

# Group B streptococcus (GBS)

Group B streptococcus (GBS) is a type of bacterium that causes illness in newborn babies, pregnant women, the elderly, and adults with other illnesses, such as diabetes or liver disease. GBS is the most common cause of life-threatening infections in newborns.

## How common is GBS disease?

GBS is the most common cause of sepsis (blood infection) and meningitis (infection of the fluid and lining surrounding the brain) in newborns.

GBS is a frequent cause of newborn pneumonia and is more common than other, better known, newborn problems such as rubella, congenital syphilis, and spina bifida.

Before prevention methods were widely used, approximately 8,000 babies in the United States would get GBS disease each year. One of every 20 babies with GBS disease dies from infection. Babies that survive, particularly those who have meningitis, may have long-term problems, such as hearing or vision loss or learning disabilities.

In pregnant women, GBS can cause bladder infections, womb infections (amnionitis, endometritis), and stillbirth.

## Does everyone who has GBS get sick?

Many people carry GBS in their bodies but do not become ill. These people are considered to be "carriers." Adults can carry GBS in the bowel, vagina, bladder, or throat. One of every four or five pregnant women carries GBS in the rectum or vagina. A fetus may come in contact with GBS before or during birth if the mother carries GBS in the rectum or vagina. People who carry GBS typically do so temporarily -- that is, they do not become lifelong carriers of the bacteria.

## How does GBS disease affect newborns?

Approximately one of every 100 to 200 babies whose mothers carry GBS develop signs and symptoms of GBS disease. Three-fourths of the cases of GBS disease among newborns occur in the first week of life ("early-onset disease"), and most of these cases are apparent a few hours after birth. Sepsis, pneumonia, and meningitis are the most common problems. Premature babies are more susceptible to GBS infection than full-term babies, but most (75%) babies who get GBS disease are full term.

GBS disease may also develop in infants 1 week to several months after birth ("late-onset disease"). Meningitis is more common with late-onset GBS disease. Only about half of late-onset GBS disease among newborns comes from a mother who is a GBS carrier; the source of infection for others with late-onset GBS disease is unknown. Late-onset disease is very rare.

## How is GBS disease diagnosed and treated?

GBS disease is diagnosed when the bacterium is grown from cultures of sterile body fluids, such as blood or spinal fluid. Cultures take a few days to complete. GBS infections in both newborns and adults are usually treated with antibiotics (e.g., penicillin or ampicillin) given through a vein.

## Can pregnant women be checked for GBS?

GBS carriage can be detected during pregnancy by taking a swab of both the vagina and rectum for special culture. Cultures for GBS carriage during prenatal visits should be done so late in pregnancy (35-37 weeks' gestation); cultures collected earlier do not accurately predict whether a mother will have GBS at delivery.

A positive culture result means that the mother carries GBS -- not that she or her baby will definitely become ill. There is no evidence that indicates that oral antibiotics given prior to labor will prevent GBS disease in newborns. Oral antibiotics should be given when GBS is identified in urine during pregnancy. GBS in the urine

should be treated at the time it is diagnosed. Carriage of GBS, in either the vagina or rectum, becomes a concern at the time of labor and delivery if not treated.

### **Can GBS disease among newborns be prevented?**

Most GBS disease in newborns can be prevented by giving certain pregnant women antibiotics through the vein during labor. There is also research evidence that the use of chlorhexidine vaginal flushings during labor lowers the infection rate. (Please see my protocols for more information.) Any pregnant woman who previously had a baby with GBS disease or who has a urinary tract infection caused by GBS should receive antibiotics during labor.

GBS carriers at highest risk are those with any of the following conditions:

- fever during labor
- rupture of membranes (water breaking) 18 hours or more before delivery
- labor or rupture of membranes before 37 weeks

Because women who carry GBS but do not develop any of these three complications have a relatively low risk of delivering an infant with GBS disease, the decision to take antibiotics during labor should balance risks and benefits. Penicillin is very effective at preventing GBS disease in the newborn and is generally safe. A GBS carrier with none of the conditions above has the following risks:

- 1 in 200 chance of delivering a baby with GBS disease if antibiotics are not given
- 1 in 4000 chance of delivering a baby with GBS disease if antibiotics are given
- 1 in 10 chance, or lower, of experiencing a mild allergic reaction to penicillin (such as rash)
- 1 in 10, 000 chance of developing a severe allergic reaction--anaphylaxis--to penicillin. Anaphylaxis requires emergency treatment and can be life-threatening.

If a prenatal culture for GBS was not done or the results are not available, treatment for GBS should be considered.

### **Who is at higher risk for GBS disease?**

Pregnant women with the following conditions are at higher risk of having a baby with GBS disease:

- previous baby with GBS disease
- urinary tract infection due to GBS
- GBS carriage late in pregnancy
- fever during labor
- rupture of membranes 18 hours or more before delivery
- labor or rupture of membranes before 37 weeks

## Protocols for Group B Streptococcus (Strep B or GBS)

(Revised May 27, 2012)

**Please note:** The purpose of this handout is to explain my protocols concerning GBS to my clients. This handout is not intended to educate concerning the risks of GBS. If you have not already received such information regarding GBS, please ask me for that information.

