Objectives

To understand:

- Food allergy phenotypes
- The role of the skin barrier in sensitisation
- Early introduction of food as an allergy prevention strategy:
  - High risk infant
  - Low risk infant
Classification of reactions

IgE vs Non IgE vs Intolerance...
Classification of Reactions

- Adverse reaction to food
  - Non Toxic
    - Immune mediated (Food Allergy)
      - IgE mediated
        - Immediate food allergy
          - Oral Allergy Syndrome
      - Non IgE mediated
    - Non-immune mediated (Food Intolerance)
      - Enzymatic
      - Pharmacological
      - Other
        - Food aversion
Classification of Reactions

Adverse reaction to food

Non Toxic

Immune mediated (Food Allergy)

- IgE mediated
  - Immediate food allergy
  - Oral Allergy Syndrome
- Non IgE mediated
  - Food Protein Enteropathies
  - Eosinophilic Gastroenteropathies

Non-immune mediated (Food Intolerance)

- Enzymatic
  - Lactose intolerance
- Pharmacological
- Other
  - Food aversion
### IgE Mediated Reactions

#### Adverse reaction to food

<table>
<thead>
<tr>
<th>IgE mediated reaction</th>
<th>Non IgE mediated</th>
<th>Enzymatic</th>
<th>Pharmacological</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin – hives, itching, angioedema</td>
<td>Food Protein Enteropathies</td>
<td>Lactose intolerance</td>
<td></td>
<td>Food aversion</td>
</tr>
<tr>
<td>Gastro – abdo pain, nausea, vomiting</td>
<td>Eosinophilic Gastroenteropathies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENT – rhinitis, conjunctivitis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airway – hoarse voice, tongue swelling, difficulty swallowing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory – cough, wheeze, tight chest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac – hypotension, pallor, collapse, sleepy, floppy, dizziness, unconsciousness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Immune mediated (Food Allergy)

- Immediate food allergy
- Oral Allergy Syndrome

#### Non immune mediated (Food Intolerance)

- Enzymatic
- Pharmacological
- Other
Anaphylaxis

Adverse reaction to food

**ANAPHYLAXIS**

- **Airway** — hoarse voice, tongue swelling, difficulty swallowing
- **Respiratory** — cough, wheeze, tight chest
- **Cardiac** — hypotension, pallor, collapse, sleepy, floppy, dizziness, unconsciousness

**Immune mediated** (Food Allergy)

- IgE mediated
- Non IgE mediated

**Non Toxic**

**Toxic**

**Immediate food allergy**

- Oral Allergy Syndrome

**Food aversion**

**Enzymatic**

- Lactose intolerance

**Pharmacological**

**Other**

**Food Protein Enteropathies**

**Eosinophilic Gastroenteropathies**

**Immediate food allergy**

**Oral Allergy Syndrome**
Rapid onset of symptoms (within minutes and < 2 hours)

Most symptoms are mild: e.g., urticaria, oral pruritus, erythema, rhinorrhea

Symptoms result from histamine release – many diagnostic tests

15% may be severe: features of anaphylaxis such as wheeze

IgE-mediated allergy
Non-IgE mediated allergy

Adverse reaction to food

Non Toxic

Immune mediated (Food Allergy)

IgE mediated
Immediate food allergy
Oral Allergy Syndrome

Non IgE mediated
Food Protein Enteropathies
Eosinophilic Gastroenteropathies

Non-immune mediated (Food Intolerance)

Enzymatic
Lactose intolerance

Pharmacological

Other

Toxic

Food aversion
Non-specific, often chronic symptoms

Common symptoms: treatment-resistant GER, eczema, colic, diarrhoea, food aversion

Can be difficult to diagnose; symptoms are also common in children without allergy

No validated tests – needs trial exclusions and reintroductions

---

non-IgE-mediated allergy
<table>
<thead>
<tr>
<th>IgE Mediated Allergy</th>
<th>Non-IgE Mediated Allergy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validated tests</td>
<td>No validated tests</td>
</tr>
<tr>
<td>Easy to diagnose</td>
<td>Harder to diagnose</td>
</tr>
<tr>
<td>Well defined mechanism</td>
<td>Mechanism unclear</td>
</tr>
<tr>
<td>Quick onset</td>
<td>Delayed onset</td>
</tr>
<tr>
<td>Anaphylaxis</td>
<td>Eczema, reflux etc</td>
</tr>
</tbody>
</table>
Can we prevent IgE mediated food allergies developing?
Case 1
Case 1

