

Food Allergy in children

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Declarations

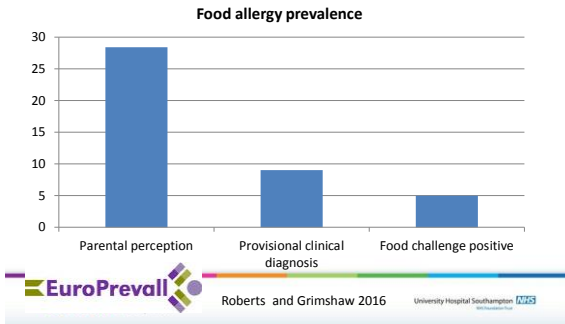
- Educational sponsorship
 - ALK Abello – Epipen
 - Meda Pharmaceuticals – JEXT
 - Allergy Therapeutics
- Research and scientific advisory
 - Danone Nutricia
 - Public Health England
- Teaching faculty
 - Allergy MSc University of Southampton



Learning objectives



Food allergy in < 2 years old



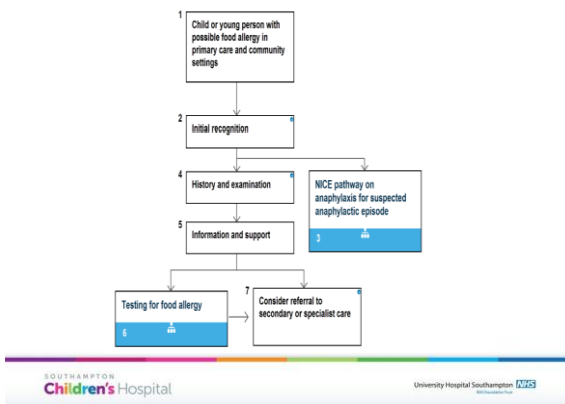
NHS
National Institute for
Health and Clinical Excellence

Food allergy in children and young people

Implementing NICE guidance

February 2011

NICE clinical guideline 116



NICE Recommendations

The recommendations cover the six following key areas:

- Assessment and allergy-focused clinical history
- Diagnosis of IgE-mediated food allergy
- Diagnosis of non-IgE-mediated food allergy
- Providing information and support
- Referral to secondary or specialist care
- Alternative diagnostic tools



When to suspect food allergy

- Immediate reaction to food
- Non response to standard therapy in
 - Atopic dermatitis
 - Gastro-oesophageal reflux disease (GORD)
 - Constipation
 - Chronic gut symptoms



Case - 1

- 8 month old girl
- First serving of scrambled egg
- Immediate hives around mouth
- Vomits
- Becomes lethargic and rash becomes more generalised
- -> 999 observed in A&E settled and discharged



Case - 2

- 6 year old boy
- Eats Chinese take away with cashew nuts
- Next day awakes with swollen face and eyes, hives
- Takes three days to settle down

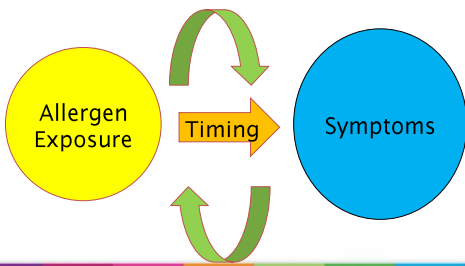


Allergy focused history

- History of reaction
- Personal history of allergic disease
 - Asthma eczema hay fever other food allergy
- Family history of allergic disease
 - Immediate family only

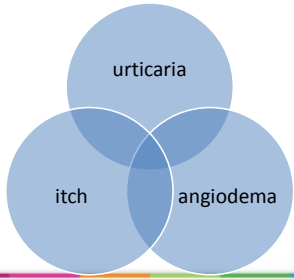


The anatomy of an allergic reaction





urticaria



Spot the difference

Food allergy

- EATS Hx
- Atopic

Urticaria

- Unrelated to exposure
- Physical triggers
- Lasts for days
- Photos
- Non atopic



Neurologic
Dizziness, weakness, syncope, seizures

Eye
Pruritus, conjunctival injection, lacrimation

Nose
Pruritus, congestion, sneezing, clear rhinorrhea

Upper airway
Hoarseness, stridor, oropharyngeal or laryngeal edema, cough, complete obstruction

