

Group B Streptococcus Infection

What is Group B Streptococcus?

Group B beta-hemolytic streptococcus (GBS) is a type of bacteria that can cause serious illness in newborns and is sometimes fatal. The bacteria are considered normal colonizers of the gastrointestinal tract (gut) and are also found in the vagina in about 10-30% of the population. Typically women who are GBS positive have no symptoms of the infection and are not sick.

How does someone get GBS?

Anyone can be colonized with GBS. It is not a sexually transmitted disease. Most women never have symptoms or know that they are colonized with GBS.

Why worry about GBS?

GBS in pregnancy can cause infection in both mothers and babies. Approximately 2-4% of pregnant women acquire a urinary tract infection from GBS. Women may also become ill during labor (chorioamnionitis) or in the postpartum period (endometritis). Without antibiotic treatment, approximately 3% of babies born to women colonized with GBS will become sick from the bacteria. Babies can contact GBS from the amniotic fluid and the birth canal during labor. GBS can cause sepsis (blood infection), meningitis (infection of the fluid and lining around the brain) and pneumonia in the newborn. Approximately one of every 20 babies with GBS infection will die. Babies who do survive, particularly those with meningitis, may have long-term problems such as hearing loss, learning disabilities and other neurological injuries. Most cases of GBS disease in newborns occur in the first week of life and symptoms are usually seen in the first hours after birth.

Symptoms of GBS infection in a baby include:

- difficulty breathing
- fever or abnormally low body temperature
- jaundice
- poor feeding
- vomiting
- seizures
- swelling of the abdomen
- bloody stools

GBS prevention efforts in the United States

The first guidelines for preventing newborn GBS infection were issued in the United States in 1996. If you had a baby before 1996 you probably never discussed GBS with your care-provider. In 1993 before prevention efforts were underway there were approximately 7,500 cases of newborn GBS infections and 310 deaths out of about 4,000,000 live births. This means that in the United States we had a rate of 1.7 cases of GBS infection per 1,000 live births. The first GBS guidelines recommended two approaches for the prevention of newborn GBS infection.

Universal Screening

The first approach involves swabbing the vagina and rectum of all pregnant women between 35 and 37 weeks of pregnancy and sending it to a laboratory to see if GBS is present. Women identified as being colonized with GBS are treated with prophylactic intravenous (IV) antibiotics during labor. According to the CDC, the recommended dose regimen is

Penicillin G, 5 million units IV for the initial dose then 2.5 million units IV every four hours until delivery. An alternative is to give Ampicillin 2 gms. IV for the initial dose, then 1 gm. IV every four hours until delivery. For patients who are allergic to penicillin, intravenous Cefazolin, Clindamycin or Erythromycin are substituted and have their own dosing regimens.

Risk-Based Screening

The second approach for GBS prevention recommended in the 1996 guidelines is based on labor risk factors to identify which women should be treated with IV antibiotics. The three labor risk factors are **labor prior to 37 weeks of pregnancy, fever of 100.3 or higher, or prolonged rupture of membranes (18 hours or longer)**. This prevention method requires women to be treated with IV antibiotics if they have one of these risk factors in labor.

Studies showed that the rate of GBS infection decreased after the 1996 GBS prevention guidelines were issued. In 2000-2001 the rate of GBS infection had dropped to 0.49 cases per 1,000 live births. In 2002 the Centers for Disease Control issued revised guidelines for the prevention of newborn GBS infection. The current guidelines recommend universal screening as the preferred approach to the prevention of newborn GBS infection. The risk-based screening approach is recommended only if universal screening has not been done.

Both universal screening and risk based screening have been shown to be effective in reducing newborn GBS infection but until 2002 it was not clear which approach was better at preventing newborn GBS infection. A study published in the New England Journal of Medicine (NEJM) in 2002 showed that universal screening prevented more newborn GBS infections compared to risk-based screening. The current GBS prevention guidelines were heavily influenced by the publication of this study.

The results from the NEJM study show that universal screening reduced the rate of newborn GBS infection by 50% compared to risk-based screening. **However, the rate of newborn GBS infection was very low in both groups**, 0.33 cases per 1,000 live births if universal screening was used and 0.66 cases per 1,000 live births if risk based screening was done. Another interesting factor is that in the risk-based screening group only 61% of the women with risk- factors actually received IV antibiotics labor. This means that some of the cases of infection may have been prevented if the proper protocol for risk based screening had been followed.

