General Overview of Allergy in the UK

Dr Prathap Pillai
Specialist Registrar, Adult Allergy
KEY POINTS

ALLERGY IS A VERY COMMON AND IMPORTANT PROBLEM IN THE UK

ALLERGY IS ON THE INCREASE IN THE UK

UK IS A WORLD LEADER IN ALLERGY RESEARCH, BUT THERE ARE UNMET GAPS IN THE SERVICE PROVISION.
How common are allergies?

Allergies are very common

21 million adults in the UK have at least 1 allergy, i.e. ¼ to 1/3

Half of children and under-18s have one or more allergies

In the UK, £900m per year is spent on allergies in primary care and £68m on allergy-related hospital admissions.
Allergy on the increase

The numbers are increasing every year

The reason for the rise is unclear

Theories

- Cleaner homes or immune system unexposed to bugs?
- Lack of vitamin D
- Poorer diet
- Delayed weaning (Introduction of solid foods)
- Increased use of paracetamol
Mystery rise in children suffering food allergies “Independent, UK” – News Report

Hospital admissions for food allergies among children have risen by 500 per cent in the last 20 years. Overall, 6-8 per cent of children under three are affected by food allergies, a dramatic increase since 1990.

• **Actual rise?**
  - A study of 1,000 children living on the Isle of Wight showed that 33 per cent of parents believed their child had some reaction to food.
  - Testing revealed that the actual number with an immediate allergy was much lower, at 5 per cent.
  - Perhaps over-diagnosed from the public side and underdiagnosed by medical staff.
Time trends in the prevalence of peanut allergy: three cohorts of children from the same geographical location in the UK

Cohort A: Born in 1989; Cohort B: Born between 1994-96; Cohort C: Born between 2001-02
Change in the pattern of allergy

Allergy are increasing throughout the world, affecting up to 30-35% of people at some stage in their lives.

This increase was initially seen in countries such as the UK, Europe and USA; but can now be found in all countries undergoing industrial development.

Initially, the increase was in asthma and allergic rhinitis (hay fever).

However, recent studies have confirmed a significant increase in the incidence of food allergies, in particular amongst children.
What are the most common allergies?

The most common allergies are to:

• Pollen – Hay Fever, Asthma
• Dust mites – Rhinitis, Asthma
• Mould - Asthma
• Wasps and bees – Venom Allergy
• Pets such as cats and dogs – Asthma, Hay Fever
• Industrial and household chemicals – Asthma, Rhinitis
• Foods such as milk, nuts and eggs – Food Allergy

Also fruits, medicines such as penicillin, metals such as nickel in jewellery, and rubber.
What are the main allergy symptoms?

- Sneezing
- Runny nose
- Itchy eyes
- Wheezing
- Coughing
- Itchy skin rashes (hives)
- Anaphylaxis

The type of symptoms you experience depends on what you are allergic to and how you come into contact with it.
Key UK Organisations

- Allergy Academy
  - Leading the fight against allergy
- Anaphylaxis Campaign
  - Supporting people with severe allergies
- Royal College of Paediatrics and Child Health
  - Lending the way in Children's Health
- BSACI
  - Improving allergy care through education, training and research
- Royal College of Physicians
- National Eczema Society
- Asthma UK
- Latex Allergy Support Group

Guy’s and St Thomas’ NHS Foundation Trust
Allergies are the most common chronic disorder in children and prevalence has dramatically increased in the last 25 years. The UK has one of the highest prevalence’s of asthma, rhinitis and eczema in the world. Several reports have highlighted the need for improved allergy services, awareness and education in the UK. There is no national allergy strategy, but NICE has published guidance on how allergy should be diagnosed and managed. Despite the UK position as a world leader in allergy research, the provision of care is widely criticised. Further research into the mechanisms underlying allergy development would improve diagnosis and treatment and inform policy development.
THANK YOU
Preventing Food Allergy

Prof Gideon Lack
Overview

• Background & Study Design
• Clinical Outcomes
• Immunological Outcomes
• Public Health Implications
• Conclusions
Background

Prevalence of Peanut Allergy in Children 4 - 18yrs

Peanut Protein Consumption 8 - 14 months

LEAP Study Design

Recruitment: 2006 - 2009

n = 640 infants with severe eczema and/or egg allergy

Age at clinic visits: 4-11 months, 12 months, 30 months, 60 months

Intervention group; SPT-Positive Stratum (n=47)

Intervention group; SPT-Negative Stratum (n=272)

Control Group; SPT-Positive Stratum (n=51)

Control Group; SPT-Negative Stratum (n=270)

n=319

n=321
Recommended Dietary Interventions

- **Consumption**: 2 g of peanut protein 3 times per week for duration of study.
- Bamba or peanut butter from infancy, whole peanuts could be added after 3 years of age

- **Avoidance**: Avoid peanut consumption
Actual Peanut Consumption

Consumption of peanut protein median per week (IQR)

- Avoidance group 0.0 g (0.0-0.0)
- Consumption group 7.7 g (6.7-8.8)

• Equivalent to:
Peanut Protein in Bed Dust at 60 months of age

The box in these plots represents the median and IQR. The whiskers represent the furthest point within 1.5 times the IQR from the box.
To eat or not to eat...
Intention-to-Treat Analysis

SPT-Negative Cohort
(N=530)
P<0.001

<table>
<thead>
<tr>
<th>Avoidance Group</th>
<th>Consumption Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.7%</td>
<td>1.9%</td>
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</tbody>
</table>

86% Relative Reduction
Intention-to-Treat Analysis

**SPT-Negative Cohort (N=530)**
- Avoidance Group: 13.7%
- Consumption Group: 1.9%
- Relative Reduction: 86%
- P<0.001

**SPT-Positive Cohort (N=98)**
- Avoidance Group: 35.3%
- Consumption Group: 10.6%
- Relative Reduction: 70%
- P=0.004
Intention-to-Treat Analysis

