



## PNEUMOCOCCAL, INVASIVE DISEASE

1. **Agent:** *Streptococcus pneumoniae* (pneumococcus), a gram-positive diplococcus. A major cause of pneumonia, bacteremia and meningitis. There are at least 90 known serotypes but 23 cause approximately 90% of the bacterial infections in the US.
  2. **Identification:**
    - a. **Symptoms:** Sudden onset of shaking chills, fever, pleural pain, difficulty breathing, rapid breathing, a cough productive of “rusty” sputum, malaise, weakness, and anorexia. In the elderly, onset may be less abrupt while infants and young children may have initial symptoms of fever, vomiting, and convulsions.
    - b. **Differential Diagnosis:** Other bacterial infections that can cause pneumonia, sepsis, or meningitis.
    - c. **Diagnosis:** Positive culture of *Streptococcus pneumoniae* from a normally sterile site, e.g., blood or cerebrospinal fluid.
  3. **Incubation:** Not well determined; may be as short as in the 1-3 days.
  4. **Reservoir:** Humans. Asymptomatic carriage is common.
  5. **Source:** Respiratory secretions.
  6. **Transmission:** Droplet spread, direct oral contact, or indirectly, articles soiled with respiratory secretions. Autoinoculation in persons carrying the bacteria in their upper respiratory tract occurs. Person to person transmission is common but illness among casual contacts and attendants is infrequent.
  7. **Communicability:** Unit pneumococci are no longer present in nose or throat in significant numbers, usually 24-48 hours after the initiation of effective therapy.
  8. **Specific Treatment:** Parenteral penicillin G, cephalosporins or fluoroquinolones if case is allergic to penicillin. For meningitis cases, initial treatment with vancomycin may be warranted until susceptibilities can be determined. Because of the emergence of resistance to penicillin and other antimicrobials, the sensitivities of strains should be determined to guide treatment.
  9. **Immunity:** Specific for infecting serotype, usually follows an attack and may last for years.
- REPORTING PROCEDURES:**
1. **Reportable:** LAC-DPH.
  2. **Reporting Form:** [Invasive Group A Streptococcal \(GAS\) or Pneumococcal Disease Report Form](#)
  3. **Epidemiologic Data:**
    - a. Sex, age, race, ethnicity.
    - b. Outcome of illness, date of death if case died.
    - c. Hospitalization, name of hospital, admission and discharge dates, hospital transfers and transfer date.
    - d. Vaccination status if  $\geq 65$  years or  $< 5$  years old. If  $< 5$  years, number of doses.
    - e. Laboratory data: date specimen collected, specimen type, antibiotic susceptibilities.
- CONTROL OF CASES, CONTACTS & CARRIERS:** Not applicable.
- PREVENTION-EDUCATION:**
1. Respiratory isolation for hospitalized cases may be warranted for patients with antibiotic resistant infections who may transmit it to other patients at high risk of pneumococcal disease.



2. Special attention should be given to institutional and military outbreaks.
3. The 13-valent pneumococcal conjugate vaccine (Prevnar 13) replaced the heptavalent pneumococcal conjugate vaccine (Prevnar®) in 2010 and is recommended by the Advisory Committee on Immunization Practices (ACIP) for all children at age 6 weeks to 5 years, children and adults aged 6-64 years with certain immunocompromising conditions, and adults 65 years or older with no previous pneumococcal vaccine or unknown vaccination history. The 23-valent pneumococcal polysaccharide vaccines (Pnu-Imune® and Pneumovax®) are recommended for all adults 65 years or older and people over

age 6 years (71 months) who are at high risk of invasive pneumococcal disease. Refer to the [Advisory Committee on Immunizations Practices recommendations](#) for more detailed guidance on the use of pneumococcal conjugate and protein polysaccharide vaccines. See individual product labeling for information on dosing and scheduling of the vaccines.

#### DIAGNOSTIC PROCEDURES:

Diagnosis of infection with *Streptococcus pneumoniae* generally relies on isolation of the organism from blood or other normally sterile body sites.