

The Complexities of Early Peanut Introduction for the Practicing Allergist



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Recommendations for the timing of introducing major food allergens, such as peanut, into the diet of at-risk infants have undergone major changes in the past decade. The most substantial modification has been a shift toward advice that delaying beyond 4 to 6 months does not prevent and might actually increase the risk of food allergy. The Learning Early About Peanut (LEAP) study published last year provided strong evidence that early peanut introduction with regular ingestion has a potentially dramatic benefit. Although there is little current doubt of the effectiveness of early peanut introduction, many unanswered questions remain. Previous guidelines defined infants at risk as those with a first-degree relative with allergic disease, whereas the LEAP study defined high risk as severe eczema or egg allergy. The LEAP study chose to screen infants but did not have a comparison group randomized without screening. In the following case-based discussion, we explore the

complexities of LEAP implementation for the practicing allergist. These include nonuniformity in the literature for defining at-risk infants, difficulties in assessing eczema severity objectively, variable adherence to current guidelines, proposed peanut screening methods contrasting with existing food allergy guidelines to not routinely screen before ingestion, unclear interpretation of positive test results if screened, risks of screening extending to foods not studied in the LEAP study, and uncertainties about the optimal dose and duration of peanut once introduced. © 2016 American Academy of Allergy, Asthma & Immunology (J Allergy Clin Immunol Pract 2016;4:221-5)

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LG is a healthy male infant who is the younger sibling of an established patient of yours. He is primarily breast-fed, with occasional extensively hydrolyzed casein formula supplementation. His 6-year-old brother (born in 2009, after guidelines suggesting lack of evidence for delaying food introduction had been published¹) has been your patient for several years, followed for cow's milk, egg, and tree nut allergies and persistent asthma. LG's brother otherwise enjoys a normal diet, including peanut, but you recall that his parents were very slow to introduce a full repertoire of complementary foods to him after he developed milk allergy at around 6 months of life. At an earlier asthma follow-up visit for LG's brother in the past year, his parents had asked about the specific timing of food introduction for LG. At that time, LG was only 1 month old and exhibited no atopic manifestations. You had reviewed current guidelines for complementary food introduction, including the 2008 American Academy of Pediatrics (AAP) position statement,¹ the 2013 Canadian Paediatric Society/Canadian Society of Allergy & Clinical Immunology position statement,² and the 2013 rostrum from the American Academy of Allergy, Asthma, and Immunology (AAAAI),³ all of which recommend that complementary food introduction not be delayed past 4 to 6 months of life for the purpose of trying to prevent the development of allergic disease.

When LG was 6 months old, you saw his older brother for another routine follow-up. His parents informed you that LG developed mild eczema at 2 months of life, which was treated with topical emollients and over-the-counter topical corticosteroids. His father mentioned that at 4 months LG had a single episode of what was described as significant eczema in his antecubital fossae with "cracking and oozing" that required 2 weeks of continuous twice-daily treatment with over-the-counter topical corticosteroids and topical antibiotics. At the time of this eczema flare, LG had a viral upper respiratory tract infection with low-grade fever; his mother reported she thought she heard LG

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Abbreviations used

AAAAI- American Academy of Allergy, Asthma, and Immunology
 AAP- American Academy of Pediatrics
 LEAP- Learning Early About Peanut
 OFC- oral food challenge
 sIgE- specific IgE
 SPT- skin prick test

wheeze “once” during the episode as well. After resolution of LG’s upper respiratory tract infection, he did not have any eczema for at least 6 weeks. You ask about LG’s diet and learn that his parents have still not introduced any complementary food because they are highly concerned about him developing food allergy like his brother. They also mention a recent news story they heard about a study reporting that early peanut introduction, in the first year of life, might help prevent peanut allergy, and ask for further advice.

