



STREPTOCOCCAL INFECTIONS, GROUP A

(See also **STREPTOCOCCAL TOXIC SHOCK SYNDROME** and **EXANTHEMS—DIFFERENTIAL DIAGNOSIS**)

1. **Agent:** Group A beta-hemolytic streptococci (*Streptococcus pyogenes*, GAS) with over 80 M-protein types, cause localized or generalized infection and nonsuppurative sequelae, including rheumatic fever and glomerulonephritis.

Group B streptococci (GBS, *Streptococcus agalactiae*) are important causes of neonatal sepsis and meningitis acquired in utero or during delivery from a vaginally colonized mother. Groups C and G streptococci have been implicated in outbreaks of streptococcal tonsillitis, usually foodborne.

Group D streptococci have been reclassified as *Enterococcus* species.

2. **Identification:**

- a. **Symptoms:** The most common conditions caused by group A streptococci are pharyngitis or tonsillitis and skin infections (pyoderma and impetigo). GAS also cause scarlet fever, cellulitis, wound infections, erysipelas, otitis media, pneumonia, septicemia, puerperal fever, and rarely, necrotizing fasciitis and streptococcal toxic shock syndrome. Typical symptoms of streptococcal pharyngitis include sudden onset of fever and sore throat with enlarged, tender anterior cervical lymph nodes.

Scarlet fever usually occurs in association with streptococcal pharyngitis and is characterized by an erythematous, sandpaper-like skin rash and circumoral pallor, in addition to the symptoms of the streptococcal infection (e.g., sore throat, skin or wound infection). The rash is caused by an erythrogenic exotoxin produced by some strains of streptococci. During convalescence, desquamation of skin on fingertips and toes may occur. Streptococcal necrotizing fasciitis and streptococcal toxic shock syndrome are rare, life-threatening conditions which involve localized tissue destruction,

multiorgan system failure and shock and are associated with infection with invasive, toxin-producing strains of GAS.

Nonsuppurative complications of GAS infection include acute rheumatic fever and acute glomerulonephritis, with onset 1-5 weeks after streptococcal infection.

- b. **Differential Diagnosis:** Infectious mononucleosis, drug eruptions, allergy, roseola, herpangina, cellulitis, sepsis, meningitis from other organisms. See **ACUTE EXANTHEMS -- DIFFERENTIAL DIAGNOSIS**.
 - c. **Diagnosis:** Rapid streptococcal tests based on identification of GAS antigen in pharyngeal secretions may be used as an adjunct to culture. If results are positive, assume the patient has group A streptococcal infection. If results are negative or equivocal, a throat culture should be done and plated on blood agar. Latex agglutination, immunofluorescence and co-agglutination tests performed on colonies growing on the agar are accurate in distinguishing group A from other beta-hemolytic streptococci. Bacitracin sensitivity discs presumptively differentiate group A.
3. **Incubation:** 1 to 3 days.
 4. **Reservoir:** Human.
 5. **Source:** Discharge from nose, throat, purulent lesions, scabs.
 6. **Transmission:** Direct contact with patients or carriers; rarely by indirect contact through objects or hands. Anal, vaginal, skin and pharyngeal carriers have been responsible for nosocomial outbreaks of surgical wound infections.
 7. **Communicability:** Highest during acute infection and in untreated cases of pharyngitis. It gradually decreases over several weeks. If treated with appropriate



antibiotics, patients are considered noninfectious within 24 hours of beginning treatment.

8. **Specific Treatment:** Orally administered penicillin V or penicillin G for at least 10 days or a single dose of intramuscularly administered benzathine penicillin G are acceptable agents for treatment of uncomplicated streptococcal pharyngitis or tonsillitis (erythromycin is indicated for patients allergic to penicillin). Clindamycin and cephalosporins are acceptable alternatives. Although resistance of GAS to penicillin has not been documented, treatment failures have occurred, presumably due to beta-lactamase-producing upper respiratory tract flora interfering with penicillin. Sulfonamide and tetracyclines should not be used for treating GAS pharyngitis.
9. **Immunity:** Immunity develops only against specific M-type strains or exotoxins.

REPORTING PROCEDURES

1. **Reportable.** Outbreaks and cases in food handlers and dairy workers are reportable under *California Code of Regulations*, Section 2500. Individual cases of invasive streptococcal disease (GAS isolated from normally sterile site), including streptococcal necrotizing fasciitis and streptococcal toxic shock syndrome, are reportable under *California Code of Regulations*, Section 2500, Occurrence of Unusual Diseases.
2. **Report Forms:** (outbreaks only)

OUTBREAK / UNUSUAL DISEASE REPORT (DHS 8554)

CD OUTBREAK NOTICE -- HEALTH CARE FACILITY (H-1163)

CD OUTBREAK INVESTIGATION -- HEALTH CARE FACILITY (H-1164)

3. **Epidemiologic Data:**
 - a. Occupation of case, contacts.
 - b. Evidence of virulent strains such as symptoms of necrotizing fasciitis, toxic

shock syndrome, acute rheumatic fever, glomerulonephritis, etc.

CONTROL OF CASE, CONTACTS & CARRIERS

Investigate within 24 hours of notification of cases in food handlers and dairy workers and of outbreaks in other groups.

CASE:

1. **Sensitive Situation or Occupation:** Remove from sensitive situation or occupation or from school until at least 24 hours after beginning antibiotic therapy and until afebrile.
2. **Isolation:** Drainage and secretion precautions; may be terminated 24 hours after beginning antibiotic therapy.

CONTACTS:

1. **Sensitive Situation or Occupation:** If symptomatic, remove and follow as for case. If asymptomatic, daily surveillance until case is released, or 3 days after contact is broken.
2. **Symptomatic Contacts:** Appropriate cultures should be obtained and the person should receive treatment if the culture is positive.
3. **Asymptomatic contacts:** Treatment of asymptomatic contacts is generally not indicated except in special outbreak situations in which individuals have unusually close contact or when the contacts are at increased risk for developing sequelae. While household contacts of patients with severe invasive GAS disease may be at increased risk for developing invasive GAS infections, the role of chemoprophylaxis in this setting has not as yet been defined and should be determined on a case by case basis. Consult ACDC.

CARRIERS:

Asymptomatic pharyngeal carriage of GAS is usually not an indication for antibiotic treatment, except in special situations.



PREVENTION-EDUCATION

1. Stress hand washing and personal hygiene.
2. Investigate promptly any unusual clusters of cases to identify possible common sources, such as contaminated milk or foods.
3. Detect early infection in other family members. Household contacts who have recent or current evidence of streptococcal infection should be cultured and treated if the culture is positive.
4. For outbreaks in special groups in which individuals have especially close contact, such as military populations and newborn nurseries, or when recurrent outbreaks occur in institutional settings, it may be necessary to administer prophylactic antibiotics to the entire group to terminate spread. Consult with District Health Officer or ACDC if mass prophylaxis is being considered as a control measure.
5. For outbreaks in schools and daycare centers, encourage vaccination for children who are susceptible to varicella.
6. Encourage completion of full 10 day or antibiotic course to minimize complications and carrier state.
7. Prepare, store, and refrigerate food properly.
8. Disinfect articles soiled with purulent discharges and dispose of appropriately.

Molecular typing by pulsed-field gel electrophoresis is available in consultation with Acute Communicable Disease Control.

DIAGNOSTIC PROCEDURES

Culture:

Container: Culturette; follow package instructions.

Laboratory Form: BACTERIOLOGY CULTURE & SENSITIVITY (H-2553).

Examination Requested: Streptococcus.

Material: Throat (or wound) swab.

Storage: Room temperature.