November 2007

Invasive Group B Streptococcal Disease (*Streptococcus agalactiae*) Surveillance Protocol

Healthcare Provider Responsibilities

1. Report all suspected cases of invasive group B streptococcal disease within one week to the local health department. Also report a positive test result of group B streptococcus (*S. agalactiae*) isolated from a non-sterile site such as placenta and/or amniotic fluid with fetal demise.

2. For more information about recommendations for screening pregnant women and prophylaxis, please see CDC's revised guidelines on the *Prevention of Perinatal Group B Streptococcal Disease* at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5111a1.htm.

3. Submit paper copies of laboratory reports to the local health department via fax.

4. Complete the provider yellow section of the WVEDSS form for invasive group B streptococcal disease: http://www.wvdhhr.org/idep/pdfs/WVEDSS/InvasiveBacterialDiseaseGrpB.pdf

Laboratory Responsibilities

For invasive (isolated from a normally sterile site) group B streptococcal disease or *S. agalactiae* isolated from the placenta and/or amniotic fluid with fetal demise:

Notify and fax a copy of a positive test result of *S. agalactiae* to your local health department within one week of diagnosis for public health investigation. For reference labs, please fax and notify West Virginia Infectious Disease Epidemiology Program (IDEP) at 304-558-5358 (phone) and fax 304-558-8736.

Public Health Responsibilities

1. Educate the public about group B streptococcus (*S. agalactiae*), such as its mode of transmission and impact of disease.

2. Educate providers and laboratories to report confirmed and probable cases of group B streptococcus (*S. agalactiae*) isolated from normally sterile site within one

Infectious Disease Epidemiology Program
350 Capitol St, Room 125, Charleston WV 25301-3715
Phone: 304.558.5358 • Fax: 304.558.6335 • www.wvdhhr.org/idep

week of diagnosis to the local health department.

3. Educate providers about recommendations to screen all pregnant women and provide prophylaxis. (CDC Prevention of Perinatal Group B Streptococcal Disease. MMWR 2002;51 (No. RR-11), please see http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5111a1.htm for details.

4. Upon receiving a report of invasive Group B Streptococcal disease, confirm that the reported case meets the case definition.

5. For reported cases of invasive Group B Streptococcal disease, complete the WVEDSS *Invasive Bacterial Diseases Form* at https://phin.wvdhhr.org. Forward a copy of the laboratory report to IDEP via fax or mail.

6. For a (suspected or confirmed) outbreak of invasive Group B Streptococcal disease in a nursery:
   a. Check to confirm that the reported cases meet the confirmed or probable case definition.
   b. Immediately report outbreaks to your Regional Epidemiologist and IDEP.
   c. Complete invasive Group B Streptococcal disease line listing form, and forward to IDEP when completed.
   d. Report all cases that meet the case definition for invasive group B streptococcal disease in WVEDSS.
   e. Cohort ill and colonized infants.
   f. Recommend use of contact precautions (hand hygiene) by nursery staff and visitors.

Disease Prevention Objectives

1. Reduce the risk of disease through the education of the general public to practice good hand washing and basic hygiene as a primary means of preventing spread of infectious agents.

2. Reduce the risk of disease through the education of health care providers to:
   a. Follow CDC recommendations for the screening of all pregnant women (in each pregnancy) for vaginal and rectal Group B Streptococcus colonization between 35 and 37 weeks' gestation.
   b. Provide intrapartum chemoprophylaxis to colonized women at time of labor

or rupture of membranes, women with GBS bacteriuria during the current pregnancy, and those who have previously given birth to an infant with early-onset GBS disease.

Disease Control Objectives

Promptly investigate outbreaks of Group B Streptococcus to identify risk factors and take measures to control disease.

Disease Surveillance Objectives

1. To determine the incidence of invasive Group B Streptococcal disease in West Virginia as a function of age and other demographic factors;
2. To characterize the risk profile of persons with invasive Group B streptococcal disease.
3. To evaluate effectiveness of disease prevention measures.
4. To promptly identify outbreaks of invasive Group B Streptococcal disease and initiate appropriate prevention and control measures.

Public Health Significance

Group B streptococcus (GBS) remains a leading cause of serious neonatal infection despite great progress in perinatal GBS disease prevention in the 1990s.

GBS causes severe invasive disease in young infants. The majority of infections in newborns occurs within the first week of life and are designated “early-onset disease”.

Late-onset infections occur in infants aged >1 week, with most infections evident in the first 3 months of life. Young infants with invasive GBS disease usually present with sepsis or pneumonia, and less often contract meningitis, osteomyelitis, or septic arthritis.

Due to widespread maternal intrapartum antimicrobial prophylaxis, the incidence of early-onset disease has decreased by approximately 81% to approximately 0.3 cases per 1000 live births in 2003 compared to 1 to 4 cases per 1000 live births (before recommendations for prevention of early-onset GBS disease by maternal intrapartum antibiotic prophylaxis were made).

Because of advances in neonatal care, the case-fatality rate of early and late-onset GBS disease declined to 4% during the 1990s, compared to 50% in the 1970s. Case fatality rates in term infants range from 3% to 5% but are higher in preterm neonates.

Studies had shown that women with prenatal GBS colonization were 25 times more likely than women with negative prenatal cultures to deliver infants with early-onset GBS disease.

In addition to colonization with GBS, other factors that can increase the risk for early-onset disease include gestational age <37 completed weeks, longer duration of membrane rupture, intraamniotic infection, young maternal age, black race, hispanic ethnicity, and low maternal levels of anticapsular antibody.

