

## Health Advisory:

### Pertussis in St. Louis County

November 18, 2010

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The Missouri Department of Health & Senior Services (DHSS) is now using 4 types of documents to provide important information to medical and public health professionals, and to other interested persons:

**Health Alerts** convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

**Health Advisories** provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

**Health Guidances** contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

**Health Updates** provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance; unlikely to require immediate action.

Health Advisory  
November 18, 2010

**FROM:** MARGARET T. DONNELLY  
DIRECTOR

**SUBJECT:** Pertussis in St. Louis County

Reported numbers of pertussis cases in Missouri have increased during 2010. Through November 13, a total of 426 confirmed and probable pertussis cases have been reported statewide, representing a 32.7% increase above the 5-year median for this time period.

The largest numbers of reported cases in 2010 have been from St. Louis County, where 126 confirmed and probable cases have been identified through November 13. (The jurisdictions with the next largest numbers of reported cases for this time period are Kansas City, where a total of 30 cases have been reported, and Howell County, with 27 reported cases.)

Of the 126 pertussis cases reported from St. Louis County, 78 (61.9%) were identified in the last 4 weeks. In addition, 59 (46.8%) of these 126 cases have been in persons 10-17 years of age, and local public health officials have identified at least one pertussis case in 20 St. Louis County schools since September 1, 2010.

Pertussis is highly communicable and can cause severe disease or death in very young children. Health care providers should consider pertussis when evaluating any infant, child, adolescent, 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. In addition, health care providers should:

- Consider pertussis in the differential diagnosis of patients presenting with cough illness.
- Evaluate persons for eligibility for Tdap vaccination, and vaccinate as indicated.
- Educate people who have or may have close contact with infants about the importance of being up-to-date on pertussis immunization. Encourage parents to keep infants away from individuals with a cough illness.
- Immediately report known or suspected pertussis cases to the local public health agency (LPHA), or to the Missouri Department of Health and Senior Services (DHSS) at 800/392-0272.

#### Clinical Manifestations

The incubation period of pertussis is commonly 7-10 days, with a range of 4-21 days. The catarrhal stage, lasting 1-2 weeks, begins with mild upper respiratory tract symptoms and progresses to severe cough. The condition can further progress to a paroxysmal stage lasting 1-6 weeks, and characterized with inspiratory whoop followed by vomiting. Fever is absent or minimal. In infants younger than six months, apnea is a common manifestation and the whoop may be absent. In the convalescent stage, recovery is gradual. The cough becomes less paroxysmal and disappears in 2-3 weeks. However, paroxysms often recur with subsequent respiratory infections for many months after the onset of pertussis.

Adolescents and adults, and children partially protected by the vaccine, may become infected with *Bordetella pertussis* but have milder disease than infants and young children. Pertussis infection in these persons may be asymptomatic, or present as illness ranging from a mild cough illness to classic pertussis with persistent cough (i.e., lasting more than 7

days). Inspiratory whoop is not common. Pertussis should be considered in older children and adults who have a persistent cough lasting more than 7-14 days, and which cannot be attributed to another specific illness. If untreated, these older children and adults can act as a reservoir for *B. pertussis* and infect younger children.

### **Diagnostic Testing**

The only pertussis diagnostic tests endorsed by the Centers for Disease Control and Prevention (CDC) are culture and polymerase chain reaction (PCR).

Culture is considered the gold standard laboratory test and is the most specific of the laboratory tests for pertussis. Obtaining a positive culture result from a person with pertussis can be affected by several factors, such as how the specimen is handled, the stage of illness at the time of specimen collection, the use of antimicrobial therapy prior to culture, immunity from past infection or from vaccination, and age of the case-patient. Specimens from the posterior nasopharynx, not the throat, should be obtained using Dacron<sup>®</sup> or calcium alginate (not cotton) swabs. Isolation rates are highest during the first 3 weeks of illness.

PCR should be used in addition to, and not as a replacement for, culture. No PCR product has been approved by the Food and Drug Administration (FDA). The PCR test could be positive beyond the three-week period.

Serologic testing could be useful for adults and adolescents who present late in the course of their illness, when both culture and PCR are likely to be negative. However, there is no FDA-approved diagnostic test. At this time, serologic test results should not be relied upon for case confirmation of pertussis infection.

If a case patient is symptomatic in the absence of another cause and is a close contact of a confirmed pertussis case, DHSS does not recommend testing before treating the case-patient.

Pertussis test kits, including swabs and transport media, can be obtained from LPHAs, or from the Missouri State Public Health Laboratory (573/751-3334).

### **Treatment**

Specific treatment recommendations are available in the American Academy of Pediatrics' *Red Book*. The *Red Book* and CDC recommend erythromycin as well as the new macrolides, clarithromycin or azithromycin dehydrate, as the antimicrobial agents for treatment or prophylaxis against pertussis. A possible alternative for patients who do not tolerate erythromycin is trimethoprim-sulfamethoxazole (TMP-SMZ). Once into the paroxysmal stage, antibiotics will not ameliorate the disease but will limit the spread to others.

