Infectious Disease

Missed Opportunities for Influenza Vaccination in Children With Chronic Medical Conditions

PURPOSE OF THE STUDY. To assess the frequency and characteristics of missed opportunities for influenza immunization in children with chronic medical conditions, and among unimmunized children in that group, to explore parent-reported reasons for not vaccinating their child.

STUDY POPULATION. A cohort of 926 children (aged 6 to 72 months) who were identified from October 1, 2002, through January 31, 2003, as having ≥1 high-risk conditions (HRCs). A total of 594 (64%) were male, and 734 (79%) were between 24 and 72 months of age. The children were insured privately (84%) or publicly (12%) or uninsured (3%). Diagnoses included asthma only (89%), cardiac conditions (3%), immunosuppressive conditions or therapies (2%), chronic nonasthma pulmonary conditions (2%), and other HRCs (2%).

METHODS. Data were obtained from shared billing and immunization registry databases of 4 private pediatric practices in metropolitan Denver, Colorado, during the 2002–2003 influenza season. Study sites had 5 to 8 pediatricians and 2 to 6 nonphysician providers per practice. The method of HRC identification through billing data using set diagnostic codes was documented to have a sensitivity of 72%, specificity of 95%, and an overall accuracy of 90% compared with medical charts. The billing system contained data for individual patient demographics, diagnostic codes, procedural codes for immunizations, and type of visit distinguished as well-child care (WCC) visit or not (non-WCC visit). Telephone surveys of randomly selected parents of children not given influenza vaccine were conducted in April to May 2003.

RESULTS. In children with asthma only (820), of all vaccine-eligible visits (881), 78% resulted in missed opportunities. Missed opportunities occurred at 62% of WCC visits and 86% of non-WCC visits (difference of 24%; 95% confidence interval: 16%–31%). The rate of influenza immunization was 43% among subjects with vaccine-eligible WCC visits compared with 18% for those without a vaccine-eligible WCC visit. In children with other HRCs (106), the rates of missed opportunities were similar to those children with asthma only. The rate of influenza immunization was also similar at 40% with vaccine-eligible WCC visits; however, the rate of immunization for those without a vaccine-eligible WCC visit was higher at 28%. If the subjects were immunized at their first opportunity, similar rates of immunization (61% for those with asthma vs 62% for those with other HRCs) would have been achieved. Telephone interviews with parents revealed lack of physician recommendation, low perceived susceptibility to influenza, and misconception of the risks of vaccination as the primary reasons.

CONCLUSIONS. Missed opportunities for influenza immunization are common among children with asthma and other HRCs, particularly at non-WCC visits and later in the influenza season, and contribute to the persistently low influenza-immunization rate in this population.

REVIEWER COMMENTS. As illustrated in this study, parents often rely on their child’s health care provider to advise them about preventive health care measures. Therefore, it is important for providers to identify the patients at risk (existence of HRC), recognize the indications for influenza immunization, and discuss the pros and cons of influenza immunization with the parents and patients.

Identification of a Universal Group B Streptococcus Vaccine by Multiple Genome Screen

PURPOSE OF THE STUDY. To apply comparative genomic techniques for the development of a universally protective group B Streptococcus (GBS) vaccine.

METHODS. The genome sequences of 8 GBS strains were compared to identify shared and strain-restricted genes. Computer algorithms were used to identify putative surface or secreted proteins. Candidates were cloned and expressed recombinantly in Escherichia coli. Purified proteins initially alone and then in combination were used to immunize groups of female mice. Immunized animals were then mated, and resulting offspring were challenged at <48 hours of age with virulent GBS. Protection was also correlated with specific antibody binding.

RESULTS. Genomic analysis identified 1811 shared genes representing ~80% of the genome of each strain. Of these, 589 proteins were predicted to be surface or secreted proteins (396 shared, 193 variable), and 312 of them were successfully expressed as soluble fusion proteins from E. coli. Systemic screening of all 312 of these proteins revealed that 4 were capable of significant protection of GBS-challenged offspring of immunized mothers. One of these 4, Sip, was a previously described shared gene, whereas 3 were variably present in the genomes from different strains. As expected, in experiments with single-antigen vaccination, there was no...
METHODS. Women were placed in 1 of 2 groups. The therapy group comprised women who underwent amniocentesis and whose amniotic fluid contained either CMV detected by culture or CMV DNA detected by polymerase chain reaction. The group was offered intravenous CMV-specific hyperimmune globulin at a dose of 200 U per kg of maternal weight. Additional intravenous, intratumbilical-cord, or intra-amniotic doses were administered if evidence of persistent fetal involvement was present on ultrasound. Women with CMV-positive amniotic fluid who declined to receive hyperimmune-globulin infusions were followed as a comparison group.

RESULTS. In the therapy group, 31 women received hyperimmune globulin, only 1 (3%) of whom gave birth to an infant with symptomatic CMV disease, compared with 7 (50%) of 14 women who did not receive hyperimmune globulin. Thus, hyperimmune-globulin therapy was associated with a significantly lower risk of congenital CMV disease (adjusted odds ratio: 0.02; 95% confidence interval: −∞ to 0.15; P < .001). In the prevention group, 37 women received hyperimmune globulin, 6 (16%) of whom had infants with congenital CMV infection, compared with 19 (40%) of 47 women who did not receive hyperimmune globulin. Thus, hyperimmune-globulin therapy was associated with a significantly lower risk of congenital CMV infection (adjusted odds ratio: 0.32; 95% confidence interval: 0.10 to 0.94; P = .04). No adverse effects resulted from CMV-specific hyperimmune-globulin administration.

CONCLUSIONS. Treatment of pregnant women with CMV-specific hyperimmune globulin is safe, and the findings of this nonrandomized study suggest that it may be effective in the treatment and prevention of congenital CMV infection. A controlled trial of this agent may be appropriate.

REVIEWER COMMENTS. The risk of congenital CMV infection is high after primary maternal CMV infection. Although the majority of congenitally acquired CMV infections are asymptomatic, symptomatic infections result in significant morbidity and possible mortality. The implementation of CMV-specific hyperimmune globulin may reduce or prevent the devastating effects of symptomatic congenital CMV.
Identification of a Universal Group B *Streptococcus* Vaccine by Multiple Genome Screen

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