Food allergy prevention: Where we are now and how we got there

Kate Grimshaw PhD RD

Senior Research Fellow, University of Southampton

Specialist Paediatric Allergy Dietitian, Southampton Children’s Hospital
Presentation overview

• Background

• Historical Perspective

• Current knowledge
  – Prenatal
  – Perinatal
    – Breastfeeding
    – Bottle feeding
  – Postnatal
    – Complementary feeding
Why Try And Prevent Food Allergy?

- Food allergy is a serious condition that can lead to death
Why Try And Prevent Food Allergy?

- Food allergy is a serious condition that can lead to death
- Lower Quality of Life of allergy sufferers and families
- Cost implications
  - To sufferer and family
    - Increased food costs
    - Increased healthcare costs
    - Potential lost earnings
  - To Healthcare “industry”
    - ↑ Face to face care (in and outpatient)
    - Medication costs
  - To Food industry
    - Allergen management costs
    - Recipe amendments costs
Why Try And Prevent Food Allergy?

- Increased risk of developing other allergic conditions

Atopic March

Redrawn from Durham SR & Church MK, Allergy 4th edition, 2011, Mosby
....consequently, a topic of massive interest to the “general public”

About 1,780,000 “hits”

Predominantly lay articles, many of dubious accuracy

Therefore there is a need for an accurate and consistent message to be promulgated and everyone working within the field of Food Allergy can play a part in achieving that.....
Atopic March

Redrawn from Durham SR & Church MK, Allergy 4th edition, 2011, Mosby
Early factors and mechanisms that interact to prevent or favour the development of an allergic response to a food protein

Grimshaw et al Arch Dis Child 2016
Food allergy prevention:

Where we are now and how we got there
Food allergy prevention:

How we got to where we are now
Historical Perspective

• 1906 It was first proposed that an allergic reaction occurred on the second and subsequent allergen exposure leading to the allergen priming concept

• Idealised strategy for allergy prevention first published in 1983 which focussed on minimising exposure to sensitising proteins during third trimester of pregnancy and delayed introduction of allergenic foods.

• Concept of allergen avoidance for prevention continued into the late 1990’s

• From early this century, allergy prevention research suggested that acquiring tolerance to foreign proteins was an active rather than passive process

• At the same time epidemiological evidence was published implying delayed introduction of solids was not protective and may even be harmful

• National recommendations moved away from allergen avoidance
Physiological Factors

Genetic factors
- Familial history of atopy

Adaptive / Epigenetic Mechanisms
- Maternal exposure
  - Exposure
  - Diet
  - Immune status
  - Microbial environment

Implantation of the gut microbiota

Altered of the gut microbiota due to solid food, hygiene, etc.

BIRTH

WEANING

BREASTFEEDING

Oral, respiratory and cutaneous exposure to allergens

Microbial Environment
- Hygiene
- Allergen structure
- Food matrix
- Food processing
- Nutritional content of diet

Grimshaw et al Arch Dis Child 2016
BIRTH
Prenatal
Perinatal
Postnatal

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Microbial Environment
Hygiene, Allergen structure, Food matrix, Food processing, Nutritional content of diet

Grimshaw et al Arch Dis Child 2016
Pregnancy

1. (Avoidance)

2. Epigenetic influences – Methyl donors

3. Dietary omega-3 polyunsaturated fatty acids

4. Vitamin D
Pregnancy and allergy prevention - Conclusions

- The *in-utero* child is vulnerable to external influence

- Maternal influences, lifestyle, diet etc., impact on the neonatal (and subsequent) phenotype and health

- This represents a window of opportunity for ‘beneficial manipulation’

- The paucity of clear information set within the developmental importance of this period does not allow for current public health messages for amelioration of subsequent infant allergy (except perhaps to avoid tobacco smoke exposure/alcohol)

- New research is constantly adding to our understanding of prenatal influences on infant allergic outcome
Grimshaw et al Arch Dis Child 2016
Modifying the infant’s diet to prevent food allergy

Kate Grimshaw,¹ Kirsty Logan,² Sinead O’Donovan,³ Mairead Kiely,³,⁴ Karine Patient,⁵ Jolanda van Bilsen,⁶ Kirsten Beyer,⁷ Dianne E Campbell,⁸ Vanessa Garcia-Larsen,⁹ Linus Grabenhenrich,¹⁰ Gideon Lack,²,¹¹ Clare Mills,¹² Jean-Michel Wal,¹³ Graham Roberts¹,¹⁴