With active prevention efforts in the 1990s, the incidence of early-onset GBS disease declined by 70% to 0.5 cases per 1,000 live births in 1999.

The incidence of invasive GBS infections among pregnant women in the United States declined by 21% from 0.29 per 1,000 live births in 1993 to 0.23 in 1998, suggesting that increased use of intrapartum antibiotics also prevented some cases of maternal GBS amnionitis and endometritis. However, the rate of late-onset GBS disease remained fairly constant throughout the 1990s.

Researchers are currently working on developing a group B streptococcal vaccine which may one day be available to the public.

Clinical Description

Group B streptococci are a major cause of perinatal bacterial infections, including bacteremia, endometritis, chorioamnionitis, and urinary tract infections in parturient women, and systemic and focal infections in infants from birth until 3 months of age or rarely older.

Invasive disease in young infants is categorized on the basis of chronologic age at onset.

Early-onset disease usually occurs within the first 24 hours of life (range, 0–6 days) and is characterized by signs of systemic infection such as respiratory distress, apnea, shock, pneumonia, and less often, meningitis (5%–10% of cases).

Late-onset disease, which typically occurs at 3 to 4 weeks of age (range, 7 days–3 months), commonly manifests as occult bacteremia or meningitis. Other focal infections include osteomyelitis, septic arthritis, adenitis, and cellulitis.

Very late-onset disease has onset beyond 3 months of age in very pre-term infants requiring prolonged hospitalization.

Group B streptococcus also causes systemic infections in nonpregnant adults with underlying medical conditions, such as diabetes mellitus, chronic liver or renal disease, malignancy, or other immunocompromising conditions, and adults 65 years of age and older.

Etiologic Agent

Group B streptococci *(Streptococcus agalactiae)* are gram-positive, aerobic diplococci that typically produce a narrow zone of beta-hemolysis on 5% sheep blood agar. These organisms are divided into 9 serotypes on the basis of capsular polysaccharides (Ia, Ib, II, and III through VIII). Serotypes Ia, Ib, II, III, and V account for approximately 95% of cases in the United States. Serotype III is the predominant cause of early-onset meningitis and most late-onset infections in infants.

Reservoir

Humans are the only known reservoir of *Streptococcus agalactiae*.

Group B Streptococcus is a common inhabitant of the gastrointestinal and genitourinary tracts; colonization of pharynx is less common.

Mode of Transmission

Transmission from mother to infant occurs shortly before or during delivery. After delivery person-to-person transmission can occur. Although uncommon, Group B Streptococcus can be acquired in the nursery from hospital personnel (probably via hand contamination) or more commonly in the community from healthy colonized people.

Incubation Period

For early onset disease is fewer than 7 days after birth.

For late and very late onset disease, the incubation period from acquisition of Group B Streptococcus to development of disease is unknown.

Period of Communicability

The period of communicability for GBS is unknown, but it presumably lasts for the duration of colonization or disease.

Outbreak Recognition

If the number of reported cases of GBS infection in your county is higher than usual or if you suspect an outbreak (two or more epi-linked cases) in a hospital nursery, then the situation warrants an investigation to determine the course of action. Record all cases utilizing the *GBS Line Listing Form*.

Case Definition

Clinical Description

Invasive group B streptococcal infections may manifest as any of several clinical syndromes, including sepsis, pneumonia and less frequently meningitis in neonates; in adults: osteomyelitis, septic arthritis, postpartum sepsis (i.e., puerperal fever), amnionitis, urinary tract infection, and still birth.

Laboratory criteria for diagnosis

- Isolation of group B Streptococcus (*Streptococcus agalactiae*) from a normally sterile site such as blood, cerebrospinal fluid (CSF), pleural fluid, peritoneal fluid, pericardial fluid, surgical aspirate, bone, joint fluid, or internal body site (e.g., lymph node, brain) and/or
- Isolation of group B Streptococcus (*Streptococcus agalactiae*) from a non-sterile site such as placenta and/or amniotic fluid with fetal demise.

Case classification

Confirmed: a case that is laboratory confirmed

Reference: CDC Active Bacterial Core Surveillance:
http://www.cdc.gov/NCIDOD/DBMD/abcs/meth-case.htm

Preventive Interventions

Educate the general public to:

- Practice good hand washing and basic hygiene as a primary means of preventing spread of infectious agents.

Educate health care providers to:

- Follow CDC recommendations for the screening of all pregnant women (in each pregnancy) at 35-37 weeks gestation for vaginal and rectal Group B streptococcus colonization or Group B Streptococcus isolated from urine in any concentration.

- Provide intrapartum chemoprophylaxis at time labor or rupture of membranes to:
    - all women identified as Group B Streptococcus carriers
    - have previously given birth to an infant with invasive Group B Streptococcus.
    - Group B Streptococcus carrier status unknown, if gestation <37 weeks, duration of membrane rupture ≥18 hours, or a maternal temperature of ≥100.4˚ F

Surveillance Indicators

- Proportion of cases with complete demographic information
- Proportion of cases with type of infection and specimen source reported
- Proportion of cases with underlying medical conditions reported
- Proportion of cases with history of pregnancy and postpartum status

References

Group B Streptococcal Infections, Red Book – 27th Edition – 2006 Report of the Committee on Infectious Diseases, American Academy of Pediatrics.

CDC Prevention of Perinatal Group B Streptococcal Disease. MMWR 2002;51 (No. RR-11)