SPT-Negative Cohort (N=530)
- Avoidance Group: 13.7%
- Consumption Group: 1.9%
- Relative Reduction: 86%
- P<0.001

SPT-Positive Cohort (N=98)
- Avoidance Group: 35.3%
- Consumption Group: 10.6%
- Relative Reduction: 70%
- P=0.004

Both Cohorts (N=628)
- Avoidance Group: 17.2%
- Consumption Group: 3.2%
- Relative Reduction: 81%
- P<0.001
## Primary Outcome by Race

<table>
<thead>
<tr>
<th>Race</th>
<th>Avoidance Group</th>
<th>Consumption Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>13.0%</td>
<td>3.2%</td>
</tr>
<tr>
<td></td>
<td>p-value &lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Mixed</td>
<td>30.8%</td>
<td>2.1%</td>
</tr>
<tr>
<td></td>
<td>p-value &lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>44.4%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>n= 24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>p-value=0.012</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>23.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>n=48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>p-value = 0.025</td>
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Safety

• Serious Adverse Events (SAEs)
• Adverse Events (AEs)
• Hospitalisation Rates
• Participants Who Discontinued Peanut
• Challenge Safety
### Serious Adverse Events

<table>
<thead>
<tr>
<th></th>
<th>Avoidance</th>
<th>Consumption</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of events</td>
<td>101</td>
<td>89</td>
<td>0.41</td>
</tr>
<tr>
<td>No. with at least one SAE</td>
<td>70 (21.8%)</td>
<td>61 (19.1%)</td>
<td>0.4</td>
</tr>
<tr>
<td>Ever hospitalised</td>
<td>52 (16.2%)</td>
<td>50 (15.7%)</td>
<td>0.86</td>
</tr>
</tbody>
</table>

### Adverse Events

<table>
<thead>
<tr>
<th></th>
<th>Avoidance</th>
<th>Consumption</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of events</td>
<td>4,287</td>
<td>4,527</td>
<td>0.02</td>
</tr>
<tr>
<td>No. with at least one AE</td>
<td>99.4%</td>
<td>99.7%</td>
<td>0.45</td>
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</tbody>
</table>
Peanut Skin Prick Test Wheal Sizes

Age at Visit (mo)

Peanut Avoidance

Peanut Consumption

Peanut Wheal (mm)

Trajectories of Participants with Peanut Allergy at 60 mo

Group Mean

Density of Distribution

Participants with Peanut Allergy at 60 mo

Participants without Peanut Allergy at 60 mo
LEAP Study Conclusions

- **Peanut consumption** beginning in the first year of life prevents **peanut allergy** in a high-risk population.
  - 86% reduction in the SPT-negative stratum
  - 70% reduction in the SPT-positive stratum
- **Both primary and secondary prevention** effective
- Prevention is **effective in all races**
- Peanut consumption in high-risk children is **safe**
- **Prevention of allergy** is associated with an **early and sustained rise in IgG and IgG4** and a later and progressive suppression of high levels of peanut-specific IgE production.
EAT Study - Early Weaning Trial

Pregnant women 20/40 scan

1302 subjects

Early weaning onto allergenic foods

Randomization (3 months)

Current weaning recommendations

3 year assessment

Food allergy
Eczema
Atopic wheeze
Cumulative allergy

www.eatstudy.co.uk
Randomized Trial of Peanut Consumption in Infants at Risk for Peanut Allergy

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- Rho Federal Systems Division
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- Families helped us achieve:
  - 98.4% retention over 5 years,
  - 92% compliance with intervention,
  - OFC in 96%,
  - Near complete blood draws at all time points
ADAPTrial: A new treatment for Severe Childhood Eczema?

Dr Susan Chan
Clinical Research Consultant
Honorary Senior Lecturer
Children’s Allergy Service
Eczema
Treatments

Moisturisers

Wraps

Steroid creams

Calcineurin inhibitors
What next?

- **Systemic treatments:**
  - Azathioprine
  - Ciclosporin
  - Methotrexate
  - Mycophenolate mofetil
  - Prednisolone (oral steroids)
  - UV therapy

- **Potential side effects**
  - Suppressed immune system
  - Liver toxicity
  - Kidney toxicity
  - Gut symptoms
  - Cancer
Anti-IgE (Xolair/omalizumab)
Antibodies
Antibodies
Allergic reaction

Mast cell with IgE bound to surface

Allergen cross-links IgE on mast cell surface

Mediators (e.g., histamine) released from mast cells
Allergic reaction

Mast cell with IgE bound to surface

Allergen cross-links IgE on mast cell surface

Mediators (e.g., histamine) released from mast cells
6 year old: medication for eczema

- Optimal topical management
- Prednisolone (oral steroids): Cushingoid features
- Azathioprine: Stopped (no significant improvement)
- Methotrexate orally: Stopped (no significant improvement)
- Methotrexate subcutaneously: Eczema remained severe
- Xolair subcutaneously
Pre Xolair treatment
2 months of Xolair treatment
• Atopic Dermatitis Anti-IgE Paediatric Trial
• Severe eczema despite topical therapy
• Systemic therapy is being considered/has failed
• Target underlying allergy
• Favourable side effect profile

ADAPT@gstt.nhs.uk  www.ADAPTrial.com  020 7188 7188 Ext. 54293
Children 4-19 years old

+ Severe eczema
despite optimum topical therapy

+ Food allergy / Rhinitis / Asthma

ADAPT@gstt.nhs.uk    www.ADAPTrial.com    020 7188 7188 Ext. 54293
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