

# Pertussis Cases Show Need for Adult Booster Shot

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Three recent hospital pertussis outbreaks and one infant death from the disease strongly point to the need for improved 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 antigens. 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, post-tussive vomiting, and fever. Pertussis was considered unlikely, the infant wasn't tested for it, and hospital staff did not observe droplet precautions.

The infant was transferred to a referral hospital after 1 day, nasopharyngeal secretions were obtained, and *B. pertussis* was isolated 16 days later (MMWR 2005;54:67-71).

Meanwhile, the physician who had cared for the infant at the first hospital developed a cough 9 days after exposure. Despite remaining symptomatic, he continued to treat patients—and to have contact with coworkers, family, and friends—without wearing a mask. His nasopharyngeal secretions tested positive 22 days after the initial exposure, while a total of 16 other health care workers and two pediatric pa-

tients at the initial hospital developed cough illness and/or tested positive for pertussis.

Hospital infection control personnel subsequently screened exposed employees, treated all who were symptomatic 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 reported.

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 illustrated 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, diagno-

sis 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 antibiotic therapy, 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 chil-

## Safety of Attenuated

### Live vaccines: a tradition of safety

Over 200 years ago, Edward Jenner changed the landscape of disease prevention by demonstrating the effectiveness and safety of the first attenuated live vaccine.

Since then, vaccines based on the same principle have been used with great success in preventing diseases, including measles, mumps, rubella, and varicella.



Jenner vaccinates James Phipps, 14 May 1796.

### A temperature-sensitive, intranasally administered influenza vaccine

FluMist® (Influenza Virus Vaccine Live, Intranasal) is the only attenuated live, cold-adapted influenza vaccine. The attenuated vaccine strains used in FluMist® replicate primarily in the nasopharynx, initiating an immune response at influenza's point of entry in addition to a serum antibody response. Because they are temperature-sensitive, the vaccine strains do not replicate efficiently in the warmer temperatures of the lower airways and lungs.<sup>1</sup>

### Extensive clinical trials

FluMist® has demonstrated its safety and efficacy. Clinical trials of FluMist® included more than 20,000 individuals.<sup>1</sup>

### Growing real-world experience

Approximately 450,000 individuals received FluMist® during the 2003-2004 season,<sup>2</sup> and many more are expected to receive it this flu season.

FluMist® is indicated for active immunization for the prevention of disease caused by influenza A and B viruses in healthy children and adolescents, 5 to 17 years of age, and healthy adults, 18 to 49 years of age. There are risks associated with all vaccines, including FluMist®. FluMist® does not protect 100% of individuals vaccinated, and may not protect against viral strains not represented in the vaccine.

## Finding, Treating Pertussis in Health Workers

### Clinical Findings

- ▶ Incubation period: 7-10 days (range: 4-21 days).
- ▶ Catarrhal stage: 1-2 weeks; coryza, 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

dren aged less than 6 months continue to be the most vulnerable to pertussis when the disease is circulating around them (MMWR 2005;54:71-2).

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 post-tussive vomiting and choking. At presentation, she was lethargic, tachycardic, and

