Pertussis
(Also known as Whooping Cough)

IMMEDIATELY REPORTABLE DISEASE

Per N.J.A.C. 8:57, health care providers and administrators shall immediately report by telephone confirmed and suspected cases of pertussis to the health officer of the jurisdiction where the ill or infected person lives, or if unknown, wherein the diagnosis is made. The health officer (or designee) must immediately institute the control measures listed below in section 6, “Controlling Further Spread,” regardless of weekend, holiday, or evening schedules.

Directory of Local Health Departments in New Jersey, available at:
http://www.state.nj.us/health/lh/directory/lhdselectcounty.shtml

Directory of After Hour Emergency Contact Phone Numbers for Local Health Departments in New Jersey, available at:
http://nj.gov/health/lh/what.shtml

If the health officer is unavailable, the health care provider or administrator shall make the report to the New Jersey Department of Health by telephone to 609.826.5964, between 8:00 A.M. and 5:00 P.M. on non-holiday weekdays or to 609.392.2020 during all other days and hours.
1 THE DISEASE AND ITS EPIDEMIOLOGY

I. Etiologic agent

Pertussis is caused by a type of bacteria called *Bordetella pertussis*. These bacteria attach to the cilia that line part of the upper respiratory system. The bacteria release toxins, which damage the cilia and cause inflammation of the respiratory tract, which interferes with the clearing of pulmonary secretions.

II. Clinical features

Pertussis is a respiratory illness commonly known as whooping cough.

A. Stages of disease

1) Catarrhal stage

- Characterized by insidious onset of mild upper respiratory symptoms including low-grade fever, coryza (runny nose), sneezing, and a mild, occasional cough.
- During the 1 - 2 weeks of this stage, the cough gradually becomes more severe.

2) Paroxysmal stage

- Characterized by spasmodic coughing episodes, or paroxysms, sometimes followed by a long inspiratory whoop sound. Paroxysmal attacks occur more frequently at night.
- Patients may become cyanotic during paroxysms.
- Children and young infants may appear very ill and distressed.
- Post-tussive vomiting and exhaustion commonly follow the episode.
- This stage usually lasts 1 - 6 weeks, but may persist for up to 10 weeks.

3) Convalescent stage

- Recovery is gradual. Paroxysms subside and the cough may disappear in 2 - 3 weeks.
- Coughing fits can go on for up to 10 weeks or more.

B. Clinical considerations

Disease presentation varies with age and history of previous exposure or vaccination.

1) Infants - pertussis in infants < 6 months of age may present with atypical symptoms which include:

   o Short catarrhal stage,
   o Gagging, gasping, or apnea in early stages,
   o Absence of whoop, and/or
C. Clinical complications

The most common complication, and the cause of most pertussis-related deaths, is secondary bacterial pneumonia. Young infants are at the highest risk for acquiring pertussis-associated complications. Other complications in young infants include seizures, encephalopathy, and death. Complications in adolescents and adults include syncope, sleep disturbance, incontinence, rib fractures, and pneumonia.

III. Epidemiology

Pertussis is a highly communicable disease transmitted through droplets. People with pertussis usually spread the disease by coughing or sneezing while in close contact with others, who then breathe in the pertussis bacteria.

A. Incubation period

7 to 10 days, with a range of 5 to 21 days.

B. Communicability

Patients are most infectious early in the illness, but communicability may persist for 3 weeks after onset of cough. After 3 weeks of cough, a patient is considered unable to spread the illness to others. Antimicrobial treatment decreases communicability and may limit the spread of disease. Patients are considered to be non-infectious after completing the 5th day of appropriate antimicrobial treatment; however, they should complete the full treatment regimen.

C. Communicability calculator

First day of communicability: date of cough onset.

Last day of communicability: date of cough onset + 21 days, OR after completing the 5th day of appropriate antibiotic treatment.

IV. Background

Pertussis occurs worldwide. It is an endemic disease in the United States, with peaks in disease every 3 to 5 years and frequent outbreaks. Pertussis has no distinct seasonal pattern, but it may increase in the summer and fall. Asymptomatic infection (carriage) has been demonstrated and may play a role in transmission. Pertussis is highly infectious, with secondary attack rates of 80% among susceptible household contacts. Before the availability of vaccine, pertussis was a common cause of morbidity and mortality among children. During the 6 year period from 1940 through 1945, more than 1 million cases of pertussis were reported, an average of 175,000 cases per year (incidence of approximately 150 cases per 100,000 population). Following the introduction of whole-cell pertussis vaccine in the 1940s, pertussis incidence gradually declined, reaching 15,000 reported cases in 1960 (approximately 8 per 100,000 population). By 1970, annual incidence was fewer than 5,000 cases per year, and during 1980-1990, an average of 2,900 cases per year were reported (approximately 1 per 100,000 population). Pertussis incidence has been gradually increasing since the early 1980s. The reasons for
the increase are not clear, but may include waning immunity in vaccinated persons and increased recognition and diagnosis of pertussis. In 2012, 48,277 cases of pertussis were reported in the U.S. This is the highest number of cases reported in the U.S. since 1955 when 62,786 cases were reported. Also, in 2010, an increase in reported cases among 7-10 year olds was seen. Similar trends occurred in 2012; however, a slight increase in cases was also observed among 13 and 14 year olds. More information on secular trends in the U.S. can be found here: [http://www.cdc.gov/pertussis](http://www.cdc.gov/pertussis/)

### 2 CASE DEFINITION

#### I. New Jersey Department of Health case definitions

Pertussis cases are reported by states to CDC through the National Notifiable Diseases Surveillance System (NNDSS). The New Jersey Department of Health (NJDOH), Vaccine Preventable Disease Program follows the most current case definition as published on the CDC NNDSS website. For the most recent case definition please visit:


**A. Clinical criteria**

In the absence of a more likely diagnosis*, a cough illness lasting \( \geq 2 \) weeks, with at least one of the following signs or symptoms:

- Paroxysms of coughing; OR
- Inspiratory whoop; OR
- Post-tussive vomiting; OR
- Apnea (with or without cyanosis) (FOR INFANTS AGED <1 YEAR ONLY).

* Differential diagnosis of pertussis may include other respiratory pathogens such as adenoviruses, *Bordetella parapertussis*, *Mycoplasma pneumoniae*, *Chlamydia pneumoniae*, and Respiratory Syncytial Virus (RSV).

**B. Laboratory criteria for diagnosis**

- Isolation of *B. pertussis* from a bacterial culture.
- Positive Polymerase Chain Reaction (PCR) for pertussis.

