

Diagnosing Pertussis in the ED

Emergency physicians undoubtedly see an abundance of both children and adults with a chief complaint of “cough”. While a majority of these cases are due to viral etiologies, one should include pertussis in their differential when assessing patients with prolonged cough. *Bordetella pertussis* (aka “whooping cough”) is a highly contagious respiratory tract infection characterized by paroxysmal cough, infecting up to 80-90% of susceptible patients exposed to it. There has been a drastic increase in the amount of cases seen a year (28,000 cases/year) secondary to **decreasing immunity status**. Although most cases in adults and adolescents (47% of cases) are mild and self-limiting, there is a greater morbidity and mortality seen in children, particularly **infants less than 2 years** who have incomplete immune status. It is estimated that only 5-10% of cases are recognized and reported by community physicians and it is the most common vaccine-preventable disease in children under 5 years of age.

Pertussis is a disease that progresses in **three stages, each lasting 1-2 weeks**. The catarrhal stage is characterized by **non-specific symptoms** with congestion, rhinorrhea, mild cough, and low-grade fever. The paroxysmal stage is defined by **fever, intense coughing followed by a loud “whoop”, post-tussive emesis, and thick respiratory secretions**. Infants can present with hypoxemia, apnea, and cyanotic episodes. Adults frequently do not present with the characteristic gasping stridor on inspiration. Patients frequently have a lymphocytosis during this stage. The final stage demonstrates a **decline in severity of the cough, although it can linger for weeks to months** with increased susceptibility to subsequent infections and bronchospasm. Patients under 3 months of age have a mortality rate of 1-3% and 13% rate of subsequent pneumonia. Adults can experience syncope, incontinence, rib fractures, and secondary pneumonia.

Diagnosis is made by *Bordetella* culture (positive in 1st two weeks of cough) and PCR (positive at 0-3 weeks following cough). It is recommended to test with both culture and PCR if the patient has had the cough over 3 weeks. CBC reveals leukocytosis with predominant lymphocytosis. CXR may be done to assess for secondary pneumonia. Management is **primarily supportive and antibiotics (erythromycin, clarithromycin, or azithromycin) are given to patients older than 1 month to prevent spread of the disease**. Infants may need admission and monitoring if they are experiencing cyanotic/apneic spells or hypoxia. Widespread vaccination is the best public health strategy. Children receive the DTap at 2, 4, 6, 15-18 months, and at 4-6 years. Tdap boosters are given to adolescents between 11-18 years of age and pregnant women immediately postpartum to avoid exposing their infants to *Bordetella*. It was found that 35-55% of pertussis cases in infants could be prevented if immunity to pertussis in parents were maintained or boosted. Adults and healthcare workers are encouraged to renew their immunization every 10 years to prevent transmission of this highly contagious disease.

Resources / Further Reading:

1. Bocka, Joseph. "Pertussis Treatment & Management." *Medscape*. N.p., 5 Dec. 2014. Web. 21 Jan. 2015.
2. Cordover, Mitchell B. "A Case of a Family With Cough - Pertussis Is Back." American College of Emergency Physicians, Aug. 2009. Web. 21 Jan. 2015.
3. <http://www.ncbi.nlm.nih.gov/pubmed/23287746>
4. <http://www.ncbi.nlm.nih.gov/pubmed/19062227>