GBS Algorithm for Preterm Labor

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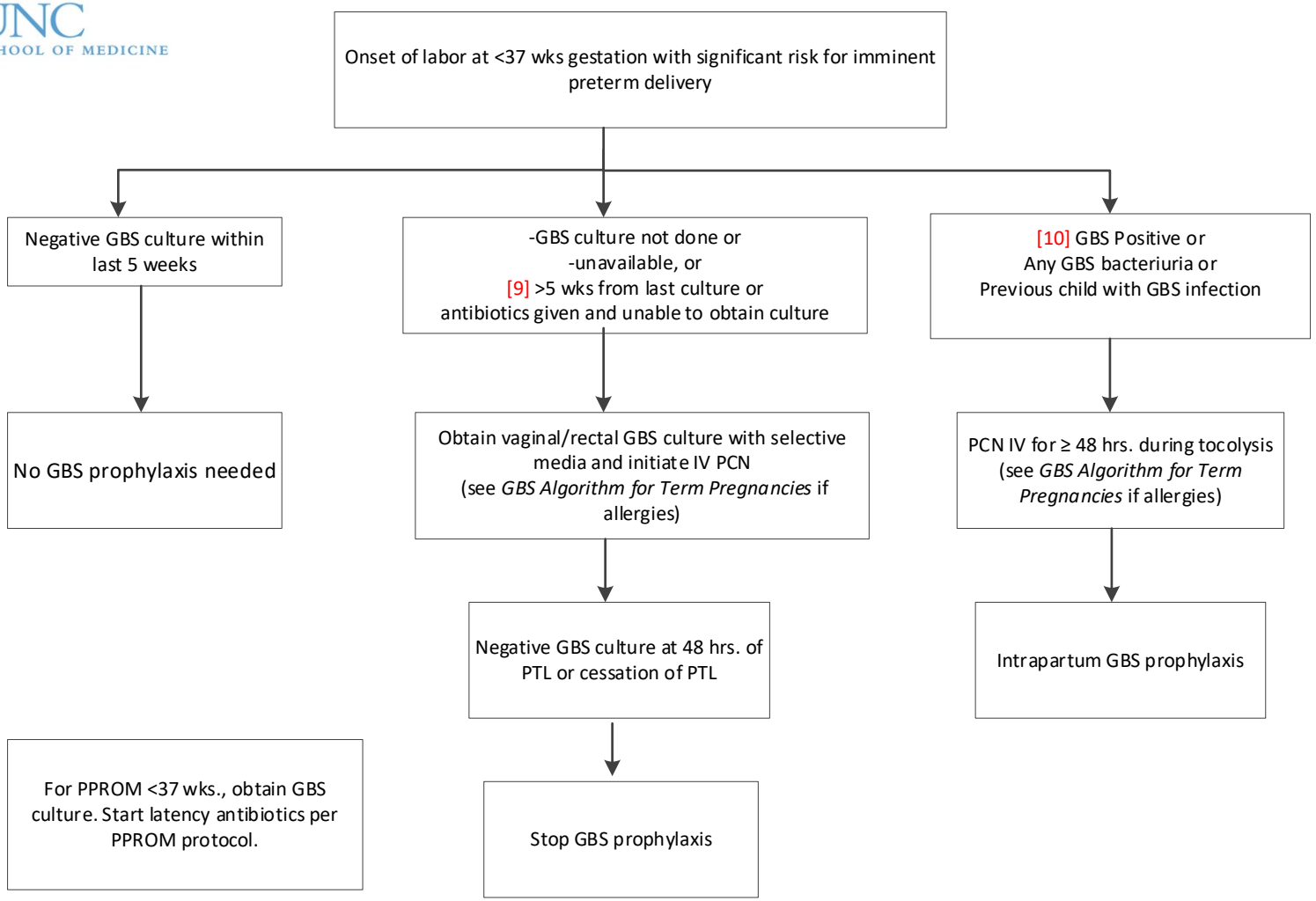

References: See Prevention of GBS Early Onset Disease in Newborns

GBS Algorithm for Term Pregnancies

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[1] Assess PCN allergy status antepartum and stratify as needed

[2] Any GBS bacteriuria OR previous child with GBS infection

- Yes → GBS prophylaxis
- No

[3] Vaginal-rectal culture at 36 0/7 to 37 6/7wks ([4] patient provider collect)
[8] If PCN allergic: test for clindamycin sensitivity

- Negative → No GBS prophylaxis needed
- Positive
  - Planned Cesarean
    - Labor or ROM → GBS propylaxis
    - No labor or ROM → No GBS prophylaxis
  - Unplanned Cesarean or vaginal delivery
- Culture:
  a) Not done or
  b) Unavailable or
  c) >5 wks from neg culture