**C. Epidemiologic linkage**

Contact with a laboratory-confirmed case of pertussis.
D. Case classification (as of 2015)

1) Probable

- In the absence of a more likely diagnosis*, a cough illness lasting ≥ 2 weeks, with
  - At least one of the following signs or symptoms:
    - Paroxysms of coughing; OR
    - Inspiratory whoop; OR
    - Post-tussive vomiting; OR
    - Apnea (with or without cyanosis) (FOR INFANTS AGED <1 YEAR ONLY)
  AND
  - Absence of laboratory confirmation; OR
  - No epidemiologic linkage to a laboratory-confirmed case of pertussis.

OR FOR INFANTS AGED <1 YEAR ONLY:

- Acute cough illness of any duration, with
  - At least one of the following signs or symptoms:
    - Paroxysms of coughing; OR
    - Inspiratory whoop; OR
    - Post-tussive vomiting; OR
    - Apnea (with or without cyanosis)
  AND
  - Positive PCR for pertussis; OR
  - Contact with a laboratory-confirmed case of pertussis.

2) Confirmed

- Acute cough illness of any duration, with isolation of *B. pertussis* from a bacterial culture.

OR

- In the absence of a more likely diagnosis, a cough illness lasting ≥ 2 weeks, with
  - At least one of the following signs or symptoms:
    - Paroxysms of coughing; OR
    - Inspiratory whoop; OR
    - Post-tussive vomiting; OR
    - Apnea (with or without cyanosis) (FOR INFANTS AGED <1 YEAR ONLY)
  AND
  - Positive PCR for pertussis; OR
  - Contact with a laboratory-confirmed case of pertussis.
3) Case classification comments

An illness meeting the clinical case definition should be classified as “probable” rather than “confirmed” if it occurs in a patient who has contact with an infant aged <1 year who is PCR positive for pertussis and has >1 sign or symptom and cough duration <14 days (classified as “probable” case).

For guidance on case classification, please consult with the NJDOH at (609) 826-5964.

E. Outbreak definitions

1) Pertussis outbreak - two or more cases from different households clustered in time (i.e., occurring within 42 days of each other) and either epi-linked or sharing a common space (i.e., in one building) where transmission is suspected to have occurred (i.e., a school). One case in an outbreak must be lab confirmed (PCR positive and meets case definition, or culture positive)*. Before planning or initiating any outbreak control measures or notifications, please notify and consult with the NJDOH at (609) 826-5964.

2) Community pertussis outbreak - when the number of reported cases is higher than what is expected on the basis of previous reports during a non-epidemic period for a given population in a defined period of time (i.e., historical disease patterns). A community may range from a greater metropolitan area to a group of counties or a larger region. Before planning or initiating any outbreak control measures or notifications, please notify and consult with the NJDOH at (609) 826-5964.

*Note: In an outbreak, one or more cases should be confirmed to be pertussis by positive culture results because of the lack of specificity of PCR.

3 LABORATORY TESTING AND DIAGNOSIS

The diagnosis of pertussis is based on a characteristic clinical history as well as a positive culture or PCR. These tests are more reliable when performed early in the course of the illness. All specimens should be nasopharyngeal specimens, NOT pharyngeal (throat). Testing of asymptomatic contacts is not necessary and should be discouraged.

I. Diagnostic tests

A. Bacterial culture

Bacterial culture is the standard pertussis diagnostic laboratory test. A positive culture for *B. pertussis* confirms the diagnosis of pertussis and is particularly useful for confirming pertussis diagnosis when an outbreak is suspected.

Bacterial culture is best when specimens are collected during the first 2 weeks of cough. Success in isolating the organism declines if the patient has received prior antibiotic treatment effective against *B. pertussis*, if specimen collection has been delayed beyond the first 2 weeks of illness, and if the patient has been vaccinated.
B. Polymerase Chain Reaction (PCR)

PCR is a molecular technique used to detect DNA sequences of the *Bordetella pertussis* bacterium, and unlike culture, does not require viable (live) bacteria present in the specimen. PCR is a rapid test and has excellent sensitivity. PCR tests vary in specificity, so obtaining a culture confirmation of pertussis for at least one suspect case is recommended any time there is suspicion of a pertussis outbreak. Results should be interpreted along with the clinical symptoms and epidemiological information. PCR should be tested from NP specimens taken during the first 3 weeks of cough when bacterial DNA is still present in the nasopharynx, but may provide accurate results for up to 4 weeks of cough. After the fourth week of cough, the amount of bacterial DNA rapidly diminishes which increases the risk of obtaining falsely-negative results. Additionally, the risk of obtaining falsely-negative results increases if the patient has received prior antibiotic treatment against *B. pertussis*. Some pertussis vaccines have been found to contain PCR-detectable *B. pertussis* DNA. It is important for providers to follow best practices to prevent contamination of specimens with pertussis vaccine DNA. The high sensitivity of PCR increases the risk of false-positivity, but following best practices can reduce the risk of obtaining inaccurate results.


*Note: commercially available serologic assays are not considered reliable at this time. Direct fluorescent antibody (DFA) tests are no longer recommended by CDC or the NJDOH. The NJDOH Public Health Environmental Laboratories (PHEL) does not perform routine laboratory testing for *B. pertussis* for the general public. Testing is usually conducted through private commercial laboratories.*

II. Specimen collection

All suspected cases of pertussis should have a nasopharyngeal (NP) aspirate or swab obtained for culture or polymerase chain reaction (PCR) testing. NP aspirates and swabs are specimens obtained by taking a sample of secretions from the uppermost part of the throat, behind the nose, to detect *B. pertussis*. CDC has developed educational materials including two short training videos for collection of NP aspirates and swabs, which can be found here: [http://www.cdc.gov/pertussis/clinical/diagnostic-testing/index.html](http://www.cdc.gov/pertussis/clinical/diagnostic-testing/index.html)

For *B. pertussis*, NP aspirates have similar or higher rates of recovery than NP swabs and therefore are the preferred method of specimen collection. Aspirates are also better to use if another diagnostic test (e.g., PCR) is to be performed on the same specimen.

A. Nasopharyngeal aspirate

- **Method of collection**
  - Insert a small tube connected to a mucus trap through the nostril to the posterior pharynx.
  - Aspirate secretions while the tube is in position.
  - Place material in the mucus trap and any material flushed from the tube onto culture medium or transport medium.
  - The specimen may be split at the time of collection so that material may be cultured and assayed by PCR.
B. Nasopharyngeal swab

- Method of collection
  - Obtain using a Dacron® (not cotton) swab.
  - Insert swab slowly through the nostril to the posterior pharynx.
  - Leave the swab in the posterior pharynx for 10 seconds before withdrawing.
  - Plate directly onto culture medium or transport medium.

