

Food allergy in children

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Aims

- Understand something of the epidemiology of childhood food allergy in NZ
- Review an approach to
 - Diagnosis
 - Investigation
 - Management
- Consider appropriate referral guidelines
- A bit about non-IgE
- Thoughts on
 - Prevention strategies
 - The future

Epidemiology

HealthNuts Study, Melbourne

- Population based study, recruited vaccination clinic
- 2848 infants (73% participation)

Positive allergy test

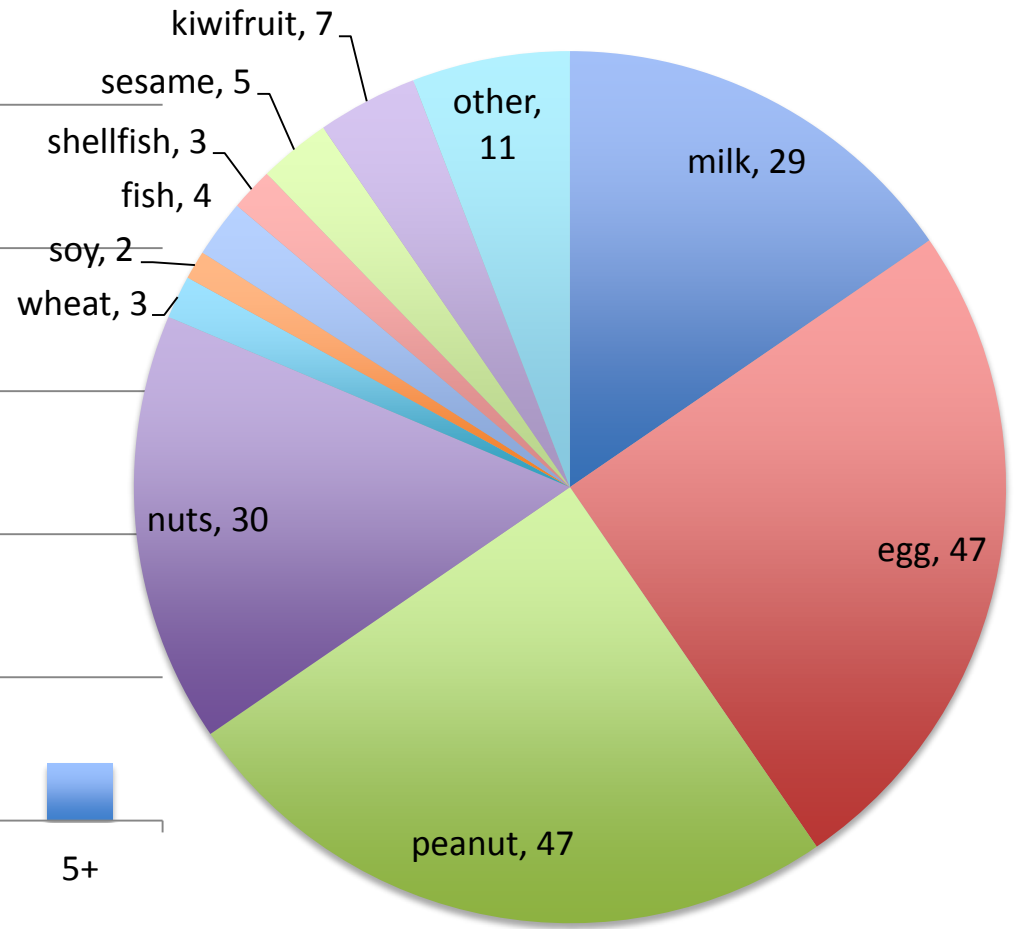
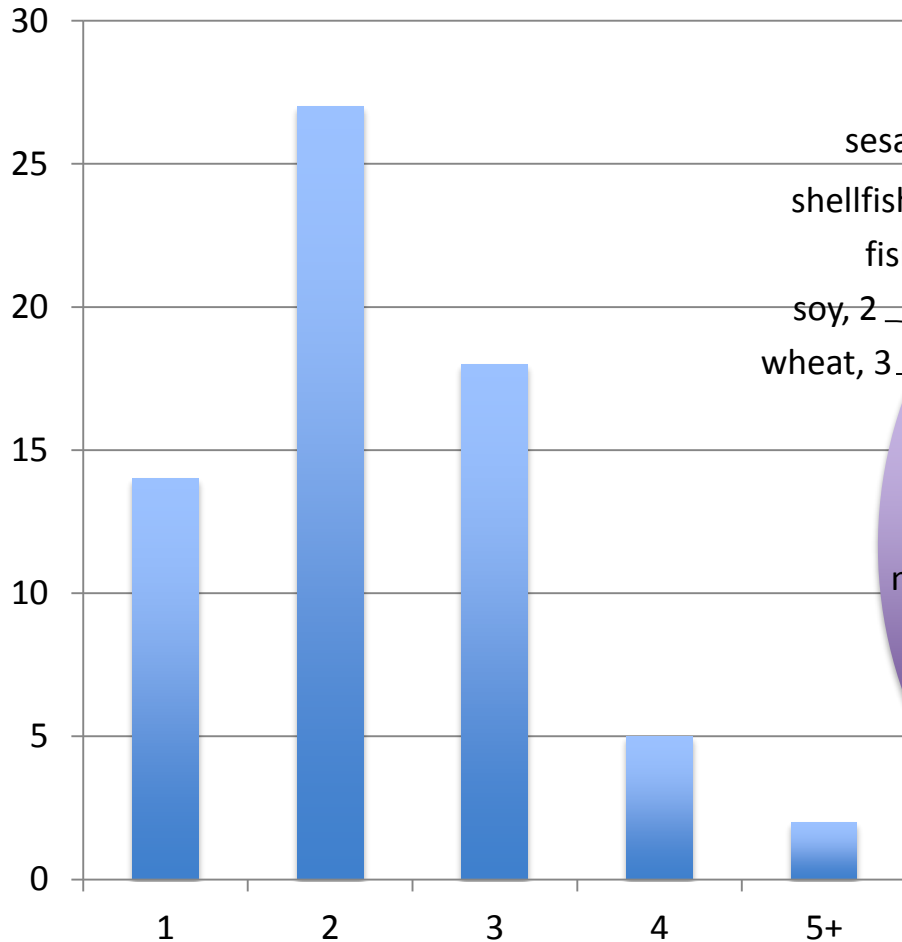
Clinical allergy

