Food Allergies: New Evidence for Early Introduction and Treatment

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Conflicts of Interest
(I am conflicted, but nothing of interest with this talk)

- Speaker’s bureau/Consulting
  - Astra Zeneca
  - Shire
  - Pharming
  - Teva
  - Novartis

Objectives

- Understand the new early peanut introduction guidelines
- Introduce emerging treatment options

Compassion Courtesy Respect
Peanut allergy is a growing health problem
- In 1999, the prevalence was estimated at 0.4% of children
- In 2010, the prevalence had increased to 2%
- 203,000 emergency department visits/year
- 90,000 episodes of anaphylaxis
- Annual rate of accidental peanut exposure was 12.6%

Psychological Impact: Parents and Family
- Parental anxiety
- Loss of control
- Conflict with daycare/school
- Relationships with family/friends
- Distortion of family life
- Social limitations
- Sleepovers, restaurants, movies, sporting events
- Travel and vacations
- Anxiety and guilt at family gatherings

Psychological Impact: Children
- Anxiety about having a reaction
- Impairment of daily activity and social interactions
- More anxiety about food than children with diabetes
- Social stigmatization
  - “The peanut table”
  - 40% have been bullied
  - Parties and social events
- Isolation/deprivation
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Trial was based on a prior observation that the prevalence of peanut allergy was 10-fold higher among Jewish children in the UK compared to Israeli children of similar ancestry.

In Israel, PN-containing foods are usually introduced in the diet around 7 months of age in substantial amounts.

In the UK, children do not typically consume any PN-containing food during their first year of life.

640 children aged 4-11 months old with severe eczema, egg allergy, or both were randomized to consume or avoid PN-containing food until they were 60 months.

It consisted of 2 cohorts:
- SPT negative group
- SPT positive with a wheal measuring 1-4mm
- If SPT showed wheal >5mm, those children were not randomized as this level of sensitization presumed peanut allergy

In cohort 1, among the 530 in the intention to treat population with a negative SPT, the prevalence of PN allergy at 60 months was 13.7% in the PN avoidance group and 1.9% in the PN consumption group.
- \( P < 0.001, 86.1\% \) relative reduction in prevalence of PN allergy

In cohort 2, among the 98 with a measurable SPT, the prevalence of PN allergy was 35.3% in the avoidance group and 10.6% in the PN consumption group.
- \( P = 0.004, 70\% \) relative reduction in prevalence of PN allergy
Guideline #1

How much PN protein to introduce?

- Usually give 6-7 grams of peanut protein over 3 or more feedings per week
- Start at age 4-6 months
- No need to disrupt breastfeeding schedules
- If a sibling has PN allergy, then must discuss and weigh the overall risks/benefits given the possible situation and risk of accidental exposures
- Four recipe options, each containing approximately 2 g of peanut protein

Option 1: Bamba (Osem, Israel), 21 pieces

- Note: Bamba is named because it was the product used in the LEAP trial and therefore has proven efficacy and safety. Other peanut puff products with similar peanut protein content can be substituted.
- For infants less than 7 months of age, soften the Bamba with 4 to 6 teaspoons of water.
- For older infants who can manage dissolvable textures, unmodified Bamba can be fed. If dissolvable textures are not yet part of the infant's diet, softened Bamba should be provided.
Option 2: 2 tsp thinned creamy PB

- Measure 2 teaspoons of peanut butter and slowly add 2 to 3 teaspoons of hot water.
- Stir until peanut butter is dissolved, thinned, and well blended.
- Let cool.
- Increase water amount if necessary (or add previously tolerated infant cereal) to achieve consistency comfortable for the infant.

Option 3: 2 tsp smooth PB puree

- Measure 2 teaspoons of peanut butter.
- Add 2 to 3 tablespoons of pureed tolerated fruit or vegetables to peanut butter. You can Note: Peanut flour and peanut butter powder are 2 distinct products that can be interchanged because they have a very similar peanut protein content.

Option 4: 2 tsp of PN flour and PB powder

- Measure 2 teaspoons of peanut flour or peanut butter powder.
- Add approximately 2 tablespoons (6-7 teaspoons) of pureed tolerated fruit or vegetables to flour or powder. You can increase or reduce volume of puree to achieve desired consistency
- Note: Teaspoons and tablespoons are US measures (5 and 15 mL for a level teaspoon or tablespoon, respectively)
Guideline #2

- Infants with mild to moderate eczema (as determined by SCORAD)
- Introduce age-appropriate PN containing foods around 6 months of age
- Perform in-office feeding or graded oral food challenges in office if parents prefer

Guideline #3

- Infants without eczema or food allergy
- Introduce age-appropriate PN containing foods around 6 months of age along with other solids in accordance with family preferences and cultural practices
- Perform in-office feeding or graded oral food challenges in office if parents prefer

Summary of Guidelines

<table>
<thead>
<tr>
<th>Addendum Guidelines</th>
<th>Infant Criteria</th>
<th>Recommendations</th>
<th>Earliest age of PN introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Severe eczema, egg allergy, or both</td>
<td>Strongly consider PN allergy evaluation at 4-6 months of age, if necessary, an OFC. Based on test results, introduce peanut-containing foods.</td>
<td>4-6 months</td>
</tr>
<tr>
<td>2</td>
<td>Mild to moderate eczema</td>
<td>Introduce PN-containing foods</td>
<td>Around 6 months</td>
</tr>
<tr>
<td>3</td>
<td>No eczema or any food allergy</td>
<td>Introduce PN-containing foods</td>
<td>Age appropriate and in accordance with family preferences and cultural practices</td>
</tr>
</tbody>
</table>
Food Allergy Treatment

Current methods under investigation—
not all inclusive

- Extensively heated milk or egg diet
- SC cross-immunotherapy with pollen
- Oral Immunotherapy (OIT)
- OIT w/ anti-IgE (i.e. omalizumab)
- Sub-lingual IT
- Epicutaneous (patch) IT
- Heat-killed E. coli expressing modified Ara
  S 1,2, 3 vaccine
- TLR 9 agonist
- Peptide IT
- Plasmid DNA IT
- ISS-ODN IT
- Human Fc-Fc fusion protein
- Mannoside-conjugated food allergen IT
- Chinese herb PRHP2
- Anti-IgE and Anti-IL 5 therapy
- Probiotics and prebiotics

Oral Immunotherapy—OIT

- Calculated, methodical approach to effectively desensitize patients or increasing their tolerance to the foods that are life-threatening to them
- At the end of the treatment, patients can consume the once life-threatening foods in unlimited amounts safely
- >90% of patients are able to successfully complete the program
- It takes about 6-8 months, on average
What is OIT?

Iocaine Powder

How does OIT work?

- Works by introducing minute doses of food in calculated increasing amounts for approximately 6-8 months (time period varies on individual differences)
- The initial doses are a microscopic amounts of food protein put in solution. The program progresses to small doses of the whole food, then advances to full-doses and eventually unrestricted as long as maintenance dose is consumed daily
- Day-by-day, step-by-step, methodical process
- Consequently, the majority of patients are able to consume their allergenic foods such as wheat, eggs, corn, peanuts, milk, tree nuts, etc without adverse reactions
Who can do it?

- Someone with legitimate food allergy (not intolerances or other “food allergy” as diagnosed by non-standard ways)

- This program is designed for a child of school age or older who will be old enough to understand the reasons for participating and be actively engaged in the process

- Adults can do this as well

- Are there patients that are "too allergic" to do this? No