

US guidelines for the prevention of peanut allergy 2017

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This review is of the 'Addendum guidelines for the prevention of peanut allergy in the United States: report of the National Institute of Allergy and Infectious Diseases-sponsored expert panel'. We aim to summarise the key recommendations for the prevention of peanut allergy (PA) for general paediatricians to use in their day-to-day practice.

INTRODUCTION

The prevalence of PA has risen significantly across the developed world over the past few decades, with a recent estimate of around 2% among UK children.¹ Severe reactions to peanut are rare, but PA remains a leading cause of fatal food-related anaphylaxis. While there have been important advances in peanut desensitisation, primary prevention remains the most attractive strategy for addressing this rise.

INFORMATION ABOUT CURRENT GUIDELINE

The guideline outlines current recommendations on the prevention of PA in infants at various risk levels in the USA. The guideline was developed by the National Institute of Allergy and Infectious Diseases alongside 25 professional organisations, federal agencies and patient advocacy groups and was overseen by an expert panel of 26 members. It was published in September 2016 following a landmark clinical trial suggesting that early introduction of peanut to infants can help prevent the development of PA² (box 1).

PREVIOUS GUIDELINES

A previous national guideline for the diagnosis and management of food allergy in the USA was published in December 2010.³ This guideline did not offer any specific strategies for the prevention of food allergies due to a lack of evidence from studies at the time. It did state that there was insufficient evidence for delaying the introduction of solid foods including potentially allergenic foods

beyond 4–6 months even in infants at risk of developing allergic diseases. This contradicted previous recommendations in both the UK and USA of exclusion of allergenic foods from the diets of infants at high risk of developing allergy.^{4 5}

KEY ISSUES THAT THE GUIDELINE ADDRESSES

► Definitions:

- Severe eczema—persistent or frequently recurring eczema with typical morphology and distribution assessed as severe (ie, needing frequent prescription-strength corticosteroids, calcineurin inhibitors or other anti-inflammatory agents despite regular emollients) by a healthcare professional.
- Egg allergy—a history of an allergic reaction to egg and a skin prick test (SPT) weal diameter of ≥ 3 mm with egg white extract or a positive oral food challenge (OFC) to egg.

► Recommendations of when to introduce peanut based on allergy testing (figure 1):

- Strongly recommend that infants with severe eczema, egg allergy or both have evaluation for PA by specific-IgE measurement and/or SPT and, if necessary, an OFC. Based on these test results, they recommend introducing peanut containing foods from 4 to 6 months of age.

► Allergy testing specifications:

► Peanut-specific-IgE tests

- Level <0.35 kUA/L has a strong negative predictive value for diagnosis of PA. Recommendation to introduce peanut into the diet with a cumulative first dose of approximately 2g of peanut protein (can be done at home).
- Level ≥ 0.35 kUA/L lacks adequate positive predictive value for diagnosing PA and should be referred to a specialist for further consultation and SPT.



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► SPT

- If wheal diameter of SPT is ≤ 2 mm, they recommend peanut should be introduced into the diet with a cumulative first dose of approximately 2 g of peanut protein (can be done at home).
- If SPT wheal diameter is 3–7 mm, supervised peanut feeding or graded OFC should be undertaken under specialist supervision. If OFC is negative, peanut should be introduced into the child's diet. If the OFC is positive, the child should strictly avoid peanut pending specialist (ie, paediatrician with a special interest in allergy) follow-up.
- If SPT wheal diameter is ≥ 8 mm, the likelihood of PA is high and children should avoid peanut and continue to be evaluated and managed by a paediatrician with a special interest in allergy.
- For children with mild-to-moderate eczema, they should have age-appropriate peanut-containing food introduced around 6 months of age to reduce the risk of developing PA.
- For children with no eczema or any food allergy, age-appropriate peanut-containing foods should be

