

Low Pertussis Immunity in Teen Hispanic Mothers

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SAN FRANCISCO — Low levels of immunity to pertussis in adolescent Hispanic mothers and their newborns may help explain their overrepresentation in pertussis cases and in deaths from the disease, Dr. C. Mary Healy said in a poster presentation at the annual meeting of the Infectious Diseases Society of America.

A study of pertussis toxin-specific IgG concentrations found low concentrations in umbilical cord blood from 220 consecutive term singletons born to Hispanic women, with the lowest geometric mean

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concentrations in infants born to adolescent mothers. The low antibody levels likely reflect waning of vaccine-induced or natural immunity, she said. Dr. Healy of Baylor College of Medicine, Houston, and her associates also compared pertussis toxin-specific IgG concentrations in blood samples from 55 mothers and their infants and found a ratio indicating efficient transfer of antibodies across the placenta. That suggests that one reason infants may be so susceptible to acquiring life-threatening pertussis in the first 4 months of life is because their mothers supply them with few antibodies.

"If you have high levels in the mothers, for example through vaccination, then the likelihood is that the antibodies will transmit very efficiently to infants and, hopefully, protect them at that most vulnerable period in the first few months of life before they begin their primary series of immunizations," she said in an interview at the meeting.

Currently there are no recommendations to vaccinate pregnant women against pertussis. Discussions are underway about whether to give pregnant women one of two relatively new acellular pertussis vaccines licensed for use in adolescents, Dr. Healy said.

"Hispanic women, especially adolescents, should be immunized with newly licensed acellular pertussis vaccine to prevent pertussis in themselves and life-threatening disease in their infants," she concluded in her poster.

Pertussis incidence is increasing among infants younger than 4 months of age, too young to have completed the DTaP primary vaccination series at ages 2, 4, and 6 months. The annual incidence of pertussis in the United States increased fivefold since 1980 despite childhood immunization rates above 80%, mainly due to disease in the youngest infants, according to federal statistics.

Pertussis incidence was 74% higher in Hispanic infants than in infants of other ethnicities throughout the 1990s despite

comparable childhood immunization rates. Pertussis was reported in 68/100,000 Hispanic infants, compared with 39/100,000 non-Hispanic infants.

Among infant deaths from pertussis between 1990 and 2000, 36%-41% who died were Hispanic infants. Hispanics made up 19% of children in 2003, according to U.S. Census data.

The reasons for this ethnic difference in pertussis are unclear and require further study, Dr. Healy said.

Mothers of the 220 infants in the study had a mean age of 26 years (ranging from 14 to 42 years), and they reported a mean of 8 years of education. Thirty percent did not begin prenatal care until the second trimester and 28% had fewer than nine prenatal care visits, which the investigators considered to be delayed prenatal care and inadequate prenatal care, respectively.

For the 55 matched mother-infant pairs, investigators stratified them by age groups

of Hispanic mothers in Texas: 10% aged 10-19 years; 30% aged 20-24 years; 30% aged 25-29 years; and 30% aged 30 years or older.

The investigators quantified pertussis antibody levels using enzyme-linked immunosorbent assay (ELISA). The geometric mean concentration of pertussis toxin-specific IgG was 8.45 ELISA U/mL for all infants and 4.63 ELISA U/mL for infants of adolescent mothers, which was a significant difference, Dr. Healy said. ■