[5] Shared decision-making re prophylaxis for patients with hx of GBS carrier status

- Accept ppx
- Decline ppx

- EGA <37 wks
- PPROM or ROM ≥ 18 hrs
- Maternal temp ≥ 38°C
- No suspicion of chorio

- Yes → GBS prophylaxis
- No → [6] Consider NAAT testing IP, with f/u culture if positive NAAT result → GBS prophylaxis with positive result

[1] Assess PCN allergy status intrapartum *(if not done antepartum)* and stratify as needed

- No PCN allergy OR Not at Risk for PCN allergy → PCN 5 million units IV load then 2.5-3 million units q 4 hrs until delivery (prefered) OR ampicilin 2 gm IV load, then 1 g q 4 hrs until delivery
- Low Risk for PCN allergy → [7] Cefazolin 2 g IV load then 1 g IV q8 hrs until delivery OR PCN clinical challenge with detailed allergy hx
- High Risk Or Severe Risk for PCN allergy
  - [8] *Clindamycin susceptible:* Clindamycin 900 mg IV q 8 hr until deliver
  - *Clindamycin resistant (or unknown clindamycin susceptibility):* Vancomycin weight based dosage of 20 mg/kg IV q 8 hrs. MAX single dosage of 2 g. Minimum infusion time: 1 hr or 500 mg/30 min for a dose of >1 g. Recommend baseline screen before initation: serum creat & estimated creatinine clearance
- UNKNOWN risk of PCN anaphylaxis → Options:
  1. PCN allergy skin testing
  2. Cefazelin (low cross-reactivity w/PCN)
  3. Clindamycin if susceptible
  4. Vancomycin if not susceptible to clindamycin

Revised 2.2020 KS

These algorithms are designed to assist the primary care provider in the clinical management of a variety of problems that occur during pregnancy. They should not be interpreted as a standard of care, but instead represent guidelines for management. Variation in practices should take into account such factors as characteristics of the individual patient, health resources, and regional experience with diagnostic and therapeutic modalities.

www.mombaby.org

References: See Prevention of GBS Early Onset Disease in Newborns

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Prevention of GBS Early Onset Disease in Newborns

BACKGROUND

The prevalence of vaginal or rectal colonization in pregnant women is between 10% and 30%. Approximately 50% of women who are colonized with GBS will transmit the bacteria to their newborn. In the absence of intrapartum antibiotic prophylaxis, 1-2% of those newborns will develop GBS Early Onset Disease (EOD).

In 2018, the stewardship and charge for updating the GBS prophylaxis guidelines were transferred from the CDC to ACOG and the American Academy of Pediatrics. In addition, the American Society for Microbiology maintains standards for laboratory procedures relevant to processing specimens.

PENICILLIN ALLERGY [1]

ASSESSING PENICILLIN ALLERGY RISK STRATIFICATION DURING PREGNANCY

DEGREE OF RISK ⟹	NOT AT RISK	LOW RISK	HIGH RISK	SEVERE RISK
SYMPTOMS	Headaches	Rash (nonspecific or maculopapular)	Hypotension	Anaphylaxis in past year
	Family history with no personal history of allergic reaction	Isolated symptoms that are unlikely allergic (itching without rash, nausea, diarrhea)	Hives or Urticaria	Mucosal involvement (sloughing of mucosal surfaces, blistering, etc)
	Yeast Infections	Unknown reaction >10 years ago without features of allergic (IgE-mediated) reaction [*]	Vomiting	Fever
	Previous tolerance of penicillin (documented tolerance on MAR, pharmacy or reported by reliable historian)		Respiratory distress	Fine pustular rash
			Angioedema/laryngeal edema	Skin sloughing
			Anaphylaxis (>1 year ago) [*]	End organ dysfunction
			Unknown reaction within past 5-10 years	Eosinophilia or other blood dyscrasia
ANTEPARTUM	Clinically de-label patient, provider patient education	Monitored drug challenge with detailed allergy history **-- *OR* --** Refer for allergy testing	Refer for allergy testing	AVOID PENICILLINS Consult allergy if penicillin administration necessary
INTRAPARTUM	Clinically de-label patient, provider patient education Follow routine GBS protocol	Monitored drug challenge with detailed allergy history **-- *OR* --** Utilize cefazolin	Utilize clindamycin or vancomycin based on sensitivity and culture data	AVOID PENICILLINS Consult allergy if penicillin administration necessary
POSTPARTUM	Clinically de-label patient, provider patient education	Monitored drug challenge with detailed allergy history **-- *OR* --** Refer for allergy testing	Refer for allergy testing	AVOID PENICILLINS Consult allergy if penicillin administration necessary

[*] Features of IgE-mediated reaction include cutaneous symptoms (itching, flushing, urticaria, and angioedema) with the presence of additional organ system involvement such as respiratory (dyspnea, wheezing, bronchospasm, shortness of breath), cardiovascular (arrhythmia, syncope, chest tightness) and gastrointestinal (abdominal pain, nausea, vomiting, diarrhea).