ABSTRACT
Recommendations and guidelines on the prevention of food allergy have changed in recent decades. The aim of this review of the current evidence and ongoing studies is to provide a comprehensive and up to date picture of prevention of food allergy for healthcare professionals. The review was undertaken as part of the European Union funded Integrated Approaches to Food Allergy and Allergen Management (iFAAM) study. This is a wide ranging project bringing together expertise across the breadth of food allergy research. Specifically, the review discusses dietary manipulation in food allergy prevention, and covers the possible preventive strategies of allergen avoidance, early allergen introduction, general nutrition and supplements, as well as other strategies, such as prebiotics and probiotics. The review concludes that despite agreement that allergen avoidance strategies should not be undertaken for allergy prevention, there is currently no consensus regarding what actions should be recommended beyond exclusive breastfeeding for the first 4–6 months of life. Recent and upcoming trial results, which are detailed in this review, should help inform the debate and add clarity to the topic.
Perinatal influences

1. Breastfeeding

2. Formula feeding
Breast feeding
Breast feeding and allergy: risk or protection?

- Smoking mother
- Young mother
- Diet of mother
- Siblings
- Atopy parents
- Supplement food
- High social status
- Sensitisation
- Infections
- Asthma
- Eczema

Red arrows inhibit, green arrows promote.

RL Bergmann 2003
• Some epidemiological studies report that breastfeeding could protect against allergic disease, whereas others do not (Elbert et al, 2017)

• Data are controversial and the mechanisms unclear.

• The tolerogenic potential of breast milk will depend on the presence of immunomodulatory factors in breast milk and of its impact on neonatal gut and immune system maturation (Verhasselt V, 2010)

Comparing Apples with Pears?
Breastfeeding and allergy development

- Exclusive breastfeeding

Vs.

- Duration of breastfeeding
Breastfeeding: Exclusive vs Duration

• Since the WHO 2003 recommendation to exclusively breastfeed to 6 months, that has been the focus of (epidemiological) research which has provided contradictory evidence regarding the relationship between breastfeeding and allergy development.

• Much interest has been evoked by data from studies indicating the introduction of wheat whilst breast-feeding may affect the development of coeliac disease. Ivarsson et al. 2002; Poole et al. 2006

• This led to the question of whether introduction of allergenic foods whilst breast-feeding, could affect the development of food allergy.
Trends in breastfeeding and the introduction of allergenic solids into the infant diet
# Introduction of Complementary Foods and the Relationship to Food Allergy

**WHAT'S KNOWN ON THIS SUBJECT:** Breast milk is protective against many conditions, but its role in allergy has not been established. Infant-feeding recommendations support exclusive breastfeeding for 26 weeks, whereas allergy prevention recommendations advise exclusive breastfeeding for 4 to 6 months with continued breastfeeding thereafter.

**WHAT THIS STUDY ADDS:** Evidence that continued breastfeeding while solids are introduced into the diet and delaying the introduction of solids until at least 17 weeks of age are associated with fewer food allergies.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at solid introduction (≥17 weeks versus &lt;17)</td>
<td>0.245 (0.088-0.679)*</td>
</tr>
<tr>
<td>Concurrent feeding with breast milk and cows’ milk protein (concurrent feeding versus no concurrent feeding)</td>
<td>0.267 (0.086-0.828)*</td>
</tr>
</tbody>
</table>

*p*<0.05
Conclusions re breastfeeding and allergy development

- Only epidemiological evidence regarding breastfeeding and allergy development

- Suggestion of protective relationship between concurrent breastfeeding and allergy food introduction

- Need more evidence before recommendations can be made…. The EAT study can provide this
Formula feeds
Formulas and prevention

- No long term studies have compared the effect of breast milk compared to hydrolysed formulas and there is no evidence that the use of these formulas are any better than human milk in the prevention of atopic disease.

