

PERTUSSIS FACT SHEET

LOS ANGELES COUNTY IMMUNIZATION PROGRAM

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BACKGROUND INFORMATION

- **Agent:** *Bordetella pertussis*, a gram negative pleomorphic bacillus.
- **Transmission:** Via contact with respiratory tract secretions or droplets of infected persons.
- **Incubation Period:** Commonly 7-10 days (range 5-21 days).
- **Communicability:** Greater in the catarrhal stage before paroxysms. Tapers off until 21 days after onset of paroxysms, if untreated. If treated, 5 days after start of appropriate antibiotics. Secondary attack rate of 70 – 100% among susceptible household contacts.

IMMUNITY FROM VACCINATION

- **5 doses of DTaP are recommended for children <7 years of age**
 - 3 (primary) doses at ages 2, 4, and 6 months
 - Boosters at 15-18 months AND 4-6 years of age
 - **Vaccine protection decreases over time**, with little or no protection 5-10 years following receipt of the last vaccine dose.
- **A single dose of Tdap is recommended for adolescents and adults at least 10 years of age**
 - Tdap may replace Td for a booster immunization against tetanus, diphtheria, and pertussis. Td should be used for subsequent booster doses. Contact the Immunization Program for more information regarding Tdap if necessary.
- **Adults who have close contact with children <12 months of age and health care personnel who provide direct patient care should be prioritized for receipt of Tdap and can receive it at an interval as short as 2 years since their last dose of Td.**
- Immunity following pertussis illness is not permanent.

CLINICAL FEATURES OF PERTUSSIS

- **1st Stage (Catarrhal stage):** Insidious onset of coryza (runny nose), sneezing, and a mild, occasional cough, similar to the common cold. Fever is absent or minimal.
- **2nd Stage (Paroxysmal stage):** Cough becomes more severe. Repeated violent coughing episodes without inhalation (paroxysms), ended by characteristic high-pitched inspiratory whoop. Post-tussive vomiting or gagging can occur without whoop. Can last 1-2 months.
- **3rd stage (Convalescent stage):** Gradual recovery. Cough becomes less paroxysmal.
- **Infants (under 6 months of age):** May have cough, choking, apnea, cyanosis, without “whoop” or paroxysms. Leukocytosis and lymphocytosis are common findings during the early paroxysmal stage. Complications include hospitalization, pneumonia, seizures, encephalopathy, and death.
- **Adults/adolescents/immunized children:** Have milder illness, hacking cough, usually with mucus production and occasional paroxysms. Post-tussive vomiting or gagging can occur without “whoop”. Mimics bronchitis.

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ASSAYS ACCEPTED AS LABORATORY CONFIRMATION OF PERTUSSIS

- **Culture:** A negative culture does not rule out the diagnosis. All suspected cases of pertussis should have a nasopharyngeal aspirate or swab obtained for culture from the posterior nasopharynx before starting antibiotics and within 3 weeks of the cough onset. Additionally, plating the specimen immediately onto culture media, as opposed to using transport media, results in a higher percentage of positive results. Bordet-Gengou or Regan-Lowe agar are the only media which can be used for culturing *Bordetella pertussis*. It is therefore important to check with the laboratory beforehand, to determine the availability of the correct culture media. Consult the Public Health Lab (562-658-1300) or the Immunization Program (213-351-7800) if technical assistance is needed.
- **PCR Tests:** The PCR test, when it is available, can greatly aid in the diagnosis of pertussis. Numerous studies have demonstrated the potential for PCR tests to detect *Bordetella pertussis* with greater sensitivity and more rapidly than culture. Positive PCR must also be accompanied by positive clinical signs and symptoms. A specimen obtained by nasopharyngeal swab or aspirate is adequate for the PCR test.

ASSAYS NOT ACCEPTED AS LABORATORY CONFIRMATION OF PERTUSSIS

- **Direct Fluorescent Antibody (DFA) Tests:** The DFA test has variable sensitivity and specificity, resulting in false negative as well as false positive results.
- **Serological Tests:** Serological tests are not yet standardized enough to be highly reliable and are difficult to interpret for previously immunized individuals.

TREATMENT AND CHEMOPROPHYLAXIS

All cases, their household members, and other close contacts, regardless of age and immunization status, should receive treatment or chemoprophylaxis. The goal is to reduce spread of infection within the household and the community at large. The dosing for treatment or chemoprophylaxis is the same.

RECOMMENDED TREATMENT AND CHEMOPROPHYLAXIS*

Drug	Infants (Special Age Categories)	Infants and Children	Adults
Erythromycin	Aged < 1 month: Not preferred because of risk of infantile hypertrophic pyloric stenosis (IHPS)	Aged ≥ 1 month: 40-50 mg/kg/day (max 2 g/day) orally in 4 divided doses each day x 14 days	2 g/day orally in 4 divided doses each day x 14 days
If person can not tolerate erythromycin or compliance is questionable:			
Trimethoprim - Sulfamethoxazole (TMP-SMX)	Aged < 2 months: Contraindicated because of risk of kernicterus	Aged ≥ 2 months: TMP-8 mg/kg/day and SMX-40 mg/kg/day orally in 2 divided doses each day x 14 days	2 regular strength tablets (TMP-80 mg and SMX-400 mg) BID or one double strength tablet (TMP-160 mg and SMX-800 mg) BID x 14 days
Clarithromycin (Biaxin)	Aged < 1 month: Not recommended because of lack of safety data	Aged ≥ 1 month: 15 mg/kg/day (max 1g/day) orally in 2 divided doses each day x 7 days	15 mg/kg/day (max 1g/day) orally in 2 divided doses each day x 7 days
Azithromycin (Zithromax)	Aged < 6 months: 10 mg/kg/day orally once daily x 5 days	Aged ≥ 6 months: 10 mg/kg/day (max 500 mg/day) orally as one dose on day 1 and 5 mg/kg/day (max 250 mg/day) orally on days 2-5	500 mg orally in one dose on day 1 and 250 mg orally once a day on days 2-5

*Initiating treatment ≥ 3 weeks after cough onset has limited benefit to patient or contacts and initiating chemoprophylaxis ≥ 3 weeks after last exposure has limited benefit for the contact.

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REPORTING TO PUBLIC HEALTH

Under the California Code of Regulations, Title 17, Section 2500, all cases or suspected cases of pertussis are to be reported to the local health department within one working day of identification of the case or suspected case. Do not wait for lab confirmation before reporting a suspected case of pertussis. For Los Angeles County residents, report to the Morbidity Central Reporting Unit by calling 888-397-3993 or faxing a Confidential Morbidity Report (CMR) form to 888-397-3778. The CMR forms can be obtained by calling 213-240-7821 or downloaded from the website: <http://lapublichealth.org/acd/cdrs.htm>.