## 4 DISEASE REPORTING AND CASE INVESTIGATION

### I. Importance of rapid case identification

Early diagnosis and treatment might limit disease spread. When pertussis is highly suspected, attempts to identify and provide postexposure prophylaxis (PEP) to close contacts should proceed without waiting for laboratory confirmation. When suspicion is low and there are no identified high-risk contacts, PEP can be delayed until there is laboratory confirmation of the diagnosis. However, PEP of infants and their household contacts should not be delayed because pertussis can be severe and life-threatening to young infants. Additional information on PEP can be found in Sections 5 and 6.

### II. Importance of surveillance

Surveillance for pertussis is used to:
- Assess burden of disease and monitor changes in epidemiology over time
- Guide policy and development of control strategies
- Monitor national trends in disease and identify populations at risk
- Identify clusters of related cases that might indicate an outbreak
- Guide vaccination policy development
- Monitor changes in the *B. pertussis* organism

### III. Reporting and case investigation

Per New Jersey Administrative Code (N.J.A.C. 8:57), confirmed and suspect cases of pertussis (*Bordetella pertussis*) must be immediately reported by telephone to the local health department where the patient resides. It is the Health Officer’s responsibility to report and investigate cases of pertussis within their jurisdiction.

*Note: single cases of *Bordetella parapertussis* are not reportable.

### A. Case investigation

Case investigation should include the collection of clinical and epidemiologic information with documentation in the Communicable Disease Reporting and Surveillance System (CDRSS). Information collected should include:
• Demographic information
• Clinical data
  o Date of cough onset, duration of cough
  o Signs and symptoms – paroxysms, inspiratory whoop, post-tussive vomiting, apnea
• Complications
  o Pneumonia documented by chest x-ray
  o Seizures
  o Encephalopathy
  o Hospitalization - dates and duration
  o Death
• Treatment
  o Antimicrobial agents used
  o Dates and duration of treatment
• Laboratory tests and results
  o Specimen collection date
  o Type of test
  o Results
• Vaccine history
  o NJIIS Registry ID
  o Dates of administration of pertussis-containing vaccine
  o Type of vaccine
  o Manufacturer of vaccine
  o Lot number
  o Reason if not vaccinated
• Epidemiology
  o Date first reported to the health department
  o Date case investigation initiated
  o Source of exposure
  o Transmission setting
  o Travel
  o Association with an outbreak
  o Exposed contacts (household and other close contacts)

*Note: additional case information may be requested by the NJDOH Subject Matter Expert (SME).

B. Entry into CDRSS

The following table can be used as a quick reference guide to determine which CDRSS fields need to be completed for accurate and complete reporting of B. pertussis cases. The “CDRSS Screen” column includes the tabs that appear along the top of CDRSS. The “Required Information” column provides detailed explanations of what information should be entered into the designated fields within CDRSS.
<table>
<thead>
<tr>
<th>CDRSS Screen</th>
<th>Required Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Info</td>
<td>Enter the disease name (“PERTUSSIS”), patient demographic information, illness onset date, and the date the case was reported to the LHD. There are no subgroups for <em>B. pertussis</em>.</td>
</tr>
<tr>
<td>Addresses</td>
<td>Enter any alternate address (i.e., a daycare or school address). Use the Comments section in this screen to record any pertinent information about the alternate address (i.e., the times per week the case-patient attends daycare or school). Entering an alternate address will allow other disease investigators access to the case if the alternate address falls within their jurisdiction.</td>
</tr>
<tr>
<td>Clinical Status</td>
<td>Enter any treatment that the patient received and record the names of the medical facilities and physician(s) involved in the patient’s care. If the patient received care from two or more hospitals, be sure that all are entered so the case can be accessed by all infection preventionists (IP) covering these facilities. Enter any treatment that the patient received (e.g., antibiotics), along with dates of treatment, in the Treatment selection section. If vaccine history is known, vaccine type and dates of administration should also be entered under the Immunizations section.</td>
</tr>
<tr>
<td>Signs/Symptoms</td>
<td>Check appropriate boxes for signs and symptoms and indicate their onset date. Make every effort to get complete information by interviewing the physician, family members, or others who might have knowledge of the patient’s illness. Also, information regarding the resolution of signs and symptoms should be entered. Additional signs or symptoms may be added by clicking the “Add Symptom/Sign Not Listed Above” button and selecting from the dropdown menu options.</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>Enter complete information about risk factors to facilitate study of <em>B. pertussis</em> disease in New Jersey. If patient has not received immunizations because of a medical or religious exemption, please check risk factor in Risk factor(s) section and type of exemption in the “Attribute” box. Please document travel history of patient or any visitors to patient (e.g., domestic/international within past 21 days) in the Comments section.</td>
</tr>
<tr>
<td>Laboratory Eval</td>
<td>Indicate appropriate test, specimen collection date, test result, and, if applicable, test values. Isolation of pertussis microorganism by culture is the gold standard (“MICROORGANISM IDENTIFIED”) for diagnosis. PCR (“BORDETELLA PERTUSSIS DNA”) and serology should be used in addition to, and not as a replacement for, culture. <strong>Note:</strong> if laboratory results indicate that the test was performed using a kit not approved by the U.S. Food and Drug Administration, this should be documented in the Comments section.</td>
</tr>
<tr>
<td>CDRSS Screen</td>
<td>Required Information</td>
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</tr>
<tr>
<td>Contact Tracing</td>
<td>Information regarding contacts is required for this disease including information on any household or other close contacts. If known, document any vaccine, chemoprophylaxis, or travel history for contacts in Comments section. Identify susceptible high-risk contacts (e.g., pregnant women, infants younger than 12 months of age).</td>
</tr>
<tr>
<td>Case Comments</td>
<td>Enter general comments (i.e., information that is not discretely captured by a specific topic screen or drop-down menu) in the Comments section. <strong>Note:</strong> select pieces of information entered in the Comments section CANNOT be automatically exported when generating reports. Therefore, whenever possible, record information about the case in the fields that have been designated to capture this information; information included in these fields CAN be automatically exported when generating reports.</td>
</tr>
<tr>
<td>Epidemiology</td>
<td>Indicate method of import in the Epidemiology section. Under the Other Control Measures section, indicate if the patient falls into any of the categories listed under Patient Role(s)/Function(s) (i.e., “DAYCARE ATTENDEE,” “DAYCARE PROVIDER,” “HEALTHCARE WORKERS,” “OTHER”). Record name and contact information for case investigators from other agencies (i.e., CDC, out-of-state health departments). Document communication between investigators in the Comments section.</td>
</tr>
<tr>
<td>Case Classification</td>
<td><strong>Case status</strong> options are “REPORT UNDER INVESTIGATION (RUI),” “CONFIRMED,” “PROBABLE,” “POSSIBLE,” and “NOT A CASE.” All cases entered by laboratories (including Electronic Laboratory Reporting submissions) should be assigned a case status of “REPORT UNDER INVESTIGATION (RUI).” Cases still under investigation by the LHD should be assigned a case status of “REPORT UNDER INVESTIGATION (RUI).” Upon completion of the investigation, the LHD should assign a case status on the basis of the case definition. “CONFIRMED,” “PROBABLE,” and “NOT A CASE” are the only appropriate options for classifying a case of pertussis. <strong>Report status</strong> options are “PENDING,” “LHD OPEN,” “LHD REVIEW,” “LHD CLOSED,” “DELETE,” “REOPENED,” “DHSS OPEN,” “DHSS REVIEW,” and “DHSS APPROVED.” Cases reported by laboratories (including Electronic Laboratory Reporting submissions) should be assigned a report status of “PENDING.” Once the LHD begins investigating a case, the report status should be changed to “LHD OPEN.” The “LHD REVIEW” option can be used if the LHD has a person who reviews the case before it is closed (i.e., health officer or director of nursing). Once the LHD investigation is complete and all the data are entered into</td>
</tr>
</tbody>
</table>
CDRSS Screen | Required Information
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| CDRSS, the LHD should change the report status to “LHD CLOSED.” “LHD CLOSED” cases will be reviewed by NJDOH and be assigned one of the DHSS-specific report status categories. If additional information is needed on a particular case, the report status will be changed to “REOPENED” and the LHD will be notified by e-mail. Cases that are “DHSS APPROVED” cannot be edited by LHD staff. If a case is inappropriately entered (i.e., a case of influenza was erroneously entered as a case of pertussis) the case should be assigned a report status of “DELETE.” A report status of “DELETE” should NOT be used if a reported case of pertussis simply does not meet case definition. Rather, it should be assigned the appropriate case status, as described above.