Cardiovascular
Tachycardia, hypotension, arrhythmias, cardiac arrest

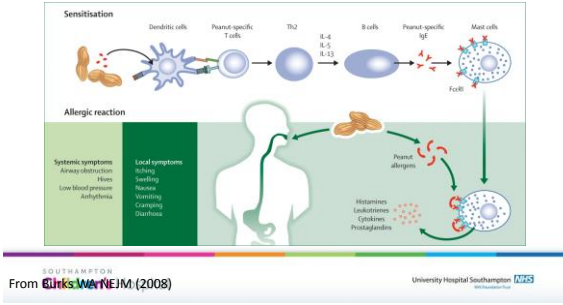
Lower airways
Chest tightness, dyspnea, tachypnea, use of accessory muscles, cyanosis, bronchospasm, respiratory arrest

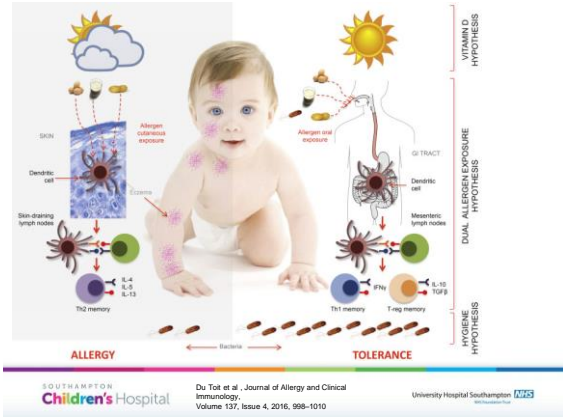
Skin
Sensation of warmth, flushing, erythema, general pruritus, urticaria, angioedema

Gastrointestinal
Nausea, vomiting, cramping abdominal pain, diarrhea (often bloody)

Anaphylaxia

Mechanisms of primary IgE mediated FA





Case 3

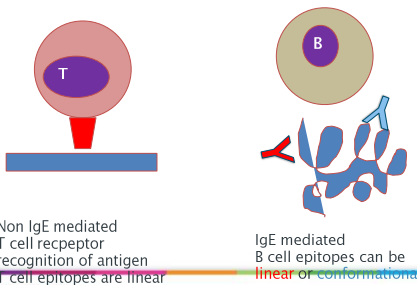
- 4 month old boy exclusively breast fed
- First bottle of formula
- Immediate localised hives and vomiting
- Parent try same next day with similar results

Case 4

- 3 month old girl breast fed
- Unsettled, cries and arches when laid flat
- vomits 3-4 x day - at least half feed volume
- Poor sleep
- Explosive loose stool
- Generalised eczema seems to be getting worse
- Thriving



Types of food allergy



Non IgE mediated
T cell receptor
recognition of antigen
T cell epitopes are linear

IgE mediated
B cell epitopes can be
linear or conformational



Allergen exposure

- Current food avoidance
- Suspected allergen
- Prior exposures
- 95 % of paediatric food allergy is on first known exposure
- Sx with fresh fruit and veg suggests oral allergy syndrome



Infant exposure to cows milk

Infant Formula



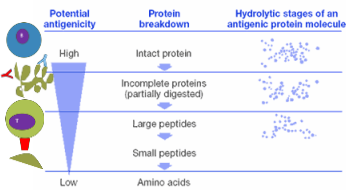
Human milk



Exposure

Non IgE	IgE
Eating	Eating
Through breast milk	Skin contact
	Rarely inhaled as food aerosols

Residual epitopes in formulas



- Normal
- Partially hydrolysed
- Cows Milk in breast
- Extensively hydrolysed
- Amino acids

Common food allergens (EU)



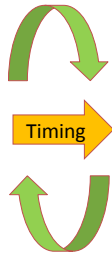
Allergens

Non IgE	IgE
Milk	Milk, egg, peanut, tree nuts
Soy	Wheat and fish
Rarely egg and wheat	Other EU label allergens
	Non EU label allergens – kiwi lentil chickpea
	Rare allergens occur as part of picture of multiple allergic sensitisation an not in isolation



