

## Vermont Department of Health

# Pertussis Clinical Information

## Epidemiology of pertussis

- *Bordetella pertussis* is endemic in Vermont.
- 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 substantial 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.
- Although paroxysmal coughing is the most common symptom in reported cases, adolescents, adults, and previously vaccinated persons may exhibit atypical manifestations with persistent cough but no whoop.

## 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 gradually develops during the second week of illness.
- Antimicrobial therapy decreases communicability and may limit the spread of disease.
- The bacteria is shed in nasopharyngeal secretions (droplets) and spreads when secretions get into mucous membranes such as the mouth, nose, eyes, or non-intact skin, especially when droplets are disseminated during coughing and sneezing.
- The incubation period for pertussis is usually seven to 10 days, but can range from four to 21 days.

**Advise patients with suspect pertussis to stay home from school, work, or other activities during which they could expose others until they have completed five full days of appropriate antimicrobial treatment.**

**Exception: If onset was more than three weeks prior, the patient is no longer infectious, even if the cough persists.**



## Consider pertussis in these patients

VDH encourages providers to consider pertussis in the following patients, regardless of age or vaccination status. Patients exhibiting:

- Prolonged cough. During outbreaks and periods of increased incidence, 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 any duration 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 infection can be confirmed by culture or polymerase chain reaction (PCR). VDH encourages health care providers to perform laboratory testing for those persons with suspect pertussis – particularly those who are household or very close contacts of a laboratory-confirmed case.

Whenever possible, both culture and PCR testing should be performed.

- **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. In addition, drug susceptibility testing and molecular epidemiologic study for strain identification require a culture. For that reason, a culture is the preferred test from a public health perspective.
- **PCR** testing is highly sensitive and specific and can provide rapid confirmation.
- Direct fluorescent antibody (DFA) testing and serology are considered **unreliable** for laboratory confirmation in Vermont.

## Antimicrobial therapy

Give antimicrobial therapy to all patients with a highly suspect or confirmed diagnosis of pertussis. The following three macrolides are equally effective for treatment or prophylaxis of pertussis: azithromycin, clarithromycin, and erythromycin.

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Trimethoprim-sulfamethoxazole is also an alternative.

Patients are considered to be non-infectious after completing the fifth day of appropriate antimicrobial treatment; however, they should complete a full regimen to avoid bacterial relapse. Some health care providers are reportedly prescribing a one- or three-day course of azithromycin (Zithromax®) in place of the five-day course that is currently one of the standard pertussis treatment options. While this may be appropriate for some respiratory illnesses, the data from published randomized clinical trials using a three-day course for treatment of pertussis are insufficient. The standard recommendations for a five-day course will remain unchanged until new data from comparative studies are available.

### Contacts of pertussis cases

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

- Household members (who stay overnight in the same household)
- Day care contacts in the same home day care or in the same classroom within a day care center (in part because of the increased severity of disease in very young children)
- Persons who have had direct face-to-face contact with an infectious pertussis case during coughing or sneezing
- Students participating in extracurricular activities with a pertussis case at least 10 hours per week
- Other persons spending at least 10 hours per week with an infectious case, during which time they are frequently in close proximity (i.e., within arm's length)
- Other contacts identified by public health in an outbreak situation

### Antimicrobial prophylaxis of close contacts

Antimicrobial prophylaxis (same regimen as therapy for cases) may be recommended to patients who are asymptomatic but are close contacts of pertussis cases.

- Antimicrobial prophylaxis is recommended if exposure to an infectious case occurred within

the previous 21 days (the maximum incubation period for pertussis).

- Asymptomatic contacts receiving prophylaxis should not be excluded from their usual activities.
- Symptomatic contacts should be evaluated as suspect pertussis cases.

### Immunization of case contacts

In addition to providing antimicrobial therapy to case contacts, providers should assess pertussis vaccination status. ACIP also recommends off-label use of Tdap products in order to improve Tdap vaccination rates and reduce pertussis rates. Off-label recommendations include giving Tdap to persons age 7-10 years and to persons age 65 years and older, as follows:

- Give DTaP to catch-up children under age 7 years for any vaccinations due or overdue. All children should complete the DTaP series with a final dose after age 4 but prior to kindergarten entry.
- 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 instance, 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.
- Tdap is routinely recommended 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.
- Give Tdap to adolescents and adults ages 13 and older who have not yet received a Tdap. Give the dose regardless of the interval since the last Td.
- Give Tdap to all persons who have or will have contact with children under age 1 year. This includes off-label administration to persons 65 years and older.
- Consider Tdap vaccination for anyone 65 years and older to reduce the likelihood of acquiring pertussis.



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