	Sensitisation	Allergy
Peanut	8.9%	3%
Egg white	16.5%	8.9% (80% tolerate baked egg)
Sesame	2.5%	0.8%
Milk	5.6%	
Shellfish	0.9%	

My epidemiology

per child n=66

Allergies to



Case 1

- A 6 month old girl had cow's milk at breakfast and comes to see you with scattered urticaria. She is otherwise well.
- What else do you need to know?

The history

Lack NEJM 2008

Table 3. Medical History in a Workup for Food Allergies.

Question	Possible Significance
What is the suspected food allergen?	Consider whether the allergen is typical for the patient's age and population.
Was the suspected food allergen ingested, inhaled, or touched?	A proportion of patients have a reaction after inhalation of or contact with the allergen.
Does the patient have an aversion to the suspected allergen?	Generally patients dislike and refuse food containing the allergen.
How soon after exposure to the suspected food allergen did the symptoms occur?	IgE-mediated allergic reactions usually occur within 20 minutes after the exposure and certainly within 2 hours after the exposure.
What are the specific symptoms and how severe are they?	If the symptoms are not typical of food allergy, consider a differential diagnosis; if the symptoms are severe, alteration of the emergency management plan may be necessary.
How long did it take for the symptoms to resolve?	The typical time to symptom resolution after reaction to food is 4–12 hours.
How reproducible are the symptoms with previous or subsequent ingestion?	A patient is unlikely to have a reaction to a food just one time, although reactivity may vary depending on factors such as preparation (e.g., depending on whether the egg is raw or cooked and how much antigen it contains).
Does exercise precipitate the symptoms?	Exercise that precipitates symptoms may suggest a diagnosis such as food-dependent, exercise-induced anaphylaxis.*

* In food-dependent, exercise-induced anaphylaxis, a patient tolerates a specific food without a clinical reaction and separately tolerates exercise. If the food is eaten within 2 hours before or after exercise, anaphylaxis may occur.

Case 1

- You see a 6 month old girl who had cow's milk at breakfast. She has scattered urticaria but is otherwise well.
 - What else do you need to know?
-
- First exposure
 - Onset within 5 minutes of 10ml formula
 - Resolved over next 4 hours
 - No other signs of symptoms
 - Has variety solids including wheat and soy (as ingredient in bread)
 - No egg or peanut as yet

Should you bother testing?

- Case of SP
 - 1 year old with anaphylaxis
 - Symptoms immediately after 1 tsp scrambled egg
 - Seen in CED at Starship, Rx adrenaline
 - Previous rash with muffin containing egg
 - SPT egg 0mm sslgE 0KuA/I
 - Egg challenge -> tolerated
- **Test**
 - **Confirm diagnosis & prevent unnecessary avoidance**
 - **Inform re natural history**

Case 1 – what to test?

Guidelines for the Diagnosis and Management of Food Allergy in the United States: Report of the NIAID-Sponsored Expert Panel

Boyce JACI 2010

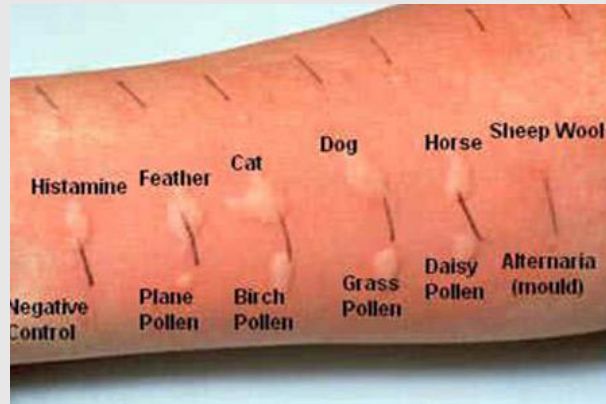
- The EP concludes that insufficient evidence exists to recommend routine FA testing prior to the introduction of highly allergenic foods (such as milk, egg, and peanut) in children who are at high risk of reacting to the introduction of such foods.
- However, widespread SPTs and sIgE tests are not recommended because of their poor predictive value. These tests would lead to many clinically irrelevant results and unnecessary dietary restrictions, especially if unconfirmed by oral food challenges.

Case 1 – what to test?

