

Streptococcus agalactiae, Invasive (Group B *Streptococcus*)

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BASIC EPIDEMIOLOGY

Infectious Agent

Streptococcus agalactiae (group B *Streptococcus* [GBS]) are beta-hemolytic, Gram-positive cocci.

Transmission

Transmission of group B *Streptococcus* from mother to infant occurs just before or during delivery. After delivery, infants are occasionally infected via person-to-person transmission in the nursery. In adults, GBS can be acquired through person-to-person transmission from healthy carriers (colonized but asymptomatic) in the community.

Incubation Period

The incubation period for early onset GBS disease in neonates is <7 days. The incubation period for late onset GBS disease in infants, children and adults is unknown.

Communicability

An estimated 10%–30% of women are carriers. GBS colonization occurs primarily in the gastrointestinal and genital tracts. Colonization is most often asymptomatic and does not require treatment. About half the infants born to colonized mothers are also colonized on the skin and mucosal surfaces as a result of passage through the birth canal or as a result of GBS ascending into the amniotic fluid. The majority of colonized infants, 98%, are asymptomatic.

Clinical Illness

In neonates two syndromes exist: early-onset disease (<7 days old) and late-onset disease (7-90 days old). Both syndromes can include sepsis, pneumonia and meningitis. Pregnancy-related infections include sepsis, amnionitis, urinary tract infection and stillbirth. In adults, pneumonia, bacteremia, meningitis, joint infections or soft tissue infections can occur.

Severity

The Centers for Disease Control and Prevention estimates that 0.53 deaths per 100,000 people occur annually. GBS is the leading cause of neonatal sepsis in the US. The case fatality rate in term infants is 1%–3% and as high as 20% in pre-term infants. The case fatality rate in adults is 8%.

DEFINITIONS

Clinical Case Definition

Group B *Streptococcus* is the most common cause of life-threatening infections, sepsis (blood infection) and meningitis (infection of the fluid and lining around the brain) in newborns. In infants, group B *Streptococcus* is characterized by sepsis, respiratory distress, apnea, shock,

pneumonia and meningitis. GBS is acquired in utero or during delivery, and occurs more frequently in low birth weight infants.

Group B *Streptococcus* invasive disease can present in a number of different ways in adults. The most common problems in adults are bloodstream infections, pneumonia, skin and soft-tissue infections and bone and joint infections. Rarely, group B *Streptococcus* can cause meningitis in adults.

Laboratory Confirmation

- Isolation of group B *Streptococcus* (*Streptococcus agalactiae*) by culture from a normally sterile site
- Isolation of group B *Streptococcus* (*Streptococcus agalactiae*) by culture from placenta or amniotic fluid from an intact amnion

Normally sterile site: Invasive diseases typically cause significant morbidity and mortality. Normally sterile sites include:

- Blood (excluding cord blood)
- Cerebrospinal fluid (CSF)
- Pericardial fluid
- Pleural fluid
- Peritoneal fluid
- Bone or bone marrow

The following are also considered sterile sites when certain other criteria are met:

- Joint fluid when the joint surface is intact (no abscess or significant break in the skin),
- Internal body sites (brain, heart, liver, spleen, vitreous fluid, kidney, pancreas, lymph node or ovary) when the specimen is collected aseptically during a surgical procedure.

Normally sterile sites do *not* include:

- Anatomical areas of the body that normally harbor either resident or transient flora (bacteria) including mucous membranes (throat, vagina), sputum, and skin, or abscesses or localized soft tissue infections.

See the Sterile Site and Invasive Disease Determination Flowchart in Appendix A for confirming that a specimen meets the criteria for sterile site.

Case Classifications

- **Confirmed:** A clinically compatible case that is laboratory confirmed
- **Probable:** No probable case definition

See the Streptococcal Infection: Case Status Classification Flowchart in Appendix A for assistance with case classification.

SURVEILLANCE AND CASE INVESTIGATION

Case Investigation

Local and regional health departments should investigate all reports of suspected group B *Streptococcus*. In-depth investigation involving patient interviews is not required **but confirmation of case status is necessary.**

Case Investigation Checklist

- Confirm that laboratory results meet the case definition.
 - See the Sterile Site and Invasive Disease Determination Flowchart for confirming that a specimen meets the criteria for sterile site.
- Review medical records or speak to an infection preventionist or physician to verify that the case meets case definition, identify underlying health conditions and describe the course of illness.
 - The Invasive Streptococcal Case Report Form is available at <http://www.dshs.state.tx.us/idcu/investigation/> and can be used to record information. This form does not need to be sent to DSHS.
- If applicable, see the Managing Special Situations section.
- All confirmed case investigations must be entered and submitted for notification in the NEDSS Base System (NBS). Please refer to the *NBS Data Entry Guidelines* for disease specific entry rules.

