**Pertussis**

**Clinical Features**  Highly communicable, vaccine-preventable disease that lasts for many weeks and is typically manifested in children with paroxysmal spasms of severe coughing, whooping, and posttussive vomiting.

**Etiologic Agent**  *Bordetella pertussis*, a gram-negative coccobacillus.

**Incidence**  This disease results in high morbidity and mortality in many countries every year. In the United States, 5000-7000 cases are reported each year. Incidence of pertussis has increased steadily since the 1980s. The incidence in 2002 was 3.01/100,000 when 8,296 cases of pertussis were reported.

**Complications**  Major complications are most common among infants and young children and include hypoxia, apnea, pneumonia, seizures, encephalopathy, and malnutrition. Young children can die from pertussis and 13 children died in the United States in 2003. Most deaths occur among unvaccinated children or children too young to be vaccinated.

**Transmission**  Occurs through direct contact with discharges from respiratory mucous membranes of infected persons.

**Risk Groups**  Children who are too young to be fully vaccinated and those who have not completed the primary vaccination series are at highest risk for severe illness. Like measles, pertussis is highly contagious with up to 90% of susceptible household contacts developing clinical disease following exposure to an index case. Adolescents and adults become susceptible when immunity wanes.

**Surveillance**  National reporting through the National Electronic Telecommunications System for Surveillance (NETSS) and through several Enhanced Surveillance Sites throughout the United States.

**Trends**  Pertussis is an endemic illness. In the United States epidemics occur every 3-5 years. The most recent epidemic occurred in 1996. Overall increase in cases since 1990, with disproportionate increase in adolescents and adults.

**Challenges**  Understanding pertussis pathogenesis and immunity; protecting infants from severe pertussis; control of pertussis outbreaks; diagnosing pertussis in a timely, accurate, and standardized fashion; understanding the true burden of disease in different age and socioeconomic groups; evaluating the impact of a licensed pertussis vaccine in persons ≥ 14 years of age; evaluating the impact of acellular vaccines on prevention programs; and determining the prevalence of erythromycin-resistant *B. pertussis*.

**Opportunities**  Characterize strains using newly developed molecular typing methods (e.g., pulsed-field gel electrophoresis and gene-sequencing analysis) to elucidate epidemiology and virulence factors, examine isolates for antimicrobial...
susceptibility and to identify resistance mechanisms; study transmission of pertussis within populations (e.g., how adults/adolescents transmit the organism to others); study efficacy of acellular pertussis vaccines among persons ≥ 14 years of age; study effectiveness of acellular pertussis vaccines to control outbreaks; apply/evaluate new diagnostic tests.

Date: October 13, 2005
Content source: Coordinating Center for Infectious Diseases / Division of Bacterial and Mycotic Diseases