

<b>DATE:</b>	August 5, 2010
<b>TO:</b>	Health Alert Network
<b>FROM:</b>	Everette James, Secretary of Health
<b>SUBJECT:</b>	Pertussis
<b>DISTRIBUTION:</b>	Statewide
<b>LOCATION:</b>	Statewide
<b>STREET ADDRESS:</b>	Statewide
<b>COUNTY:</b>	Statewide
<b>MUNICIPALITY:</b>	Statewide
<b>ZIP CODE:</b>	Statewide

**This transmission is a “Health Advisory” provides important information for a specific incident or situation; may not require immediate action.**

**HOSPITALS:** PLEASE SHARE WITH ALL MEDICAL, PEDIATRIC, INFECTION CONTROL, NURSING, AND LABORATORY STAFF IN YOUR HOSPITAL

**EMS COUNCILS:** PLEASE DISTRIBUTE AS APPROPRIATE

**FQHCs:** PLEASE DISTRIBUTE AS APPROPRIATE

**LOCAL HEALTH JURISDICTIONS:** PLEASE DISTRIBUTE AS APPROPRIATE

**PROFESSIONAL ORGANIZATIONS:** PLEASE DISTRIBUTE TO YOUR MEMBERSHIP

Since April 2010, PADOH has identified an increase in pertussis activity in Pennsylvania. The increase has been focused in suburban areas around Philadelphia, where there has been a four-fold rise in cases when compared to the first three months of the year. Heightened pertussis activity has persisted over the summer months when school is not in session, and there are suggestions activity may also be increasing in other parts of the commonwealth. As a result, the PADOH recommends the following:

**All suspected or confirmed cases should be immediately reported to the Pennsylvania Department of Health at 1-877-PA-HEALTH or to the local health department where the patient resides.**

Clinicians should consider pertussis when evaluating any infant, child, youth, or adult with an acute cough illness characterized by prolonged cough or cough with paroxysms, whoop, or post-tussive gagging/vomiting. Infants may present with apnea and/or cyanosis.

Pertussis, or whooping cough, is an acute infectious disease caused by the bacterium *Bordetella pertussis*. *B. pertussis* is a small aerobic gram-negative rod. It is fastidious, and requires special media for isolation.

The incubation period of pertussis is commonly 7 to 10 days, with a range of 4 to 21 days, and rarely may be as long as 42 days.

The clinical course of the illness is divided into three stages.

- The first stage, the catarrhal stage, is characterized by the insidious onset of coryza (runny nose), sneezing, low-grade fever, and a mild, occasional cough, similar to the common cold. The cough gradually becomes more severe, and after 1-2 weeks, the second, or paroxysmal stage, begins.
- It is during the paroxysmal stage that the diagnosis of pertussis is usually suspected. Characteristically, the patient has bursts, or paroxysms of numerous, rapid coughs, apparently due to difficulty expelling thick mucus from the tracheobronchial tree. At the end of the paroxysm, a long inspiratory effort may be accompanied by a characteristic high-pitched whoop. During such an attack, the patient may become cyanotic. Children and young infants, especially, appear very ill and distressed. Vomiting and exhaustion commonly follow the episode. The patient usually appears normal between attacks. Paroxysmal attacks occur more frequently at night, with an average of 15 attacks per 24 hours. During the first 1 or 2 weeks of this stage the attacks increase in frequency, remain at the same level for 2 to 3 weeks, and then gradually decrease. The paroxysmal stage usually lasts 1 to 6 weeks, but may persist for up to 10 weeks. Infants under 6 months of age may not have the strength to have a whoop, but they do have paroxysms of coughing.
- In the convalescent stage, recovery is gradual. The cough becomes less paroxysmal and disappears over 2 to 3 weeks. However, paroxysms often recur with subsequent respiratory infections for many months after the onset of pertussis. Fever is generally minimal throughout the course of pertussis.

Older persons (i.e., adolescents and adults), and those partially protected by the vaccine may become infected with *B. Pertussis*, but usually have milder disease. Pertussis in these persons may present as a persistent (>7 days) cough, and may be indistinguishable from other upper respiratory infections. Inspiratory whoop is uncommon.

The most common complication, and the cause of most pertussis-related deaths, is secondary bacterial pneumonia.

The diagnostic gold standard for pertussis is a positive culture result. The preferred method to obtain a specimen is with a nasopharyngeal aspirate; however a nasopharyngeal Dacron™ swab could also be used. Swabs or aspirate should be placed in Regan Lowe transport media if direct inoculation of selective media is not possible.

**The direct fluorescent antibody (DFA) stain** of a nasopharyngeal swab is unreliable so this test **should not be used** to confirm pertussis. Although commercial serologic tests for pertussis exist, none are currently licensed by the FDA for diagnostic use, and cutoff values for diagnostic values of PT IgG have not been established.

