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WHOOPING COUGH CASES REACH HIGHEST LEVEL IN NEARLY 40 YEARS

There has been an alarming trend in the number of reported cases of pertussis in the United States. Commonly known as "whooping cough," pertussis is a highly contagious infection of the respiratory tract that many believe no longer exists, although it, in fact, remains a significant health threat. Pertussis is the only vaccine-preventable disease for which children are routinely vaccinated against that is on the rise in the U.S. Following the introduction of immunization in the mid-1940s, reported pertussis cases reached an all-time low of 1,010 by 1976 (*1*). However, records from the Center for Disease Control (CDC) showed approximately 11,647 cases reported in 2003—the highest numbers in nearly 40 years (*2*). The records further indicate that 39% of reported cases were in adolescents 10-19 years of age. 17% of cases occurred in infants less than 6 months of age who are too young to have been fully vaccinated (*2*).

2003 Reported Case Profiles By Age (Weeks 1-53)

Age	No. of Cases	%	Incidence per 100,00
< 6 mos	1982	17	103.14
6-11 mos	235	2	12.23
1-4 yrs	1138	10	7.5
5-9 yrs	852	7	4.43
10-19 yrs	4540	39	11.05
20+ yrs	2854	25	1.4
Unknown	46	< 1	-
Total *	11647	100	4.1

* Total age incidence per 100,000 calculated from 11,601 cases with age reported. Source CDC(*2*)

An individual's vaccine-induced protection normally diminishes after 5 to 10 years following the last vaccine dose (given at approximately 4-6 years of age); therefore, pertussis disease occurs in adolescents even though they were fully vaccinated as young children. No pertussis vaccine is currently licensed in the United States for use in persons seven years of age or older. Pertussis, significantly under-reported and under-recognized, is a common cause of prolonged cough illness in adolescents and adults. In a clinical study involving 442 adolescents and adults who had a cough-related illness for more than seven days, approximately 20 percent of these patients had laboratory-documented pertussis (*3*).

According to Jay M. Lieberman, MD, Chief, Pediatric Infectious Disease, Miller Children's Hospital, Associate Professor of Pediatrics, University of California, Irvine, "Diseases such as measles, chickenpox, and spinal meningitis are at all-time lows in the United States because of the availability and use of highly effective vaccines. Unfortunately, the incidence of pertussis appears to be increasing in the U.S. We have learned that protection does not last forever after pertussis vaccination, and that teenagers and adults can develop whooping cough."

The first symptoms of pertussis are similar to the "common cold" with a mild fever, runny nose and a cough. Symptoms generally progress to more severe coughing episodes, yet adolescents often do not exhibit the classic "whoop" associated with the disease, making it difficult to recognize and diagnose. Dr. Lieberman went on to say, "However, we have also learned that some adolescents can get quite sick with whooping cough—they may vomit after the coughing episodes or even break a rib. The other major consequence of pertussis in this age group is that they can transmit the infection to young infants, who are at highest risk of severe complications, including death. Adding a pertussis vaccine to the current tetanus-diptheria booster routinely administered to 11 and 12 year olds could help control community

outbreaks and protect older children and teens from this serious and highly contagious disease. Such a vaccine is currently under review by the FDA."

While outbreaks of pertussis can happen in any environment, they frequently occur in middle and high schools. Response to these outbreaks are both costly and disruptive for the schools as well as local health officials (*4*). The current course of treatment for an infected person includes antibiotics and 5 days of isolation. Individuals in close contact with an infected person should receive antibiotic treatment as well, regardless of age or vaccination status. This health threat could be disruptive in a school setting, affecting not only families, but entire classrooms, school teams or schools. While the rates of serious complications and death among adolescents are low, illness due to pertussis is lengthy and has considerable impact with respect to visits to physicians, antimicrobial treatment, and experience of illness (*5*). The disease also has considerable economic repercussions, including the cost of medical care. Even more significant are the indirect costs of pertussis, such as lost productivity at work and social activities, or days lost from school (*6*). According to researchers, vaccinating the adolescent population would prove to be the cost-effective as they have the highest reported incidences of pertussis and pertussis-related morbidity (*4*). A cost-benefit analysis for the use of a pertussis booster vaccine in adolescents projected that vaccination of people in the U.S. ages 10-19 during a 10-year period would prevent up to 1.8 million cases of pertussis and save as much as $1.6 billion in direct and indirect costs.

To deal with the issue of waning immunity and prevention of pertussis, an adolescent acellular pertussis vaccine combined with diphtheria and tetanus toxoids (Tdap) is being developed in the United States, and is currently under review by the FDA. Similar vaccines are already licensed and available in other countries, including Canada, Germany, France, and Australia. In fact, health authorities in many countries have issued recommendations for universal pertussis vaccination in adolescents in their countries.

Pertussis is caused by the bacterium Bordetella pertussis and produces spasms of severe coughing. Pertussis can be quite serious. Symptoms can appear within 7 to 10 days after exposure. The clinical course of pertussis is separated into three stages. In the first or catarrhal stage the symptoms can easily be mistaken for the common cold, and can include a runny nose, low fever and a mild cough. After 1 to 2 weeks, symptoms generally progress to the second or paroxysmal stage, characterized by more paroxysms of rapid coughs, often followed by gagging or vomiting. Pertussis is most often diagnosed in this stage. Diagnosis and treatment with antibiotics after the onset of persistent coughing episodes may limit the spread of pertussis, but may have no discernable effect on the course of illness. The paroxysmal stage can last from 1 to 6 weeks, but can continue for up to 10 weeks, with the cough gradually decreasing. In the final convalescent stage, the recovery is gradual over many weeks or months. The coughing spells become less severe and fade out in 2 to 3 weeks.

For more information please contact a **GlaxoSmithKline** representative at AAP booth #1427, or visit "Evolving Needs for Adolescent Immunization of Adolescents," Monday, October 11, 2004 7:45 p.m.-9:45 p.m., San Francisco Museum of Modern Art, 151 Third Street, San Francisco, CA.

References:

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5. Wharton M. CID 2004;39:29
6. Lee LH and Pichichero ME. Arch Fam Med 2000;9:989