Additional Considerations

- Approximately 80-90% of persons who report a history of penicillin allergy are not truly allergic because the sensitization is lost over time or the original reaction was not related to penicillin.
- [7] A recent study based on results from skin allergy testing estimated that allergic reactions occur in only 4.3% of patients with PCN allergy who are administered 1st or 2nd gen cephalosporins. Cefazolin is a 1st gen cephalosporin with a unique configuration and very low cross-reactivity with PCN.
- [8] At UNC, when reported as clindamycin sensitive, the inducible resistance has been tested--please contact the lab at your own institution to determine if inducible resistance testing has been performed.
- Erythromycin is no longer recommended as alternative prophylaxis (GBS resistance rates up to 44.8%).

PRENATAL CARE

GBS Bacteriuria

- [2] Treatment for asymptomatic bacteriuria, defined as ≥100,000 CFU/ml has been shown to decrease the risk of pyelonephritis, LBW <2500g, and PTB. Not recommended to treat bacteriuria with lower GBS colony counts, however still recommend intrapartum prophylaxis for GBS carriage.

Prenatal Culture Collection

- [3] Single swab, 1st lower ⅓ of vagina, then thru anal sphincter, without use of speculum
- It is critical that the healthcare provider **report a PCN allergy to the laboratory at the time of prenatal culture-based screen**.

Prenatal Patient Self-Collect

- [4] *"It has been shown the women who receive instruction in collecting their own vaginal-rectal screening specimen are able to collect specimens that result in GBS culture yields similar to the yield rates of specimens collected by health care providers."*
- Patient instructions: https://www.cdc.gov/groupbstrep/downloads/gbs_swab_sheet21.pdf

Patient Education

- https://www.acog.org/Patients/FAQs/Group-B-Strep-and-Pregnancy?IsMobileSet=false

INTRAPARTUM CARE

Decision-Making

- [5] Women who were GBS colonized during a previous pregnancy have a 50% likelihood of GBS carriage in the current pregnancy.
- Obstetrical interventions, when necessary, should not be delayed to provide 4 hours of antibiotic administration before birth, but some variation may be warranted based on needs of individual patients.
- Obstetrical procedures:
    - Membrane sweeping: current evidence limited; membrane sweeping does not appear to be associated with adverse outcomes in women colonized with GBS
    - Mechanical cervical ripening: no recommendation re timing of GBS ppx in women undergoing
    - Water immersion is not contraindicated solely on GBS status
    - Vaginal exams: more data needed, perform when clinically needed
    - AROM: weigh risks and benefits, reasonably to perform if clinically indicated
    - Intrauterine monitoring: GBS colonization should not be considered a contraindication to obstetrically indicated intrauterine monitoring either of FHTS or UCs.

Collection

- [6] Consider NAAT testing method
  - 1-2 hr turnaround time for point of care
  - 7-10% failure rate
  - Rates for GBS detection using NAAT methods have been shown to be equivalent to culture-based screening or better with proper test protocol.
  - However, molecular-based NAAT does not isolate the organism as the culture does and therefore does not allow for antibiotic susceptibility testing necessary for women with a PCN allergy.
  - **An additional culture and susceptibility test can be performed if GBS results by NAAT are positive in a woman with a PCN allergy.**

Preterm Labor

- [9] A negative GBS is considered valid for 5 weeks. If a patient with PTL is re-admitted with signs and symptoms of PTL and had a negative GBS screen >5 weeks prior, she should be rescreened and managed according to this algorithm at that time.
- [10] A positive preterm GBS culture does not need to be repeated and intrapartum antibiotic GBS prophylaxis should be reinstituted whenever labor occurs.

STREPTOCOCCUS PSEUDOPORCINUS AND PORCINUS

"Streptococcus pseudoporcinus prevalence is low (1.6%), but can cause false-positive Streptococcus agalactiae (GBS) results in pregnancy. S. pseudoporcinus occurs primarily in African-American women. PPROM and spontaneous PTB were more common in patients colonized with S. pseudoporcinus when compared to those with GBS. More research is needed."