Control Measures

- Provide education on invasive group B *Streptococcus* as needed.
- Recommend that anyone experiencing symptoms be evaluated by a healthcare provider.
- Promote routine hand washing with soap and warm water.
- Pregnant women should undergo vaginal-rectal screening for GBS colonization at 35-37 weeks.
- Use standard precautions. In the case of a nursery outbreak, use contact precautions.
- Antibiotic prophylaxis during non-cesarean section labor is recommended if the mother:
 - Has a positive GBS screen between weeks 35 and 37
 - Has a positive GBS urine result anytime during the current pregnancy
 - Delivered a previous baby with invasive GBS disease
 - Develops fever ($\geq 100.4^{\circ}\text{F}$) during labor
 - Has not delivered her baby within 18 hours of her water breaking
 - Goes into labor before 37 weeks and has not been tested for GBS

Exclusion

Children with a fever from any infectious cause should be excluded from school and daycare for at least 24 hours after fever has subsided without the use of fever-suppressing medications.

MANAGING SPECIAL SITUATIONS

Case is a Suspected Healthcare-Associated (Nosocomial) Infection

If one or more nosocomial (healthcare-associated) cases occur in patients of the same labor and delivery facility, residential care facility or other long-term care facility; and the cases have no other identified plausible source of infection; or if other circumstances suggest the possibility of nosocomial infection, notify the IRID team lead in EAIDB at **(800) 252-8239 or (512) 776-7676**. The DSHS EAIDB Healthcare-Associated Infections (HAI) Team or the regional HAI

epidemiologist should also be notified and should work with the local health department to investigate the possibility of transmission within the healthcare setting.

Outbreaks

If an outbreak is suspected, notify EAIDB at **(800) 252-8239** or **(512) 776-7676**.

The local/regional health department should:

- Review infection prevention practices currently in place.
- Work with the facility to ensure that everyone gets hand hygiene education.
- Recommend cohorting of ill and colonized infants together and the use of contact precautions in nursery settings.
- Encourage anyone with symptoms to be evaluated by a healthcare provider.

Note: Treatment of asymptomatic carriers is considered ineffective.

REPORTING AND DATA ENTRY REQUIREMENTS

Provider, School, Child-Care Facility, and General Public Reporting Requirements

Confirmed cases are required to be reported **within 1 week** to the local or regional health department or to DSHS EAIDB at **(800) 252-8239** or **(512) 776-7676**.

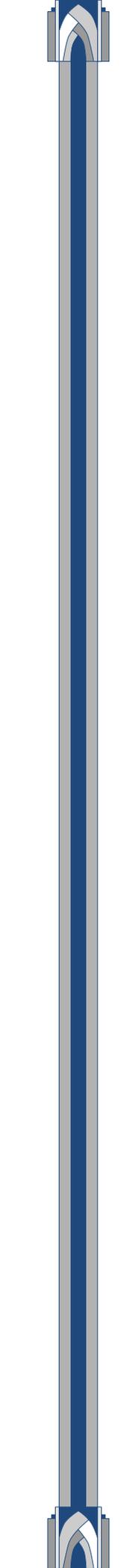
Local and Regional Reporting and Follow-up Responsibilities

Local and regional health departments should:

- Enter the case into NBS and submit an NBS notification on all **confirmed** cases to DSHS within 30 days of receiving a report of a confirmed case.
 - Please refer to the *NBS Data Entry Guidelines* for disease-specific entry rules.
 - A notification can be sent as soon as the case criteria have been met. Additional information from the investigation may be entered upon completion of the investigation.
- If the investigator filled out an investigation form, fax (or mail) it when the NBS notification is submitted.
 - Investigation forms may be faxed to **512-776-7616** or mailed to:
Infectious Disease Control Unit
Texas Department of State Health Services
Mail Code: 1960
PO Box 149347
Austin, TX 78714-9347

When an outbreak is investigated, local and regional health departments should:

- Report outbreaks within 24 hours of identification to the regional DSHS office or to EAIDB at **512-776-7676**.
- Submit a completed **Respiratory Disease Outbreak Summary Form** at the conclusion of the outbreak investigation.
 - Fax a copy to the DSHS regional office and/or to EAIDB at 512-776-7676.
 - The Respiratory Disease Outbreak Summary Form is available at <http://www.dshs.state.tx.us/idcu/investigation/>.



LABORATORY PROCEDURES

Testing for group B *Streptococcus* is widely available from most private laboratories. In general, specimens should not be submitted to the DSHS laboratory. However, if prior approval is obtained from DSHS EAIDB, isolates may be submitted to DSHS for genotyping (PFGE) in cluster or outbreak investigations.

UPDATES

- Definitions: minor change to Laboratory Confirmation to bring this document in line with Epi Case Criteria Guide (ECCG) changes
- Surveillance and Case Investigation: emphasis added on collecting enough information for GAS cases to confirm that the case meets case definition