

# Section 17: *Streptococcal pyogenes*, Invasive (Group A Streptococcus)

## BASIC EPIDEMIOLOGY

### Infectious Agent

*Streptococcus pyogenes* (group A streptococcus / GAS) is a beta hemolytic gram positive cocci. There are over 130 serotypes.

### Transmission

Spread occurs via large respiratory droplets and direct contact. Spread via indirect contact with objects is rare. Foodborne spread has been associated with milk, milk products and egg products. Food products are contaminated by an infected individual. Raw milk may be contaminated if GAS is transmitted to the cow.

### Incubation Period

The incubation period is 1 to 5 days.

### Communicability

Untreated cases may be infectious 10–21 days, longer if purulent discharges are present. The infectious period ends 24 hours after start of appropriate treatment. Asymptomatic carriage is possible.

### Clinical Illness

Group A streptococcus has multiple invasive and non-invasive presentations. Non-invasive presentations include strep throat, scarlet fever, impetigo, cellulitis, Otitis media, and wound infections. Invasive presentations include meningitis, septicemia, septic arthritis, necrotizing fasciitis, peritonitis, osteomyelitis and toxic shock syndrome.

### Severity

Severity varies by clinical presentation. Mortality of invasive infections ranges from 12–13% and can be as high as 40% in cases with toxic shock syndrome. The Centers for Disease Control and Prevention estimates that 0.4 deaths per 100,000 people occur annually.

## DEFINITIONS

### Clinical Case Definition

Invasive group A streptococcal infections may manifest as any of several clinical syndromes, including pneumonia, bacteremia in association with cutaneous infection (e.g., cellulitis, erysipelas, or infection of a surgical or nonsurgical wound), deep soft-tissue infection (e.g., myositis or necrotizing fasciitis), meningitis, peritonitis, osteomyelitis, septic arthritis, postpartum sepsis (i.e., puerperal fever), neonatal sepsis, and non-focal bacteremia.

### Laboratory Confirmation

- Isolation of group A streptococci (*Streptococcus pyogenes*) by culture from a normally sterile site (e.g., blood or cerebrospinal fluid, or, less commonly, joint, pleural, or pericardial fluid)
- Isolation of group A streptococci (*Streptococcus pyogenes*) by culture from any site when Toxic Shock Syndrome or Necrotizing Fasciitis is present

**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.

#### Case Classifications

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

## CASE INVESTIGATION

### Case Investigation

Local and regional health departments should investigate all reports of suspected group A streptococcus.

### Case Investigation Checklist

- Confirm laboratory results meet the case definition.
  - See the Sterile Site and Invasive Disease Determination Flowchart for confirming a specimen meets the criteria for sterile site.
- Review medical records or speak to an infection preventionist or healthcare provider to verify case definition, identify underlying health conditions and describe course of illness.
  - The Streptococcal Investigation Form may be used to record information collected during the investigation. This form is not required to be sent to DSHS.

- 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 streptococcus as needed.
- Use appropriate food safety practices
- Recommend only pasteurized milk be consumed.
- Prohibit infected people from handling milk and prohibit people with uncontained skin lesions from handling prepared food.
- Recommend that anyone experiencing symptoms including signs of a wound infection (redness, swelling, drainage, pain) be evaluated by a healthcare provider.
- Promote basic control measures which include:
  - Keep cuts, scratches, sores and wounds clean and covered
  - Cover your mouth and nose when you sneeze and cough
  - Wash your hands often using hot water and soap
  - Don't share toothbrushes or eating utensils
  - Vaccinate children over 1 year of age against chickenpox (Some children get invasive GAS infection right after they've had the chickenpox)
- Note: For household contacts of persons with invasive GAS infection, routine screening for GAS colonization and chemoprophylaxis is not recommended

### Exclusion

Children with streptococcal sore throat or scarlet fever should be excluded from school and daycare until 24 hours after initiation of antibiotic treatment and until fever subsides. Children with a fever from any infectious cause should be excluded from school/daycare for at least 24 hours after fever has subsided without the use of fever suppressing medications.

## MANAGING SPECIAL SITUATIONS

### Case is a Suspected Health Care-Associated Infection

If one or more health care-associated (nosocomial) cases occur in patients of the same dental or healthcare provider, acute care hospital, 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 Infectious Disease Control Unit (IDCU) at **(800) 252-8239 or (512) 776-7676**. A single case of postpartum or post-surgical GAS infection requires prompt epidemiologic investigation and assessment of potential nosocomial spread from an asymptomatic carrier may be required

The local/regional health department should

- Review infection prevention practices at the facility.
- Request the facility to conduct enhanced surveillance for GAS for 6 months before and after the first (and last) case is identified.

- Work with the DSHS IDCU healthcare associated infections (HAI) team or the regional HAI epidemiologist to rule out transmission within the healthcare setting.

### **Outbreaks**

If an outbreak is suspected, notify Infectious Disease Control Unit (IDCU) at **(800) 252-8239** or **(512) 776-7676**. Outbreaks of invasive disease in children or of rheumatic fever require immediate public health attention.

The local/regional health department should

- Rule out foodborne exposure.
- Work with the facility to ensure staff and students/residents get hand hygiene and respiratory etiquette education.
- Recommend staff with strep infections be restricted from working until 24 hours after antibiotic treatment is initiated.
- Encourage anyone with symptoms be evaluated by a healthcare provider.
- In childcare settings, limit transfers of children to other childcare settings.
- If cases continue to occur after basic control measures are implemented and the contacts are at high risk for complications or the presentation of illness is severe (rheumatic fever, acute nephritis, etc), consider testing to identify carriers.

## **REPORTING AND DATA ENTRY REQUIREMENTS**

### **Provider, School & Child-Care Facilities, and General Public Reporting Requirements**

Confirmed and suspected cases of group A streptococcus should be reported within 1 week of suspicion to the local or regional health department or the Texas Department of State Health Services (DSHS), Infectious Disease Control Unit at (800) 252-8239 or (512) 512-7676.

### **Local and Regional Reporting and Follow-up Responsibilities**

Local and regional health departments should submit an NBS notification on all confirmed cases to DSHS within 30 days of receiving a report. Please refer to the *NBS Data Entry Guidelines* for disease specific entry rules. Investigations forms are not required to be submitted.

Local and regional health departments should report suspected outbreaks within 24 hours of identification to the regional DSHS office or to 512-776-7676 and submit a completed respiratory outbreak form at the conclusion of the outbreak investigation (fax a copy to the DSHS regional office and/or IDCU 512-776-7676)

## **LABORATORY PROCEDURES**

Testing for group A streptococcus is widely available from most private laboratories. Specimens should not be submitted to the DSHS laboratory.