Pertussis Clinical Information

Epidemiology of pertussis

- Bordetella pertussis is endemic in Minnesota.
- Pertussis occurs year-round, peaking in the later part of the year.
- Annual incidence peaks every three to five years.
- Adolescents and adults represent over half of the reported cases nationally. Even among highly vaccinated populations, waning immunity leads to a large number of susceptible older children and adults. Adolescents and young adults can serve as an important reservoir for transmission to young infants, who are at increased risk for serious complications.
- Paroxysmal coughing is the most common symptom in reported cases, but adolescents, adults, and previously vaccinated persons may exhibit atypical manifestations with only a persistent cough.

Communicability of pertussis

- Patients are most infectious early in the illness, but communicability may persist for three weeks after onset of cough.
- During the first week of illness, symptoms resemble “the common cold,” and paroxysmal coughing may gradually develop during the second week of illness.
- Early antimicrobial therapy decreases communicability and may limit disease spread.
- The bacteria are shed in nasopharyngeal secretions (droplets) when secretions get into mucous membranes (e.g., mouth, nose, eyes, or non-intact skin), especially when droplets are spread during coughing and sneezing.
- Advise patients with suspect pertussis to stay home from school, work, or other activities where they could expose others until they have completed five full days of appropriate antimicrobial treatment. Exception: If onset of cough was more than three weeks prior, the patient is no longer infectious, even if cough persists, and no longer needs antibiotics.

Consider pertussis in patients

Consider pertussis, regardless of age or vaccination status, in patients exhibiting:

- Prolonged cough. Pertussis should be considered in the diagnosis of coughs lasting greater than one week.
- Paroxysmal cough and/or post-tussive vomiting or whoop.
- Apnea or cyanosis without the characteristic paroxysmal cough, especially in infants.
- A cough illness of three or more days and a known close exposure to a pertussis case. This includes persons notified of potential exposure during an outbreak in a school or other setting.

Lab testing encouraged

Suspect cases of pertussis can be confirmed by culture, polymerase chain reaction (PCR), or serology. Perform laboratory testing for persons with suspect pertussis – particularly close contacts of a laboratory-confirmed case.

- PCR testing is highly sensitive and specific within the first two weeks of cough, and has variable sensitivity beyond two weeks. PCR can provide rapid confirmation.
- A single-point IgG serology assay is available. This assay may be more useful than PCR in individuals with a cough of greater than two weeks, especially for individuals not recently vaccinated against pertussis. The optimal timing for specimen collection is two to eight weeks following cough onset—when the antibody titers are at their highest. However, serology may be performed on specimens collected up
to 12 weeks following cough onset. There are several serologic tests with varying accuracy, so MDH staff will help interpret results.

- **Culture** for *B. pertussis* is most frequently recovered in the early stages of illness and is rarely found after the fourth week of illness. A negative culture does not necessarily rule out disease. Additionally, drug susceptibility testing and molecular epidemiologic study for strain identification require a culture.

**Antimicrobial therapy**

Give antimicrobial therapy to any patient with a highly suspect or confirmed diagnosis of pertussis. These macrolides are equally effective for treatment or prophylaxis of pertussis: azithromycin, clarithromycin, and erythromycin. Trimethoprim-sulfamethoxazole is an alternative.

Patients are considered to be non-infectious after completing the fifth day of appropriate antimicrobial treatment, but they should complete the regimen to avoid bacterial relapse.

See [Pertussis Treatment and Prophylaxis](http://www.health.state.mn.us/divs/idepc/diseases/pertussis/hcp/treatment.html) for information on dosage and duration of therapy.

**Contacts of pertussis cases**

Local public health will work with the patient and the community to identify close contacts, like:

- Household members
- Contacts from child care, school, work, or other extracurricular activities
- Persons who had face-to-face contact with an infectious case during coughing or sneezing
- Other contacts identified by public health

**Antimicrobial prophylaxis of close contacts**

Antimicrobial prophylaxis (same regimen as treatment) is sometimes recommended for high-risk patients who are asymptomatic and are close contacts of pertussis cases.

**Immunization of case contacts**

In addition to providing antimicrobial therapy to case contacts, providers should assess pertussis vaccination status. Use DTaP or Tdap depending on the age of the case contact.

- Give DTaP to catch-up children under age 7 years for any vaccinations due or overdue.
- The two Tdap vaccines are Adacel (licensed for persons age 11 through 64 years) and Boostrix (licensed for persons age 10 years and older).
- Give Tdap to children age 7-10 years who have an incomplete DTaP schedule or who have never received a primary series of tetanus, diphtheria, and pertussis. In this case, initiate a primary series giving Tdap as the first dose, followed by a dose of Td one month later and a second Td six months later. This off-label use is ACIP recommended.
- Give Tdap routinely at age 11-12 years. However, do not wait for the pre-adolescent check-up to provide Tdap to household contacts; give it as early as age 10 years.
- Give Tdap to adolescents and adults ages 13 and older who have not received it regardless of the interval since the last Td.
  - Make special effort to give Tdap to all persons who have or will have contact with children under age 1 year.
- Give Tdap during every pregnancy, regardless of any doses given before pregnancy, preferably between 27-36 weeks.

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