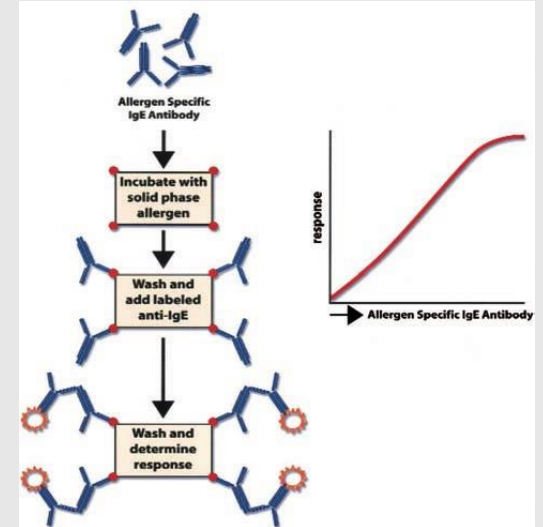
- The culprit
- Avoid panels
 - Don't test anything that is already tolerated
- Pros and cons of testing common allergens not yet tolerated
 - Consider egg and peanut

Case 1 – how to test?

SPT



ssIgE



Pros and cons

Timely
Easy
Safe

Take time
Cost
Less sensitive

Both

Strength of positivity of test \propto likelihood true allergy

Neither

Predict severity of allergic reaction

Case 1

- Histamine 5mm
- Saline 0mm
- Cow's milk 6mm
- Egg 10mm
- Peanut 0mm

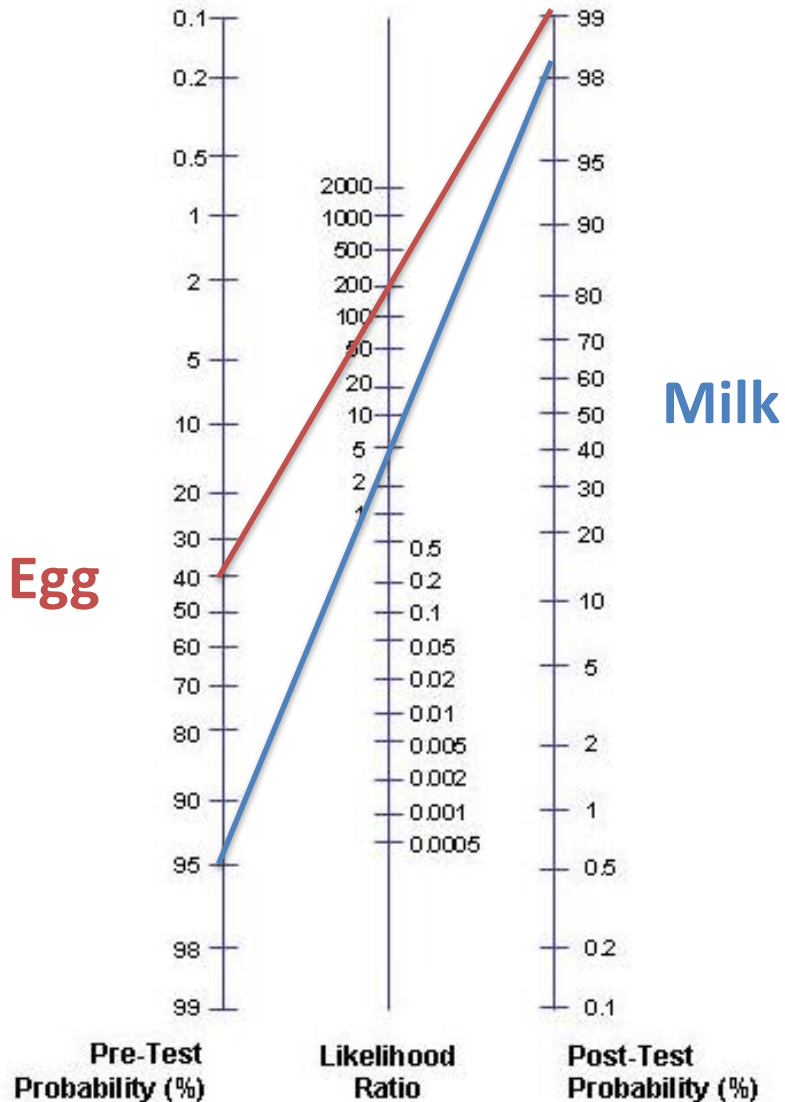
Skin test food allergy testing

Skin tests 95% predictive of reaction at food challenge

Milk		8mm
	In infants <2yr	6mm
Egg		7mm
	In infants <2yr	5mm
Peanut		8mm
	In infants <2yr	4mm

- Wheat and soy – more difficult to predict

Fagans nomogram



Pre test probability
(Patient history
Epidemiology)

