Pertussis Outbreaks Underline Need for Vaccination

Vaccines for teens and adults could be beneficial, as immunity from infant immunization wanes.

BY MIRIAM E. TUCKER  Senior Writer

Three recent hospital pertussis outbreaks underscore the need to improve recognition and protection against transmission, the Centers for Disease Control and Prevention said.

The cases, from four states, also illustrate the potential benefit of vaccination against Bordetella pertussis in adolescents and adults, because immunity from infant immunization wanes after a decade. No vaccine is currently licensed for persons aged 7 years and above, but two manufacturers have filed for licensure with the Food and Drug Administration for vaccines that combine acellular pertussis, tetanus toxoid, and tetanus toxoid antigen.

One would be indicated for persons aged 10-18 years, the other for ages 11-64 years.

All three hospital outbreaks, which occurred in August and September of 2003, involved hospitalized infants with cough illness. In Pennsylvania, a 3-week-old infant was hospitalized with cough, posttussive vomiting, and fever. Pertussis was diagnosed in an additional 15 patients at the initial hospital developed cough illness and/or tested positive for pertussis.

Hospital infection control personnel subsequently screened exposed employees at all three locations with a 5-day course of azithromycin, and excluded them from work for 5 days. Another 307 close contacts of the symptomatic health care workers were given azithromycin prophylactically, the CDC report.

The other two outbreaks, in Kentucky and Oregon, also involved acutely ill infants with cough illness, exposed health care workers, and potential transmission to a large number of contacts who subsequently received azithromycin as either treatment or prophylaxis.

All three cases illustrate the difficulties in the diagnosis of pertussis, particularly in older individuals in whom the symptoms during the catarrhal stage are usually nonspecific while the disease is already highly communicable. In infants, diagnosis may be delayed when the presentation is respiratory distress with apnea but without the typical cough.

Also problematic is the lack of adequate diagnostic tests for pertussis. Culture is not sensitive beyond 3 weeks of illness or after antibiotics. Polymerase chain reaction for pertussis is not standardized, and no serologic test is available, although the CDC and the FDA are developing one.

A second MMWR report illustrates the fact that incompletely immunized children aged less than 6 months continue to be the most vulnerable to pertussis when the disease is circulating around them (MMWR. 2005;54:7-12).

A 29-day-old West Virginia infant was brought to the emergency department with difficulty breathing. The infant’s mother had had prolonged paroxysmal cough illness for 3 weeks before the infant’s delivery; the father had onset of paroxysmal cough illness 2 weeks before the infant’s illness.

The infant had been coughing for 5 days with increasing severity, resulting in posttussive vomiting and choking. At presentation, she was lethargic, tachycardic, and had a mild fever. Laboratory results indicated leukocytosis. Chest x-ray revealed pneumonia, and she developed respiratory failure. She died approximately 30 hours after admission to the pediatric intensive care unit, despite antibiotic treatment for presumed B. pertussis, high-frequency ventilation, nitric oxide administration, and a double-volume exchange transfusion.

The diagnosis of pertussis was based on history, clinical findings, and a positive polymerase chain reaction test. Around the time of the infant’s death, two cousins, her paternal grandmother, and a great-grandmother all had cough illness as well.

Caring for Infected Health Workers

Clinical Findings:

- Incubation period: 7-10 days (range: 4-21 days).
- Catarhal stage: 1-2 weeks; corryza, low-grade fever, and mild cough.
- Paroxysmal stage: 1-6 weeks; paroxysmal cough, posttussive vomiting, and inspiratory “whoop”.
- Convalescent stage: at least 3 weeks; cough lessens and disappears.

Treatment/Prophylaxis:

- Macrolides (erythromycin, azithromycin, or clarithromycin) are preferred.
- Trimethoprim-sulfamethoxazole is an alternative antibiotic for use in persons with allergy or intolerance to macrolides.

Source: Centers for Disease Control and Prevention

Diagnosing and Treating UTIs in Newborn Called Difficult

BY DAMIAN MCNAMARA  Miami Bureau

Miami Beach — Diagnosis of a newborn urinary tract infection is challenging, but identification is crucial to prevent potentially serious complications, according to a review of recent literature.

Although urinary tract infections (UTIs) are common in newborns—with an estimated 4 million cases in the United States—clinical questions remain. What is the true incidence of complications if left untreated, which are the more serious or long-term consequences, and what is the best approach to treatment?

There is still uncertainty about whether long-term, low-dose antibiotics prevent recurrent UTIs, according to another study (Acta Paediatr. 2004;93:164-8). The prospective case control study compared 200 children with their first febrile UTI to 316 controls. Dr. Wiswell said, “They concluded breast-feeding significantly lowered risk of UTI, with strongest effect in the first months after birth. The protection was no longer present after 7 months of age.”

There is still uncertainty about whether long-term, low-dose antibiotics prevent recurrent UTIs in susceptible children (Pediatr. Database Syst. Rev 2001;4:CD001534). There is no consensus in the literature about traditional long-course antibiotics versus short-course therapy in upper UTIs. For eradication of lower UTIs, however, the Cochrane Collaboration Systematic Review indicates a 2- to 4-day course of oral antibiotics is as effective as 7- to 14-day therapy (Cochrane Database Syst. Rev 2004;1:CD001534).

Until larger and more rigorous trials are completed, questions will remain about UTIs in newborns. Dr. Wiswell said.