5 TREATMENT AND CHEMOPROPHYLAXIS

Antimicrobial agents have had varying effects in reducing pertussis symptoms and clearing *B. pertussis* from the respiratory system, and have been used extensively for treatment and postexposure prophylaxis (PEP). The agents, doses, and duration of PEP are the same as for treatment of pertussis. The primary objective of treatment and PEP should be to prevent severe pertussis and life-threatening complications in individuals at high risk. High risk individuals include infants younger than 12 months of age, pregnant women, or individuals with pre-existing health conditions that may be exacerbated by a pertussis infection.*

*Note: The best way to protect against pertussis infection is with vaccines, however immunization with a pertussis-containing vaccine is not recommended for treatment or PEP. Antimicrobial agents are used as treatment and to protect people who have been exposed and are at high risk of developing severe pertussis.

A. Case-patient (treatment)

Clinicians should begin antimicrobial treatment prior to receiving test results if the clinical history is strongly suggestive of pertussis or the case-patient is at high risk of developing severe disease and life-threatening complications (i.e., an infant). Clinicians should begin antimicrobial treatment regardless of the case-patient’s age and vaccination status*. After the cough is established, antimicrobial treatment has little discernible effect on the course of illness but is recommended to limit spread of organisms to others. A 5-day course of azithromycin is the treatment of choice. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for treatment. Also, immunization with a pertussis-containing vaccine is not recommended as treatment. Please see the antimicrobial treatment schedule below in Section 5C for dosage and duration of treatment by age group.

*Note: initiating treatment > 3 weeks after cough onset has limited benefit to the case-patient. However, treatment is recommended up to 6 weeks after cough onset in high risk case-patients.
B. Contacts (PEP)

If pertussis is highly suspected in a patient, PEP should be administered to contacts at high risk of developing severe pertussis and life-threatening complications and to contacts having close contact with persons at high risk of developing severe pertussis and life-threatening complications. **PEP should be administered regardless of the contact’s age and vaccination status***. Early use of PEP in close contacts may limit secondary transmission. A 5-day course of azithromycin is the appropriate first line choice for PEP. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for PEP. Also, immunization with a pertussis-containing vaccine is not recommended for PEP. Please see the PEP schedule below in Section 5C for dosage and duration of treatment by age group.

*Note: initiating PEP > 3 weeks after last exposure to a patient with pertussis has limited benefit to contacts. However, PEP should be considered for high risk contacts (i.e., infants) up to 6 weeks after exposure. Examples of persons considered to be high risk can be found in Section 6.

C. Antimicrobial treatment and PEP schedule*

Please see the recommended antimicrobial treatment and PEP schedule for pertussis below. This schedule is available in the Red Book: 2015 Report of the Committee on Infectious Diseases, 30th ed. Additional information on PEP can be found in Section 6.

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<td><strong>Azithromycin</strong></td>
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<td>1 through 5 mo</td>
<td>10 mg/kg/day as a single dose daily for 5 days*&lt;sup&gt;de&lt;/sup&gt;</td>
<td>Not recommended</td>
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<td><strong>6 mo or older and children</strong></td>
<td><strong>Erythromycin</strong> 40 mg/kg/day in 4 divided doses for 14 days</td>
<td><strong>Clarithromycin</strong> 15 mg/kg per day in 2 divided doses for 7 days</td>
</tr>
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<td>2 mo of age or older: TMP, 8 mg/kg/day; SMX, 40 mg/kg/day in 2 doses for 14 days</td>
<td></td>
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</tr>
<tr>
<td><strong>Adolescents and adults</strong></td>
<td><strong>Azithromycin</strong> 500 mg as a single dose on day 1, then 250 mg as a single dose on days 2 through 5&lt;sup&gt;ad&lt;/sup&gt;</td>
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<td><strong>TMP; 320 mg/day; SMX, 1600 mg/day in 2 divided doses for 14 days</strong></td>
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*Please check updated resources to ensure appropriate antibiotic choices and dosages.