Causality

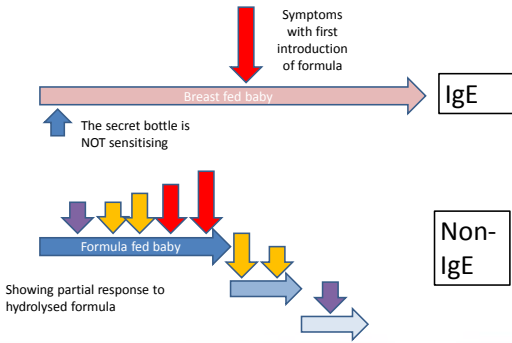
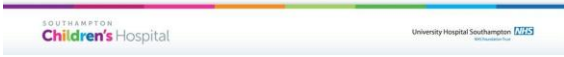
- Speed of onset of symptoms
- Reproducibility
- Consumption of food before or after event?
- Exposure to cross reactive allergens?

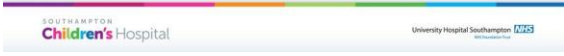




Timing

Non IgE	IgE
Vomiting with minutes to several hours	Immediate
Ecematous skin flare in hours	Within 30 minutes
Symptoms can be insidious and relationship to food may only be clear on exclusion diet for 2-4 weeks	Within 2 hours rare
	Biphasic reaction are later but associated with immediate symptoms that then clear
	Symptoms have gone within 12 hours





Rapid progression of IgE mediated symptoms



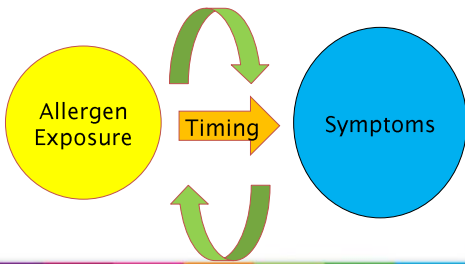


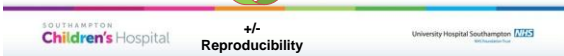
Symptoms

Non IgE	IgE
Confined to skin and gut	Start where allergen contact occurred – normally mouth itch
Eczema	Multisystem disease mucosa, gut, skin, respiratory, neurological, cardiovascular if severe
Gut dysmotility	
FTT and oedema is rare	



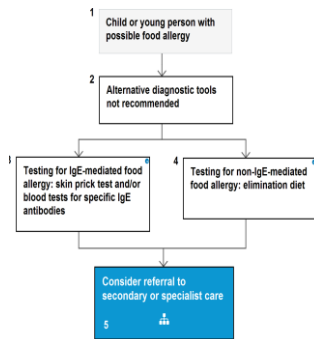
Summary





Diagnosis of IgE mediated food allergy





Diagnosis of IgE-mediated food allergy (1)

- If IgE-mediated food allergy is suspected,
 - offer a skin prick test
 - and/or blood tests called specific IgE (RAST)
- Skin prick tests should only be undertaken where there are facilities to deal with an anaphylactic reaction



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Allergy Diagnostics: Pros and cons

- | | |
|--|--|
| <p>Skin Prick testing</p> <ul style="list-style-type: none"> • Same day results • Requires skilled staff • Small risk of reaction • Need skilled interpretation • Less expensive | <p>Specific IgE</p> <ul style="list-style-type: none"> • Delayed results • Skilled Laboratory • Blood test in a child • Need skilled interpretation • More Expensive |
|--|--|

Alternative diagnostic tools

- Do not use these in diagnosis:
 - Vega test
 - applied kinesiology
 - hair analysis
 - serum-specific IgG (York Labs)



Providing information and support

Providing information and support



- The primary principle is food allergen avoidance
- Patient and family education is key

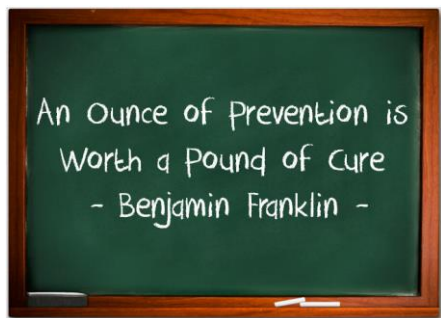
Providing information and support

- Offer information that is age-appropriate
- Offer information that is relevant to the type of allergy
- If a food elimination diet is advised, information given should take into account socioeconomic, cultural and religious issues
- Consider referral to a registered dietician
- Offer information about the support available and details of how to contact support groups



Dietary advice in food allergy

- Avoidance
 - Prevent further reactions
- Prevention
 - Early introduction of highly allergenic foods
- Treatment
 - Use of cake for treatment of egg allergy
 - DON'T advise small amounts of peanut in peanut allergy!





