

PNEUMOCOCCAL, INVASIVE DISEASE

1. **Agent:** *Streptococcus pneumoniae* (pneumococcus), a gram-positive diplococcus. There are at least 90 known serotypes but 23 cause approximately 90% of the bacterial infections in the USA.
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. A major cause of pneumonia, bacteremia and meningitis. 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-DHS.
2. **Reporting Form:** **LAC-DHS INVASIVE PNEUMOCOCCAL DISEASE FORM (acd-Invas Pneumo, 10/02 fillable)** will be mailed/fax to the following website: www.lapublichealth.org/acd/procs/pneumo/spfrm4.pdf.

SUPPLEMENTAL FORM: PNEUMOCOCCAL CONJUGATE VACCINE FAILURE CASE REPORT (CDC-52.87, 9/01), if indicated.

Contact ACDC. Completed form must accompany isolate which must be submitted to the Los Angeles County Public Health Department.

The following four conditions must be met to use the pneumococcal conjugate vaccine failure form:

1. The child is < 5 years old
2. The child has invasive pneumococcal disease as defined above (2c in the Identification section).
3. A pneumococcal isolate is available for serotyping, and
4. A pneumococcal conjugate vaccine (Pevnar[®]) history is available.

The vaccine failure form can be obtained by mail or fax from ACDC or is available on the following website:

www.cdc.gov/nip/diseases/pneumo/PCV-survrpts/PCV7-form.pdf

3. Epidemiologic Data:

- a. History of viral illness within the past 7 days, especially measles or influenza A or B.
- b. History of chronic disease, immunosuppression, or splenectomy.
- c. Pertinent laboratory information including antimicrobial resistance results.
- d. History of immunization for individuals under 5 years and 65 years of age and older. Number of doses given.
- e. Exposure to day care.

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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. Heptavalent pneumococcal conjugate vaccine (Prevnar[®]) is recommended by the Advisory Committee on Immunization Practices (ACIP) for all children less than age 2 years, and for children up to age 5 years who are at high risk of invasive pneumococcal infections. The 23-valent pneumococcal polysaccharide vaccines (Pnu-Imune[®]23 and Pneumovax[®]23) are recommended for all adults \geq 65 years and those over age 2 years who are at high risk of invasive pneumococcal disease. For children age 2 years to 5 years of age who are at high risk of invasive pneumococcal infections, ACIP recommends use of pneumococcal conjugate vaccine followed at least 2 months later by 23-valent pneumococcal polysaccharide vaccine, in order to provide protection against a broader range of serotypes, although supporting data are limited. 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.