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6 CONTROLLING FURTHER SPREAD

I. Isolation requirements (N.J.A.C. 8:57-1)

The current recommendations of CDC and NJDOH (as of 2015) are as follows:

A. Isolation/exclusion of a case-patient

A patient is considered infectious from the onset of cough through 21 days after cough onset, OR until the completion of the 5th day of appropriate antimicrobial treatment. A 5-day course of azithromycin is the treatment of choice. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for treatment. Also, immunization with a pertussis-containing vaccine is not recommended as treatment. Symptomatic patients* should be excluded from all activities until the completion of the 5th day of appropriate antimicrobial treatment. Please see Section 5C, Antimicrobial treatment and PEP schedule, for dosage and duration of treatment by age group.

*Note: symptomatic patients who do not take the appropriate antimicrobial treatment should be excluded through 21 days from the onset of cough. This recommendation includes Healthcare Workers (HCWs).

B. Management of contacts

Contacts exposed to pertussis, whether they have symptoms or not, should be referred to their healthcare provider for evaluation.

If pertussis is highly suspected in a patient, PEP should be administered to contacts at high risk of developing severe pertussis and life-threatening complications and to contacts having close contact with persons at high risk of developing severe pertussis and life-threatening complications. PEP should be administered regardless of the contact’s age and vaccination status*. Early use of PEP in close contacts may limit secondary transmission. A 5-day course of azithromycin is the appropriate first line choice for PEP. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for PEP. Also, immunization with a pertussis-containing vaccine is not recommended for PEP of a contact. Please see Section 5C, Antimicrobial treatment and PEP schedule, for dosage and duration of treatment by age group.

*Note: initiating PEP > 3 weeks after last exposure to a patient with pertussis has limited benefit to contacts. However, PEP should be considered for high risk contacts (i.e., infants) up to 6 weeks after exposure.

1) Asymptomatic contacts

- Asymptomatic contacts, regardless of receiving PEP, should not be excluded from their usual activities. Please see *Note below.

- Asymptomatic contacts should be monitored closely for symptoms for 21 days (one incubation period) after their last exposure to the infected patient.

- For asymptomatic contacts, if exposure occurred more than 21 days (one incubation period) ago, PEP is not indicated.
*Note: in certain situations deemed to be high risk, NJDOH may recommend the exclusion of asymptomatic contacts not receiving prophylaxis AND/OR may extend the exclusion period up to 42 days (two incubation periods).

2) Symptomatic contacts

- Symptomatic contacts should be evaluated as suspect pertussis cases regardless of age and vaccination status.

- Symptomatic contacts should be excluded from all activities until the completion of the 5th day of appropriate antimicrobial treatment. Symptomatic contacts who do not take the appropriate antimicrobial treatment should be excluded through 21 days from the onset of cough.

- If symptomatic contacts are already beyond their infectious period (21 days from the onset of cough), treatment has limited benefit and no exclusion is required.

II. Postexposure antimicrobial treatment (aka PEP)

The primary objective of PEP should be to prevent severe pertussis and life-threatening complications in individuals at high risk. **PEP should be considered regardless of age and vaccination status.**

CDC and NJDOH are engaged in actively promoting the judicious use of antibiotics among healthcare providers and patients.

CDC and NJDOH support the use of PEP for the following:

- **Providing PEP to all household contacts of a pertussis case.**

- **Providing PEP to contacts at high risk of developing severe pertussis and life-threatening complications and to contacts having close contact with persons at high risk of severe pertussis and life-threatening complications.** These include,
  
  - Infants younger than 12 months of age
  - Women in their third trimester of pregnancy
  - All persons with pre-existing health conditions that may be exacerbated by a pertussis infection (for example, but not to be limited to immunocompromised persons and patients with moderate to severe medically treated asthma)
  - Contacts who themselves have close contact with either infants younger than 12 months of age, pregnant woman or individuals with pre-existing health conditions that may be exacerbated by a pertussis infection
  - All contacts in high risk settings that include infants younger than 12 months of age or women in the third trimester of pregnancy. These include but are not limited to neonatal intensive care units, childcare settings, and maternity wards.

Additional information regarding PEP can be found here: [http://www.cdc.gov/pertussis/outbreaks/](http://www.cdc.gov/pertussis/outbreaks/)

III. Managing special situations

Special situations may include household, childcare or school, and healthcare settings. **Before planning or initiating any control measures, please consult the NJDOH at (609) 826-5964.**
A. Household setting

Due to close proximity and long duration of exposure, transmission of pertussis from case-patients to susceptible contacts living in the same household is a frequent occurrence. Investigation of household contacts should begin immediately after reporting a suspected case of pertussis. Although all susceptible household contacts are at risk for contracting pertussis, special emphasis should be given to identifying those at high risk for developing severe pertussis and life-threatening complications and to contacts having close contact with persons at high risk of developing severe pertussis and life-threatening complications.

*Note: an interview with the case-patient or parent/guardian may reveal unreported cases in household contacts that had cough illness with onset before or after the first reported case. These cases should also be investigated.

1) Case-patient - should begin antimicrobial treatment as soon as possible if pertussis is highly suspected regardless of age and vaccination status*. After the cough is established, antimicrobial treatment has little discernible effect on the course of illness but is recommended to limit spread of organisms to others. A 5-day course of azithromycin is the treatment of choice. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for treatment. Also, immunization with a pertussis-containing vaccine is not recommended as treatment. Please see Section 5C, Antimicrobial treatment and PEP schedule, for dosage and duration of treatment by age group.

Symptomatic patients should be excluded from all activities until the completion of the 5th day of appropriate antimicrobial treatment. Symptomatic patients who do not take the appropriate antimicrobial treatment should be excluded from all activities through 21 days from the onset of cough.

*Note: initiating treatment >3 weeks after cough onset has limited benefit to the case-patient. However, treatment is recommended up to 6 weeks after cough onset in high risk case-patients.

2) Household contacts – provide PEP to all household contacts regardless of age and vaccination status**. Early use of PEP in close contacts may limit secondary transmission. A 5-day course of azithromycin is the appropriate first line of choice for PEP. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for PEP. Also, immunization with a pertussis-containing vaccine is not recommended for PEP of a close contact. Please see Section 5C, Antimicrobial treatment and PEP schedule, for dosage and duration of treatment by age. Asymptomatic contacts, regardless of receiving PEP, should not be excluded from their usual activities. Please see *Note below.

*Note: in certain situations deemed to be high risk, NJDOH may recommend the exclusion of asymptomatic contacts not receiving prophylaxis AND/OR may extend the exclusion period up to 42 days (two incubation periods).