+

Likelihood ratio

↓

Post test probability

Case 1

- Histamine 5mm
- Saline 0mm
- Cow's milk 6mm
- Egg 10mm
- Peanut 0mm

- Cow's milk allergy

- Egg sensitised

- Should start eating peanut butter



Avoid milk & egg

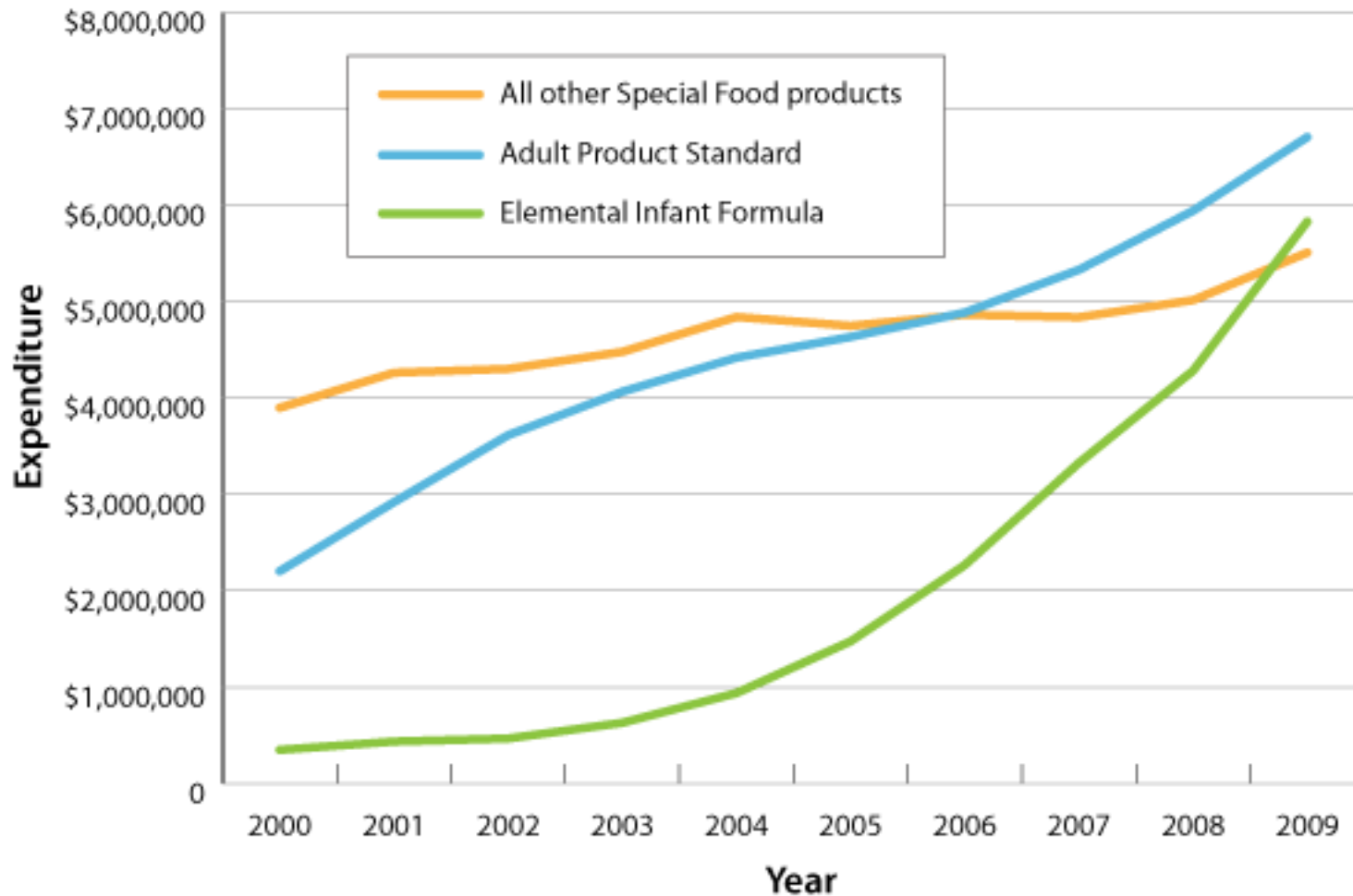
Consider dairy alternative

Consider milk & egg in baking

Cow milk alternatives

Syndrome	Onset of reaction	Maternal elimination of CMP if breastfeeding?	Choice of formula		
			First [†]	Second (if first not tolerated)	Third (if second not tolerated)
Immediate reaction					
Immediate food allergy	< 1 h	Yes	eHF (< 6 months)	AAF	—
			Soy (> 6 months)	eHF	AAF
Anaphylaxis	< 1 h	Yes	AAF (followed by urgent consultation with paediatric allergist)	—	—
Food protein-induced enterocolitis syndrome	1–3 h	No	eHF	AAF	—

Why PHARMAC changes?



PHARMAC - eHF

INITIAL APPLICATION

Applications only from a dietitian, relevant specialist or vocationally registered general practitioner. Approvals valid for 6 months.

Prerequisites (tick boxes where appropriate)

Cows milk formula is inappropriate due to severe intolerance or allergy to its protein content

and

Soy milk formula has been trialled without resolution of symptoms

or

Soy milk formula is considered clinically inappropriate or contraindicated

- NZ eHF = Pepti Junior®
 - Some large molecules compared with other eHF
 - Risk allergic reaction including occasional anaphylaxis
- Care especially if past reaction to small dairy exposure
 - Start with small amounts, day time hours

PHARMAC - AAF

INITIAL APPLICATION

Applications only from a dietitian, relevant specialist or vocationally registered general practitioner. Approvals valid for 6 months.

Prerequisites (tick boxes where appropriate)

Extensively hydrolysed formula has been reasonably trialed and is inappropriate due to documented severe intolerance or allergy or malabsorption

or

History of anaphylaxis to cows milk protein formula or dairy products

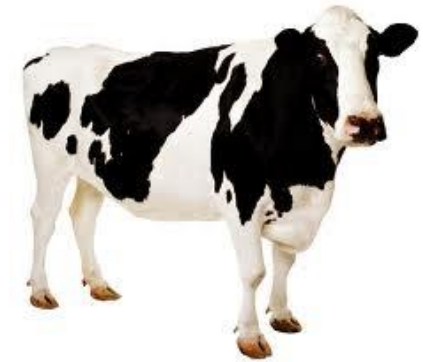
or

Eosinophilic oesophagitis

- NZ options Neocate® and Elecare®
- Sometimes taste preference

Soy as alternative

- Not cross reactive with cow's milk



- Cons: phytoestrogens, aluminium
- Pros: ? Cardiovascular
- Long term follow up
 - Normal health and reproductive outcomes @ 20-34yr follow up of individuals fed soy (n=248) or cow milk (n=563) from birth