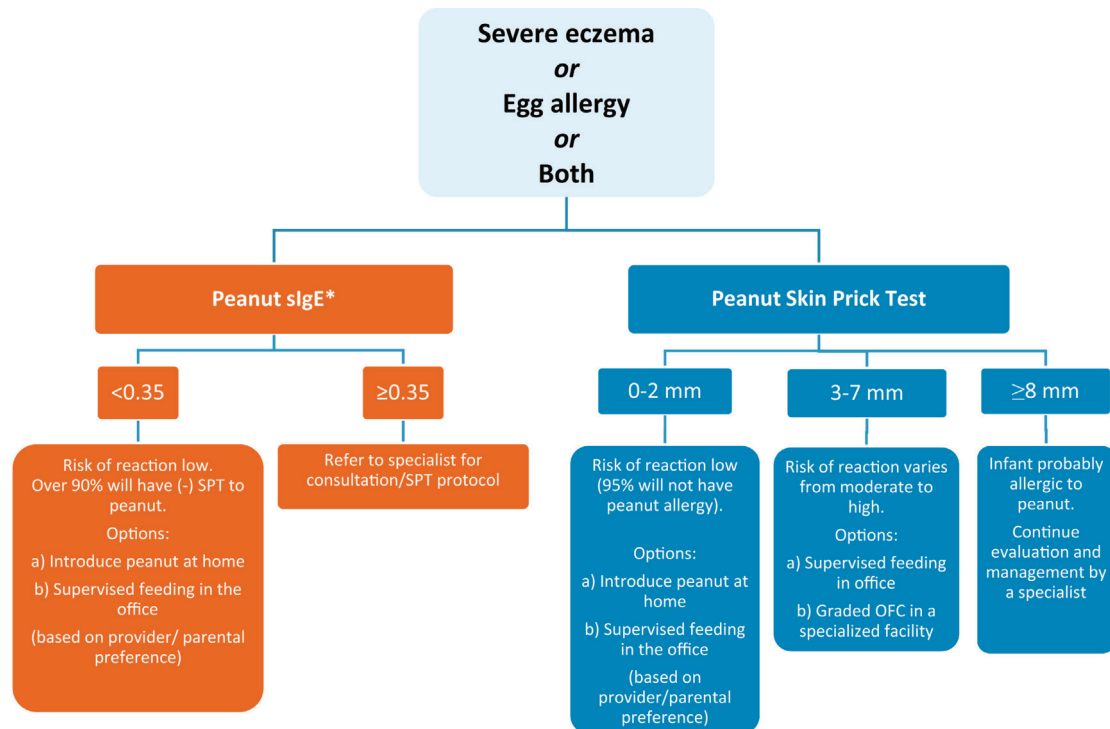
Box 1 Resources

1. [http://www.jacionline.org/article/S0091-6749\(16\)31222-2/fulltext](http://www.jacionline.org/article/S0091-6749(16)31222-2/fulltext) Link to full guideline: Addendum guidelines for the prevention of peanut allergy in the United States: report of the National Institute of Allergy and Infectious Diseases-sponsored expert panel
2. Learning Early About Peanut (LEAP) study
 - Website: <http://www.leapstudy.co.uk/>
 - Link to full text: <http://www.nejm.org/doi/full/10.1056/NEJMoa1414850#t=article>
3. Enquiring About Tolerance (EAT) study
 - Website: <http://www.eatstudy.co.uk/>
 - Link to full text: <http://www.nejm.org/doi/full/10.1056/NEJMoa1514210#t=article>

introduced into the diet freely with other solid foods (table 1).

UNDERLYING EVIDENCE BASE

Clinical practice guidelines from 1998 suggested exclusion of peanut from the diet of pregnant and breastfeeding mothers and the infant diet in high-risk families but this was withdrawn in 2008 due to lack



* To minimize a delay in peanut introduction for children who may test negative, testing for peanut-specific IgE may be the preferred initial approach in certain health care settings. Food allergen panel testing or the addition of sIgE testing for foods other than peanut is not recommended due to poor positive predictive value.

Figure 1 Recommendation approach when evaluating children with severe eczema and/or egg allergy for the introduction of peanut. OFC, oral food challenge; SPT, skin prick test.

Table 1 Common peanut-containing foods (peanut protein content) for introducing peanut in infants

	Bamba	Peanut butter	Peanut flour/peanut butter powder
Amount containing approximately 2 g peanut protein	17 g or 21 pieces	9–10 g or 2 teaspoons	4 g or 2 teaspoons
Typical serving size	1 bag (28 g)	Spread on a slice of bread (16 g)	No typical serving size
Peanut protein per typical serving	3.2 g	3.4 g	No typical serving size

of evidence to support this. This led to the Learning Early About Peanut (LEAP) study², a randomised, open-label, controlled trial of which 640 high-risk (defined as having severe eczema and/or egg allergy) infants from 4 to 11 months were randomised to either consume peanut regularly or avoid it until 5 years of age. The primary outcome was the proportion of participants with PA at 5 years of age. Among children with a negative SPT on entry to the study, there was a relative risk reduction of PA at 5 years of 86% (13.7% in the avoidance group and 1.9% in the consumption group). Among those who initially had positive test results (SPT 1–4 mm), the prevalence of PA was 35.3% in the avoidance group and 10.6% in the consumption group. This study provided robust evidence that early introduction of peanuts significantly decreased the frequency of the development of PA among children at high risk for this allergy. The Enquiring About Tolerance (EAT) study⁶ further demonstrated this effect, in a large, unselected cohort with a 100% risk reduction (2.5% vs 0%) in the per-protocol group of children where peanut was introduced from 3 months. The LEAP-On study⁷ demonstrated that after 5 years of age stopping peanut consumption for 12 months did not affect ongoing tolerance, that is, that this was a durable effect.

