Practice Parameters

Administration of influenza vaccines to egg allergic recipients: A practice parameter update 2017

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A R T I C L E   I N F O

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The Influenza Vaccine and Egg Allergy Practice Parameter Workgroup was commissioned by the Joint Task Force on Practice Parameters (JTFPP) to develop practice parameters that address the administration of influenza vaccines to egg allergic recipients. Workgroup members invited to participate in the parameter development are considered experts in the field. Workgroup members have been vetted for financial conflicts of interest by the JTFPP, and their conflicts of interest have been listed in this document and are posted on the JTFPP website at https://www.allergyparameters.org/. Where a potential conflict of interest is present, the potentially conflicted workgroup member was excluded from discussing relevant issues. The charge to the workgroup was to use a systematic literature review, in conjunction with consensus expert opinion and workgroup-identified supplementary documents, to develop a practice parameter that provides a comprehensive approach for the administration of influenza vaccines to egg allergic recipients based on the current state of the science.

Preface

Annual seasonal influenza vaccination remains the most effective means of protection against contracting influenza illness and preventing spread of the disease among the population. Influenza infection is a significant source of morbidity and mortality in the United States. During the 2015–2016 influenza season, an estimated 308,232 persons were hospitalized in the United States because of influenza, including 15,389 hospitalizations of children younger than 5 years. It is estimated that 23,607 deaths occur each year in the United States as a result of influenza, including approximately 124 children. Egg allergy affects as many as 2% of US children, and of these, 25% also have asthma. Therefore, egg allergic children are a subgroup who may be at higher risk for influenza-related complications. However, because most influenza vaccines are grown in embryonated chicken eggs and may contain residual egg protein (ovalbumin), they were contraindicated in those with egg allergy until recently.
New Developments

A large number of studies have reported inactivated influenza vaccine (IIV) to be safe for egg allergic recipients, including those with a history of anaphylaxis to egg, with low rates of minor reactions among egg allergic recipients that are no greater than those incurred by non–egg allergic recipients. Furthermore, these studies have demonstrated that special precautions, such as prevaccine skin testing or stepwise challenge, are unnecessary for risk stratification. Moreover, the ovalbumin content in all IIV available in the United States is less than 1 μg per dose, an amount considered highly unlikely to cause reactions even in the most severely egg allergic recipients. Two non–egg-based influenza vaccines have been introduced. One (ccIIV4) is grown in cell culture and in theory could contain 50 fg of ovalbumin (1 fg equals 10^-15 μg). It is approved for recipients 4 years and older. The other (RIV, available both as trivalent RIV3 and quadrivalent RIV4) uses recombinant hemagglutinin protein produced in an insect cell line and does not contain egg protein. It is approved for patients 18 years and older.

Beginning in 2011, the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) and the American Academy of Pediatrics (AAP) Committee on Infectious Diseases (COID) recommended that egg allergic patients receive annual IIV, with certain precautions. Those with a history of only hives after egg ingestion were recommended to receive the vaccine in a primary care setting and be observed for 30 minutes after vaccination, whereas those with a history of more severe reactions to egg were recommended to see an allergist for vaccination.

An practice parameter on adverse reactions to vaccines was published in 2012, with an update on influenza vaccination of egg allergic patients published in 2013, which stated the following:

- All patients with egg allergy of any severity, including anaphylaxis, should receive IIV annually, using any age-approved brand of IIV in an age-appropriate dose. Such patients can receive the vaccine as a single dose without prior vaccine skin testing.
- For egg allergic patients 18 years and older, either egg-based or egg-free IIV can be used.
- Special precautions regarding medical setting and waiting periods after administration of IIV to egg allergic recipients beyond those recommended for any vaccine are not warranted.
- For IIV, language that describes egg allergic recipients as being at increased risk compared with non–egg allergic recipients or requiring special precautions should be removed from guidelines and product labeling.
- All practitioners were reminded to be aware that although anaphylactic reactions are rare after vaccination, their immediate onset and life-threatening nature require that all personnel and facilities providing vaccinations of any kind have procedures in place for anaphylaxis management.