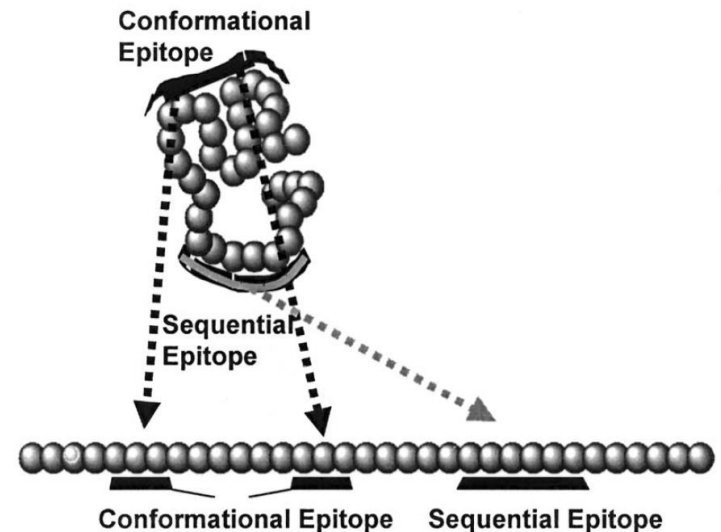
Case 2

- 1 year old
 - Eats most things including milk, wheat, soy, peanut, fish, plus has cake and muffins
 - Skin contact raw egg resulted in urticaria
 - Ate ½ scrambled egg x 1 with vomiting, tasted quiche without problems
 - Now refuses lightly cooked egg

- Egg sIgE 4.5KuA/l

- Management?

- Referral?



ssIgE (aka RAST, EAST)

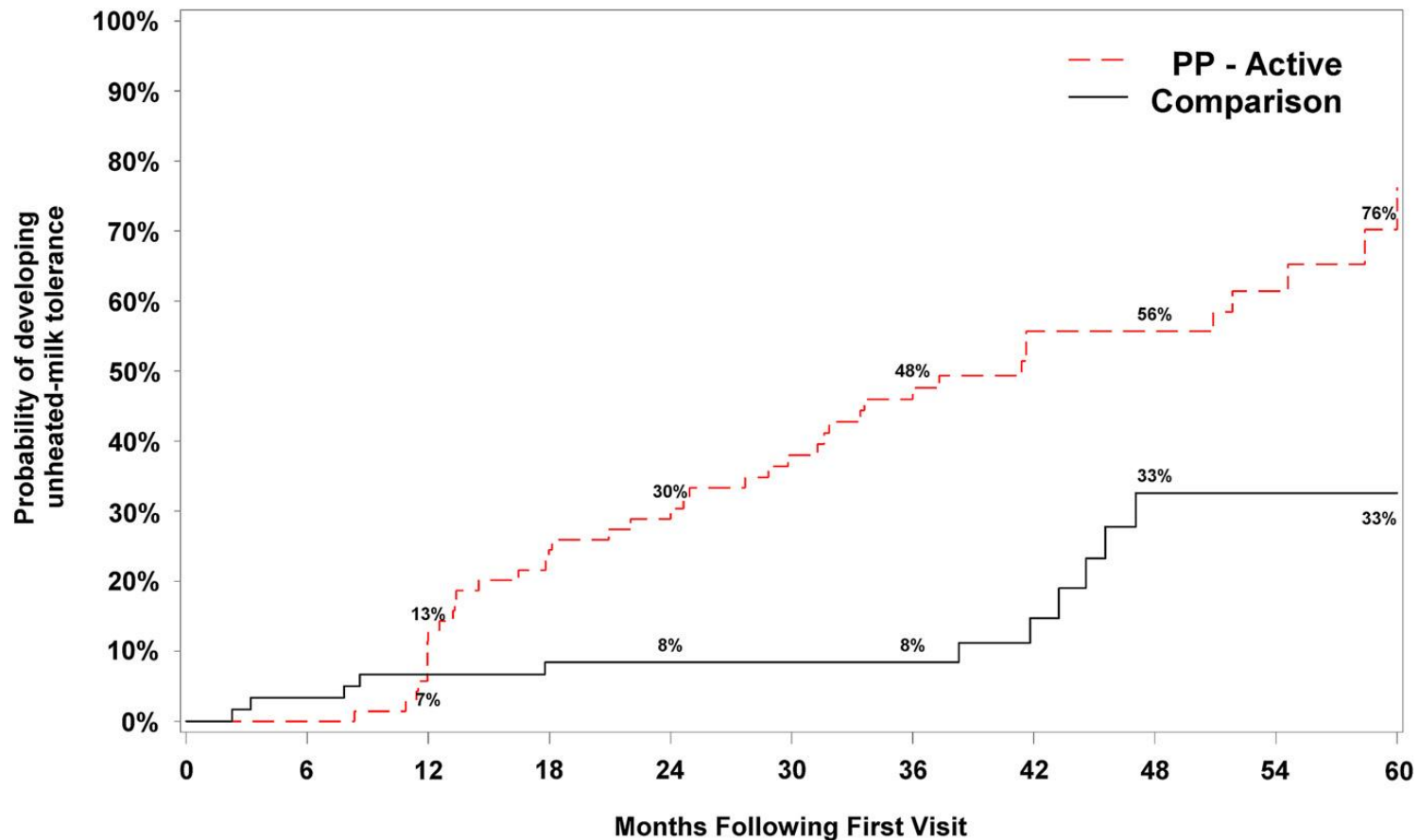
ssIgE tests 95% predictive of reaction at food challenge

Milk		15 u/ml
	In infants <2yr	5 u/ml
Egg		7 u/ml
	In infants <2yr	2 u/ml
Peanut		15 u/ml
Tree nuts		15 u/ml
Fish		20 u/ml

