Pertussis
Information for Health Professionals

What is Pertussis?

- Pertussis, also known as whooping cough, is a highly contagious respiratory disease. It is caused by the bacterium *Bordetella pertussis*.
- Pertussis can cause serious illness in infants, children and adults and can even be life-threatening, especially in infants.
- A person with pertussis develops a severe cough that usually lasts four to six weeks or longer, even up to “100 days”. In classic cases of pertussis the coughing is marked by a “whoop” when gasping for breath after a severe coughing attack. [Click to hear how whooping cough sounds.](#)
- It is important to know that not everyone with pertussis “whoops”, especially infants who may not be strong enough to whoop.
- The illness can be milder, and the typical "whoop" absent in children, teens, and adults who have been vaccinated.
- Frequently misdiagnosed as acute onset of asthma, bronchitis, sinusitis with persistent cough, and pneumonia.
- May resemble “the common cold” in the first few weeks of illness.

Symptoms of Pertussis:

**Stage 1 – Catarrhal stage (typically lasts 1-2 weeks)**

- The disease usually starts with cold-like symptoms such as runny nose, mild occasional cough, sometimes a low grade fever, and apnea (in infants).
- The cough gradually becomes more severe.
- In infants, the cough can be minimal or not even there.

**Stage 2 – Paroxysmal stage**

(lasts from 1-6 weeks, can persist up to 10 weeks)

- This stage is defined by severe coughing.
- Paroxysms (fits) of many, rapid coughs followed by a high-pitched "whoop".
- Young infants may not be strong enough to whoop, but can appear agitated/anxious.
- Vomiting and exhaustion may follow the coughing fits.
- Infants and young children may become cyanotic while coughing, but patients usually appear relatively well between coughing fits.
- Coughing fits generally become more common and severe as the illness continues, and can occur more often at night.

**Stage 3 – Convalescent stage (lasts about 2-3 weeks)**

- The cough becomes less severe and less frequent
- Nonparoxysmal coughing can persist for 6 weeks or longer
- Subsequent respiratory infections can cause coughing fits to return. This can last for many months.

December 2016
Identifying Suspect Pertussis Cases:

Consider Pertussis in the following patients, regardless of age or vaccination status:

- Prolonged cough (coughs persisting more than 2 weeks or more than 1 week during outbreaks or periods of increased incidence)
- Paroxysmal cough and/or posttussive vomiting or whoop
- Apnea or cyanosis without the characteristic paroxysmal cough, especially in infants
- Cough illness in patients with a known exposure to a case of pertussis in the 3 weeks prior to symptom onset

Questions to ask patients/parents to help identify suspect cases:

- How long have you had the cough?
- Do you vomit after coughing?
- What is the cough like?
- Is the cough worse at night?
- Do you feel well between coughing fits?
- Has anyone in your household, at work, at your child’s school had a severe or prolonged cough?

Testing for Pertussis:

Lab testing of suspect cases is encouraged. The following testing methods are recommended:

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Result Interpretation</th>
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</thead>
<tbody>
<tr>
<td>PCR</td>
<td>(+) Positive: Confirms B. pertussis if clinical and/or exposure history support the diagnosis of pertussis. (-) Negative: Does not rule out B. pertussis infection.</td>
</tr>
<tr>
<td>Culture</td>
<td>(+) Positive: Confirms B. pertussis infection. (-) Negative: Does not rule out B. pertussis infection.</td>
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</tbody>
</table>

![Cough Onset Diagram](image)

1: Optimal timing for diagnostic Pertussis testing (in weeks)

Whenever possible, both PCR and culture should be performed.

Testing by direct fluorescent antibody (DFA) and serology are considered unreliable and are not recommended. A negative DFA result does not rule out the diagnosis of pertussis.
Infection Prevention and Control

Treating Pertussis:
Refer to the treatment guidance from the CDC at http://www.cdc.gov/pertussis/clinical/treatment.html

Communicability of Pertussis:
- *B. pertussis* is shed in nasopharyngeal secretions, especially during coughing and sneezing. The disease spreads when secretions get into mucous membranes such as the eyes, nose, and mouth.
- Patients are most infectious early in the illness (generally the 2 weeks after the cough begins), but communicability can persist for 3 weeks after the cough begins.
- Milder symptoms do not preclude transmission of pertussis.
- Individuals who don’t realize that they are infected may spread disease to vulnerable contacts – especially to infants who are not old enough to have been vaccinated.
- Antimicrobial therapy decreases communicability and can help limit the spread of disease.
- The incubation period is usually 7-10 days, but can range from 4-21 days.

