



Early introduction of peanuts

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ABSTRACT

Peanut allergy is the most common food allergy and the leading cause of anaphylaxis and death due to food allergy. Despite previous guidelines created by the American Academy of Pediatrics in 2003, peanut allergy has continued to significantly increase over the past decade. Therefore, further research has been done to help clinicians provide more evidence-based recommendations about the timing of introduction of peanuts. The LEAP study, published in February 2015, demonstrated the value of much earlier introduction of peanuts to nonallergic patients than previously suggested. These findings have altered current practice, and recommendations supported by the American Academy of Pediatrics now allow the introduction of peanuts as early as age 4 months to reduce the likelihood of developing peanut allergy.

Keywords: peanut allergy, pediatrics, anaphylaxis, early introduction, guidelines, atopic disease

In the United States, the prevalence of food allergy has increased nearly 50% over the past 15 years, and affects 5.1% of children.¹ Peanut allergy has become an emerging public health concern for parents and clinicians caring for children, as it now affects more than 3 million American children.² The rise in peanut allergy is not only recognized nationally, but globally as well, and is noted in Africa and Asia.⁵ This significant increase in the prevalence of peanut allergy has raised abundant concerns, with special concern for schoolage children who may be incidentally exposed to peanuts.

Peanut allergy can be life-threatening. Severe allergic reactions such as anaphylaxis usually result from oral ingestion but reactions also can occur from cutaneous or airborne exposure, although these reactions rarely are fatal.³ Peanuts are recognized as the leading food allergen to cause anaphylaxis and death.⁴ Experts estimate that

every 3 minutes, a food allergy reaction sends a child to the ED (every 6 minutes for an anaphylactic reaction), accounting for about 200,000 ED visits per year.⁵ Thus, the severity of these reactions has provoked even more concern over the increasing burden of this particular allergy.

ECONOMIC BURDEN OF PEANUT ALLERGY

Food allergies place an immense financial burden on the nation's healthcare system and families. Costs that contribute to the healthcare system's financial burden include office visits, rescue medications such as injectable epinephrine, ED visits, and hospitalizations.⁶ Families are financially responsible for costs associated with the remaining medical and nonmedical expenses, and often are forced to pay these fees out of pocket. Furthermore, lost labor productivity, including time off taken for medical visits due to food allergy, costs the nation nearly \$1 billion annually.⁶ Costs related to purchasing special foods in place of potentially allergenic foods are estimated at \$5.5 billion annually.⁶ Clinicians must focus on primary allergy prevention to not only offset the medical burden but also the economic burden of peanut allergy. New research has helped inform and change recommendations about when to introduce peanuts into the diet, in an effort to decrease the prevalence and economic burden of peanut allergy (see *Addendum guidelines for the prevention of peanut allergy in the United States: Summary of the National Institute of Allergy and Infectious Diseases-sponsored expert panel* at www.jaapa.com).

PREVIOUS RECOMMENDATIONS

The American Academy of Pediatrics (AAP) recognized the importance of primary prevention in 2003, and created guidelines for introducing children to highly allergenic foods.

The 2003 guidelines recommended delaying the introduction of all solid foods until age 6 months, and delaying introduction of highly allergenic foods until age 3 years.⁷ Because breast milk enhances natural defenses and stimulates immunoregulation, it produces the best nutritional, immunologic, and physiologic nourishment for infants. Therefore, AAP suggested delaying the introduction of solid foods, ideally, until after a child was exclusively breastfed for 6 months. This would allow the infant's immune system to more fully mature before highly allergenic

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foods were introduced, reducing the risk of developing an allergy. More specifically, these guidelines recommended that children at risk of developing atopic disease avoid highly allergenic foods such as peanuts, tree nuts, and fish until age 3 years.⁷

These suggestions were made based solely on studies that showed introducing any solid food before age 4 months increased the incidence of recurrent/chronic eczema. Therefore, AAP concluded that avoiding solid foods until age 6 months and highly allergenic foods until age 3 years may reduce eczema and food allergy in early childhood.⁷ However, AAP stated that due to insufficient data at that time to support these ideas, the guidelines could be considered as recommendations.⁷ AAP further softened any recommendations related to delay of highly allergenic foods in updated recommendations published in 2008 that stated "...there is little evidence that delaying the introduction of complimentary foods beyond 4 to 6 months of age has any protective effect against allergy."⁸

NEW RESEARCH INFORMS GUIDELINE REVISIONS

Although the AAP guidelines were intended to decrease the incidence and prevalence of peanut allergy, the suggested measures were inadequate at reducing the occurrence of adverse reactions or the subsequent financial burdens.¹ Although multiple factors may be leading to the increased prevalence, the introduction of peanuts is one modifiable factor that is amenable to change. In response to this situation, the AAP guidelines were reevaluated to improve patient outcomes and provide newer, more evidence-based recommendations about peanut introduction.

