor or rupture of membranes.
2. Previous pregnancy with positive GBS screening culture **is not by itself an indication for treatment**
3. Negative 35-37 week vaginal and rectal screening GBS culture regardless of intrapartum risk factors.

II. Intrapartum Antibiotic Chemoprophylaxis:

Antibiotic prophylaxis for GBS should consist of:

- A. Preferred dosing is Penicillin G 5 million units IV loading dose (Floor stock UIMC-L&D effective 01/29/01-Order Penicillin G **K** via Power Chart), then 3.0 million units (due to UIC Pharmacy dosage availability; CDC recommends 2.5 million units) IV piggyback every 4 hours (Administer dose over 40 minutes) OR
- B. Alternate dosing is Ampicillin 2 grams IV loading dose and 1 gram IV piggyback every four hours during labor.
- C. **Recommendations for treatment of proven penicillin-allergic women include:**
 - **LOW RISK FOR ANAPHYLAXIS:**

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- Cefazolin 2 gm loading dose then 1 gm every 8 hours until delivery (UIMC pharmacy will dispense if 'Low Risk for anaphylaxis' is explicitly documented in the record and the order comments.)
- HIGH RISK FOR ANAPHYLAXIS*:
 - SENSITIVITIES RECORDED:
 - Clindamycin 900 mg every 8 hours, intravenously OR
 - Erythromycin 500 mg every 6 hours, intravenously
 - NO SENSITIVITIES or resistant to clindamycin/erythromycin:
 - Vancomycin 1 gm every 12 hours until delivery

*Penicillin-allergic patients at high risk for anaphylaxis are those who have experienced immediate hypersensitivity to penicillin including a history of penicillin related anaphylaxis; Other high risk patients are those with asthma or other diseases that would make anaphylaxis more dangerous or difficult to treat, such as persons being treated with beta-adrenergic-blocking agents.

Clarification –

- A. **Chorioamnionitis** (temperature >38 C [100.4F]; uterine tenderness; foul smelling fluid; maternal/fetal tachycardia; increased white blood cell counts)
Broad spectrum antibiotics are needed (e.g. Cefoxitin 2 grams every 8 hours or combination therapy [e.g. Clindamycin & Gentamycin OR Ampicillin & Gentamycin]). These cover GBS as well.
- B. **Preterm Premature Ruptured Membranes (Latency)**
If the management plan includes antibiotic treatment for prolongation of pregnancy with preterm premature ruptured membranes:
Penicillin alone is insufficient
Discuss antibiotic coverage plan with Maternal Fetal Medicine
- C. Antibiotics should not be used to treat women found to be colonized with GBS during prenatal screening. Such treatment is neither effective in eliminating carrier status nor in preventing neonatal disease.
- D. Asymptomatic patients should be treated for a urinary tract infection with > 100,000 col. of GBS. If <100,000 then they are considered a carrier only. If the patient has symptoms then she may be treated for a GBS UTI with any amount of colonies.

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APPENDIX A: Specimen Collection Guideline

Culture techniques that maximize the likelihood of GBS recovery should be used. Because lower vaginal and rectal cultures are recommended, cultures should not be collected by speculum examination.

The optimal method for GBS screening is collection of a single standard culture swab, vagina then rectum, [swab must pass anal sphincter]. Swab may be placed in a transport medium (i.e. Ames) if the microbiology laboratory is offsite. NOTE: Culture from the cervix is not acceptable.

The sample should be identified for the laboratory as specifically for GBS culture. **Known penicillin allergies [e.g. Pt PCN allergic] should be noted on the lab requisition to alert the laboratory to perform sensitivities for Clindamycin and Erythromycin if the culture is positive (obtaining sensitivities is important because high resistance has been reported [up to 30%] with the above alternative antibiotics).** UIMC labs recommend use of either the current red- or blue-top culture swab and want only ONE culture swab submitted.

Results are to be posted to the MARS Problem List/Other Labs.

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APPENDIX: Indications for Intrapartum Antibiotic Prophylaxis to Prevent Perinatal GBS Disease under a Universal Prenatal Screening strategy based on combined vaginal and rectal cultures collected at 35 – 37 weeks' gestation from all pregnant women

Vaginal and rectal GBS screening cultures at 35 – 37 weeks' gestation for **ALL** pregnant women [unless patient had GBS bacteriuria during the current pregnancy or a previous infant with invasive GBS disease]

