Learn About Pertussis

Pertussis, also known as whooping cough, is an extremely contagious respiratory infection caused by *Bordetella pertussis* bacteria. It can be especially serious and even fatal for infants. Unfortunately, many people who spread it may not know they have it. Infection can occur throughout the year, but in North America, its activity peaks in summer and fall. The classic sign of pertussis is a “whooping” sound made at the end of an episode of violent coughing, giving the common name of whooping cough. The Chinese name for pertussis is “the 100-day cough,” which describes the duration of illness, since it often lasts up to 3 to 6 months.

**Key Facts**

- Very contagious respiratory infection caused by bacteria known as *Bordetella pertussis*.
- Most commonly occurs in preschool/school-age children although it can infect any age group.
- Most serious and potentially fatal in infants.
- Usually starts with cold-like symptoms followed by persistent harsh cough and a whooping sound.
- Gradually resolves over 3 to 6 months, regardless of therapy.
- Pertussis is preventable by vaccination. Routine childhood vaccinations greatly reduce the likelihood of infection in infants and children.
- Immunity decreases with age. It is recommended that all adults ages 19 to 65 get at least one “booster” vaccination.
- Older adults should also get a “booster” vaccine if they come into contact with babies less than 12 months old.

What Is Pertussis?

Pertussis is a respiratory tract infection caused by *B pertussis* bacteria.

It most commonly occurs in preschool and school-age children but can occur at any age. The illness typically starts 7 to 10 days after being exposed to an infected person. One usually presents with mild upper respiratory symptoms (nasal drainage, tearing, mild cough, and tiredness), similar to the common cold. This stage is often referred to as the catarrhal stage.

After 1 to 2 weeks, the illness progresses from a mild cough into the second stage of coughing paroxysms (persistent and prolonged rapid coughing spells). This stage is called the paroxysmal stage.

The paroxysmal stage is categorized by coughing spells that often result in vomiting and is followed by a whooping sound. During a coughing spasm, the neck veins may pop out, eyes bulge, and the tongue sticks out. The person may even appear blue around the mouth and face.

How often these paroxysmal, or coughing, episodes occur may vary. There can be several per hour to five to ten per day. The episodes are often worse at night and can interfere with sleep. This stage can last up to 3 months. The symptoms of cough gradually improve over weeks to months. This stage is often referred to as the convalescent stage.

For 6 to 12 months following the illness, viral infections may be associated with a reappearance of the paroxysmal cough.
How Pertussis Affects Your Body
Initially, the individual will tend to have a runny nose, tearing eyes, mild cough, and general tiredness. This resembles the symptoms of a common cold and may be ignored at first. Later, there may be severe coughing spells, a whooping sound, and vomiting. An individual may experience light-headedness or headaches from harsh coughing. The lips and areas around the lips may even turn blue immediately after a coughing spell. Weight loss may occur as persistent coughing interferes with eating. A fever is typically not seen. If there is fever, there may be an associated bacterial infection.

How Serious Is Pertussis?
Pertussis is the most severe in the first 6 months of life and in preterm or unimmunized infants. Almost all deaths and over 80% of hospitalizations associated with pertussis have been in infants less than 3 months of age. Children under 6 months of age usually experience a shorter respiratory symptom phase is shorter and the infant may gag or gasp, or even stop breathing temporarily. Often, at times, there is no whooping and the recovery is longer.

In preschool children, pertussis can be exhausting, given the length of course. Complications, including rib fractures, can result. In some older children and adults, the cough doesn’t happen in fits and doesn’t have a whooping sounds. Vomiting with cough is the best predictor of pertussis as the cause of prolonged cough in adults.

More severe complications may occur in infants, including pneumonia, heart failure, collapsed lung, brain bleeds, and death.

Pertussis Symptoms, Causes, and Risk Factors
Pertussis is very contagious. People who are unimmunized and or living in the same household as an infected individual are at highest risk for infection. Symptoms can vary among the various age groups—from coughing associated with a whooping sound to vomiting after a coughing spell.

What Are the Symptoms of Pertussis?
Classic symptoms of pertussis start with cold-like symptoms (runny nose, tearing eyes, etc), followed by a harsh repetitive cough and an accompanying whooping sound. A patient with pertussis often vomiting following a coughing spell. The cough is present throughout the day and night and may be brought on by acts such as yawning, stretching, laughing, yelling, or exercise. It may also be worse at night and can be triggered by the inhalation of steam, mist, or other respiratory irritants. A fever is uncommon.

Symptoms of pertussis in adolescents and adults are often less severe than in infants and children. Prior infection or immunization may blunt the severity of illness, but neither creates lifelong immunity. As a result, prolonged cough may be the only symptom in this population. Other symptoms, such as sputum production, runny nose, sweating episodes, and sore throat may also occur. Episodes are often worse at night and interfere with sleep.

What Causes Pertussis?
Pertussis is caused by an infection of B pertussis.

What Are the Risk Factors?
Pertussis is a highly contagious disease. Living in the same house with an infected person and not being immunized are two major risk factors for infection. People in the same household who have not had their DTaP (diphtheria, tetanus, and pertussis in infants) or Tdap (tetanus, diphtheria, and pertussis in adults) vaccines are 80 to 100% likely to be infected with exposure, but those who have been immunized, but live in the same household, are 20% likely to be infected.
When to See Your Doctor
If you have been exposed to someone in your household infected with pertussis, you should consider getting preventative antibiotic therapy. If there has been known exposure and you have cold-like symptoms, see a doctor for testing and possibly starting antibiotic therapy. Anyone with a prolonged persistent debilitating cough should see a physician immediately.