Preventing Transmission of Pertussis:

Transmission-based Precautions in the Healthcare Setting
- If a patient has symptoms of an infection (such as a cough) appropriate empiric based precautions (a mask and eye protection) should be used until an infection can be confirmed or ruled out.
- Droplet precautions should be used for all suspect and confirmed cases of pertussis. This includes mask and eye protection for staff inside the room, and a mask for the patient (and any coughing parents/visitors) outside the room.
- As always, healthcare workers should stay home if they are ill. If you are coughing at work, please wear a mask to protect our vulnerable patients from respiratory illnesses such as pertussis. *An illness may be mild for you, but can cause a much more serious illness in our patients.*

Transmission-based Precautions at Home
- Patients with suspect/confirmed pertussis should be advised to stay home from work, school or other activities for the first 21 days of cough or until they have completed 5 full days of appropriate antimicrobial treatment, whichever occurs first.

Vaccine
The best way to prevent pertussis is to get vaccinated. There are vaccines for children, pre-teens, teens and adults. Because immunity to pertussis begins to wane 1-2 years after vaccination, it is important to ensure on time vaccination according to the recommended schedule and that incompletely vaccinated patients are brought up to date.
- The childhood vaccine is called DTaP, and the pertussis booster vaccine for adolescents and adults is called Tdap.
- Tdap for adolescents is given usually at the 11-12 yr old visit as a onetime vaccine.
- Adults need a single dose of Tdap if they have not previously received one
- Pregnant women should receive a Tdap vaccination during each pregnancy
- Tdap is available free of charge for all Children’s employees through Employee Health Services (952-992-5372).

Post exposure Prophylaxis:
Of Healthcare Workers
- Exposures can be easily avoided by using appropriate PPE (see above section on transmission based precautions in the healthcare setting).
Infection Prevention and Control

Please notify the Infection Prevention and Control department (651-629-4444) of all suspect/confirmed cases of Pertussis so we can initiate employee exposure follow-up as needed.

Employee Health Services will facilitate distribution of post exposure prophylaxis for staff that meet the exposure definition.

All healthcare worker exposures must be reported to Employee Health Services.

Self treatment and/or antibiotic prophylaxis from colleagues is not allowed.

Of Household Members

Providers should recommend to the patient/family that household members (persons who stay overnight in the same household) of confirmed cases receive prophylaxis.

Of Other Close Contacts

Other close contacts may include daycare contacts, students participating in extracurricular activities at least 10 hrs per week, other persons spending at least 10 hours per week with an infectious case (during which time they are in close proximity).

Local public health will identify other close contacts and facilitate post exposure antibiotic prophylaxis.

Please notify the Infection Prevention and Control department (651-629-4444) of all suspect/confirmed cases of Pertussis so we can report the cases to MDH/local public health.

In general, antimicrobial prophylaxis isn’t recommended until there has been laboratory confirmation of the suspect case.

Children’s Resources:

Children’s Infectious Disease Physicians are available 24/7 for consultation and assistance in identifying cases, interpreting lab results, treating, etc. The on-call infectious disease physician can be reached at 651-220-6444.

Children’s Infection Prevention and Control department is available 24/7 for reporting suspect/confirmed pertussis cases, guidance on transmission based precautions, initiating employee exposure follow-up when necessary (please wear your PPE to prevent exposures!), etc. The on-call Infection Preventionist can be reached at 651-629-4444.

External Sources and References:

1. Centers for Disease Control and Prevention (CDC) http://www.cdc.gov/pertussis/
5. Recommended Antimicrobial Agents for the Treatment and Postexposure Prophylaxis of Pertussis. 2005 CDC Guidelines. (http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5414a1.htm)