Grundy, M. Suwantarat, N., Rubin, M., Harris, R., Hanlon, A., Tekle, T., Ellis, B., Carroll, K., Witter, F. (2019). Differentiating Streptococcus pseudoporcinus from GBS: could this have implications in pregnancy? *American Journal of Obstetrics and Gynecology*: 220(5):490.e1-490.e7. doi: 10.1016/j.ajog.2019.01.219. https://www.ncbi.nlm.nih.gov/pubmed/30690012

"Streptococcus porcinus may contribute to the pathogenesis of PROM and cervical insufficiency."

Pereira, N., Powell, AM, Nyirjesy, P., and Plante, LA. (2013). Vaginorectal streptococcus porcinus in pregnancy: an emerging pathogen? *Journal of Lower Genital Tract Disease*: 17(4):e18-21. doi: 10.1097/LGT.0b013e318280407c. https://www.ncbi.nlm.nih.gov/pubmed/23595037

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Related Policies and Resources

Epic Instructions

- Use dot phrase*: .PENICILLINALLERGYASSESS for nurse history and provider assessment)
  - Nurse history section: perform during new to nurse-document in allergy 'notes' section of Epic
  - Provider section: create penicillin allergy problem (ICD-10 code Z88.0) and document in A/P in problem-based charting
- Use dot phrase*: .PENICILLINALLERGYPTEDUCATION
  - Patient education: include in patient instruction section of AVS

* *Jamie Waldron is the dot phrase owner*

Referral to Allergy Clinic

- non-pregnant
  - routine referral to Allergy and Immunology for "Penicillin Allergy Testing"
- pregnant
  - routine referral to Allergy and Immunology for "Penicillin Allergy Testing" if in 1st and 2nd trimester
  - expedited referral to Allergy and Immunology for "Penicillin Allergy Testing"
    - Indicate "Urgent referral" and state 3rd trimester of pregnancy
- Contact information for other questions, and specifically if needed for urgent referrals
  - Jamie Waldron (Jamie_Waldron@med.unc.edu)
  - Mildred Kwan (Mildred_Kwan@med.unc.edu)

UNC Lab Antimicrobial Susceptibility Testing Protocol

https://pstat-live-media.s3.amazonaws.com/pdf_cache/policy/6622429/eeaea354-1b06-4527-9459-d09beb9c143a/BACTII-%20Antimicrobial%20Susceptibility%20Testing%20Protocol.pdf

UNC Lab Group B Screening Culture

https://pstat-live-media.s3.amazonaws.com/pdf_cache/policy/6717411/c53bdc61-d41b-4b41-a3ad-c32849991b64/BACTI-%20Group%20B%20Screening%20Culture%20-%20w-sensi.pdf

UNC Penicillin Desensitization During Pregnancy

https://www.med.unc.edu/obgyn/ip/files/2018/08/pcn-desensitization-during-pregnancy-policy-475.pdf

References [1]

Shenoy ES, Macy E, Row T, et al “Evaluation and Management of Penicillin Allergy: A Review” JAMA 2019; 321(2): 188-199.

Macy E, “Penicillin Skin Testing in Pregnant Women with a history of Penicillin Allergy and Group B streptococcus colonization” Ann Allergy Asthma Immunol. 2006; 97:164-168.

Blumenthal KG, Huebner EM, Xiaoqing F, et al “Risk-based pathway for outpatient penicillin allergy evaluations” J Allergy Clin Immunol Pract 2019 September/October; 7(7): 2411-14.

Blumenthal KG, Peter JG, Trubiano JA, et al. “Antibiotic Allergy” Lancet. 2019 January 12; 393(10167): 183-198.

Reference [2-9]

ACOG Committee Opinion Number 797: Prevention of Group B Streptococcal Early-Onset Disease in Newborns (2020). *Obstetrics & Gynecology.* 135(2): e51-e72.
https://www.acog.org/-/media/Committee-Opinions/Committee-on-Obstetric-Practice/co797.pdf?dmc=1&ts=20200127T0248174401

Reference [10]

ACOG Practice Bulletin No. 199: Use of prophylactic antibiotics in labor and delivery (2018). *Obstetrics & Gynecology.* 132:e103-19.

Further Information

The American Academy of Pediatrics has published clinical recommendations that guide the care of term and preterm newborns at risk for sepsis.
https://pediatrics.aappublications.org/content/pediatrics/144/2/e20191881.full.pdf

American Society for Microbiology: ASM is currently (2019) reviewing GBS laboratory guidance.