- 7 month old baby boy
- Born by C section
- FHx atopy
- Exclusively breast fed from birth to 6 months
- Onset of eczema at 3 months – difficult to treat
- Weaned onto solids at 6 months
- Tolerated milk, wheat, vegetables, fruits
- Reacted to egg – hives, vomited, swollen eye and lips. No anaphylaxis Sx.
Case 1 - Discussion

- Key points in the history
Key points in history

- 7 month old baby boy
- Born by C section
- FHx atopy
- Exclusively breast fed from birth to 6 months
- Onset of eczema at 3 months – difficult to treat
- Weaned onto solids at 6 months
- Tolerated milk, wheat, vegetables, fruits
- Reacted to egg – hives, vomited, swollen eye and lips. No anaphylaxis Sx.
Case 1 - Discussion

- Key points in the history
- Is this patient high risk for food allergy?
Case 1 – High Risk?

YES!
Case 1 - Discussion

- Key points in the history
- Is this patient high risk for food allergy?
- What would you do next?
  - What investigations?
  - What food exclusions?
Case 2
Case 2

- 14 week old baby boy
- Born by NVD, no concerns
- Exclusively breast fed
- Mild eczema on the cheeks at 3 months which responds to emollients
- Seems to be hungry, mum wants to wean onto solids
- FHx – Mum allergic rhinitis, dad allergic rhinitis. No other children.
Case 2 - Discussion

- Is this infant high risk for food allergies?
- Mum wants weaning advice, nephew has food allergies – bit confused re different advice. What is the current advice in the UK?
- Do we need to do any tests?
- Can we prevent food allergy?
Case 3

- Pregnant mum 37+5 weeks, G2 P1
- Mum has asthma and shellfish allergy
- Daughter (3 years) has eczema, peanut allergy and milk allergy
- Dad – no atopy
- Planned NVD
- Wants advice on preventing allergies in her 2nd child
Case 3 - Discussion

- Is her new baby at high risk of allergies?
- What options are available?
Case 3

- Born at 39 weeks
- Exclusively breast fed
- Mum moisturises the baby from birth (no eczema develops)
- At 3 months, mum is unwell with appendicitis and baby needs formula. Which formula?
## Summary of cases

<table>
<thead>
<tr>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk infant</td>
<td>Low risk infant</td>
<td>Not yet born with risk of inheriting atopy</td>
</tr>
<tr>
<td>Weaned at 6 months</td>
<td>Early weaning</td>
<td>Moisturised from birth</td>
</tr>
</tbody>
</table>
Allergy vs tolerance
Dual allergen exposure hypothesis

Journal of Allergy and Clinical Immunology 2016 137, 998-1010DOI: (10.1016/j.jaci.2016.02.005)
Arachis oil-based cream use ↑ in infants who develop peanut allergy

Food sensitisation across the skin barrier?

Lack NEJM 2003; Factors associated with the development of peanut allergy
Does dietary peanut prevent allergy?

Adapted from: Lack, G. JACI. 2008; 122:984–991
Effect of Avoidance on Peanut Allergy after Early Peanut Consumption

LEAP Study

4 to < 11 Months

60 Months

Both Cohorts (N=628)
P<0.001

81% Relative Reduction

LEAP-On Study

**LEAP**
- 4 to < 11 Months
  - Consumption
  - Avoidance

**LEAP-On**
- 60 Months
- 72 Months
  - Avoidance

**Primary Endpoint:**
Persistent tolerance
Comparison of proportion with peanut allergy in LEAP Consumers vs LEAP Avoiders at 72 Months

**Secondary Endpoint:**
Transient desensitization
Comparison of proportion with peanut allergy in LEAP Consumers at 60 and 72 Months

Feasibility of LEAP

- Consumption group ate median 7.5g protein/week
- No impact on duration of breast feeding
- No difference in anthropometric measurements
- No difference in total energy intake
  - Consumers higher fat
  - Avoiders higher carb
  - Protein intakes the same
- Huge level of support – dietitians etc
Case 1 – what would we do?