- Over 100 studies in the literature have examined the role of hydrolysed formulas on the development of atopic disease in high risk studies but these are not all of adequate methodological rigour to be included in systematic reviews. The number included varies according to the review.
Hydrolysed formula and risk of allergic or autoimmune disease: systematic review and meta-analysis

Robert J Boyle,¹ Despo Ierodiakonou,¹,² Tasnia Khan,¹ Jennifer Chivinge,¹ Zoe Robinson,¹ Natalie Geoghegan,¹ Katharine Jarrold,¹ Thalia Afxentiou,¹ Tim Reeves,² Sergio Cunha,³ Marialena Trivella,⁴ Vanessa Garcia-Larsen,² Jo Leonardi-Bee⁵

CONCLUSION
These findings do not support current guidelines that recommend the use of hydrolysed formula to prevent allergic disease in high risk infants.

Cite this as: BMJ 2016;352:i974
http://dx.doi.org/10.1136/bmj.i974
Bias and Conflict of interest

“There was evidence of conflict of interest and high or unclear risk of bias in most studies of allergic outcomes and evidence of publication bias for studies of eczema and wheeze.”

Conclusion
“Overall there was no consistent evidence that partially or extensively hydrolysed hydrolysed formulas reduce risk of allergic or autoimmune outcomes in infants at pre-existing risk of these outcomes.”
Authors’ conclusions

We found no evidence to support short-term or prolonged feeding with a hydrolysed formula compared with exclusive breast feeding for prevention of allergy. Very low-quality evidence indicates that short-term use of an EHF compared with a CMF may prevent infant CMA.

In infants at high risk of allergy not exclusively breast fed, very low-quality evidence suggests that prolonged hydrolysed formula feeding compared with CMF feeding reduces infant allergy and infant CMA. Studies have found no difference in childhood allergy and no difference in specific allergy, including infant and childhood asthma, eczema and rhinitis and infant food allergy.

Very low-quality evidence shows that prolonged use of a partially hydrolysed formula compared with a CMF for partial or exclusive feeding was associated with a reduction in infant allergy incidence and CMA incidence, and that prolonged use of an EHF versus a PHF reduces infant food allergy.
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Physiological Factors

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Adaptive / Epigenetic Mechanisms

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Oral, respiratory and cutaneous exposure to allergens

Hygiene, Allergen structure, Food matrix, Food processing, Nutritional content of diet

Grimshaw et al Arch Dis Child 2016
Introduction of solid food and allergy prevention......

Two issues:

- When to wean

- What to feed
Introduction of solid food and allergy prevention......

Two issues:

- When to wean

- What to feed
RCT’s re solid re-introduction
<table>
<thead>
<tr>
<th>Name of trial</th>
<th>Country (institution)</th>
<th>Allergen(s) of interest</th>
<th>Population</th>
<th>Study details</th>
<th>Study status</th>
</tr>
</thead>
</table>
| Enquiring About Tolerance (EAT)  | UK (Kings’ College, London)                                     | Cow’s milk, hen’s egg, peanuts, cod, sesame, wheat | General population              | ▶ Open label RCT  
▶ n=1106  
▶ Enrolled at 3 months of age then consumption of 6 allergenic foods until 6 months or exclusive breastfeeding until 6 months of age  
▶ Outcome: prevalence of IgE mediated food allergy to any of the 6 allergenic foods between 1 and 3 years of age | Reported         |
| Learning Early About Peanut allergy (LEAP) | UK (Kings’ College, London)                                     | Peanuts               | High risk infants with moderate/severe eczema and/or egg allergy | ▶ Open label RCT  
▶ n=640  
▶ Enrolled at 4–11 months then peanut consumption or avoidance until age 5  
▶ Outcome: prevalence of DBPCFC confirmed peanut allergy at 5 years of age  
▶ Study status: Reported | Reported         |
| Hen’s Egg Allergy Prevention (HEAP) | Germany (Charite Hospital, Berlin)                             | Hen’s egg             | General population              | ▶ RCT, placebo controlled  
▶ n~800  
▶ Enrolled at 4–6 months then consumption of egg powder or placebo until 12 months of age  
▶ Outcome: prevalence of IgE mediated egg allergy at 12 months of age  
▶ Study status: Abstract presented | Completed        |
| Preventing Peanut Allergy in Atopic Dermatitis (PEAAD) | Germany (Charite Hospital, Berlin)                             | Peanut                 | High risk (infants with atopic dermatitis) | ▶ Non-randomised, self selected  
▶ n~460  
▶ Enrolled at 5–30 months of age then peanut consumption or avoidance for 1 year  
▶ Outcome: prevalence of IgE mediated egg allergy at 12 months of age  
▶ Study status: Ongoing | Ongoing          |
| Prevention of egg allergy in infants with atopic dermatitis (PETIT) | Japan (National Centre for Child Health and Development, Japan) | Hen’s egg             | High risk (infants with atopic dermatitis) | ▶ RCT, placebo controlled  
▶ n~200  
▶ Enrolled at 4–6 months then consumption of egg powder or placebo until 12 months of age  
▶ Outcome: prevalence of IgE mediated egg allergy at 12 months of age  
▶ Study status: Abstract presented | Completed        |
| Solids Timing for Allergy Research (STAR) | Australia (University of Western Australia)                    | Hen’s egg             | High risk (infants with moderate/severe eczema) | ▶ RCT, placebo controlled  
▶ n~86  
▶ Enrolled at 4–6 months of age then consumption of egg powder or placebo until 8 months of age  
▶ Outcome: prevalence of IgE mediated egg allergy at 12 months of age  
▶ Study status: Reported | Reported         |
| Starting Time for Egg Protein (STEP) | Australia (University of Western Australia)                    | Hen’s egg             | Moderate risk (infants without eczema but atopic mothers) | ▶ RCT, placebo controlled  
▶ n~1500  
▶ Enrolled at 4–6 months of age then consumption of egg powder or placebo until 12 months of age  
▶ Outcome: prevalence of IgE mediated egg allergy at 12 months of age  
▶ Study status: Completed | Completed        |
| Beating Egg Allergy (BEAT)       | Australia (Sydney University Children’s Hospital)             | Hen’s egg             | Moderate risk (sibling/parent with allergy) | ▶ RCT, placebo controlled  
▶ n~290  
▶ Enrolled at 4 months of age then consumption of egg powder or placebo until 8 months of age  
▶ Outcome: primary egg white sensitisation, Secondary: prevalence of IgE mediated egg allergy at 12 months of age  
▶ Study status: Completed | Completed        |
| Preventing Atopic Dermatitis and Allergies in Children (PreventADALL) | Norway (Oslo University Hospital)                              | Hen’s egg, milk, wheat, peanut | General population              | ▶ Open label RCT with four arms  
▶ n=5200  
▶ Outcome: food allergy, atopic dermatitis  
▶ Open label RCT with four arms: early introduction by 4 months, skin care, both early introduction and skin care | Ongoing          |

DBPCFC, double blind, placebo-controlled food challenge; RCT, randomised controlled trial.
Systematic Review and meta-analysis

JAMA | Original Investigation

Timing of Allergenic Food Introduction to the Infant Diet and Risk of Allergic or Autoimmune Disease
A Systematic Review and Meta-analysis

Despo Ierodiakonou, MD, PhD; Vanessa García-Larsen, PhD; Andrew Logan, PhD; Annabel Groome, BSc; Sergio Cunha, MD; Jennifer Chivinge, BSc; Zoe Robinson, BSc; Natalie Geoghegan, BSc; Katharine Jarrold, BSc; Tim Reeves, BSc; Nara Taglyanova-Mline, PhD; Ulugbek Nurmatov, MD, PhD; Marialena Trivella, DPhil; Jo Leonard-Bee, PhD; Robert J. Boyle, MD, PhD

**Importance** Timing of introduction of allergenic foods to the infant diet may influence the risk of allergic or autoimmune disease, but the evidence for this has not been comprehensively synthesized.

**Objective** To systematically review and meta-analyze evidence that timing of allergenic food introduction during infancy influences risk of allergic or autoimmune disease.

**Data Sources** MEDLINE, EMBASE, Web of Science, CENTRAL, and LILACS databases were searched between January 1946 and March 2016.