If appropriate antimicrobial therapy is contraindicated or the patient refuses treatment, the patient should be isolated until three weeks after the onset of paroxysms. LPHAs can provide epidemiological consultation when required.

### **Prophylaxis of Household and Other Close Contacts**

Chemoprophylaxis is recommended for all household and other close contacts regardless of age, whether or not the contact has pertussis-like symptoms, and irrespective of the contact's immunization status. Close contacts are defined as those persons having direct contact with respiratory, oral, or nasal secretions from a symptomatic case-patient; having direct face-to-face contact, regardless of duration, with a symptomatic case; or having shared a confined space in close proximity for a prolonged period of time with a symptomatic case.

### **Pertussis in Schools and Child-Care Facilities**

Management of pertussis in schools and child-care facilities requires:

1. Identification, evaluation, and treatment of cases.
  - Immediate notification of the LPHA (or DHSS) and, if the case attends or works in a school, the school nurse. Contact information for LPHAs is available at <http://www.dhss.mo.gov/LPHA/PublicHealthAgencies.html>.

- Collection of a nasopharyngeal specimen for detection of *B. pertussis*.
  - Appropriate treatment of cases.
2. Identification of close contacts and high-risk contacts. (Close contacts were defined above. High-risk contacts are persons at risk for developing severe disease and adverse outcomes.)
  3. Chemoprophylaxis for all close contacts. In addition, chemoprophylaxis for high-risk contacts who are not close contacts should be considered and evaluated on a case-by-case basis.
  4. Initiation of active surveillance for pertussis in the child-care center or school, and continuation of surveillance until six weeks after cough onset of the last confirmed or suspected case. In schools where outbreaks are occurring, implement a **school policy of student exclusion for cough illness** until pertussis is ruled out or an alternative diagnosis is established, or suspected cases have been on appropriate antimicrobial treatment for at least five days. School nurses should require notes from medical providers confirming negative pertussis test results or an alternative diagnosis, or treatment documentation, before ill students can be re-admitted to schools.
  5. Assessment of the immunization status of students and staff, and immunization as needed.

### Immunization

The best way to reduce the incidence of pertussis is to have a highly vaccinated population, and to that end physicians' offices play a crucial role.

Close contacts under the age of seven years who are unimmunized or underimmunized should have pertussis immunization initiated or continued according to the recommended schedule. Children who received their third dose six months or more before exposure should be given a fourth dose at this time as a protective measure. Children who received their fourth dose three or more years before exposure and who are younger than seven years of age should be given a fifth dose of DTaP at this time.

**In the event of an outbreak, it is even more important that a booster Tdap vaccination be given to persons 11-18 years of age if they have not previously received Tdap.** Adults 19-64 years of age should receive a single dose of Tdap if it has been more than two years since their last Td vaccine, and they have not previously received Tdap. Shorter intervals can be considered if necessary.

In households with infant(s) less than twelve months of age, all children in the household should be up-to-date with the recommended doses of DTaP and all adults (including the mother) and adolescent household contacts should be appropriately vaccinated with a dose of Tdap, if they have not previously received Tdap.

Any woman who might become pregnant is encouraged to receive a single dose of Tdap if she has not already received a dose. Women who have not received Tdap (including women who are breastfeeding) should receive a dose in the immediate postpartum period, before discharge from the hospital or birthing center, if 2 years or more have elapsed since the last Td. Shorter intervals since the last Td can be used if necessary. If Tdap cannot be administered before discharge, it should be given as soon as feasible. The dose of Tdap replaces the next routine dose of Td.

Finally, it should be remembered that immunized children and adults can still get pertussis.

### Reporting

Health care providers are requested to assist in the control of pertussis through immediate reporting of suspect cases by telephone to their LPHA, or to DHSS (800/392-0272).

Questions on pertussis immunization should be directed to DHSS' Bureau of Immunization Assessment and Assurance at 573/751-6124 or 800/219-3224. Other questions should be directed to DHSS's Bureau of Communicable Disease Control and Prevention at 573/751-6113 or 866/628-9891.

## References

1. Centers for Disease Control and Prevention. *Epidemiology and Prevention of Vaccine - Preventable Diseases*. Atkinson W, Wolfe S, Hamborsky J, McIntyre L, eds. "Pertussis." 11th Ed. Washington DC: Public Health Foundation, 2009, 199 – 216.  
(Available at: <http://www.cdc.gov/vaccines/pubs/pinkbook/default.htm>)
2. Centers for Disease Control and Prevention. Prevention of Pertussis, Diphtheria and Tetanus among Pregnant and Postpartum Women and their Infants. *Morbidity and Mortality Weekly Report*, 2008;57(No.RR-4).  
(Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5704a1.htm>)
3. Academy of Pediatrics. "Pertussis". In: Pickering L, ed. *Red Book: 2009 Report of the Committee on Infectious Diseases*. 27th Ed. Elk Grove Village, IL: American Academy of Pediatrics; 2009: 504 – 519.

DTaP = diphtheria and tetanus toxoids and acellular pertussis vaccine

Tdap = tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine

Td = tetanus and diphtheria toxoids vaccine