Patients and families should report any signs of dehydration to your doctor immediately. These include dry, sticky mouth, sleepiness or tiredness, thirst, decreased urination or fewer wet diapers, few or no tears when crying, muscle weakness, headache, dizziness, or lightheadedness.

How Is Pertussis Diagnosed?
A test from secretions in the back of the nose or throat (culture or PCR) are most commonly used to diagnose pertussis. The specimens are collected from either a small tube passed deep into the nose or a special swab. Results will come back within a day of the PCR test, but longer with the culture. Cultures are less useful in adolescents and adults as they can have symptoms for several weeks before pertussis is even suspected. Patients with more than 4 weeks of cough may only be diagnosed with a special blood test.

Diagnostic and Treating Pertussis
Even if someone has all of the signs and symptoms of pertussis, your doctor will likely order a laboratory test to confirm it. Once a diagnosis is made or suspected exposure has been determined, antibiotic therapy should be started. This will reduce the spread of infection and the severity of illness, though the length of the illness will not change once coughing paroxysms have already started.

What to Expect
It is rare for a diagnosis to be made before a patient has reached the coughing paroxysm phase since pertussis can initially mimic the common cold. Adolescents and adults can take even longer to get diagnosed, as sometimes the only symptom they have is a prolonged cough.

Treatment is available and can help reduce the complications seen in younger infants. However, if it is not started early, it may not change the clinical course, especially in school-age children, adolescents, and adults.

How Is Pertussis Treated?
Pertussis is generally treated with antibiotics; it is very important that treatment is started early to reduce severity and duration of the illness, as well as reduce the likelihood of spreading the infection to others. Treatment after 3 weeks of illness is unlikely to help because the bacteria are typically gone from your body, despite still having symptoms. The symptoms are persistent because the bacteria have already done damage to your body.

There are several antibiotics available to treat pertussis. The recommended drugs are azithromycin, clarithromycin, and erythromycin.

Pertussis can sometimes be very serious, requiring treatment in the hospital. Infants have the greatest risk of severe complications from pertussis.

The use of cough medications is not recommended in the treatment of pertussis cough and will probably not help.
Living With Pertussis

Though pertussis is not a lifelong illness, it can be debilitating and have a relatively prolonged course. Before widespread immunization programs in the developed world, pertussis was one of the most common infectious causes of morbidity and death. Fortunately, universal childhood vaccinations reduced the number of cases of pertussis in infants and children dramatically. However, the number of adults with pertussis has recently started to rise, probably because immunity from the vaccine may decrease with age.

What to Expect

Pertussis can last up to 3 to 6 months.

In infants, the illness can be severe and even fatal. Infants commonly present with apneas, gasping, gagging with coughing, and worse complications, ultimately resulting in death.

School-age children will often present with the classic symptoms discussed earlier.

Older children and adults often present with a prolonged cough but may also present with complications of dizziness, sleep disturbances, and even rib fractures.

Managing Pertussis

Prevention is the first and most important step. Childhood immunization reduces the risk of catching pertussis, and universal immunization of all infants can limit exposure by reducing the overall number of cases. Because the risk of transmission of *B pertussis* within households is high, treating with antibiotics is widely recommended for household contacts of pertussis cases.

If recognized before the harsh coughing phase, early treatment can help shorten the course. Otherwise management is typically supportive, as symptoms will gradually improve with time. Cough medicine is not recommended and likely will not be helpful.

A vaccine called Tdap can help protect adolescents and adults against three diseases: tetanus, diphtheria, and pertussis. Because immunity from the childhood vaccine decreases over time, a “booster” vaccine is recommended for all adults 19-65 years, and for older adults who will be in contact with babies less than 12 months old.

Tips for managing pertussis and reducing the risk of spreading it:

1. Follow the schedule for giving antibiotics exactly as your doctor prescribed.
2. Try your best to keep your home free of any irritants that can trigger coughing, such as smoke, dust, and chemical fumes.
3. Use a clean, cool mist vaporizer to help loosen secretions and soothe the cough.
4. Practice good handwashing.
5. Drink plenty of fluids, including water, juices, and soups and eat fruits to prevent dehydration (lack of fluids).
6. Eat small, frequent meals to help prevent vomiting (if occurring).
Finding Support

With the support of your doctor, you can be made aware of the symptoms that you need to look out for in case complications arise. Depending on how debilitating your illness is, your doctor may provide a letter to the school or employer regarding your illness to facilitate flexibility in your work or school duties or schedule. Many people are still able to attend work and school with the illness once they are no longer contagious.

The Lung Association recommends patients and caregivers join our Living With Lung Disease Support Community to connect with others facing this disease. You can also call the Lung Association’s Lung HelpLine at 1-800-LUNGUSA to talk to a trained respiratory professional who can help answer your questions and connect you with additional support.

Questions to Ask Your Doctor About Pertussis

Making notes before your visit, as well as taking along a trusted family member or friend, can help you through the first appointment with your doctor. Questions you may want to ask your doctor:

- Could my child’s cough be pertussis (or whooping cough)?
- If pertussis/whooping cough, is suspected, how much longer will the cough last?
- What are the symptoms or changes in symptoms I should notify the doctor of?
- When should I take my child to the emergency room?
- Am I/is my child still contagious? If so, when will I/my child no longer be contagious?
- What treatments are recommended?
- What precautions should household members or other contacts take?
- If you are pregnant or someone in your family or household is pregnant, talk to your doctor about whether you should have a Tdap booster.

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