**Note: initiating PEP > 3 weeks after last exposure has limited benefit for contacts. However, PEP should be considered for high risk contacts up to 6 weeks after exposure.

B. Childcare or school setting

If a case of pertussis is identified in a childcare or school setting, please notify the local health department where the patient resides and the school nurse immediately*. Consider sending a notification letter to parents/guardians and staff about the case of pertussis. Letters can be distributed
to exposed classrooms, grades, extracurricular groups, or to the entire childcare or school depending on the situation. Before distribution of notification letters, please consult the NJDOH at (609) 826-5964.

*Note: an interview with the school nurse may reveal unreported cases in the childcare or school that had cough illness with onset before or after the first reported case. These cases should also be investigated.

1) **Case-patient** – should begin antimicrobial treatment as soon as possible if pertussis is highly suspected regardless of age and vaccination status*. After the cough is established, antimicrobial treatment has little discernible effect on the course of illness but is recommended to limit spread of organisms to others. A 5-day course of azithromycin is the treatment of choice. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for treatment. Also, immunization with a pertussis-containing vaccine is not recommended as treatment. Please see Section 5C, Antimicrobial treatment and PEP schedule, for dosage and duration of treatment by age group.

Symptomatic patients should be excluded from childcare or school and any extracurricular activities until the completion of the 5th day of appropriate antimicrobial treatment. Symptomatic patients who do not take the appropriate antimicrobial treatment should be excluded from childcare or school and any extracurricular activities through 21 days from the onset of cough.

*Note: initiating treatment >3 weeks after cough onset has limited benefit to the case-patient. However, treatment is recommended up to 6 weeks after cough onset in high risk case-patients.

2) **Childcare or school contacts** - If pertussis is highly suspected in a patient, PEP should be administered to contacts at high risk of developing severe pertussis and life-threatening complications and to contacts having close contact with persons at high risk of developing severe pertussis and life-threatening complications regardless of the contact’s age and vaccination status. Early use of PEP in close contacts may limit secondary transmission. A 5-day course of azithromycin is the appropriate first line of choice for PEP. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for PEP. Also, immunization with a pertussis-containing vaccine is not recommended for PEP of a contact. Please see Section 5C, Antimicrobial treatment and PEP schedule, for dosage and duration of treatment by age group. Asymptomatic contacts, regardless of receiving PEP, should not be excluded from their usual activities. Please see *Note below.

*Note: in certain situations deemed to be high risk, NJDOH may recommend the exclusion of asymptomatic contacts not receiving prophylaxis AND/OR may extend the exclusion period up to 42 days (two incubation periods).

**Note: initiating PEP > 3 weeks after last exposure has limited benefit for the contacts. However, PEP should be considered for high risk contacts up to 6 weeks after exposure.

3) **Initiate active surveillance – determine exposed groups**

- Collect dates the pertussis case-patient attended childcare or school during his/her infectious period.

- Determine if the case-patient is involved in any after-school or school-based extracurricular activities, such as being on a sports team.
Communicable Disease Service Manual

- Determine the number and ages of individuals potentially exposed.
- Assess the immunization status of exposed individuals. Create a line-listing of all individuals who are not up-to-date or unimmunized with pertussis vaccine.
- Notify staff and the parents/guardians of students exposed to the suspect case of pertussis.
- Evaluate close contacts of the case-patient for an acute cough illness.
- Notify the class instructor and other staff (teachers, coaches, instructors) to refer students with cough illness to the school nurse for evaluation.
- Refer all symptomatic students, teachers, and staff to their healthcare provider for evaluation.
- Refer all asymptomatic high risk contacts to their healthcare providers for evaluation.
- Consider notifying area healthcare providers of the pertussis case and exposure in the event students, teachers, and/or staff seek medical evaluation and diagnostic testing.
- Continue active surveillance for two incubation periods (42 days) after the date of cough onset in the last case of pertussis.

*Note: decisions about who and how to provide PEP in childcare centers or schools should depend on setting, patterns of student interaction, number of cases, and number of affected groups, etc. Before planning or initiating any control measures, please consult the NJDOH at (609) 826-5964.

C. Healthcare setting

Nosocomial transmission of pertussis in healthcare settings among patients, healthcare workers* (HCWs), or both, poses a high risk of transmission to children without immunity or immunocompromised individuals. Control measures should be implemented when a case of pertussis is recognized in a healthcare setting. If a case of pertussis is identified in a healthcare setting, please notify the local health department where the patient resides and where the healthcare facility is located.

*Note: HCWs working with pediatric patients, particularly infants younger than 12 months of age, should be considered high risk cases because of their high probability of exposing susceptible individuals who have an increased risk for developing severe pertussis and life-threatening complications.

1) **Symptomatic healthcare worker** – should begin antimicrobial treatment as soon as possible if pertussis is suspected **regardless of age or vaccination status***. After the cough is established, antimicrobial treatment has little discernible effect on the course of illness but is recommended to limit spread of organisms to others. A 5-day course of azithromycin is the treatment of choice. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for treatment. Also, immunization with a pertussis-containing vaccine is not recommended as treatment. Please see Section 5C, Antimicrobial treatment and PEP schedule, for dosage and duration of treatment by age group.
Symptomatic HCWs should be excluded from work until the completion of the 5th day of appropriate antimicrobial treatment. HCW’s who do not take the appropriate antimicrobial treatment should be excluded from work through 21 days from the onset of cough.

*Note: initiating treatment >3 weeks after cough onset has limited benefit to the HCW. However, treatment is recommended up to 6 weeks after cough onset in high risk persons.

2) **Symptomatic patient** – should begin antimicrobial treatment as soon as possible if pertussis is suspected regardless of age or vaccination status*. After the cough is established, antimicrobial treatment has little discernible effect on the course of illness but is recommended to limit spread of organisms to others. A 5-day course of azithromycin is the treatment of choice. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for treatment. Also, immunization with a pertussis-containing vaccine is not recommended as treatment. Please see Section 5C, Antimicrobial treatment and PEP schedule, for dosage and duration of treatment by age group.

Symptomatic patients should be placed on droplet precautions until the completion of the 5th day of appropriate antimicrobial treatment. Symptomatic patients who cannot or refuse to take the appropriate antimicrobial treatment should remain on droplet precautions through 21 days from the onset of cough.

*Note: initiating treatment >3 weeks after cough onset has limited benefit to the case-patient. However, treatment is recommended up to 6 weeks after cough onset in high risk case-patients.

