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Key Inforbits

- About Group B Strep (GBS)
- GBS Risk Factors
- GBS Consequences
- GBS Treatment in Newborn
- GBS Screening
- GBS Prevention
- GBS in the Literature

July is...

Group B Strep Awareness Month



ABOUT Group B Strep (GBS)

Group B streptococcus (GBS) is the leading cause of infant death and decreased quality of life in the United States.¹ GBS (*Streptococcus agalactiae*) is a naturally occurring bacteria found in the lower digestive tract and birth canal of 10% to 40% of pregnant and nonpregnant women.^{2,3} GBS does not cause problems under normal circumstances.³ However, pregnant women who have GBS are at an increased risk for premature delivery and transmission of the bacteria to their infant.^{2,3} Infants can be infected with GBS during gestation or after birth.¹⁻³ In babies, GBS most commonly causes sepsis, meningitis, and pneumonia.^{2,3}

1. Centers for Disease Control and Prevention. Trends in perinatal group B streptococcal disease—United States, 2000-2006. *MMWR Morb Mortal Wkly Rep.* 2009;58(05):109-112.
2. Edwards MS, Baker CJ. Streptococcus agalactiae (group B streptococcus). In: Mandell GL, Bennett JE, Dolin R. Principles and practice of infectious diseases. 6th ed. Philadelphia: Elsevier; 2005. p.2423-2434.
3. Group B Strep International [homepage on the Internet]. Massachusetts: Group B Strep International; c2006-2008 [cited 2009 Jun 8]. Available from: <http://www.groupbstrepinternational.org/index.html>.

RISK FACTORS for Developing GBS Disease^{1,2}

- African-American ethnicity
- Age 20 years or younger
- GBS bacteria in urine (bacteriuria, either with or without symptoms)
- Previous delivery of an infant with GBS infection
- Previous delivery of an infant with sepsis
- History of miscarriage
- Fever during labor of 100.4°F or greater
- Membrane rupture (having your “water-break”) or delivery before 37 weeks of gestation
- Membrane rupture for 18 or more hours before delivery

1. Edwards MS, Baker CJ. Streptococcus agalactiae (group B streptococcus). In: Mandell GL, Bennett JE, Dolin R. Principles and practice of infectious diseases. 6th ed. Philadelphia: Elsevier; 2005. p.2423-2434.
2. Dermer P, Lee C, Eggert J, Few B. A history of neonatal group B streptococcus with its related morbidity and mortality rates in the United States. *J Pediatr Nurs* 2004;19(5):357-363.

CONSEQUENCES of GBS in Newborns

In infants, GBS disease is categorized based upon the age of onset into early-onset, late-onset, and very late-onset disease.

- **Early-onset infection** occurs within the first 6 days of birth, usually within 12 to 24 hours.^{1,2} Early-onset cases are estimated to occur in 0.34 per 1,000 live births in the United States.³ It primarily manifests as sepsis (60% of cases) with pneumonia and meningitis accounting for 30% and 10%, respectively.¹ Signs of early-onset infection include lethargy, poor feeding, inability to maintain normal body temperature, breathing difficulty, pale complexion, cyanosis (bluish skin), and low blood pressure.^{1,2,4}
- **Late-onset infection** typically occurs between 3 to 4 weeks after birth, with a range of 7 to 89 days.^{1,2} Late-onset cases are estimated to occur in 0.29 per 1,000 live births in the United States.³ It primarily presents as occult bacteremia or meningitis; however, other infections, such as bone and skin infections, may occur. Signs of late-onset infection include lethargy, poor feeding, irritability associated with fever, and seizure activity.^{1,2}
- **Very late-onset infection** occurs in 10% to 15% of late-onset cases. It occurs in infants older than 3 months of age who were born prematurely and requiring prolonged hospitalization.^{1,2}



1. Edwards MS, Baker CJ. Streptococcus agalactiae (group B streptococcus). In: Mandell GL, Bennett JE, Dolin R. Principles and practice of infectious diseases. 6th ed. Philadelphia: Elsevier; 2005. p.2423-2434.
2. American Academy of Pediatrics. Group B streptococcal infections. In: Pickering LK, Baker CJ, Long SS, McMillan JA, eds. Red Book: 2006 report of the committee on infectious diseases. 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006. p.620-627.
3. Active Bacterial Core surveillance (ABCs) Report, Emerging Infections Program Network: group B streptococcus, 2007. Centers for Disease Control and Prevention Web site [accessed 2009 Jun 8]. Available from: <http://www.cdc.gov/ncidod/dbmd/abc/survreports/GBS07.pdf>.
4. Dermer P, Lee C, Eggert J, Few B. A history of neonatal group B streptococcus with its related morbidity and mortality rates in the United States. *J Pediatr Nurs*. 2004;19(5):357-363.

SCREENING for GBS

The CDC guidelines recommend GBS screening for ALL pregnant women between 35 and 37 weeks' gestation. Susceptibility testing for erythromycin and clindamycin is also recommended in penicillin-allergic women to determine appropriate preventative strategy if necessary.¹

1. Group B Strep Prevention (GBS, baby strep, group B streptococcal bacteria) [Internet]. Centers for Disease Control and Prevention; c2009. [Cited 8 June 2009]; [about 1 screen]. Available from: <http://www.cdc.gov/groupbstrep/>.