- SPT for common allergenic foods not yet consumed
  - Sesame, peanut, tree nuts, fish, kiwi, soya
- If SPT negative – advise introduction
- If peanut SPT 4mm or less, do SplgE to determine safety of a challenge or supervised feed
- Ara h2
- Encourage introduction if possible
Case 2

- This case relates to evidence from the EAT study
Randomized Trial of Introduction of Allergenic Foods in Breast-Fed Infants

Michael R. Perkin, Ph.D., Kirsty Logan, Ph.D., Anna Tseng, R.D., Bunmi Raji, R.D., Salma Ayis, Ph.D., Janet Peacock, Ph.D., Helen Brough, Ph.D., Tom Marrs, B.M., B.S., Suzana Radulovic, M.D., Joanna Craven, M.P.H., Carsten Flohr, Ph.D., and Gideon Lack, M.B., B.Ch., for the EAT Study Team*
The EAT Study Design

**Antenatal recruitment and randomisation**

- **Clinic visit 3m**
  - 3 months
  - Intervention
  - 6 months

**Monthly questionnaires**

- **Clinic visit 12m**
  - 12 months
  - Follow up

**Three monthly questionnaires**

- **Clinic visit 36m**
  - 36 months
  - Outcome

**EAT cohort**

- EAT cohort N=1303
  - Standard Introduction Group n=651
    - Tolerant
  - Early Introduction Group n=652
    - Allergic
    - Tolerant
    - Allergic

**IgE mediated Food Allergy:**

SPT >3mm AND positive DBPCFC to one or more foods
EAT Study Breastfeeding Rates Between Groups

Infant Feeding Survey 2010 Data. All comparisons between EIG or SIG and Infant Feeding Survey data at varying ages significantly different, p<0.001

Perkin M, Logan K et al. Enquiring about tolerance (EAT) study: Feasibility of an allergenic food introduction regimen. 2016 In press JACI
# Food Introduction Schedule

<table>
<thead>
<tr>
<th>WEEK 1</th>
<th>MON</th>
<th>TUES</th>
<th>WED</th>
<th>THURS</th>
<th>FRI</th>
<th>SAT</th>
<th>SUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>cow's milk</td>
<td><img src="image" alt="Yogurt" /></td>
<td><img src="image" alt="Yogurt" /></td>
<td><img src="image" alt="Yogurt" /></td>
<td><img src="image" alt="Yogurt" /></td>
<td><img src="image" alt="Yogurt" /></td>
<td><img src="image" alt="Yogurt" /></td>
<td><img src="image" alt="Yogurt" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEEK 2</th>
<th>MON</th>
<th>TUES</th>
<th>WED</th>
<th>THURS</th>
<th>FRI</th>
<th>SAT</th>
<th>SUN</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Skippy" /></td>
<td><img src="image" alt="Yogurt" /></td>
<td><img src="image" alt="Skippy" /></td>
<td><img src="image" alt="Skippy" /></td>
<td><img src="image" alt="Yogurt" /></td>
<td><img src="image" alt="Tahini" /></td>
<td><img src="image" alt="Tahini" /></td>
<td><img src="image" alt="Tahini" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEEK 3</th>
<th>MON</th>
<th>TUES</th>
<th>WED</th>
<th>THURS</th>
<th>FRI</th>
<th>SAT</th>
<th>SUN</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Skippy" /></td>
<td><img src="image" alt="Egg" /></td>
<td><img src="image" alt="Egg" /></td>
<td><img src="image" alt="Egg" /></td>
<td><img src="image" alt="Egg" /></td>
<td><img src="image" alt="Tahini" /></td>
<td><img src="image" alt="Fish" /></td>
<td><img src="image" alt="Tahini" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEEK 4</th>
<th>MON</th>
<th>TUES</th>
<th>WED</th>
<th>THURS</th>
<th>FRI</th>
<th>SAT</th>
<th>SUN</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Skippy" /></td>
<td><img src="image" alt="Egg" /></td>
<td><img src="image" alt="Egg" /></td>
<td><img src="image" alt="Fish" /></td>
<td><img src="image" alt="Egg" /></td>
<td><img src="image" alt="Fish" /></td>
<td><img src="image" alt="Fish" /></td>
<td><img src="image" alt="Tahini" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEEK 5 and Onwards</th>
<th>MON</th>
<th>TUES</th>
<th>WED</th>
<th>THURS</th>
<th>FRI</th>
<th>SAT</th>
<th>SUN</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Skippy" /></td>
<td><img src="image" alt="Egg" /></td>
<td><img src="image" alt="Fish" /></td>
<td><img src="image" alt="Fish" /></td>
<td><img src="image" alt="Egg" /></td>
<td><img src="image" alt="Fish" /></td>
<td><img src="image" alt="Fish" /></td>
<td><img src="image" alt="Tahini" /></td>
</tr>
</tbody>
</table>

