Influenza and Children with Asthma

Identifying and Overcoming Barriers to Improved Influenza Immunization Rates in this High-risk Population

Call to Action

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Influenza vaccination rates in children with asthma need to increase

Influenza vaccination rates in children with asthma must be increased. The Centers for Disease Control and Prevention (CDC) and other major medical, consumer and public health groups have long recommended or endorsed annual influenza vaccination for all children with asthma. Vaccination is the primary means of preventing influenza infection and its serious complications. Yet, estimates show that even in the best years just one-third of children with asthma are actually vaccinated. Vaccination disparities lead to even lower immunization rates in racial and ethnic minority children, a group that experiences increased morbidity and mortality from asthma.

Influenza and other respiratory viruses can be deadly for children with asthma

Viral respiratory infections commonly precipitate wheezing in children with asthma. The body’s inflammatory process, necessary to clear a viral infection, intensifies the pre-existing respiratory inflammation associated with asthma. This results in increased airway obstruction and more lower respiratory tract symptoms. Although there are many respiratory viruses that can cause this sequence of events, including influenza virus, respiratory syncytial virus, parainfluenza virus and rhinovirus, only one—influenza—is vaccine-preventable.

Influenza virus spreads easily and causes substantial morbidity and mortality. Influenza contributes to deaths in approximately 36,000 Americans and hospitalizes over 200,000 persons each year. While influenza-associated deaths are most common in elderly persons, they do occur in children. During a recent influenza season, 153 influenza-associated deaths in children were reported to CDC. Of those children 2 to 17 years of age who had underlying risk factors identified, 43 percent had asthma alone or in combination with some other high-risk condition. Pediatric mortality data were not reported from earlier years, but mathematical models based on other projections estimate that 92 influenza-related deaths occur annually in U.S. children younger than 5 years of age.

Morbidity also is increased in asthmatic children infected with influenza [Figure 1]. These children get twice as many antibiotic prescriptions compared with those without asthma. Younger asthmatic children (1 to 3 years of age) also are nearly twice as likely as age-matched non-asthmatic children to make an outpatient visit when infected with influenza.

Figure 1: Outpatient morbidity: influenza-attributable events per 100 children


Asthma puts millions of children at increased risk of morbidity and mortality

Asthma is the most common chronic disorder in childhood. It affects over six million U.S. children younger than 18 years. Asthma is the third leading cause of hospitalization among children younger than 15 years and accounts for more than 640,000 annual emergency department visits in this age group. It also causes an estimated 12.8 million lost school days. In 2002, 170 children younger than 15 years died from asthma. In a study of pediatric mortality due to asthma, deaths were nearly equally distributed among children categorized as having severe (36 percent), moderate (31 percent) and mild (33 percent) persistent asthma [Figure 2]. All children with asthma, regardless of its severity, should be protected with an annual influenza vaccine.
Influenza vaccine is safe and effective in children

The inactivated influenza vaccine has been shown to be effective in preventing influenza in children with asthma; the live attenuated influenza vaccine (LAIV) is not recommended for use in this population.\(^1\)\(^,\)\(^14\) Vaccine effectiveness is influenced by the age and immune status of the vaccine recipient and the match between vaccine and circulating influenza virus strains.

The inactivated influenza vaccine also has been shown to be safe in children, including those with asthma.\(^15\)\(^,\)\(^16\) In children with asthma, vaccination is associated with local reactions, including redness and swelling at the injection site and myalgia, but not differences in symptom-free days, daily symptom score, daily peak flow rate, new or increased use of asthma medication or school absenteeism.

Influenza vaccines are contraindicated in children with known systemic hypersensitivity (e.g., anaphylactic reaction) to egg proteins. Prevalence of egg allergy is 2.4 percent at 2 years of age,\(^17\) but about 50 to 66 percent of children lose their sensitivity to eggs by 3 to 5 years of age.\(^18\) Clinicians should try to verify whether clinical food allergy persists rather than inadvertently restrict vaccination based on an early hypersensitivity.

What’s needed

Asthma education programs and treatment guidelines should include the message “get an annual influenza vaccine.” Addition of this message where absent, or increasing its prominence where it exists, should be advocated whenever and wherever possible. Moreover, providers should follow asthma treatment guidelines to assure consistent quality care for all pediatric asthma patients.

Support of age-based recommendations is essential as they are easier to implement than risk-based recommendations. Over time, age-based influenza vaccination recommendations may lead to the optimal goal of universal vaccination. In the interim, practices that serve pediatric populations should work to identify and vaccinate children in high-risk categories. These include children with asthma and other underlying risk factors and all children 6-23 months of age.

There are several key elements to increasing vaccination rates that all vaccine providers, no matter their size or type, should employ.

Secure commitment to the influenza vaccination program from management or administration of the clinic or healthcare facility

Assign a person or team to manage the program

Identify patients in your practice who should get vaccinated (see “Identifying Your Pediatric Asthma Patients Who Need Influenza Vaccine: ICD-9 Codes,” available at www.nfid.org)

Increase demand for the vaccine

- Recommend the vaccine
- Educate parents throughout the year
- Remind parents of the best months to vaccinate and why influenza vaccination is important

Enhance access to the vaccine

- Reduce out-of-pocket costs and wait time
- Vaccinate during well and sick child visits
- Consider walk-in or scheduled “influenza vaccine only” clinics and mass immunization days

Overcome practice barriers

- Issue standing orders and develop collaborative agreements so non-physicians can vaccinate appropriate patients
- Remind practice members regularly about talking to patients and parents about influenza vaccine

Measure your vaccination rates, review your program and make changes to improve it as necessary

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* Inactivated influenza vaccine is approved for use in all children at least 6 months of age regardless of underlying risk conditions, including asthma; live attenuated influenza vaccine is approved for use only in children 5 to 18 years of age who have no underlying medical conditions (such as asthma).
Organizational supporters

The National Foundation for Infectious Diseases (NFID) held a roundtable meeting in November 2005 with leading organizations to review the issue of low influenza vaccination rates in children with asthma. The following groups agree annual influenza vaccination rates among children with asthma need to be improved and is an important goal for reducing morbidity and mortality in this high-risk pediatric population:

- Allergy & Asthma Network Mothers of Asthmatics
- American Academy of Allergy, Asthma & Immunology
- American Academy of Pediatrics
- American College of Allergy, Asthma & Immunology
- American College of Emergency Physicians
- American Lung Association
- American Medical Association
- American Pharmacists Association
- American Thoracic Society
- Asthma and Allergy Foundation of America
- Centers for Disease Control and Prevention
- Kaiser Permanente Northern California
- Mountain Park Health Centers
- National Association of Pediatric Nurse Practitioners
- National Foundation for Infectious Diseases
- National Jewish Medical and Research Center
- National Medical Association
- Old Harding Pediatric Associates
- Pediatric Infectious Diseases Society
- Society for Adolescent Medicine

References


