

# Under the Microscope

## Bordetella pertussis

Following increased disease activity from 2010 and early 2011, **there has been a continued increase in reported cases of pertussis (whooping cough) throughout the summer and fall in DuPage County**, with the majority occurring in children and adolescents. Although no localized outbreak activity has been reported yet this year, in several recent cases, there have been two or more cases within a household.

Pertussis is an acute infectious disease caused by the bacterium *Bordetella pertussis*. Before the availability of pertussis vaccine in the 1940s, more than 200,000 cases of pertussis were reported annually in the U.S. Since widespread use of the vaccine began, incidence has decreased more than 80% compared with the pre-vaccine era.

Since the 1980s, however, there has been an increase in the number of reported cases of pertussis, especially among 10 to 19 year olds and infants younger than 6 months of age. **Several factors have likely contributed to the increase in reported cases, including increased awareness and improved recognition of pertussis among clinicians, greater access to and use of laboratory diagnostics, especially polymerase chain reaction (PCR) testing, and increased surveillance and reporting of pertussis to public health departments.** Even with these improvements, Centers for Disease Control and Prevention (CDC) believes that much of the disease goes unrecognized and unreported.

Clinicians are reminded of the importance of early disease recognition, diagnosis, treatment, reporting, and preventive measures that should be followed to control and prevent further transmission. Pertussis remains endemic in the U.S., despite longstanding routine childhood pertussis vaccination. **Immunity to pertussis wanes approximately 5–10 years after completion of childhood vaccination, leaving adolescents and adults susceptible to pertussis.**

Even though the disease may be milder in older persons, those who are

infected may transmit the disease to other susceptible persons, including unimmunized or incompletely immunized infants. **Compared with older children and adults, infants aged <12 months have substantially higher rates of pertussis and the largest burden of pertussis-related deaths.** Since 2004, a mean of 3,055 infant pertussis cases with more than 19 deaths has been reported each year in the U.S

**Diagnosis** of pertussis is based primarily on clinical presentation (**cough lasting at least 2 weeks with inspiratory “whoop,” paroxysms, or post-tussive vomiting**, without other apparent cause), and may be confirmed by a positive culture and/or PCR testing by nasopharyngeal swab. A negative culture or PCR test, however, does not rule out pertussis if the patient’s clinical presentation is otherwise consistent with pertussis per the clinician’s judgement; **the case should still be reported to the local health department**, and appropriate treatment and prophylaxis should still be administered. Testing in the absence of respiratory symptoms is not recommended.

Since some pertussis vaccines have been found to contain PCR-detectable *B. pertussis* DNA, **preparation and administration of vaccines in areas separate from pertussis specimen collection areas may reduce the opportunity for cross contamination of clinical specimens.** Care should be taken when preparing and administering pertussis vaccines to avoid contamination of surfaces with vaccine.

In addition to frequent handwashing, respiratory hygiene, and timely diagnosis followed by appropriate antimicrobial treatment, transmission of pertussis may be controlled by **post-exposure prophylaxis of close contacts of persons with pertussis, regardless of age and vaccination status.**

**Vaccination of susceptible persons is the most important preventive strategy against pertussis.**

Children should receive DTaP vaccine doses at **2, 4, 6 and 15 months** of age and another dose at **4 to 6 years** of age. **New booster Tdap vaccines** became available in 2005 that offer continued protection against pertussis, diphtheria and tetanus for **adolescents and adults.**

Published in October 2011, CDC also recommends:

**1) Maternal vaccination, that healthcare personnel should administer Tdap to susceptible women**

**during pregnancy, preferably during the third or late second trimester (after 20 weeks' gestation).**

If not administered during pregnancy, Tdap should be administered immediately postpartum.

**2) Cocooning**, that susceptible adolescents and adults (e.g., parents, siblings, grandparents, child care providers, and **healthcare personnel**) who have or anticipate having close contact with an infant aged

<12 months should receive a single dose of Tdap to protect against pertussis.

References:

For questions or **to report a suspect or known case of pertussis**, please call the DuPage County Health Department at **(630) 221-7553**.

1. [www.cdc.gov/pertussis/clinical/index.html](http://www.cdc.gov/pertussis/clinical/index.html)

2. [www.cdc.gov/mmwr/PDF/rr/rr5503.pdf](http://www.cdc.gov/mmwr/PDF/rr/rr5503.pdf)

3. [www.cdc.gov/mmwr/PDF/rr/rr5517.pdf](http://www.cdc.gov/mmwr/PDF/rr/rr5517.pdf)

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4. [www.cdc.gov/vaccines/pubs/pinkbook/downloads/pert.pdf](http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/pert.pdf)

5. <http://www.cdc.gov/mmwr/pdf/wk/mm6041.pdf>

6. [www.cdc.gov/pertussis/surv-reporting.html](http://www.cdc.gov/pertussis/surv-reporting.html)

7. [www.cdc.gov/mmwr/PDF/rr/rr5414.pdf](http://www.cdc.gov/mmwr/PDF/rr/rr5414.pdf)

8. [www.cdc.gov/pertussis/clinical/diagnostictesting/](http://www.cdc.gov/pertussis/clinical/diagnostictesting/)