**Study Selection** Intervention trials and observational studies that evaluated timing of allergenic food introduction during the first year of life and reported allergic or autoimmune disease or allergic sensitization were included.
Findings

A Risk of food allergy

### Dietary Introduction of Allergenic Food

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Early</th>
<th>Late</th>
<th>Risk Ratio (95% CI)</th>
<th>Decreased Risk of Food Allergy</th>
<th>Increased Risk of Food Allergy</th>
<th>Weight (random-effects model), %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egg allergy</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perkin et al.(^6) 2016</td>
<td>21</td>
<td>569</td>
<td>32</td>
<td>596</td>
<td>0.69 (0.40-1.18)</td>
<td>30.9</td>
</tr>
<tr>
<td>Naik et al.(^7) 2016</td>
<td>5</td>
<td>60</td>
<td>23</td>
<td>61</td>
<td>0.22 (0.09-0.54)</td>
<td>16.7</td>
</tr>
<tr>
<td>Tan et al.(^8) 2016</td>
<td>8</td>
<td>130</td>
<td>13</td>
<td>124</td>
<td>0.59 (0.25-1.37)</td>
<td>31.1</td>
</tr>
<tr>
<td>Bellach et al.(^9) 2015</td>
<td>2</td>
<td>142</td>
<td>1</td>
<td>156</td>
<td>2.20 (0.20-23.97)</td>
<td>18.2</td>
</tr>
<tr>
<td>Palmer et al.(^1) 2013</td>
<td>14</td>
<td>42</td>
<td>18</td>
<td>35</td>
<td>0.65 (0.38-1.11)</td>
<td>3.1</td>
</tr>
<tr>
<td>Random-effects model</td>
<td>943</td>
<td>972</td>
<td></td>
<td></td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td>Peanut allergy</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Perkin et al.(^6) 2016</td>
<td>7</td>
<td>571</td>
<td>15</td>
<td>597</td>
<td>0.49 (0.20-1.19)</td>
<td>45</td>
</tr>
<tr>
<td>Du Toit et al.(^4) 2015</td>
<td>10</td>
<td>312</td>
<td>54</td>
<td>313</td>
<td>0.19 (0.10-0.36)</td>
<td>55</td>
</tr>
<tr>
<td>Random-effects model</td>
<td>883</td>
<td>910</td>
<td></td>
<td></td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td>Milk allergy</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Perkin et al.(^6) 2016</td>
<td>3</td>
<td>569</td>
<td>4</td>
<td>597</td>
<td>0.79 (0.18-3.50)</td>
<td>32.7</td>
</tr>
<tr>
<td>Lowe et al.(^1) 2011</td>
<td>6</td>
<td>193</td>
<td>8</td>
<td>191</td>
<td>0.74 (0.26-2.10)</td>
<td>67.3</td>
</tr>
<tr>
<td>Random-effects model</td>
<td>762</td>
<td>788</td>
<td></td>
<td></td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

Conclusions

In this systematic review, early introduction of egg or peanut to the infant diet was associated with lower risk of developing egg or peanut allergy. These findings must be considered in the context of limitations in the primary studies.
Relevant findings from to consider when considering the primary RCT’s

- Early for Egg = 4-6 months (mean 5 months) but for peanut = 4-11 months (Mean 7 months)

- High level of reactions to egg on first dose (2 studies had to stop early)

- Differing levels of adherence to complete protocol

- There may well be a dose effect
Summary of RCT’s

• “early” introduction protective – 2 studies
• “early” no difference – 2 studies
• “early” inconclusive – 1 study
• ? There is a dose effect

• Straight comparison of the results to achieve an answer not really possible

iFAAM study carrying out a meta-analysis of these studies but also a pooled data analysis – manuscript next year (hopefully!)
• Early evidence, which requires further investigation, suggests that if a window of opportunity for promoting tolerance exists, it may be different for each food.

Koplin and Allen, 2013
Introduction of solid food and allergy prevention......

Two issues:

- When to wean

- What to feed
Nutrients in early life

• Fish Consumption during first year of life associated with reduced prevalence of atopic dermatitis, recurrent wheeze, allergic rhinitis, food allergy, asthma*

• LCPUFA supplementation in early life associated with reduced atopic dermatitis, rhinitis Review: Hageman et al. 2012

• WAO guideline panel found no support for the hypothesis that vitamin D supplementation reduces the risk of developing allergic diseases in children. Yepes-Nuñez et al 2016
Other dietary components?