PREVENTION of GBS in Newborns

Women who have tested positive for GBS or have had a previous newborn infected with GBS should be given intravenous penicillin during labor, regardless of time of onset, to prevent GBS disease in the newborn. Resistance to penicillin is low; however, increasing resistance to clindamycin and erythromycin has been observed. Administration of antibiotics during labor

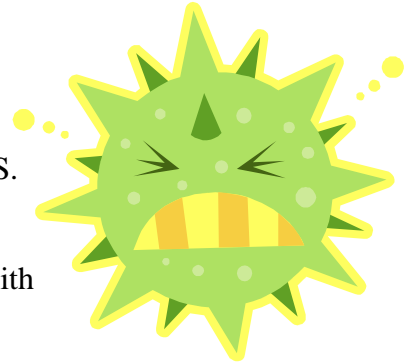
decreases the risk of transmission from 1 in 200 to 1 in 4000 for carriers without complications, such as fever or premature labor. As always, the decision to use antibiotics should be evaluated for risks and benefits. Penicillin is generally safe in pregnancy; however, the mother runs a small risk of experiencing an allergic reaction. For penicillin-allergic women, use of erythromycin or clindamycin is preferred if prenatal screening isolates are positive for susceptibility. In cases of noted resistance to either erythromycin or clindamycin, cefazolin or vancomycin (only for those with a history of class I hypersensitivity reaction to penicillin) becomes the last alternative.¹

1. Centers for Disease Control and Prevention. Prevention of perinatal group B streptococcal disease: a public health perspective. MMWR Recomm Rep. 2002;51:1-22. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5111a1.htm>. Accessed on June 9, 2009.

TREATMENT of GBS in Newborns

Newborn treatment recommendations:

- Ampicillin plus aminoglycoside is the initial treatment of choice for a newborn infant with presumptive invasive GBS.
- Penicillin G should be used alone when GBS has been identified and there is a documented response.
- Infants with meningitis caused by GBS should be treated with penicillin G or ampicillin.



1. Summary of Infectious Diseases. In: Pickering LK, Baker CJ, Long SS, McMillan JA, editors. Red Book. 27th Edition. American Academy of Pediatrics; 2006. p 622.
2. Edwards MS, Baker CJ. Streptococcus agalactiae (Group B Streptococcus). In: Mandell GL, Bennet JE, Dolin R, editors. Principles and Practice of Infectious Diseases. 6th Edition. Elsevier; 2005. p 2423-2434.

FROM THE MEDICAL LITERATURE

Term labor if group B strep status is not known.

While the CDC recommends GBS culture screening at 35 to 37 weeks for most women, there are still those who arrive at term labor whose GBS status is not known.¹ What is the best way to manage this patient? A recent evidence-based answer to this question was published in *The Journal of Family Practice*. The patient should be monitored and given intrapartum chemoprophylaxis (antibiotics during labor). This treatment should be based on the woman's risk factors. However, if a highly sensitive (>85%) polymerase chain reaction (PCR) test is immediately available, this should be used to test for GBS to accurately guide possible prophylactic treatment.²

1. Centers for Disease Control and Prevention. Prevention of perinatal group B streptococcal disease: a public health perspective. MMWR Recomm Rep. 2002;51:1-22. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5111a1.htm>. Accessed on June 9, 2009.
2. Brooke S, Whitworth J, Calabretta N. How best to manage the patient in term labor whose group B strep status is unknown. J Fam Practice. 2009;58(1):42-43

Where is the vaccine?

In 2006, the prospects of a GBS vaccine looked promising. There were even evaluations of a polysaccharide-tetanus toxoid conjugate that would enhance the immunogenicity of the vaccine.¹ Though there is continued interest in this field, there are several key factors, which have delayed

the progress of research. The GBS responsible for the clinical disease has shifting serotypes. Serotypes are groups of microorganisms that are closely related based on their specific set of antigens, the fundamental key to all vaccines. Without a stable antigen or set of antigens, vaccine development will continue to be a challenge. Secondly, due to the young age at which women are at greatest risk for GBS, many may not see the need for a vaccination. And once they are pregnant, concern for their fetus may make them unwilling to receive it. Finally, the current public concerns regarding the safety of vaccinations could foster unwillingness of women to receive the vaccination and possible litigation if side effects are present.²

1. Baker CJ, Rench MA, Paoletti LC, Edwards MS. Dose-response to type V group B streptococcal polysaccharide-tetanus toxoid conjugate vaccine in healthy adults. *Vaccine*. 2007;25(1):55-63.
2. Woods CJ, Levy CS. Streptococcus group B infections. *eMedicine*. Available from: <http://emedicine.medscape.com/article/229091-print>. Accessed on June 8, 2009.

DID YOU KNOW...?

Only John Hancock and Charles Thomson actually signed the Declaration of Independence on July 4th. Most of the other members of Congress signed on August 2nd, but the last signature was not added until 5 years later, and a few delegates never signed at all due to disagreement with the document.¹

1. The National Archives. Available at www.archives.gov. Accessed on: 8 June 2009.



The last “dose” ...

If they can make penicillin out of moldy bread, they can sure make something out of you. ~Muhammad Ali



HAPPY 4TH OF JULY!!!

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