Evidence-Based Evaluation of GBS Protocols The Cochrane Collaboration is a non-profit organization comprised of over 28,000 contributors from more than 100 countries who work together to provide systematic reviews of health care interventions tested in biomedical randomized controlled trials and observational studies. The results are published as Cochrane Reviews and are widely considered to be the "gold standard" for reliable evaluation of evidence-based medical practices. In 2009, the standard protocols for GBS testing and treatment received this evaluation by the Cochrane Collaboration, provided as a plain language summary for the public:

Women, men and children of all ages can be colonized with Group B *streptococcus* (GBS) bacteria without having any symptoms; bacteria are particularly found in the gastrointestinal tract, vagina and urethra. This is the situation in both developed and developing countries. About one in 2000 newborn babies have Group B *streptococcus* bacterial infections, usually evident as respiratory disease, general

sepsis, or meningitis within the first week. The baby contracts the infection from the mother during labor. Giving the mother an antibiotic directly into a vein during labor causes bacterial counts to fall rapidly, which suggests possible benefits but pregnant women need to be screened. Many countries have guidelines on screening for GBS in pregnancy and treatment with antibiotics. Some risk factors for an affected baby are preterm and low birthweight; prolonged labor; prolonged rupture of the membranes (more than 12 hours); severe changes in fetal heart rate during the first stage of labor; and gestational diabetes. Very few of the women in labor who are GBS positive give birth to babies who are infected with GBS and antibiotics can have harmful effects such as severe maternal allergic reactions, increase in drug-resistant organisms and exposure of newborn infants to resistant bacteria, and postnatal maternal and neonatal yeast infections.

This review finds that giving antibiotics is not supported by conclusive evidence. The review identified four trials involving 852 GBS positive women. Three trials, which were around 20 years old, compared ampicillin or penicillin to no treatment and found no clear differences in newborn deaths although the occurrence of early GBS infection in the newborn was reduced with antibiotics. The antibiotics ampicillin and penicillin were no different from each other in one trial with 352 GBS positive women. All cases of perinatal GBS infections are unlikely to be prevented even if an effective vaccine is developed.

Read more from the Cochrane Review here:
<http://www2.cochrane.org/reviews/en/ab007467.html>

GBS & The Midwives Model of Care

It is very important to us that you ask questions about GBS and have a thorough understanding of the options available to you prior to making a decision about screening. We have included links to outside resources that we think are helpful and we encourage you to seek out other sources of information. You must weigh for yourself the risk and benefits of each approach. In the Medical Model you would just be screened for GBS and there would not be any discussion about other options. We understand that part of the reason that you chose home birth and midwifery care is because you want to have information presented to you so you can make an individualized, informed decisions about your care. This is, in fact a hallmark of the Midwives Model of Care.

As part of our home birth practice, we routinely limit the number of internal vaginal exams we do during labor (especially if the water bag is broken). We also do not routinely rupture the bag of waters, waiting for it to break naturally. This usually means that the water bag breaks late in labor and that sometimes the baby is born in the amniotic sac (the "caul"). Both of these practices are believed to minimize the exposure of the baby to GBS in the vagina.

Testing options

As midwives we offer the choice of universal screening for GBS between 35 and 37 weeks of pregnancy or risk-based screening in labor.

Can IV antibiotics be given at home?

Currently, we do not offer prophylactic IV antibiotic therapy at home. If maternal GBS screening is positive we can make arrangements for transfer of care to hospital prior to labor so you can receive IV antibiotics during labor, if desired.

What if I don't want to be screened for GBS?

You have the right to decline universal screening for GBS. When universal screening is declined we use the risk based screening approach in labor. In the event that labor risk factors are present (**labor prior to 37 weeks, fever ≥ 100.3 , or prolonged rupture of membranes ≥ 18 hours**) we may recommend transfer of care to the hospital for IV antibiotic therapy. A negative GBS screen does not completely eliminate the risk of GBS infection in mother or baby. Recent studies have shown cases of GBS infection in newborns whose mothers screened negative between 35 and 37 weeks of pregnancy. We still recommend using risk-based screening in labor even with a negative screen prior to labor.

Promoting good bacterial health

A fundamental element of minimizing colonization of any harmful bacteria in the body is maintenance of a healthy intestinal tract. This usually includes supplementing your diet with probiotics, which are extremely helpful in maintaining the beneficial balance of good bacteria in the gut.