• Probiotics

• Prebiotics

• Dietary Patterns
Probiotics

• The most up to date Cochrane review states that further research is needed before probiotic use can be recommended for the prevention of allergy
  Osborn DA, Sinn JK 2013

• However, a recent World Allergy Organisation (WAO) systematic review has suggested using probiotics in infants at high risk of allergy due to the ‘likely net benefit’ from the prevention of eczema seen with the use of probiotics
  Fiocchi et al, 2015

• Above is supported in the latest recommendations from Philippines
  Recto el al, 2017
Prebiotics

- WAO guideline panel suggests using prebiotic supplementation in not-exclusively breastfed infants and not using prebiotic supplementation in exclusively breastfed infants.

- We found no experimental or observational study of prebiotic supplementation in pregnant women or in breastfeeding mothers. Thus, the WAO guideline panel chose not to provide a recommendation about prebiotic supplementation in pregnancy or during breastfeeding, at this time.

Cuello Garcia, 2016
Dietary Patterns

- Epidemiological study (n= 3142 children). By 12 months of age, less food diversity was associated with increased risk of any asthma, atopic asthma, wheeze, and allergic rhinitis. (Food allergy not an endpoint) Nwaru et al. 2014

- Higher adherence to a Mediterranean diet at 10-12 years of age associated with lower prevalence of asthma symptoms Arvaniti et al, 2011

- Higher “healthy eating” score up to 12 months of age associated with lower food allergy at 2 years of age Grimshaw et al, 2014
Recommendations regarding allergy prevention

• “Opinion” articles

• Guidance from Professional Societies:
“Opinion” articles

• Since the publication of the LEAP study (and other RCT’s) there have been a large number of review/opinion/summary articles written...... too many to list!

Three examples

- Grimshaw et al Arch Dis Child, 2017
- Turner and Campbell JAMA, 2017
- Abrams, Greenhawt, Fleischer and Chan J Pediatr, 2017
### Guidance from Professional societies - Prenatal

<table>
<thead>
<tr>
<th>Society</th>
<th>Perinatal</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAAAI (2013)</td>
<td>Consensus that avoiding foods during <strong>pregnancy</strong> is not recommended for preventing allergic disease.</td>
</tr>
<tr>
<td>AAP (2008)</td>
<td>Some (including ASCIA and PSAAI) recommend “healthy balanced diet” and up to 3 servings of fatty fish/omega-3 fatty acids</td>
</tr>
<tr>
<td>ASCIA (2016)</td>
<td>Some (including ASCIA and PSAAI) recommend “healthy balanced diet” and up to 3 servings of fatty fish/omega-3 fatty acids</td>
</tr>
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<td>EAACI (2014)</td>
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</tr>
<tr>
<td>ESPGHAN (2008)</td>
<td>Some (including ASCIA and PSAAI) recommend “healthy balanced diet” and up to 3 servings of fatty fish/omega-3 fatty acids</td>
</tr>
<tr>
<td>PSAAI and PSPGHAN (2017)</td>
<td>(Lactobacillus rhamnosus GG in atopic women from 36 weeks until 6 months for AD – PSAAI)</td>
</tr>
</tbody>
</table>
Guidance from Professional societies - Breastfeeding

<table>
<thead>
<tr>
<th>Society</th>
<th>Breastfeeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAAAI (2013)</td>
<td>Exclusive breastfeeding for 4-6 months</td>
</tr>
<tr>
<td></td>
<td>No maternal exclusion diet</td>
</tr>
<tr>
<td>AAP (2008)</td>
<td>Exclusive breastfeeding for at least 4 months</td>
</tr>
<tr>
<td></td>
<td>No maternal exclusion diet</td>
</tr>
<tr>
<td>ASCIA (2016)</td>
<td>Breastfeed for at least 6 months</td>
</tr>
<tr>
<td></td>
<td>“Overlap” feeding may be beneficial</td>
</tr>
<tr>
<td>EAACI (2014)</td>
<td>Exclusive breastfeeding for 4-6 months</td>
</tr>
<tr>
<td></td>
<td>No maternal exclusion diet</td>
</tr>
<tr>
<td>ESPGHAN (2008)</td>
<td>Exclusive breastfeeding for 4-6 weeks</td>
</tr>
<tr>
<td></td>
<td>No maternal exclusion diet</td>
</tr>
<tr>
<td>PSAAI/ PSPGHAN (2017)</td>
<td>Exclusive breastfeeding for at least 3-6 months</td>
</tr>
<tr>
<td></td>
<td>No maternal exclusion diet</td>
</tr>
</tbody>
</table>
## Guidance from Professional societies - Formula feeding