Food allergy management

- Avoidance
 - Most foods “all or nothing”
 - With milk and egg 75% of patients will tolerate these allergens as ingredient in well baked foods
 - Ingestion in that form may promote tolerance
 - Discuss precautionary labeling
 - Consider dietetic assistance
 - Nutritionally important foods or difficult to avoid allergens
- Action plan
 - www.allergy.org.au
- Follow up for possible resolution

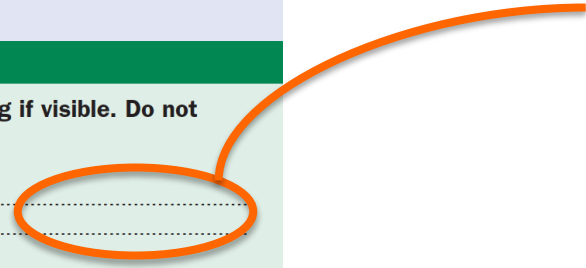
Let them eat cake (made with milk)?



Action plan

Loratadine or
cetirizine

Don't use sedating
antihistamine
unless you want
the patient to go to
sleep



MILD TO MODERATE ALLERGIC REACTION

- Swelling of lips, face, eyes
- Hives or welts
- Tingling mouth
- Abdominal pain, vomiting (these are signs of a severe allergic reaction to insects)

ACTION

- **For insect allergy, flick out sting if visible. Do not remove ticks.**
- Stay with person and call for help
- Give medications (if prescribed)
Dose:
- Phone family/emergency contact

**Mild to moderate allergic reactions may
or may not precede anaphylaxis**

Watch for any one of the following signs of anaphylaxis

ANAPHYLAXIS (SEVERE ALLERGIC REACTION)

- Difficult/noisy breathing
- Swelling of tongue
- Swelling/tightness in throat
- Difficulty talking and/or hoarse voice
- Wheeze or persistent cough
- Persistent dizziness or collapse
- Pale and floppy (young children)

ACTION

- 1 Lay person flat. Do not allow them to stand or walk.
If breathing is difficult allow them to sit.**
- 2 Give adrenaline autoinjector if available.**
- 3 Phone ambulance* 000 (AU), 111 (NZ), 112 (mobile)**
- 4 Phone family/emergency contact**

**Commence CPR at any time if person is unresponsive and not breathing normally.
If uncertain whether it is asthma or anaphylaxis, give adrenaline autoinjector FIRST,
then asthma reliever.**

* Medical observation in hospital for at least 4 hours is recommended after anaphylaxis

Additional information

Name: _____
Date of birth: _____

Photo

Confirmed allergens:

Asthma Yes No

Family/emergency contact name(s):

Work Ph: _____

Home Ph: _____

Mobile Ph: _____

Plan prepared by:

Dr: _____

Signed: _____

Date: _____

Note: The ASCIA Action Plan for Allergic Reactions is for people with mild to moderate allergies, who need to avoid certain allergens.

For people with severe allergies (and at risk of anaphylaxis) there are ASCIA Action Plans for Anaphylaxis, which include adrenaline autoinjector instructions.

Instructions are also on the device label and at:
www.allergy.org.au/anaphylaxis

Note: This is a medical document that can only be completed and signed by the patient's treating medical doctor and cannot be altered without their permission.

Referral guidelines in FA

- A history of definite or possible anaphylaxis.
- Allergy to cow's milk, FA to nutritionally important foods, or multiple food allergies, where expert advice is needed.
- Where there is uncertainty about the diagnosis or interpretation of results.
- Food sensitisation on sIgE / SPT, where supervised challenge may be necessary to clarify whether there is clinical allergy.
- Allergy to particular allergens (e.g. peanut, nut) where the risk of severe allergic reactions is higher.
- Children with asthma and FA, with asthma a risk factor for severe food allergic reaction on accidental exposure.
- Children whose FA persists past 5 years of age.

Home introduction

- Not considered if
 - Previous severe egg reaction
 - Previous reaction to trace amount
 - Asthma
 - Multiple food allergy
- British protocols published
 - Clark Clin Exp All 2010
 - Start with a smear then pea sized amount and gradually increase
 - When well and not in a hurry

Vaccinations

- MMR
 - Routine
 - Usual precautions including in children with egg anaphylaxis; no increase in risk
- Influenza
 - Increasing data on safety
 - Current vaccines <0.1ug egg protein
 - History anaphylaxis or no known egg tolerance -> vaccinate under hospital supervision (1/10th dose then remainder)
 - Mild egg allergy or some tolerance -> vaccinate with usual precautions
- Yellow fever -> still contraindicated

Case 3

- 7 year old boy
- Reaction to peanut age 1 with urticaria
 - Follow up @ 5 years ssslge>100KuA/I
 - Sensitised to nuts on testing -> avoiding
- Out for lunch – chicken pasta, garnish with pesto
 - 10 minutes with urticaria -> A&M
 - Initial cardiorespiratory exam normal
 - 10 minutes -> wheeze

Question?