3) **Exposed HCWs** - if exposure to pertussis occurs, PEP should be administered to HCWs at high risk of developing severe pertussis and life-threatening complications and to HCWs having close contact with persons at high risk of developing severe pertussis and life-threatening complications regardless of age or vaccination status*. Early use of PEP in close contacts may limit secondary transmission. A 5-day course of azithromycin is the appropriate first line of choice for PEP. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for PEP. Also, immunization with a pertussis-containing vaccine is not recommended for PEP of contacts. Please see Section 5C, Antimicrobial treatment and PEP schedule, for dosage and duration of treatment by age group.

Asymptomatic healthcare workers who have had close contact with a pertussis case should be put under close surveillance with employee health. **HCWs may be isolated or excluded from work under certain circumstances, please consult with NJDOH at (609) 826-5964.**

*Note: initiating treatment > 3 weeks after last exposure has limited benefit for the exposed contacts. However, PEP should be considered for high risk contacts up to 6 weeks after exposure.

4) **Exposed patients** – if exposure to pertussis occurs, PEP should be administered to patients at high risk of developing severe pertussis and life-threatening complications and to patients having close contact with persons at high risk of developing severe pertussis and life-threatening complications regardless of age or vaccination status*. Early use of PEP in close contacts may limit secondary transmission. A 5-day course of azithromycin is the appropriate first line of choice for PEP. A shorter course of azithromycin (i.e., 3 days) has not been validated and is not recommended for PEP. Also, immunization with a pertussis-containing vaccine is not recommended for PEP of contacts. Please see Section 5C, Antimicrobial treatment and PEP schedule, for dosage and duration of treatment by age group.
Asymptomatic patients who have had close contact with a pertussis case should be put under close surveillance. **Asymptomatic patients may be isolated or excluded under certain circumstances, please consult with NJDOH at (609) 826-5964.**

*Note: initiating treatment > 3 weeks after last exposure has limited benefit for the exposed contacts. However, PEP should be considered for high risk contacts up to 6 weeks after exposure.*

5) **Initiate active surveillance – determine exposed groups**

- Determine dates, type, and duration of exposure to the case of pertussis.
- Determine the number and ages of individuals potentially exposed.
- Assess the immunization status of exposed individuals. Create a line-listing of all individuals who are not up-to-date or unimmunized with pertussis vaccine.
- Refer all symptomatic individuals to their healthcare provider for medical evaluation and diagnostic testing.
- Refer all asymptomatic high risk contacts to their healthcare providers for medical evaluation.
- Depending on the type/duration of exposure to a pertussis case-patient, consider notifying persons who occupied waiting areas of their exposure so that at-home monitoring for pertussis symptoms and/or PEP can be initiated.
- Conduct active surveillance for two incubation periods (42 days) after the date of cough onset in the last case of pertussis.

IV. **Preventive measures**

The best way to prevent pertussis is to get vaccinated. There are several formulations of vaccines used to prevent diphtheria, tetanus, and pertussis. Some are combined with other vaccines to prevent additional diseases and reduce the total number of shots that someone receives at one office visit. Good personal hygiene is also important.

For persons not immunized or completely immunized against pertussis (particularly infants younger than 12 months of age), it is strongly recommended to speak with a health care provider about the benefits of vaccination.

A. **Vaccine information – diphtheria, tetanus, and pertussis vaccines (DTaP)**

In the United States, DTaP vaccines are commonly used. DTaP is given to children younger than 7 years of age. It is recommended that children receive 5 doses of DTaP, one dose at each of the following ages: 2, 4, 6, and 15-18 months and 4 through 6 years.

B. **Vaccine information – diphtheria, tetanus, and pertussis vaccines (Td and Tdap)**

In the United States, Tdap or Td are commonly used in older children and adults. Td is a tetanus-diphtheria vaccine given to adolescents and adults as a booster shot every 10 years, or after an
exposure to tetanus under some circumstances. Tdap is similar to Td but also containing protection against pertussis. Tdap can be given no matter when Td was last received.

It is recommended that adolescents* 11 through 18 years of age (preferably at age 11-12 years) receive a single dose of Tdap. One dose of Tdap is also recommended for adults 19 years of age and older who did not get Tdap as an adolescent. Tdap should also be given to 7-10 year olds who are not fully immunized against pertussis.

*Note: children born on or after January 1, 1997 AND who are at least 11 years of age and older (or a comparable age level special education program with an unassigned grade) are required to receive a one-time dose of Tdap vaccine at grade 6 or higher grade level.

It is recommended that expectant mothers receive Tdap during each pregnancy, preferably at 27 through 36 weeks.

It is recommended that healthcare workers receive a single dose of Tdap if they have not previously received Tdap as an adult and if they have direct patient contact. Tdap vaccination can protect health care personnel against pertussis and help prevent them from spreading it to their patients. Priority should be given to vaccinating those who have direct contact with babies younger than 12 months of age. For additional guidance, see Evaluating Revaccination of Healthcare Personnel: http://www.cdc.gov/vaccines/vpd-vac/pertussis/tdap-revac-hcp.html

For additional information regarding pertussis vaccination click here: http://www.cdc.gov/vaccines/acip/index.html

Additional Information

Additional information on pertussis can be obtained at the NJDOH Web site at http://www.nj.gov/health/cd/, click on “Find a Disease/Health Topic” and scroll down to “Pertussis.”

References


Attachment A: Pertussis Investigation Form (IMM-24) & Close Contact Investigation Form
# PERTUSSIS INVESTIGATION RECORD

## PATIENT INFORMATION
- **Name of Patient (Last)**
- **Name of Patient/Guardian**
- **Address**
- **Telephone No.**
- **City**
- **Zip Code**
- **County**
- **Name of School/Work/Child Care**
- **Facility Contact Name**
- **Address**
- **Telephone No.**

## REPORTING INFORMATION
- **Reporting Source**
- **Treating Physician Name**
- **Address of Physician**
- **Telephone No.**
- **Date(s) Physician Saw**
- **Date Reported to LHD**
- **Name of Investigator**
- **Telephone No.**
- **Hospital**
- **Hospital Record #**
- **Hospital Address**
- **Telephone No.**

## ADDITIONAL PATIENT INFORMATION
- **CDRSS #**
- **County**
- **State**
- **Zip**
- **Birth Date (Month/Day/Year)**
- **Age (Unknown = 999)**
- **Age Type**
- **Race**
- **Ethnicity**
- **Sex**
- **Event Date (Month/Day/Year)**
- **Event Type**
- **Imported**
- **Reported (Month/Day/Year)**