### GBS Screening and Treatment

- All clients will be given educational materials concerning the risks of GBS to their babies. They will also be given information on the pros and cons of various treatments for GBS including but not limited to Chlorhexidine vaginal flushings, anti-biotic treatment for the mother during labor and prophylactic anti-biotic treatment of the baby within two hours of birth.
- I will test every client for GBS vaginally between 36 and 38 weeks gestation unless she refuses testing.
- If a client refuses testing, I will consider accepting her refusal based upon her reasons for refusal. Before deciding to continue care, careful consideration will also be given to any other risk factors the client might have or develop.
- Any client who tests positive will be instructed on how to use ¼ cup of a point two percent chlorhexidine solution for vaginal washings every 6 hours during labor. **This solution will be prepared by diluting a standard 4% Hibiclens-type wash at one part to twenty of water.** A standard peri-bottle will be used for this application. The client will be instructed to “douche” gently in her vagina every 6 hours during the course of labor until birth. Both a 4 oz bottle of Hibiclens and an extra peri-bottle come in every birth kit for this purpose (if needed).
- If a client has any of the following high risk conditions for GBS disease, she will be referred to physician or CNM (for possible transfer of care). If I am able to obtain collaboration with a physician or CNM to use IV antibiotics in the home birth setting, this option will be considered.
  - a previous delivery of an infant with invasive GBS disease,
  - GBS bacteriuria during the current pregnancy, or
  - an intrapartum (during labor) fever of > 100.4 (38.0 C) (current pregnancy)
- If the client tests positive for GBS or has not been tested, vaginal exams will be kept to a minimum during labor to lower the risk of infection to the baby.
- If rupture of membranes occurs prior to 37 weeks gestation, transport to a hospital will occur at or before 18 hours if the birth has not already occurred or is not imminent. Babies born prior to 37 weeks gestation will be monitored closely for any signs of infection for a minimum of 6 hours.

### A Client's Right to Refuse Testing or Treatment:

Clients have the right to refuse testing or treatment for GBS. But refusal does not obligate me to continue care. I will consider accepting a client's refusal for testing or treatment on a case-by-case basis only. If you wish to refuse testing for GBS during your pregnancy; or if you tested positive and do not wish to accept treatment, please discuss your concerns with me.

### Research Based Methods of Treating GBS:

**The first treatment method is the least invasive, carries the lowest risk of side effects, and can easily be used in a home birth setting. Therefore, it is the treatment option that I use in my practice.**

1. **A European Approach – Chlorhexidine Vaginal Flushings During Labor** – The following information is taken from Research Updates for Midwives, Gail Hart 2004

If strep is a natural flora of the recto-genital area, and not a systemic disease, then we theoretically “should” be able to prevent the baby from becoming contaminated as he passes through the birth canal. Simple washing routines have worked to lower the transmission of hepatitis and HIV. In the pre-antibiotic days they were quite effective in reducing gonorrhea and other STDs. Would a germicidal wash or douche be effective against strep? The European answer is an unequivocal “Yes”!

After nearly two decades, the Hexidine Group released their results of a large study recently. Researchers say that several methods show promise; a vaginal germicidal douche in the last weeks of pregnancy; an application of germicidal gel in labor; or a “rinse” in labor. The germicide most tested was chlorhexidine (hexachlorophene), but povidone iodine is also being tested. (Natural practitioners might wonder about herbal equivalents).

*“Germicidal washings...display the same efficacy as ampicillin in preventing vertical transmission of group B streptococcus. Moreover, the rate of neonatal E. Coli colonization was reduced by chlorhexidine.*

**J Matern Fetal 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.**

*A total of 244 group B streptococcus-colonized mothers at term (screened at 36-38 weeks) were randomized to receive either 140 ml chlorhexidine 0.2% by vaginal flushings every 6 h or ampicillin 2 g intravenously every 6 h until delivery. ...*

*RESULTS: A total of 108 women were treated with ampicillin and 109 with chlorhexidine. Their ages and gestational weeks at delivery were similar in the two groups. Nulliparous women were equally distributed between the two groups (ampicillin, 87%; chlorhexidine, 89%). Clinical data such as birth weight ... Apgar scores ... were similar for the two groups, as was the rate of neonatal group B streptococcus colonization (chlorhexidine, 15.6%; ampicillin, 12%). Escherichia coli, on the other hand, was significantly more prevalent in the ampicillin (7.4%) than in the chlorhexidine group (1.8%,  $p < 0.05$ ). Six neonates were transferred to the neonatal intensive care unit, including two cases of early-onset sepsis (one in each group).*

*CONCLUSIONS: In this carefully screened target population, intrapartum vaginal flushings with chlorhexidine in colonized mothers display the same efficacy as ampicillin in preventing vertical transmission of group B streptococcus. Moreover, the rate of neonatal E. Coli colonization was reduced by chlorhexidine.*

PMID: 1195801 J Matern Fetal 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.**

Here is a large study. The vaginal rinse was done with a peribottle.