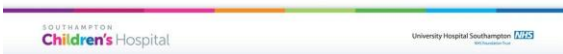
Primary prevention strategies for atopic disease

- Skin barrier protection
 - Reduced bathing
 - Emollients
- Pregnancy and lactation
 - Inclusive maternal diet
 - Hydrolysed formula
- Infant feeding
 - Early introduction dairy protein, egg, peanut
 - LEAP study
 - EAT study



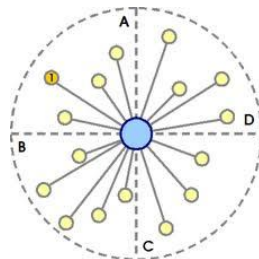
Referral to secondary or specialist care

Specialist children's allergy clinic



Secondary and tertiary care

1. A dietician
2. General paediatrics
3. A paediatrician with an interest in allergy
4. A paediatric allergist in a regional centre



Referral

- Suspected IgE mediated food allergy
 - For diagnosis information and support
- Suspected non IgE who will continue on a dairy free diet
 - Paediatric dietician to manage the condition



3 Ps for secondary care referral

- Prudence
- Perplexed
- Parents



3 Ps for secondary care referral

- Prudence
 - acute systemic reactions
 - severe delayed reactions
 - IgE-mediated food allergy and asthma
 - faltering growth in combination with one or more of the gastrointestinal symptoms
- Perplexed
- Parents



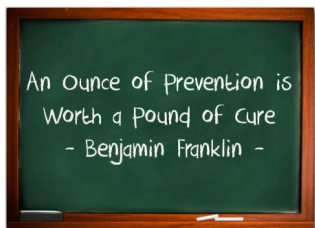
3 Ps for secondary care referral

- Prudence
- **Perplexed**
 - strong clinical suspicion of IgE-mediated food allergy
 - not responded to a single-allergen elimination diet
 - Allergy test results are negative
- Parents



3 Ps for secondary care referral

- Prudence
- Perplexed
- **Parents**
 - significant eczema where multiple or cross-reactive food allergies are suspected by the parent
 - persisting parental suspicion of food allergy



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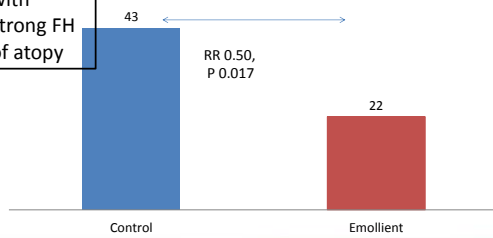
www.southampton.ac.uk/allergy



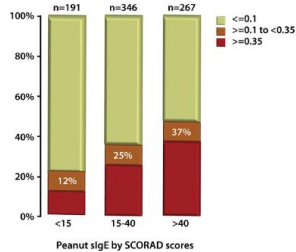
Emollient as primary prevention for eczema

- High risk infants with strong FH of atopy

Proportion of with eczema at 6 months

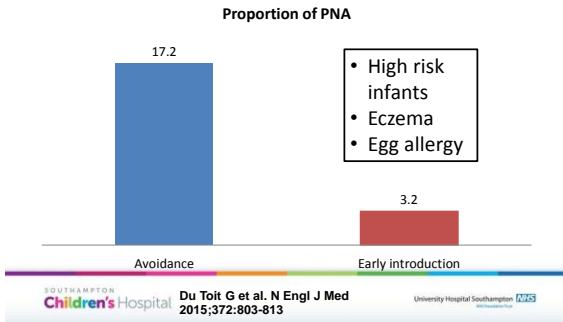


Eczema is risk factor food allergy



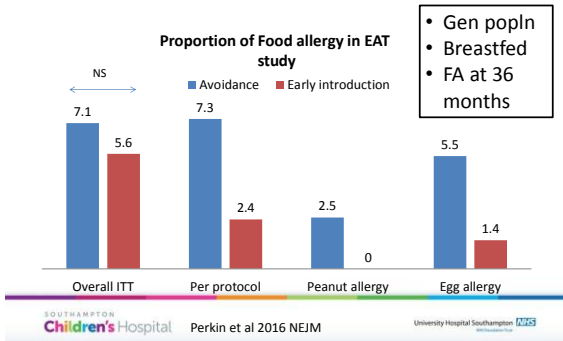


Results of the LEAP study





The EAT study



Who is at high risk of atopy?