In all the aforementioned guidelines, live attenuated influenza vaccine (LAIV) was not recommended for use in egg allergic recipients. This is because LAIV also contains a very low level of ovalbumin (<0.24 μg per 0.2-mL dose), and at the time, no studies demonstrating its safety in egg allergic recipients had been published. Another concern raised regarded the possibility of increased risk for wheezing in patients with asthma after vaccine administration, although the evidence base for this is limited.

Since publication of the 2013 practice parameter update, additional data have been published regarding the safety of both IIV and LAIV in egg allergic recipients. Two large multicenter, prospective cohort studies demonstrated the safety of LAIV in egg allergic individuals. The CDC/ACIP and AAP/COID have updated their guidelines for the 2017–2018 influenza season, largely adopting the recommendations made in the 2013 practice parameter.

The AAP/COID guidelines now state the following:

- “All children with an egg allergy of any severity can receive an influenza vaccine without any additional precautions beyond those recommended for any vaccine.”
- “IIV administered in a single, age-appropriate dose is well tolerated by recipients with a history of egg allergy of any severity.”
- “Special precautions for egg-allergic recipients of IIV are not warranted, because the rate of anaphylaxis after IIV administration is no greater in egg-allergic than in non–egg-allergic recipients or from other universally recommended vaccines.”
- “Standard vaccination practice for all vaccines in children should include the ability to respond to rare acute hypersensitivity reactions.”

The CDC/ACIP, in its guidance for the 2017–2018 influenza season, also states that persons with egg allergy of any severity can receive any age-appropriate influenza vaccine but recommends that those who report having had reactions to egg that involve symptoms other than hives receive the vaccine in a medical setting supervised by a health care professional.

In addition, current guidelines from the Canadian National Advisory Committee on Immunization state, “Egg allergic individuals may be vaccinated against influenza using inactivated TIV or QIV, or LAIV without prior influenza vaccine skin test and with the full dose, irrespective of a past severe reaction to egg, and without any extraordinary precautions.”

Summary Statements

The purpose of this practice parameter update is to review new data pertaining to the safety of influenza vaccines in egg allergic individuals and provide recommendations regarding annual influenza vaccination in egg allergic individuals. This focused practice parameter answers the following focused questions: (1) Is IIV safe in egg allergic individuals, including those with a history of severe reactions to egg ingestion? (2) Are special precautions necessary to administer IIV to any egg allergic recipients? (3) Are non–egg-based IIV medically necessary in egg allergic patients in the age groups for which they are approved? and (4) Is LAIV safe to administer to egg allergic individuals, including those with a history of anaphylaxis to egg ingestion?

Summary Statement 1: Influenza vaccines should be administered to individuals with egg allergy of any severity, just as they would be to individuals without egg allergy. Strength of recommendation: strong. Evidence level: A/B.

Data from 28 studies, covering 4,315 egg allergic patients, including 656 patients with severe egg allergy, describe uneventful administration of egg-based IIV without any reported cases of anaphylaxis. Low rates of minor reactions such as hives have been noted to occur but at no greater rate than those occurring in non–egg allergic controls. Ongoing analysis of the Vaccine Adverse Event Reporting System data after the 2011 CDC guidelines recommended the administration of influenza vaccine to egg allergic recipients has not demonstrated any increased reporting of allergic reactions, including anaphylaxis, in egg allergic individuals after influenza vaccination compared with the general population. Similarly, the Canadian guidelines recommending no special precautions for influenza vaccination of egg allergic recipients have been in place since 2014, and no increase in adverse reactions have been observed. Thus, all patients with egg allergy, irrespective of the severity, including those with a history of anaphylaxis after egg
Conclusion

There is strong evidence that egg allergic individuals can safely receive IIV or LAIV if the latter vaccine is recommended for use once the concerns regarding efficacy have been resolved. Presence of egg allergy in an individual is not a contraindication to receive IIV or LAIV. Influenza vaccine recipients with egg allergy are at no greater risk for a systemic allergic reaction than those without egg allergy. Precautions, such as choice of a particular vaccine, special observation periods, or restriction of administration to particular medical settings, are not warranted and constitute an unnecessary barrier to immunization. Vaccine providers and screening questionnaires do not need to ask about the egg allergy status of recipients of influenza vaccine.

References