## CLINICAL DATA
- **Any Cough?**
- **Cough Onset (Month/Day/Year)**
- **Paroxysmal Cough?**
- **Whoop?**
- **Post-Vaccine Vomiting?**
- **Apnea?**
- **Final Interview Date (Month/Day/Year)**
- **Cough at Final Interview?**

## COMPLICATIONS
- **Chest X-Ray for Pneumonia?**
- **Seizures Due to Pertussis?**
- **Acute Encephalopathy Due to Pertussis?**
- **Hospitalized?**
- **Days Hospitalized?**
- **Died?**

## TREATMENT
- **Were Antibiotics Given?**
- **First Antibiotic* Received (Month/Day/Year)**
- **Second Antibiotic* Received (Month/Day/Year)**

## FOR STATE USE ONLY:
- **Date Surveillance Rec’d at State**
- **Date Reviewed at State**
- **Final Case Status by State**
- **E-Number**
- **Date Sent to CDC**
**Communicable Disease Service Manual**

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<tr>
<th>LABORATORY</th>
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<tbody>
<tr>
<td><strong>Not recommended for Confirmation</strong></td>
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<tr>
<td>Was Laboratory Testing for Pertussis Done? Y = Yes, N = No, U = Unknown</td>
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<tr>
<td><strong>Result Codes:</strong> P = Positive, X = Not Done, N = Negative, S = Parapertussis, E = Pending, I = Indeterminate</td>
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<tr>
<td><strong>PCR:</strong></td>
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<td><strong>Result Code</strong></td>
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<td><strong>Date Specimen Taken (Month/Day/Year)</strong></td>
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<td><strong>DFA:</strong></td>
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<td><strong>Result Code</strong></td>
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<td><strong>Date Specimen Taken (Month/Day/Year)</strong></td>
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<td><strong>Serology 1:</strong></td>
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<td><strong>Result Code</strong></td>
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<td><strong>Date Specimen Taken (Month/Day/Year)</strong></td>
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<td><strong>Serology 2:</strong></td>
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<td><strong>Result Code</strong></td>
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<td><strong>Date Specimen Taken (Month/Day/Year)</strong></td>
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<tr>
<th>VACCINE HISTORY</th>
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<tbody>
<tr>
<td>Vaccinated? (Received any doses of diphtheria, tetanus, and/or pertussis-containing vaccines)? Y = Yes, N = No, U = Unknown</td>
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<tr>
<td><strong>Vaccination Date (Month/Day/Year)</strong></td>
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<tr>
<td><strong>Vaccine Type</strong></td>
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<td><strong>Vaccine Mfr.</strong></td>
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<td><strong>Lot Number</strong></td>
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<td><strong>Vaccination Date (Month/Day/Year)</strong></td>
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<td><strong>Vaccine Type</strong></td>
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<td><strong>Vaccination Date (Month/Day/Year)</strong></td>
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<td><strong>Vaccine Type</strong></td>
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<tr>
<td><strong>Vaccine Mfr.</strong></td>
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<tr>
<td><strong>Lot Number</strong></td>
</tr>
<tr>
<td><strong>Record Vaccine Type and Vaccine Manufacturer for each dose (unlikely to be available if patient born before 1988).</strong></td>
</tr>
<tr>
<td><strong>Vaccine Type Codes:</strong> W = DTP Whole Cell, A = DTPa, H = DTPa + Hb, D = DTP or Td, T = DTP or Td, P = Pertussis Only, N = TdaP, R = DTPa + HepB + IPV, O = Other, I = Mich. Health Dept., M = Mass. Health Dept., L = Ledette, C = Sanofi-Pasteur, S = GlaxoSmithKline, N = North American Vaccine</td>
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<tr>
<td><strong>Vaccine Manufacturer Codes:</strong> Class 1: C, L, M, I, S, N, Class 2: A, H, D, T, Class 3: W, R, O</td>
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<table>
<thead>
<tr>
<th>EPIDEMIOLOGIC INFORMATION</th>
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<tbody>
<tr>
<td><strong>Date First Reported to a Health Department (Month/Day/Year)</strong></td>
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<td><strong>Date Case Investigation Started (Month/Day/Year)</strong></td>
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<tr>
<td><strong>Outbreak Related</strong> Y = Yes, N = No, U = Unknown</td>
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<tr>
<td><strong>Epi-Linked?</strong> Y = Yes, N = No, U = Unknown</td>
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<thead>
<tr>
<th>Transmission Setting (Where did this case acquire pertussis?)</th>
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<tbody>
<tr>
<td>1 = Day Care, 2 = School, 3 = Doctor’s Office, 4 = Hospital Ward, 5 = Hospital ER, 6 = Hospital Outpatient Clinic, 11 = Military, 12 = Correctional Facility, 13 = Church, 14 = International Travel, 16 = No Documented Spread</td>
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<tr>
<th>Setting (Outside Household) of Further Documented Spread From This Case</th>
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<tbody>
<tr>
<td>1 = Day Care, 2 = School Household, 3 = Doctor’s Office, 4 = Hospital Ward, 5 = Hospital ER, 6 = Hospital Outpatient Clinic, 11 = Military, 12 = Correctional Facility, 13 = Church, 14 = International Travel, 15 = Other, 16 = No Documented Spread</td>
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<tr>
<th>Number of Contacts in Any Setting Recommended Antibiotics</th>
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**EPIDEMIOLOGICAL INFORMATION**

| Contacts | Relation to Patient | Date of Exposure | Age | Sex | Phone | Name of School or Workplace | Drug Therapy | No. of PCVs
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**Comments:**

1. **IDENTIFICATION**: An acute bacterial disease involving the tracheobronchial tree. The initial catarrhal stage has an insidious onset with an irritating cough which gradually becomes paroxysmal, usually within 1 to 2 weeks, and lasts for 1 to 2 months. Paroxysms are characterized by repeated violent cough; each series of paroxysms has many coughs without intervening inhalation, followed by a characteristic crowing or high pitched inspiratory whoop; paroxysms frequently end with the expulsion of clear, tenacious mucus. Young infants and adults often do not have the typical paroxysm.

2. **INCUBATION PERIOD**: From 5 to 21 days; almost uniformly within 10 days.

3. **PERIOD OF COMMUNICABILITY**: Communicability is the greatest in the catarrhal stage before onset of paroxysms. The organism rarely can be recovered after the 4th week of the disease. The period of communicability may be much shorter in patients receiving certain antimicrobial drugs.

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*PCV = Pertussis-Containing Vaccine*