1st: Cow’s milk | Randomized to [Egg, Peanut, Sesame, Fish] | 6th: Wheat

Perkin M, Logan K et al. Enquiring about tolerance (EAT) study: Feasibility of an allergenic food introduction regimen. 2016 In press JACI
**Early Introduction Group - Overall Adherence to Food Introduction Regime**

<table>
<thead>
<tr>
<th></th>
<th>≥ 4 FOODS</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥50 %</td>
<td>≥75 %</td>
<td>100 %</td>
<td></td>
</tr>
<tr>
<td>≥ 4 weeks</td>
<td>81 %</td>
<td>70 %</td>
<td>54 %</td>
<td></td>
</tr>
<tr>
<td>≥ 5 weeks</td>
<td>67 %</td>
<td>53 %</td>
<td>34 %</td>
<td></td>
</tr>
<tr>
<td>≥ 6 weeks</td>
<td>56 %</td>
<td>41 %</td>
<td>24 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 5 FOODS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥50 %</td>
<td>≥75 %</td>
<td>100 %</td>
<td></td>
</tr>
<tr>
<td>≥ 4 weeks</td>
<td>74 %</td>
<td>58 %</td>
<td>39 %</td>
<td></td>
</tr>
<tr>
<td>≥ 5 weeks</td>
<td>58 %</td>
<td>42 %*</td>
<td>24 %</td>
<td></td>
</tr>
<tr>
<td>≥ 6 weeks</td>
<td>44 %</td>
<td>26 %</td>
<td>16 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 6 FOODS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥50 %</td>
<td>≥75 %</td>
<td>100 %</td>
<td></td>
</tr>
<tr>
<td>≥ 4 weeks</td>
<td>57 %</td>
<td>42 %</td>
<td>24 %</td>
<td></td>
</tr>
<tr>
<td>≥ 5 weeks</td>
<td>41 %</td>
<td>24 %</td>
<td>12 %</td>
<td></td>
</tr>
<tr>
<td>≥ 6 weeks</td>
<td>25 %</td>
<td>13 %</td>
<td>7 %</td>
<td></td>
</tr>
</tbody>
</table>

Perkin M, Logan K et al. Enquiring about tolerance (EAT) study: Feasibility of an allergenic food introduction regimen. 2016 *In press JACI*
## Per-protocol Adherence: Individual Foods

<table>
<thead>
<tr>
<th>Food</th>
<th>Total weekly Guideline Amount (2g allergen protein twice weekly)</th>
<th>% per-protocol adherent* (3g allergen protein per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>2 small pots (40-60g) of yoghurt</td>
<td>85.2</td>
</tr>
<tr>
<td>Peanut</td>
<td>3 rounded teaspoons peanut butter</td>
<td>61.9</td>
</tr>
<tr>
<td>Fish</td>
<td>2 x fish fingers or ¼ fish fillet (25g)</td>
<td>60.0</td>
</tr>
<tr>
<td>Sesame</td>
<td>3 teaspoons tahini paste</td>
<td>52.3</td>
</tr>
<tr>
<td>Egg</td>
<td>1 small egg</td>
<td>43.1</td>
</tr>
<tr>
<td>Wheat</td>
<td>2 wheat based biscuit cereal</td>
<td>39.1</td>
</tr>
</tbody>
</table>

*Consumed 75% of total weekly amount

RESULTS: Prevalence of Allergy to One or More Foods

ITT - 20% Non-significant reduction in prevalence in EIG

PP - 67% Significant reduction in prevalence in EIG

Perkin M, Logan K, Tseng A et al. Randomized trial introducing allergenic foods in breastfed infants. March 4th 2016, at NEJM.org
RESULTS: Prevalence of allergy to Peanut and/or Egg

Per-protocol – **100% Significant reduction** in Peanut allergy prevalence in EIG