Case 3

- 7 year old boy
- Reaction to peanut age 1 with urticaria
 - Follow up @ 5 years ssslge>100KuA/I
 - Sensitised to nuts on testing -> avoiding
- Out for lunch – chicken pasta, garnish with pesto
 - 10 minutes with urticaria -> A&M
 - Initial cardiorespiratory exam normal
 - 10 minutes -> wheeze, drowsy
 - Rx adrenaline
 - Hospital observation 6 hours

Anaphylaxis

- Recognizing a constellation
- No single sign or symptom always present
- Any cardiovascular or respiratory involvement in an allergic reaction - > fulfills criteria

Skin

Feeling of warmth, flushing (erythema), itching (may occur in areas, such as external auditory canals, palms, soles, or groin), urticaria, angioedema, morbilliform rash, and "hair standing on end" (pilo erection)

Oral

Itching or tingling of lips, tongue, or palate

Edema of lips, tongue, uvula, metallic taste

Respiratory

Nose - Itching, congestion, rhinorrhea, and sneezing

Laryngeal - Itching and "tightness" in the throat, dysphonia, hoarseness, stridor

Lower airways - Shortness of breath (dyspnea), chest tightness, deep or repetitive cough, wheezing, and cyanosis

Gastrointestinal

Nausea, abdominal pain (colic, cramps), vomiting (large amounts of "stringy" mucus), diarrhea, and dysphagia (difficulty swallowing*)

Cardiovascular

Feeling of faintness or dizziness; syncope, altered mental status, chest pain, palpitations, tachycardia, bradycardia or other dysrhythmia, hypotension, tunnel vision, difficulty hearing, urinary or fecal incontinence, and cardiac arrest

Neurologic

Anxiety, apprehension, sense of impending doom, seizures, headache*, and confusion; children may become irritable, cease to play, or have other sudden behavioral changes

Ocular

Periorbital itching, erythema and edema, tearing, and conjunctival erythema

Other

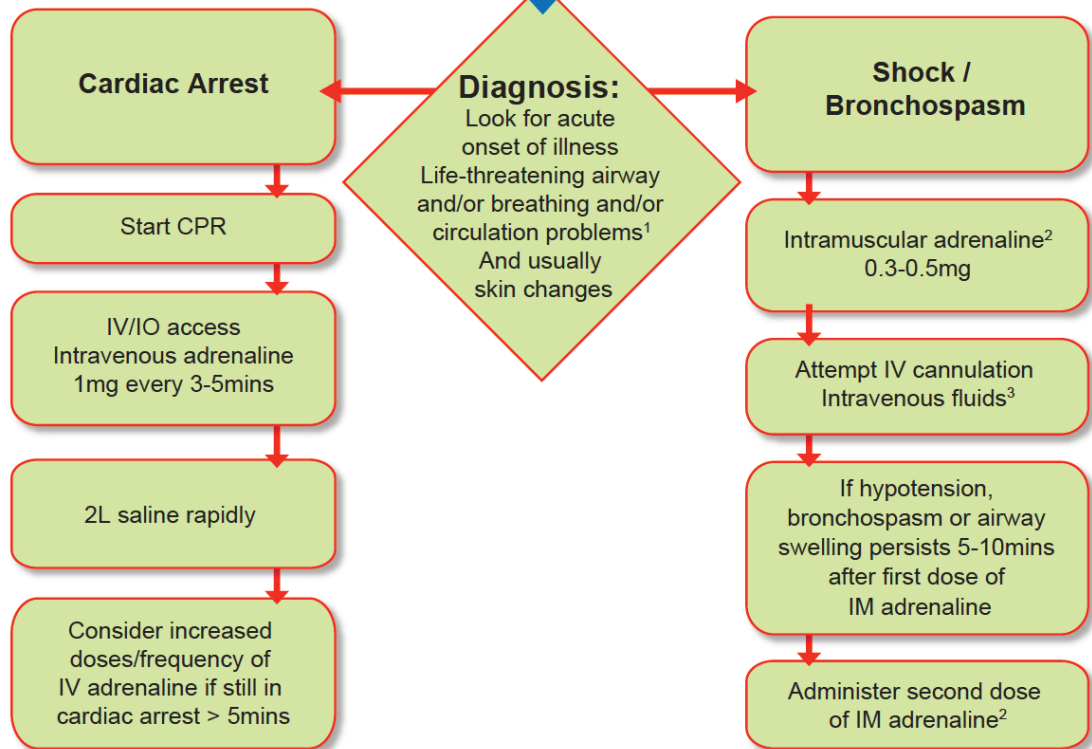
Uterine cramps and bleeding in women and girls

Anaphylaxis

Adrenaline doses		
50kg +	0.5mg IM	0.5ml 1:1000
40kg	0.4mg IM	0.4ml 1:1000
30kg	0.3mg IM	0.3ml 1:1000
20kg	0.2mg IM	0.2ml 1:1000
10kg	0.1mg IM	0.1ml 1:1000

Anaphylaxis suspected?

Stop administration / Remove trigger
Call for help - Position supine
High flow oxygen - Attach monitoring

