

CCHMC, Division of Allergy & Immunology
Egg Allergy & Influenza Vaccination Guideline Statement (2009-2010)

This year's influenza outbreak is presenting us all with challenges. Not only are we facing the current H1N1 "swine flu" pandemic, but we are also gearing up to confront the normal yearly influenza season. Our patients with a history of a positive skin test or elevated serum IgE (≥ 7 kU/L if ≥ 2 years old, or ≥ 2 kU/L if < 2 years old) to egg, and patients who have had allergic reactions to egg ingestion or inactivated flu vaccination are at-risk for future similar reactions upon flu vaccination. The general concerns raised over this issue have caused us to receive an unprecedented number of phone calls and e-mails from patients around the world, prompting us to formulate a set of guidelines for how to effectively give prophylaxis to at-risk patients against influenza. Suggested protocols for graded challenge and desensitization can be found at the end of the guidelines.

We recommend that ideally *every healthy patient of CCHMC and all of their close contacts* meeting CDC criteria for vaccination (www.cdc.gov/h1n1flu) should receive some form of prophylaxis from **both** the H1N1 flu **and** the seasonal flu (the usual flu season is October through April). While every patient at CCHMC represents a unique individual with a distinct set of medical problems, we believe that we can effectively categorize patients into 5 distinct risk groups as it pertains to egg allergy and influenza prophylaxis:

- **Blue Group** – *Minimal risk*. Patients without immunodeficiency, a history of skin test or serum IgE positivity or clinical reaction to either egg or previous flu vaccines, who can eat whole eggs safely without allergic reaction, should receive either the inactivated (IM) or live (intranasal) vaccine at their General Pediatrician's office. This should comprise the vast majority of patients this year.
- **Green Group** – *Low risk*. Patients without immunodeficiency, who have had recent (less than 2 years) skin test or serum IgE positivity to egg but who do not react to ingestion of baked products containing egg, should receive the inactivated flu vaccine at full-strength (or graded challenge in special cases) at their General Pediatrician's office or the Allergy Clinic, where Epinephrine should be available.
- **Yellow Group** – *Moderate risk*. **Any patient avoiding eggs entirely for any medical reason should be evaluated in the Allergy Clinic.** Also, patients without immunodeficiency, who have had recent skin test or serum IgE positivity to egg who do react to baked products containing egg, or patients with a history of a non-anaphylactic allergic reaction to inactivated flu vaccine, should be evaluated in the Allergy Clinic. In order to provide the vaccine safely to these patients, we recommend skin testing with the full-strength inactivated flu vaccine and egg extract prior to vaccine administration. If the skin tests are negative, we recommend that the rest of the vaccine be given at full-strength or as a graded challenge. If the vaccine skin test is positive, we would either desensitize the patient to the vaccine and administer it or give chemoprophylaxis in *special cases* with a neuraminidase inhibitor (e.g. oseltamivir or zanamivir) for the entire flu season.

- **Red Group** – *High risk*. Patients without immunodeficiency, who have a history of an anaphylactic reaction to egg ingestion or flu vaccination should be evaluated in the Allergy Clinic. **Even patients who have then gone on to tolerate the vaccine later in life should be evaluated in the Allergy Clinic**, as there is significant year-to-year and lot-to-lot variability in the egg protein concentration in the flu vaccine. We recommend that these patients be skin tested to egg and full-strength inactivated flu vaccine prior to administration. Patients with negative skin tests to the vaccine would receive a graded flu vaccine challenge, while patients with positive skin test to the vaccine would receive either desensitization or neuraminidase inhibitor prophylaxis for the entire flu season.
- **Gray Group** – *Special risks*. Patients *with immunodeficiency or other contraindications* to either of the flu vaccines should be evaluated in the Allergy and/or Infectious Disease Clinics, and their close contacts and caregivers should strongly consider inactivated (i.e. not live) influenza vaccination. Most patients in this group may safely receive the inactivated flu vaccine as a single injection, provided they do not have a history of skin test positivity, serum IgE positivity, or clinical reaction to either egg or prior flu vaccines. Should a patient with immunodeficiency have such an issue, we would treat them similarly to whichever Green, Yellow or Red Group they would otherwise be in, with the general caveat that we do not recommend live vaccine use in this patient population or in pregnant women.

The Allergy and Immunology Division wishes to extend our services to all patients, including the *monitoring* of all Green, Yellow and Red Group patients for at least one hour post-vaccination, which we recommend. Please note that our guidelines were formulated in concert with the CDC guidelines, and do not supersede them. Moreover, these guidelines are not CCHMC policy and are only meant to assist physicians in their individualized patient care decision-making process. We look forward assisting you with your patient needs.

Suggested Graded Challenge Protocol:

- 1) Give 1/10 of the total volume of full-strength (FS) flu vaccine.
- 2) Observe patient for 30 minutes. If no reaction, continue protocol.
- 3) Give 9/10 of the total volume of FS flu vaccine.
- 4) Observe for 1 hour.

Suggested Desensitization Protocol: (15-minute intervals)

- 1) Give 0.05ml of 1:100 dilution of flu vaccine and observe.
- 2) Give 0.05ml of 1:10 dilution of flu vaccine and observe.
- 3) Give 0.05ml of FS flu vaccine and observe.
- 4) Give 0.1ml of FS flu vaccine and observe.
- 5) Give 0.15ml of FS flu vaccine and observe.
- 6) Give 0.2ml of FS flu vaccine and observe for 1 hour.