Per-protocol – **75% Significant reduction** in Egg allergy prevalence in EIG

Perkin M, Logan K, Tseng A et al. Randomized trial introducing allergenic foods in breastfed infants. March 4th 2016, at NEJM.org
Factors influencing food allergy

Table S5. Logistic Modelling and Dominance Analysis of Factors Influencing the Primary Outcome

<table>
<thead>
<tr>
<th>Factor</th>
<th>Primary outcome</th>
<th>Primary outcome dominance analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.4% (74/1161)</td>
<td></td>
</tr>
<tr>
<td>Study group (early-introduction group)</td>
<td>0.75 (0.46-1.24)</td>
<td>0.26</td>
</tr>
<tr>
<td>Ethnicity (non-white)</td>
<td>2.09 (1.19-3.66)</td>
<td>0.01</td>
</tr>
<tr>
<td>Visible eczema at 3m visit</td>
<td>6.09 (3.67-10.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Maternal atopy</td>
<td>1.49 (0.86-2.59)</td>
<td>0.15</td>
</tr>
<tr>
<td>Maternal education (≤18 years)</td>
<td>0.58 (0.28-1.23)</td>
<td>0.16</td>
</tr>
<tr>
<td>Siblings (any)</td>
<td>1.95 (1.11-3.42)</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Perkin M, Logan K, Tseng A et al. Randomized trial introducing allergenic foods in breastfed infants. March 4th 2016, at NEJM.org
Factors influencing adherence to early intro

Table S14. Logistic Modelling and Dominance Analysis of Factors Influencing Early-Introduction Group Non-Adherence

<table>
<thead>
<tr>
<th>Factor</th>
<th>EIG non-adherence</th>
<th>EIG dominance analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>56.6% (286/505)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity (non-white)</td>
<td>2.21 (1.18-4.14)</td>
<td>27.4%</td>
</tr>
<tr>
<td>Visible eczema at 3m visit</td>
<td>1.38 (0.87-2.19)</td>
<td>10.9%</td>
</tr>
<tr>
<td>New onset eczema (4-6m)</td>
<td>1.35 (0.75-2.41)</td>
<td>3.8%</td>
</tr>
<tr>
<td>Maternal atopy</td>
<td>1.23 (0.84-1.79)</td>
<td>5.1%</td>
</tr>
<tr>
<td>Maternal education (≤18 years)</td>
<td>1.12 (0.68-1.83)</td>
<td>0.5%</td>
</tr>
<tr>
<td>Maternal smoking</td>
<td>0.78 (0.27-2.28)</td>
<td>1.4%</td>
</tr>
<tr>
<td>Caesarean delivery</td>
<td>1.21 (0.80-1.83)</td>
<td>3.9%</td>
</tr>
<tr>
<td>Sex (female)</td>
<td>1.21 (0.84-1.75)</td>
<td>3.3%</td>
</tr>
<tr>
<td>Siblings (any)</td>
<td>1.10 (0.76-1.61)</td>
<td>1.6%</td>
</tr>
<tr>
<td>QOL psychological domain (&gt;median)</td>
<td>0.69 (0.47-1.00)</td>
<td>17.8%</td>
</tr>
<tr>
<td>Skin-prick test positive at 3m visit</td>
<td>1.01 (0.39-2.60)</td>
<td>0.6%</td>
</tr>
<tr>
<td>Any symptoms to EIG foods (4-6m)</td>
<td>1.70 (1.02-2.86)</td>
<td>22.2%</td>
</tr>
<tr>
<td>Any symptoms to other foods (4-6m)</td>
<td>1.34 (0.53-3.35)</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

Perkin M, Logan K, Tseng A et al. Randomized trial introducing allergenic foods in breastfed infants. March 4th 2016, at NEJM.org
The ITT analysis revealed a **20% reduction** in the prevalence of food allergy; **not statistically significant**

Per-protocol analysis revealed a **67% reduction** in the rate of overall food allergy that **was significant**

- **Breastfeeding** rates not negatively affected

- **75% reduction** in egg allergy in Early Introduction Group

- **100% reduction** in peanut allergy in Early Introduction Group
Case 2

- 14 week old baby boy
- Born by NVD, no concerns
- Exclusively breast fed
- Mild eczema on the cheeks at 3 months which responds to emollients
- Seems to be hungry, mum wants to wean onto solids
- FHx – Mum allergic rhinitis, dad allergic rhinitis. No other children.
Case 2 - Discussion