*“ a trial of randomized, blinded placebo controlled douching with either 0.2% chlorhexidine or sterile saline was performed on 1130 women in vaginal labour... In the double blind study, vaginal douching with chlorhexidine significantly reduced the vertical transmission rate ... The lower rate of bacteria isolated from the latter group was accompanied by a significantly reduced early infectious morbidity in the neonates ( $P < 0.05$  confidence interval 0.00-0.06). This finding was particularly pronounced in Str. Agalactiae infections ( $P < 0.01$ ). In the early postpartum period, fever in the mothers was significantly lower in the patients offered vaginal disinfection, ... A parallel lower occurrence of urinary tract infections was also observed. **This prospective controlled trial demonstrated that vaginal douching with 0.2% chlorhexidine during labour can significantly reduce both maternal and early neonatal infectious morbidity.** The squeeze bottle procedure was simple, quick, and well tolerated. The beneficial effect may be ascribed both to mechanical cleansing by liquid flow and to the disinfective action of chlorhexidine.”*

**Int J Antimicrob Agents 1999 Aug;12(3):245-Vaginal disinfection with chlorhexidine during childbirth**

**The following two methods involve the use of antibiotics. There are obstacles to choosing antibiotic treatments in the home birth setting. Therefore, these methods are not a part of my protocols for treating GBS.**

The use of IV antibiotics carries some risk to the mother and baby, so I do not use IV antibiotics in a home birth setting. I have on occasion agreed to give penicillin to the newborn shortly after birth. But this approach requires a prescription from a physician for the penicillin before it can be given in the home setting. In my experience, it has not been easy to find a physician willing to write this prescription. Therefore, this is not my protocol either.

## **2. Centers for Disease Control and Prevention (CDC) Guidelines:**

The current 2002 CDC Guidelines for strep B recommend universal prenatal screening for vaginal and rectal group B strep colonization of all pregnant women at 35-37 weeks' gestation. According to these guidelines, women who test positive should be given IV antibiotics during labor. Any woman with any risk factors (*See Risk Factors, page 3*) should also receive IV antibiotics during labor. But according to the new 2002 CDC guidelines, women with negative vaginal and rectal group B strep screening cultures within 5 weeks of delivery do not require IV antibiotics during labor, even if they develop obstetric risk factors.

**Research regarding prophylactic treatment of the newborn instead of the mother:**

In cases where there are *no risk factors* (whether or not the mother is screened), penicillin G 50,000 to 60,000 units given IM to newborns within one hour of the time of delivery has been proven effective in preventing GBS in the newborn.

Siegel JD and Cushion NB *Obstetrics and Gynecology 1996; Vol 87 (Number 5 part 1), page 692*  
Wendel GD et al. *American Journal of Obstetrics and Gynecology 2002; Vol 186 Number 4, page 618*

### **More to Read about Antibiotics**

You may also wish to read an article in PEDIATRICS Vol. 106 No. 2 August 2000, pp 244-250. A copy is included in your information packet. This article sites research done on the use of antibiotics during labor and concludes: "Exposure to antibiotics during labor did not change the clinical spectrum of disease or the onset of clinical signs of infection within 24 hours of birth for term infants with Early Onset GBS infection.

### **Are there alternative treatments for GBS?**

There are alternatives to the research based recommendations listed above. Alternative methods are used by some women and many who use alternative treatments claim favorable results. However, alternative methods of treatment are either not supported by research or research has never been done on their effectiveness against strep B. Many such alternative treatments include various herbal or homeopathic remedies. Because the research evidence is currently lacking for these alternative treatments, I do not include them in my protocols.

In addition to herbs or other natural treatments, oral antibiotics are sometimes taken for the last several weeks of the pregnancy or during labor. However, I have found no research evidence backing the effectiveness of this method of treatment and therefore oral antibiotics are also not a part of my protocols for treatment of GBS.

### **The Following are considered High-Risk Factors for GBS Disease:**

1. Previous delivery of an infant with invasive GBS disease,
2. GBS bacteriuria during current pregnancy,
3. Delivery before 37 weeks' gestation,
4. Rupture of membranes greater than 18 hours,
5. Intrapartum (during labor) fever of > 100.4 (38.0 C)

### **Suggestions for Lowering Your Risk of GBS Disease:**

- Avoid cervical exams during your pregnancy
- Avoid cervical exams during labor
- Avoid cervical exams after ROM
- Avoid anal sex, especially when followed by vaginal sex (GBS is more naturally found in the intestinal tract.)
- Do not use an internal fetal monitor
- Do not have your membranes "stripped" because the mucus plug is a natural barrier to infection.
- Encourage healthy vaginal floraculture – A healthy vaginal floraculture discourages group B strep. GBS can grow in a healthy vagina with high lactobacilli, but it prefers similar conditions to Gardnerella (bacterial vaginosis) and yeasts. It grows more profusely under alkaline conditions. Cultivating acidophilus/lactobacilli may help discourage strep. Colonizing the gut with lactobacilli may help eliminate strep from the intestines and urogenital system.