Many studies have been conducted since the release of the AAP guidelines in 2003 to determine the risks and benefits of earlier introduction. One study published in February 2015, the Learning Early About Peanut allergy (LEAP) study, was critical in demonstrating the value of early introduction of peanuts to specific patient risk groups. As such, the LEAP study outcomes helped to establish the need for important changes to be made in clinical practice regarding guidelines for peanut introduction.

The LEAP study sought to evaluate observed differences in rates of peanut allergy between Jewish children in the United Kingdom compared with those in Israel. The study took place in the United Kingdom, assessing 640 infants ages 4 to 11 months who were not yet allergic to peanut but deemed "highly susceptible" to developing a peanut allergy based on a previous diagnosis of severe eczema, egg allergy, or both. Before study cohorts were created, the participants underwent a skin-prick test for peanut allergy.⁴ Participants with a skin-prick test wheal greater than 4 mm were excluded from the study. Participants with a resulting wheal measuring 1 to 4 mm in diameter

were placed in one cohort of the study. Participants with no measurable wheal were considered skin-prick test negative and were placed in a separate cohort. All infants in both cohorts then underwent a peanut protein baseline challenge.

To conduct this challenge, the participants with a negative skin-prick test (N=542) were given a 2 g sample of peanut protein to determine if they had a food allergy reaction to peanuts. Participants in the 1 to 4 mm wheal cohort (N=98) received an initial 2 g sample followed by additional titrated challenges up to 3.9 g. The participants who had an initial baseline reaction to peanut challenge in either cohort were instructed to avoid peanuts, but were included in the intention-to-treat analysis of results.⁴ The remaining infants from the two cohorts who had a negative peanut challenge were randomly assigned to consume or avoid peanuts until age 5 years. Peanut consumption consisted of at least 6 g of peanut protein per week as part of three or more meals. Those without a baseline reaction who had been instructed to initially avoid peanuts were introduced to peanuts once they were age 5 years.⁴ These children, in addition to those who had been exposed to peanuts since the start of the study, were reassessed to determine the effect of early introduction versus initial avoidance on the frequency of development of peanut allergy.

Findings revealed that early introduction of peanuts was indeed effective in reducing peanut allergy as the prevalence of peanut allergy significantly decreased with earlier introduction.⁴ Of the participants who initially had a negative skin-prick test, 13.7% in the avoidance group and 1.9% in the consumption group had peanut allergy at age 5 years. Additionally, of those with a positive skin-prick test initially, 35.3% in the avoidance group and 10.6% of the consumption group were allergic to peanuts at age 5 years.

This study suggests that oral introduction of peanuts in children as young as age 4 months can prevent allergy in high-risk infants.⁴ Based on the study exclusion criteria of skin-prick test wheal greater than 4 mm, these results may not be generalizable to all high-risk patients and referral to an allergist for skin-prick testing is a valuable component of risk assessment.

CURRENT RECOMMENDATIONS FOR PATIENTS

Due to the study findings that contrast previous AAP recommendations established in 2003, current clinical practice has changed to implement the results of the LEAP study and to best reflect evidence-based medicine. As of September 2015, the findings of the LEAP study were accepted and endorsed by the AAP as the established guidelines for clinicians on peanut introduction.⁹ To ensure that these guideline changes truly improve patient outcomes, providers must not only educate parents on *when* to introduce these highly allergenic foods, but also *how* to appropriately introduce them:

- Whole peanuts are a choking hazard and should not be used for peanut introduction. Instead, use small amounts (1 teaspoon) of smooth peanut butter.
- Introduce peanuts at home rather than in public places, such as daycare or restaurants, to allow for immediate emergent care if a life-threatening reaction occurs.⁹ • Most hypersensitivity reactions to peanuts occur at the initial ingestion. Therefore, the child should be closely monitored immediately after initial exposure for symptoms of anaphylaxis including shortness of breath, hives, urticaria, and angioedema.
- In high-risk patients or those who may experience delays in reaching emergency services, providers may choose to observe the child's first ingestion of peanut in the office.
- Other, less severe skin, respiratory, or gastrointestinal symptoms may be observed several days after the exposure and should be monitored. If none of the aforementioned symptoms are observed, peanuts can be slowly introduced in increasing amounts.
- If parents wish to introduce other allergenic complementary foods, they should limit their introduction to one new food every 3 to 5 days to avoid potential confusion of the allergenic source.^{10,11} **JAAPA**

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