- Family history of atopy
 - 40-60% risk of eczema in child
- Severe eczema in infancy
 - Increases risk of food allergy up to 75%
- Sibling with peanut allergy
 - 7-11 fold risk of peanut allergy in child

Unanswered questions

- How do we apply this knowledge in primary care?
- What is the role of allergy testing to guide therapy?
- How does it affect the atopic march?



Assessment: An allergy-focused clinical history

If food allergy is suspected, a healthcare professional should take an allergy-focused clinical history, and physically examine the child based on the findings.[1.1.3]



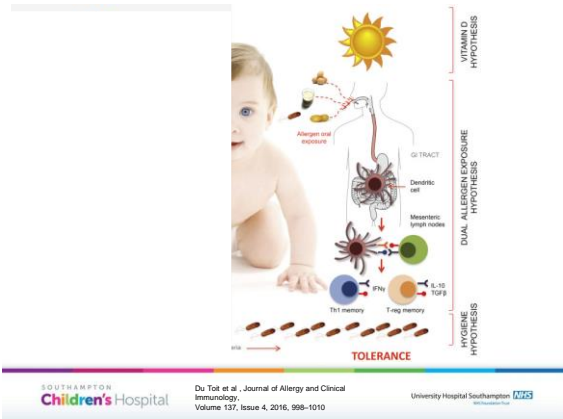


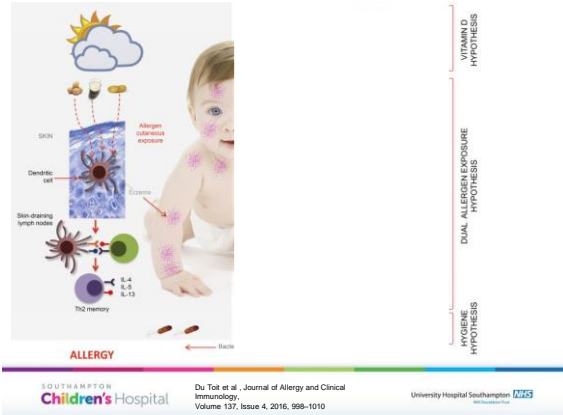
Referral to secondary or specialist care



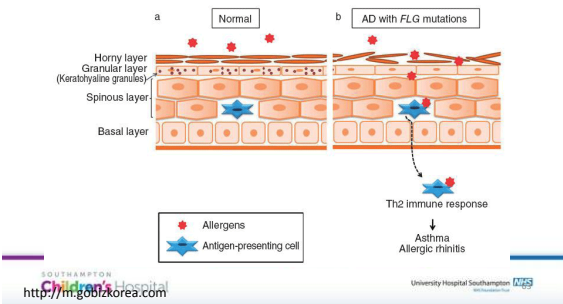
Based on the allergy-focused clinical history, consider referral to secondary or specialist care if

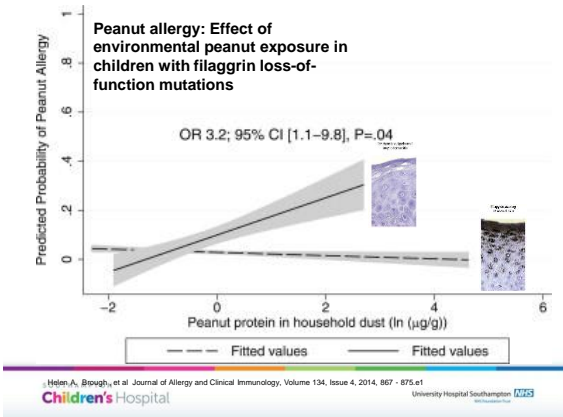




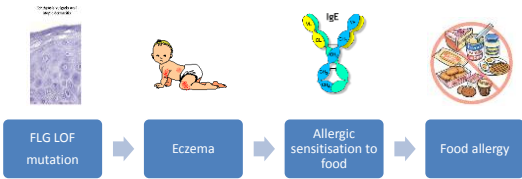


FLG is key to skin barrier integrity





Causal relationship between filaggrin and FA



Results of pathway analysis of FILAFFAL study of IOW cohort data