PCR testing of nasopharyngeal swabs and serologic testing may be available in some commercial labs, but these tests are not standardized. However, if the PCR test is considered valid by public health authorities, a positive result may be used to laboratory-confirm pertussis.

**All cases and their households/close contacts should receive prophylaxis regardless of age or immunization status.** Pertussis immunity is not absolute (100%) and may not prevent infection. Older children and adults with mild illness can transmit the infection. Close contact is defined as face-to-face contact, direct contact with respiratory, oral or nasal secretions, or being in the same hospital room or open ward with a coughing pertussis case.

Those most at risk of serious and fatal complications are children <6 months of age and immunocompromised individuals of any age. Assuring chemoprophylaxis of these populations is of paramount importance. In addition, exposed individuals who live or work with people in these groups should be targeted for prophylaxis. This includes child care and health care workers. Women in the third trimester of pregnancy should also be targeted for prophylaxis due to the risk of transmission to their newborn infants should they develop pertussis.

The recommended chemoprophylactic regimen is:

- Erythromycin 40-50 mg/kg per day for children and 1-2 g/day for adults, orally in 4 divided doses for 14 days. Although infantile hypertrophic pyloric stenosis (IHPS) in neonates aged < 3 weeks has been linked to use of erythromycin use in infants and breastfeeding mothers, the high case fatality rate of pertussis in neonates demonstrates the need to prevent pertussis in this age group. Physicians who prescribe erythromycin to newborns should inform parents about the possible risks for IHPS and counsel them about signs of developing IHPS.
- For patients who cannot tolerate erythromycin, Trimethoprim-Sulfamethoxazole (TMP-SMZ) TMP 8 mg/kg/day, SMZ 40 mg/kg/day in two divided doses orally for 14 days in children and TMP 320 mg/day, SMZ 1600 mg/day in two divided doses for 14 days in adults. TMP-SMZ is contraindicated in pregnant women at term, nursing mothers and infants <2 months of age.
- Clarithromycin 15-20 mg/kg/day orally in two divided doses, maximum 1 gm/day, for 10-14 days, and Azithromycin 10-12 mg/kg/day orally in one dose, maximum 500 mg/day for 5-7 days are also effective against *B. Pertussis* in vitro, but there are limited data on their effectiveness in vivo. The American Academy of Pediatrics accepts these regimens as acceptable alternatives for patients who cannot tolerate erythromycin. Although neither is approved for use in infants < 6 months of age
- Azithromycin 10 mg/kg as a single dose on day 1 (maximum 500 mg); then 5 mg/kg per day as a single dose on days 2-5 (maximum 250 mg/day) has been used for pertussis prophylaxis in at least one group of ~100 children, including small infants, where it was shown to be well tolerated and effective.

**Symptomatic children and/or adults may return to school, child care group settings, or work after completing the first 5 days of an appropriate antibiotic regimen (see above), but the full course of treatment must be completed.**

Any contacts under 7 years of age who are not up to date on their pertussis vaccination should be brought up to date with doses of DTaP using the minimum recommended intervals. Children aged 4-6 years who have completed a primary series but have not received the pertussis vaccination booster dose should be given this dose. Children under 2 months of age may receive a first dose of DTaP at six weeks of age with subsequent doses at 4 week intervals.

Contacts between the ages of 10 and 64 years may be given one of the Tdap vaccines (Adacel™ sanofi pasteur or Boostrix™ GlaxoSmithKline). Although a five year interval between Td and Tdap is encouraged to reduce the risk of local or systemic reactions, intervals shorter

than five years can be used. The benefits of protection from pertussis generally outweigh the risk of local or systemic reactions in settings with increased risk from pertussis (e.g., pertussis outbreaks and close contact with infants <6 months of age).

Starting in the school term of 2011-2012, **all children entering the 7th grade are to receive one dose of Tdap**, if five years have elapsed since their last tetanus immunization.

In addition, **a single dose of Tdap vaccine is recommended for all health care workers under the age of 65**. Pregnant health care workers should defer Tdap vaccination until the immediate postpartum period. All adults who have or who anticipate having close contact with an infant aged <12 months (e.g., parents, grandparents aged <65 years, child-care providers, and HCP) should receive a single dose of Tdap at interval <2 years since the last Td to protect against pertussis if they have not previously received Tdap. Ideally, these adults should receive Tdap at least 2 weeks before beginning close contact with the infant.

Any questions or concerns regarding these recommendations should be directed to the PADOH 1-877-PA-HEALTH or your local health department.

For more information you may link to the CDC fact sheet Web page at:  
<http://www.cdc.gov/nip/publications/pink/pert.pdf>.

Categories of Health Alert messages:

**Health Alert:** conveys the highest level of importance; warrants immediate action or attention.

**Health Advisory:** provides important information for a specific incident or situation; may not require immediate action.

**Health Update:** provides updated information regarding an incident or situation; unlikely to require immediate action.

This information is current as of August 5, 2010 but may be modified in the future.
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