1. What should a medical provider advise LG’s parents regarding complementary food introduction?

In 2000, the AAP recommended delayed introduction of complementary foods to help prevent the development of food allergy and allergic disease. This included delaying the introduction of cow’s milk until age 1 year, egg until age 2 years, and peanut, tree nuts, fish, and shellfish until age 3 years in any child at high risk of developing an allergic disease.⁴ In 2008, this recommendation was reversed, citing a lack of evidence to delay the introduction of complementary foods beyond 4 to 6 months, but no guidance was provided regarding the appropriate timing for the introduction of high-risk allergens.¹ Both the Canadian Paediatric Society and the AAAAI issued similar recommendations. These newer recommendations were passive in that they did not directly encourage the introduction of specific foods, but merely stated that delayed introduction was not recommended.^{2,3}

A 2008 study by Du Toit et al⁵ found a 10-fold higher rate of peanut allergy in Jewish children in the United Kingdom, where there is little early peanut consumption, compared with Jewish children in Israel, where peanut is introduced early. Further observational evidence from multiple birth cohorts supported the concept that earlier complementary food introduction was associated with lower rates of food sensitization to selected allergens.⁶⁻⁸ However, none of these studies was a randomized controlled trial. The recent Learning Early About Peanut (LEAP) study was a randomized controlled trial and showed that in infants with either severe eczema or egg allergy, randomization to early and frequent peanut introduction/feeding was associated with lower rates of developing peanut allergy when compared with delaying peanut introduction for several years.⁹ Thus, evolving evidence supports not delaying the introduction of major food allergens into the infant diet.

2. Who is truly at high risk for the development of food allergy?

Before the recent LEAP study, *high risk* was defined as a biparental, parental, or sibling family history of allergic disease, with equal weight given to any type of allergic disease. This would imply that a parental history of allergic rhinitis would confer equal risk of food allergy in the progeny as a parental

history of severe peanut allergy. A parental history of atopy has been considered a risk factor for food allergy development since the 1980s and has been consistently used as criteria in most trials involving food allergy prevention since then, though poor evidence exists to substantiate family history as a discrete risk.¹⁰⁻¹² AAP guidelines from 2000 and 2008, as well as AAAAI, Canadian, and European Academy of Allergy and Clinical Immunology recommendations from 2013 and 2014 used this designation.^{1-4,13} The LEAP trial, however, used different criteria to define a high-risk 4- to 11-month old infant⁹:

A. Egg allergy, defined as

- skin prick test (SPT) wheal diameter of 6 mm or more from exposure to raw hen’s egg white without previous egg tolerance or
- a SPT wheal diameter of 3 mm or more from exposure to pasteurized hen’s egg white and allergic symptoms related to exposure to hen’s egg.

OR

B. Severe eczema, defined as a rash that

- requires application of topical creams, ointments, or both containing corticosteroids or calcineurin inhibitors and that, if the participant is younger than 6 months, lasted for at least 12 of 30 days on 2 occasions or, if the participant is older than 6 months, lasted for at least 12 of 30 days on 2 occasions in the last 6 months;
- has been reported by a parent to be a “very bad rash in joints and creases” or “a very bad itchy, dry, oozing, or crusted rash”; and
- is currently or was previously graded 40 or more by using the modified SCORing Atopic Dermatitis evaluation.

3. How well can one rely on parental-reported history to accurately portray the severity of the child’s eczema?

In the recent interim consensus communication, parentally reported eczema severity was not included because of its subjective nature, but the remainder of the LEAP study—defined high-risk criteria were included.¹⁴ These criteria, however, have not been robustly validated outside of the prescreening study for the LEAP trial, and in a study of risk factors as part of the HealthNuts study.^{15,16} The LEAP trial investigators did not consider other food allergens presenting in young children at this age such as cow’s milk, soy, or wheat allergy, egg allergy diagnosed by serum specific IgE (sIgE) testing, or the previously established parental/sibling history of allergic disease. Furthermore, no comparative study of these criteria has been performed. In applying LEAP trial’s criteria to this case, LG’s eczema likely does not meet any of the severity criteria, except possibly for the subjective “parentally reported rash,” though one could say that his eczema flared during a concomitant viral illness and worsened because of related excoriation.

Overall, LG’s eczema is generally under good control, and he does not have identified food allergy at age 6 months. The issue of family history of allergy can be considered, because there is a strong history of allergic disease in the older brother, but not the parents. With respect to his brother’s food allergies, there is no known specific risk of peanut allergy conferred to the younger sibling from milk, egg, or tree nut allergy. The younger

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