WHAT DO I NEED TO KNOW?

What should I start doing?

- ▶ Recommending delayed introduction of peanut-containing foods into the diet of low-risk infants (box 2).

- ▶ Recommending introduction of peanut-containing foods into the diet of children with severe eczema and/or egg allergy without screening for peanut allergy.

What should I start doing?

- ▶ Recommending introduction of peanut into the diet of children at around 6 months of age as long as they do not have egg allergy or severe eczema.
- ▶ This may be done at home or after allergy testing depending on clinician/parental preferences.
- ▶ Screening children with severe eczema or egg allergy for peanut allergy by 4 months of age or referring these children for allergy testing.
- ▶ In children with severe eczema or egg allergy, once they have introduced peanut safely into the diet, they should be advised to eat 6–7 g of peanut over three or more feeds per week.

What can I continue to do as before?

- ▶ Recommend continuation of breastfeeding while introducing solids.
- ▶ Recommend strict avoidance of peanut in children with a history of an allergic reaction to peanut.
- ▶ Recommend starting introduction of solids with normal weaning foods first (before peanut).

Life- or limb-saving points

- ▶ Children under the age of 5 years should not eat whole nuts due to risk of choking.

What should I do with infants with positive peanut tests (ie, SPT ≥ 3 mm or IgE ≥ 0.35 kU/L)?

- ▶ Advise to avoid peanut and refer to specialist for further investigations.

Box 2 Clinical bottom line

- ▶ Early introduction of peanut into the infant diet can reduce the risk of peanut allergy.
- ▶ In infants with severe eczema and/or egg allergy, evaluation with SPT and/or peanut-specific-IgE should guide dietary introduction of peanut from 4 to 6 months of age.
- ▶ In infants with no eczema, or mild to moderate eczema, and no history of egg allergy, peanut-containing foods can be introduced at home during weaning, without further evaluation around 6 months of age.
- ▶ Once dietary peanut has been introduced, regular weekly intake should be maintained for 5 years.

UNRESOLVED CONTROVERSIES/CRITICAL APPRAISAL

- ▶ These guidelines reflect recommendations for the USA. The most recent publication of recommendations by the Scientific Advisory Committee on Nutrition (SACN) in the UK concluded that there is as yet insufficient data to support the introduction of peanut before 6 months of age and they advise that families of infants with a history of early-onset eczema or history of food allergy may wish to seek medical advice before the introduction of foods.⁸
- ▶ A significant proportion of the recommendations were based on a small number of (although well-conducted, randomised and controlled) studies, and primarily on the findings of a single trial, the LEAP study.

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- ▶ The guideline recommends evaluation for peanut allergy and egg allergy with specific-IgE and/or SPT, or oral food challenges. These investigations may not be available to all clinicians; therefore, testing will be determined by local guidelines and availability.
- ▶ The significance of specific-IgE and the size of the wheal on SPT can vary with the age of the infant, reagents, equipment and methodology. These criteria may need to be adapted to the local population.
- ▶ The guidelines advise that patients with an SPT of 3–7 mm greater than the saline control should be evaluated further for peanut introduction. This cut-off is higher than the 4 mm used in the LEAP study, where it was assumed that patients with wheal diameters ≥ 5 mm were peanut allergic.
- ▶ The safety of home introduction of peanut has not been evaluated in the community setting. In children with severe eczema or egg allergy, the guideline recommends a peanut-specific-IgE of <0.35 kUA/L as the cut-off level for peanut introduction at home. Studies have shown that 21% of patients with a level of 0.1–0.34 kUA/L can experience allergic reactions, so home introduction under these circumstances does carry a risk.⁹
- ▶ It remains unclear if recommendations extend beyond peanut to other food allergens, although the impact of early egg introduction in the EAT study showed a 75% reduction of egg allergy in the per-protocol group.
- ▶ The duration of regular peanut ingestion required to achieve long-term tolerance has not been specified in this guideline. The LEAP-On study suggests that regular ingestion to 5 years of age may be sufficient to result in tolerance.

Contributors All authors contributed equally to writing this review guideline.

Competing interests None declared.

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