- Is this infant high risk for food allergies? Yes
- Mum wants weaning advice, nephew has food allergies – bit confused re different advice. What is the current advice in the UK?
- Do we need to do any tests? Probably not
- Can we prevent food allergy? Yes, if enough of the allergen is consumed regularly
Current and updated weaning advice

- WHO 2001: “breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants… As a global public health recommendation, infants should be exclusively breast fed for the first 6 months of life… thereafter, infants should receive nutritionally adequate and safe complementary foods while breast feeding continues…”
Current and updated weaning advice

- DOH, England:
  - Breastfeeding til 6 months is a desirable goal
  - Wean around 6 months and not before 4 months (17 weeks)
  - Potentially high allergenic foods do not need to be delayed until a certain age
Change in recommendations

Two prospective studies suggested that food allergy and eczema could be postponed by the late introduction of certain foods.\(^1,2\)

European guidelines recommend to ‘not deny or encourage’ exposure to highly allergenic foods after weaning.\(^5\)

1980-83

The avoidance paradigm was first challenged.\(^4\)

2000

The avoidance theory became part of infant feeding practices in the U.S.\(^3\)

2004

The first prospective, interventional study shows that early exposure to peanut protects against allergy in high-risk children.\(^6\)

2014

2015

References:

What now?

- Australian Consensus on Infant Feeding Guidelines:
  - When your infant is ready, at around 6 months, but not before 4 months, start to introduce a variety of solid foods, starting with iron rich foods, while continuing breast feeding.
  - All infants should be given allergenic solid foods including peanut butter, cooked egg, dairy and wheat products in the first year of life. This includes infants at high risk of allergy.
  - Hydrolysed infant formula is not recommended for the prevention of allergic disease.
What now?

- USA
- NIAID produced addendum guidelines for the prevention of peanut allergy in the USA
- Infants with severe eczema and/or egg allergy have introduction of peanut as early as 4-6 months
- Other food should be introduced first to show that the infant is developmentally ready
- SPT or SpIgE should be considered first
- Flow chart SpIgE <0.35 introduce at home, >0.35 refer for SPT
- SPT 0-2mm (home intro or SF), 2-7mm (SF or OFC), >8 = allergic
What now?

- UK

- No change yet but more likely to be like USA for high risk infants and like Australia for low risk
Case 3
Case 3

- Pregnant mum 37+5 weeks, G2 P1
- Mum has asthma and shellfish allergy
- Daughter (3 years) has eczema, peanut allergy and non-IgE milk allergy
- Dad – no atopy
- Planned NVD
- Wants advice on preventing allergies in her 2nd child
Case 3 - Discussion

☑ Is her new baby at high risk of allergies? Yes
☑ What options are available?
BEEP study

- Barrier Enhancement for Eczema Prevention
- 1395 families
- Results expected by 2019 (5 year study)
- Primary objective — does advising parents to apply emollient to their child’s skin for the first year of life, prevent the onset of eczema in high risk children
- Secondary objectives — rate of eczema, severity of eczema, risk of food allergy, risk of food allergen sensitisation, safety issues, cost effectiveness and long term effects
Case 3

- Born at 39 weeks
- Breast fed
- Mum moisturises the baby from birth (no eczema develops)
- At 3 months, mum is unwell with appendicitis and baby needs formula. Which formula?
Case 3 – which formula?

- Boyle et al. Hydrolysed formula and risk of allergic or autoimmune disease: systematic review and meta-analysis BMJ 2016; 352: i974 (open access)
- To determine whether feeding infants with hydrolysed formula reduces their risk of allergic or autoimmune disease
- Used prospective trials of hydrolysed CMF cf other formula
- No consistent evidence that partially or extensively hydrolysed formulas reduce the risk of allergic outcomes
- They did not support current guidelines (EU and Australia) that recommend the use of hydrolysed formula to prevent allergic disease in high risk infants
Take Home Messages...

- The early introduction of peanut and egg may protect against the development of peanut and egg allergy.
- The effectiveness of the early introduction of allergenic solids depends upon the quantity, regularity and persistence.
- Children presenting with established eczema and/or likely immediate food allergic reactions would benefit from specialist review.
- We await results from BEEP.
- No strong evidence for protective effect of Hydrolysed Formula in preventing allergy.
Any questions?
Acknowledgements

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