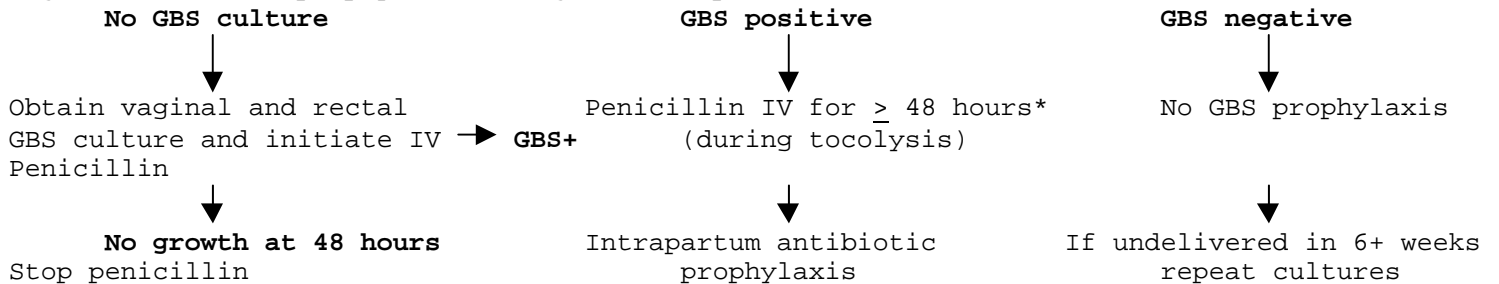
Intrapartum prophylaxis indicated

- Previous infant with invasive GBS disease
- GBS bacteriuria during current pregnancy
- Positive GBS screening culture during current pregnancy (unless a planned cesarean delivery, in the absence of labor or amniotic membrane rupture, is performed)
- Unknown GBS status (culture not done, incomplete or results unknown) and any of the following:
 - Delivery at <37 weeks' gestation*
 - Amniotic membrane rupture >18 hours
 - Intrapartum temperature $\geq 100.4^{\circ}\text{F}$ / $\geq 38.0^{\circ}\text{C}^{\dagger}$

Intrapartum prophylaxis not indicated

- Previous pregnancy with a positive GBS screening culture (unless a culture was also positive during the current pregnancy)
- Planned cesarean delivery performed in the absence of labor or membrane rupture (regardless of maternal GBS culture status)
- Negative vaginal and rectal GBS screening culture in late gestation during the current pregnancy, regardless of intrapartum risk factors

*If onset of labor or rupture of amniotic membranes occurs at <37 weeks' gestation and there is a significant risk for preterm delivery (as assessed by the clinician), a suggested algorithm for GBS prophylaxis management is provided:



[†] If amnionitis is suspected, broad-spectrum antibiotic therapy that includes an agent known to be active against GBS should replace GBS prophylaxis.

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Recommended Regimens for Intrapartal Antimicrobial Prophylaxis for Perinatal GBBS disease prevention*

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|--------------------|---|
| Recommended | PenicillinG, 5million units IVinitial dose, then 2.5 million units (3.0 million units at UIMC) every 4 hours until delivery |
| Alternative | Ampicillin 2 grams IV initial dose, then 1 gram every 4 hours until delivery |

† If Penicillin Allergic

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|--|---|
| Patients <i>not</i> at high risk for anaphylaxis | Cefazolin 2 grams IV initial dose, and then 1 gram every 8 hours until delivery |
| Patients at high risk for anaphylaxis§ | ¶GBS susceptible to clindamycin or erythromycin: |
| | Clindamycin 900 milligrams every 8 hours until delivery |
| | Erythromycin 500 milligrams IV every 6 hours until delivery |
| | GBS resistant to clindamycin or erythromycin, or susceptibility unknown |
| | Vancomycin** 1 gram every 12 hours until delivery |

*Broader spectrum agents, including an agent active against GBS, may be necessary for treatment of chorioamnionitis

†History of penicillin allergy should be assessed to determine whether a high risk for anaphylaxis is present. Penicillin-allergic patients at high risk for anaphylaxis are those who have experienced immediate hypersensitivity to penicillin including a history of penicillin related anaphylaxis; Other high risk patients are those with asthma or other diseases that would make anaphylaxis more dangerous or difficult to treat, such as persons being treated with beta-adrenergic-blocking agents.

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§If laboratory services are adequate, elindamycin and erythromycin sensitivity testing should be performed on prenatal GBS isolates from penicillin allergic patients at high risk for anaphylaxis

¶Resistance to erythromycin is often but not always associated with clindamycin resistance. If a strain is resistant to erythromycin but appears susceptible to clindamycin, it may still have inducible resistance to Clindamycin

**Cefazolin is preferred over vancomycin for women with a history of penicillin allergy other than immediate hypersensitivity reactions, and pharmacologic data suggest it achieves effective intraamniotic concentrations. Vancomycin should be reserved for penicillin allergic women who are at high risk for anaphylaxis.

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