**Flu-Related Neurologic Complications: Risk Factors**

**Full Vaccination Wards Off Influenza in Young Children**

*BY KERRI WACHTER  Senior Writer*

Full immunization in children aged 6-59 months and partial immunization in children aged 24-59 months provide significant protection from influenza, even when the match between vaccine and circulating strains is suboptimal, Carrie M. Shuler, D.V.M., an epidemiologist with the Georgia Division of Public Health, and her colleagues reported. However, children aged 6-23 months with partial vaccination had no benefit in terms of influenza protection, the authors wrote. (Pediatrics 2007;119:587-95.)

The researchers evaluated the effectiveness of the trivalent inactivated influenza vaccine at a private pediatric practice in Atlanta during the 2003-2004 influenza season. During that season, only onequarter of circulating influenza viruses nationally and in Georgia were similar antigenically to the vaccine strain.

Case patients (290) were identified as having laboratory-confirmed influenza between Nov. 1, 2003, and Jan. 31, 2004. Case patients were randomly matched with two control children based on age. Children who had received two doses of the vaccine at least 1 month apart and at least 14 days before the date of symptoms (the anchor date for the case child and matched control children) were considered fully vaccinated.

Case patients who had received influenza vaccine in 2002-2003 were considered partially vaccinated if they had not been vaccinated in a previous season and had received two doses of vaccine since September 2003, with an anchor date less than 14 days after the second dose. A child also was considered partially vaccinated if she had not been vaccinated in a previous season and had received only one dose since September 2003 and was vaccinated at least 14 days prior to the anchor date. In all, 445 children were considered unvaccinated. Fully vaccinated children aged 6-23 months had a significant reduction (52%) in influenza, compared with unvaccinated children.

Likewise, fully vaccinated children aged 24-59 months had a significant reduction (45%) in influenza, compared with unvaccinated children. Partially vaccinated children aged 24-59 months also had a significant reduction (NNMD), children with a history of febrile seizures, an incident of encephalopathy, or developmental delay also were more likely to have a seizure or other complication during influenza infection, with an odds ratio of 6.6. Although not previously reported in association with influenza, this is not entirely unexpected because patients with an NNMD—especially those with a history of seizures—are likely to have seizures during an acute illness, the investigators said.

Neither influenza type nor season put patients at any increased risk for neurologic complications. Dr. Newland and his associates’ findings are in contrast to reports from Japanese investigators during the past decade about severe and frequent influenza encephalopathy— including fatal encephalopathy rates reported as high as 25%-37%—in that country. Only 1% of patients in this study were hospitalized with influenza, and no deaths were reported in the U.S. investigation.

Limitations of this study included the fact that the areas surrounding the hospital represent a predominantly African American population, “and so our findings may not be generalizable to the rest of the country.” Another is that, because influenza testing is typically performed only on patients with cough and rhinorrhea, infected patients who did not present this way may not have been diagnosed and, therefore, excluded. Also, “the definition of acute encephalopathy is somewhat arbitrary and may both under- and overidentify patients with the acute onset of neurologic symptoms,” they wrote.

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**Under a Third of Asthmatic Kids Got a Flu Vaccine in 2004-2005**

*BY DIANA MAHONEY New England Bureau*

Less than one-third of children with asthma between the ages of 2 and 17 years received the influenza vaccine during the 2004-2005 influenza season, according to the first national estimate of influenza vaccine coverage in children with asthma by the Centers for Disease Control and Prevention. While this rate is approximately three times higher than that reported for nonasthmatic children, the “inadequate” numbers indicate “the opportunities for vaccination during health-care provider visits likely are being missed,” according to Susan M. Brim of the CDC’s National Center for Environmental Health and her colleagues (MMWR 2007;56:193-6).

With data from the 2005 National Health Interview Survey (NHIS)—a cross-sectional, household interview survey in the United States—the CDC investigators analyzed influenza vaccine coverage rates for the 5.124 youth aged 2-17 years represented in the database and determined that 29% of children with current asthma had received the influenza vaccine for the September 2004-February 2005 influenza season, compared with 10.3% of their nonasthmatic peers.

Of the children with current asthma, vaccine coverage was highest—at 32.9%—in the 2- to 4-year-old age group, compared with 28% in both the 5- to 12-year-old and 13- to 17-year-old age categories. Children who had experienced an asthma attack or episode within the 12 months prior to the survey (35.9% of those with asthma) were more likely to have been vaccinated than children with current asthma but no past-year history of an asthmatic episode (20%). Children aged 5-12 years with current asthma and no past year history of an asthmatic episode had the lowest vaccination coverage rate, at 16.4%, in the asthma group, the authors reported. When the data were analyzed based on the number of health care visits per child during the 12 months preceding the survey, influenza vaccine coverage among children with asthma was directly related to the number of visits. “Approximately 10.8% of children with current asthma who had one health care visit in the preceding year were vaccinated, whereas 42.6% of children with [10 or more] visits were vaccinated,” Ms. Brim and her associates wrote.

Because the 2005 NHIS was the first to include questions on influenza vaccination in the child portion of the survey “the results of this analysis cannot be compared with previous years,” according to the authors. “Analysis of NHIS data from 2006 and future years will allow determination of trends in national influenza vaccination coverage in children with asthma.”

Such monitoring is essential for the design of public health strategies for increasing influenza vaccine coverage that targets all children with asthma, particularly those with the lowest coverage rates, the authors stressed. Continued monitoring also will be necessary to determine whether and to what extent changes, such as the 2006 revision to Advisory Committee on Immunization Practices (ACIP) influenza vaccine recommendation, to include all children between the ages of 6 and 59 months, will impact actual coverage rates, they noted.