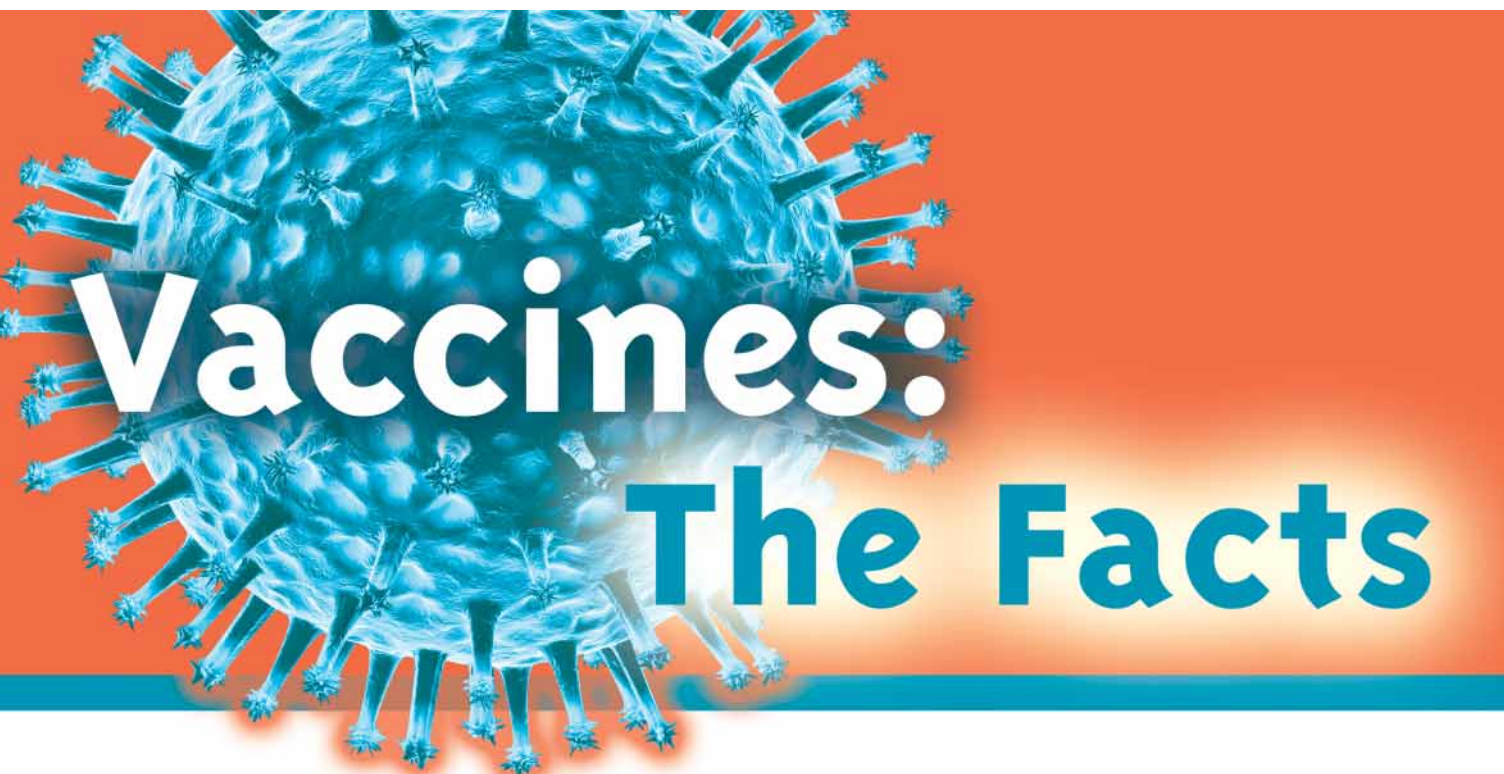
had a mild fever. Laboratory results indicated leukocytosis. Chest x-ray revealed pneumonia, and she developed respiratory failure. She died approximately 30 hours after admission to the pediatric intensive care unit, despite azithromycin treatment for presumed *B. pertussis*, high-frequency ventilation, 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. ■

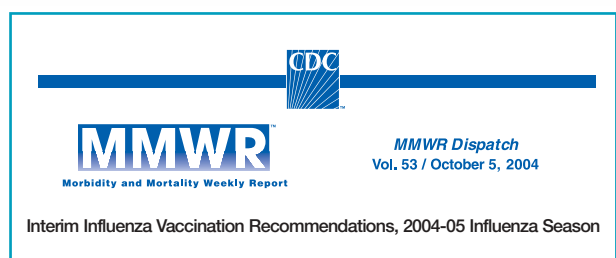
## VERBATIM

*"To those men, I would put this question: "At what age would you like your genitalia to begin shrinking?"*

Dr. Murray Freedman, on genital atrophy that occurs in postmenopausal women who have stopped hormone therapy, p. 58



### FluMist®—appropriate for most healthcare workers



This flu season, the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) encourages the use of intranasally administered, live, attenuated influenza vaccine, if available, for healthy nonpregnant people ages 5 to 49 years, including most healthcare workers and those caring for children aged <6 months.<sup>3</sup> To learn more about the influenza vaccine recommendations, go to [www.cdc.gov/flu](http://www.cdc.gov/flu).

### A demonstrated safety profile

In placebo-controlled clinical trials, the most common solicited adverse events in the indicated population (n=2,762) included runny nose/nasal congestion,

headache, cough, sore throat, tiredness/weakness, irritability, decreased activity, and muscle aches.

FluMist® is contraindicated in persons with hypersensitivity to any component of the vaccine, including eggs; in children and adolescents receiving aspirin therapy or aspirin-containing therapy; in individuals with a history of Guillain-Barré syndrome; and in individuals with known or suspected immune deficiency. The safety and efficacy of FluMist® have not been established in pregnant women or for patients with chronic underlying medical conditions, including asthma or reactive airways disease; the vaccine should not be administered to these patients.

For indications and usage, dosage and administration, and safety information, see the Brief Summary on the adjacent page.

For more information, visit [flumist.com](http://flumist.com).

**REFERENCES:** 1. Prescribing Information for FluMist®, Influenza Virus Vaccine Live, Intranasal. MedImmune Vaccines, Inc., Gaithersburg, MD. 2. Flu drug maker MedImmune posts wider loss [press release]. College Park, Md: Associated Press; October 21, 2004. Available at: [http://biz.yahoo.com/ap/041021/earns\\_medimmune\\_5.html](http://biz.yahoo.com/ap/041021/earns_medimmune_5.html). Accessed: January 4, 2005. 3. Centers for Disease Control and Prevention. Interim Influenza Vaccination Recommendations—2004–05 Influenza Season. Available at: [www.cdc.gov/flu/protect/whoshouldget.htm](http://www.cdc.gov/flu/protect/whoshouldget.htm). Accessed November 2, 2004.

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