Resources for a nutrition-based approach to GBS colonization:

[Vaginal Ecology- An owner's guide to care and maintenance](#) By Sheri Winston

[Handout on Vaginal Health](#) By Gail Hart

[Garlic to Treat GBS Protocol](#) By Judy Slome Cohen

Procaine penicillin G

No universal recommendations exist for the management of the newborn if maternal intrapartum chemoprophylaxis was not given despite an indication. However, a single intramuscular dose of aqueous penicillin G (50,000 units per kg within one hour of birth) to newborns whose mothers received less than three hours of antibiotics but did not develop intrapartum risk factors appeared observationally to decrease neonatal sepsis without increasing late-onset (four to 30 days of age) disease, GBS meningitis, or mortality. Parkland Hospital in Dallas, Texas and others observed that the rate of GBS infection in newborns treated with penicillin G was extremely low. A summary on this topic written by physicians at the Mt. Sinai School of Medicine was published by the Journal of Pediatrics in 1997 and is available from your midwives. This treatment option remains an acceptable protocol in the Newborn Intensive Care Unit of Stanford University Hospital in Palo Alto, California: <http://newborns.stanford.edu/GBScreen.html>

Hibiclens Vaginal Wash as an Alternative to Antibiotics in Labor

Some research has demonstrated the effectiveness of using a chlorhexidine (Hibiclens) vaginal wash to prevent newborn GBS infection. Hibiclens is an over-the-counter, medical grade antiseptic and antimicrobial soap.

Candidates: GBS positive women in labor or with ruptured membranes who have declined transfer of care for IV antibiotic prophylaxis.

Treatment: 140 cc of 0.2% chlorhexidine vaginal wash at the onset of labor or at rupture of membranes, whichever comes first, repeated every six hours, and done shortly before birth if possible.

Method:

- Prepare the 0.2% chlorhexidine solution by combining it with ~ 7 cc (1 1/2 teaspoon) water.
- Hibiclens (4% chlorhexidine solution) with ~133 cc (1/2 cup plus 2 teaspoons) water.

- Assist the client to a supine or sitting position with hips slightly elevated.
- Use the entire amount for each flush.
- Mix a fresh batch for every application.
- Slowly instill the solution into the vagina under gentle pressure using a peri bottle.
- Begin at onset of labor or ROM and repeat every six hours and before delivery.
- A woman may self-administer the vaginal flush or her spouse/partner may assist as well.

Studies on Hibiclens for GBS:

J Matern Fetal Neonatal Med. 2002 Feb;11(2):84-8. [Chlorhexidine vaginal flushings versus systemic ampicillin in the prevention of vertical transmission of neonatal group B streptococcus, at term.](#) Facchinetti F, Piccinini F, Mordini B, Volpe A.

Lancet. 1992 Jul 11;340(8811):65-9. [Prevention of excess neonatal morbidity associated with group B streptococci by vaginal chlorhexidine disinfection during labour.](#) The Swedish Chlorhexidine Study Group. Burman LG, Christensen P, Christensen K, Fryklund B, Helgesson AM, Svenningsen NW, Tullus K.

Eur J Obstet Gynecol Reprod Biol. 1995 Aug;61(2):135-41. [Randomized study of vaginal chlorhexidine disinfection during labor to prevent vertical transmission of group B streptococci.](#) Adriaanse AH, Kollee LA, Muyltjens HL, Nijhuis JG, de Haan AF, Eskes TK.

Obstet. Gynecol., November 1, 2007; 110(5): 977 – 985. [Chlorhexidine Vaginal and Neonatal Wipes in Home Births in Pakistan: A Randomized Controlled Trial](#) S. Saleem, T. Reza, E. M. McClure, O. Pasha, N. Moss, D. J. Rouse, J. Bartz, and R. L. Goldenberg

Resources:

<http://blessedbeginning.org/ABBgroubstrephandout.htm>

<http://mountainviewmidwives.com/documents/HibiclensFlushProtocol.pdf>

Client Consent/Refusal for Testing

My signature anywhere below indicates that I have read the above three-page document regarding GBS and have researched the topic myself to understand fully the risks of GBS disease to my baby and me as well as the risks and benefits of intrapartum antibiotic therapy.

RISK FACTORS IN THIS PREGNANCY: _____

_____ I have no known risk factors, and I refuse prenatal GBS cultures.

_____ Due to the above risk factors, or by personal choice in absence of risk factors, I consent to prenatal GBS cultures at an additional cost.

_____ Despite having the above risk factors, I refuse prenatal GBS cultures.

Midwife's Signature , CPM, LM

Client Signature

Date _____