<table>
<thead>
<tr>
<th>Society</th>
<th>Formula feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAAAI (2013)</td>
<td>If breastfeeding not possible use a hydrolysed infant formula</td>
</tr>
<tr>
<td>AAP (2008)</td>
<td>Perhaps use phf or ehf ( pref ehf) but consider cost in the decision</td>
</tr>
<tr>
<td>ASCIA (2016)</td>
<td>If breastfeeding not possible, standard infant formula can be given</td>
</tr>
<tr>
<td>EAACI (2014)</td>
<td>High risk have formula with documented preventative effect for first 4 months</td>
</tr>
<tr>
<td>ESPGHAN (2008)</td>
<td>Formula with proven reduced allergenicity</td>
</tr>
<tr>
<td>PSAAI/ PSPGHAN (2017)</td>
<td>If breastfeeding not possible, ehf- c or phf- w for 6 months Soya, amino acid and non bovine mammalian milk formula not recommended</td>
</tr>
</tbody>
</table>
**Guidance from Professional societies - Complementary feeding**

<table>
<thead>
<tr>
<th>Society</th>
<th>Complementary feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAAAI (2013)</td>
<td>Introduce between 4- 6 months; single ingredients every 3- 5 days No need to delay allergenic foods once weaning established</td>
</tr>
<tr>
<td>AAP (2008)</td>
<td>No delay after 4- 6 months No need to delay introduction of allergenic foods beyond this time</td>
</tr>
<tr>
<td>ASCIA (2016)</td>
<td>Introduce around 6 months., preferably whilst still breastfeeding. For high risk infants, introduce one at a time, cooked egg before 8 months</td>
</tr>
<tr>
<td>EAACI (2014)</td>
<td>After 4 months with no special dietary restrictions No evidence to introduce “early” or “late” Preferably introduce whilst breastfeeding</td>
</tr>
<tr>
<td>ESPGHAN (2008)</td>
<td>Between 17- 26 weeks No delayed introduction of allergenic foods</td>
</tr>
<tr>
<td>PSAAI/ PSPGHAN (2017)</td>
<td>Delayed introduction beyond 6 months not recommended Egg between 4- 6 months, wheat before 6 months, fish 6- 9 months, peanut 4- 11 months</td>
</tr>
</tbody>
</table>
Interim guidance regarding early peanut prevention

- Consensus statement from AAAAI, AAP, ACAAI, ASCIA, CSACI, EAACI, IAACI, JSA, SPD, WAO
  
  - Health care providers should recommend introducing peanut-containing products into the diets of “high-risk” infants early on in life (between 4 and 11 months of age) in countries where peanut allergy is prevalent because delaying the introduction of peanut can be associated with an increased risk of peanut allergy.
  
  - Infants with early-onset atopic disease, such as severe eczema, or egg allergy in the first 4 to 6 months of life might benefit from evaluation by an allergist or physician trained in management of allergic diseases in this age group to diagnose any food allergy and assist in implementing these suggestions regarding the appropriateness of early peanut introduction. The clinician can perform an observed peanut challenge for those with evidence of a positive peanut skin test response to determine whether they are clinically reactive before initiating at-home peanut introduction. Both strategies were used in the LEAP study protocol.
  
  - Although the outcome of the LEAP regimen was excellent, the study does not address use of alternative doses of peanut protein, minimal length of treatment necessary to induce the tolerogenic effect, or potential risks of premature discontinuation or sporadic feeding of peanut.

Fleischer et al JACI 2015
In Summary

• Each country has national guidelines regarding feeding and weaning.

• In addition, professional societies produce guidance regarding weaning for allergy prevention.

• **All** should adhere to their national/professional guidelines.

• There needs to be a combined analysis of the results of RCTs. There are currently informal meetings scheduled in the USA and UK and Europe to address how recommendations should be changed.

• Other considerations such as nutritional adequacy of weaning diet, developmental milestones and prevention of faddy eating/food refusal also very important when providing feeding and weaning advice to mothers. Whilst these discussions take place...........

...............**All** should adhere to their national/professional guidelines!!!!! 😊
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Any Question?