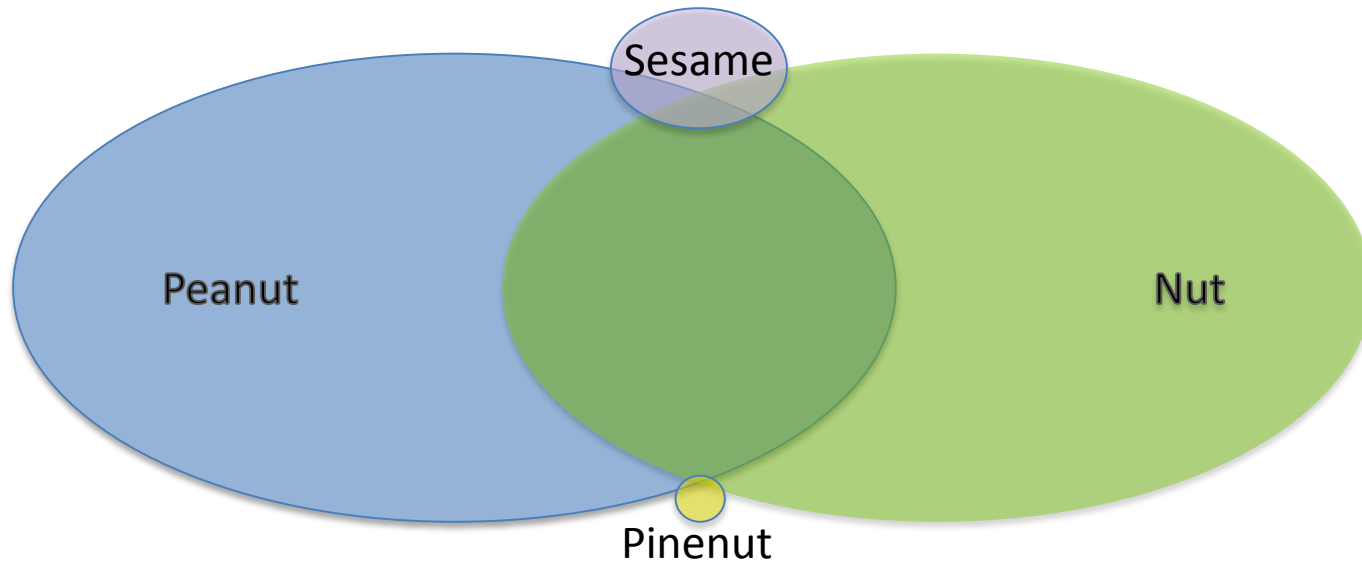


¹Life-threatening problems
Airway (swelling, hoarseness, stridor)
Breathing (rapid breathing, wheeze, fatigue, cyanosis, SpO₂<92%)
Circulation (pale, clammy, low blood pressure, faintness)

²Intramuscular adrenaline
 Use 1:1,000 adrenaline / 0.3-0.5mg (0.3-0.5mL). Preferred injection site: upper outer thigh
Check route and dose before administration (to ensure adrenaline is given IM)

³Intravenous fluids
 0.9% Sodium Chloride: 1000mL. Rapid infusion then titrate according to requirements

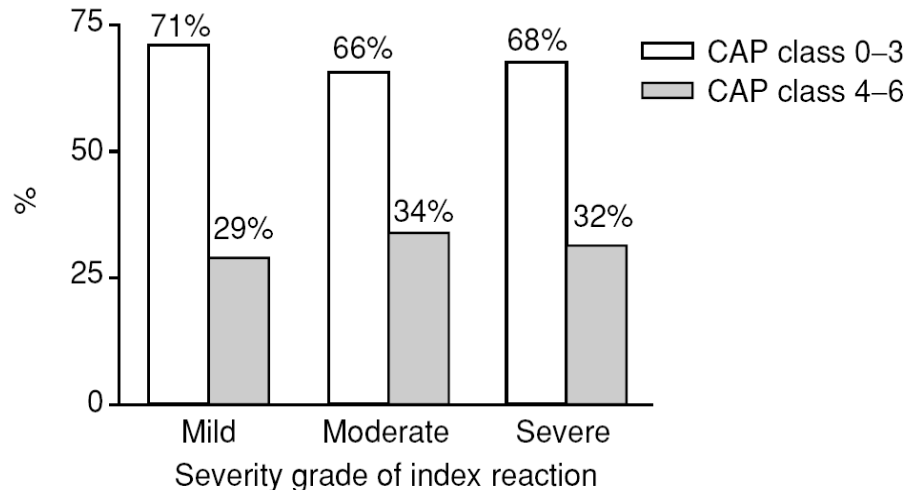
Nut cross reactivity & cosensitivity



- 25-50% with peanut allergy have nut allergy
- 50% with nut allergy allergic to >1 nut
 - Cashew and pistachio, walnut and pecan
- 15% with peanut or nut allergy have sesame allergy
 - 50% with peanut & nut allergy have sesame allergy

Case 3

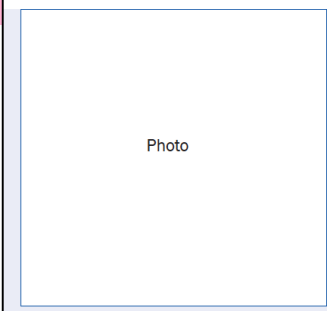
- Anaphylaxis due to cashew in pesto
- Did the absence of past anaphylaxis reduce the risk?
 - 50% of fatalities have history food allergy but no history severe food reaction
 - Age, asthma, peanut/nut risk factors
- Did the high specific IgE to peanut increase the risk?



Case 3 – m'ment

- Further testing
 - Peanut and nuts remain positive
 - Pinenut negative
 - Avoid pesto regardless given high chance contains nut
- Risk management
 - Nut recognition and avoidance
 - Autoinjector plan and use (include child)

Name: _____
Date of birth: _____



Confirmed allergens: _____

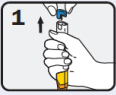
Asthma Yes No


Family/emergency contact name(s): _____

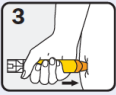
Work Ph: _____
Home Ph: _____
Mobile Ph: _____

Plan prepared by: _____
Dr: _____
Signed: _____
Date: _____

How to give EpiPen®

- 

Form fist around EpiPen® and PULL OFF BLUE SAFETY RELEASE.
- 

PLACE ORANGE END against outer mid-thigh (with or without clothing).
- 

PUSH DOWN HARD until a click is heard or felt and hold in place for 10 seconds.
REMOVE EpiPen®. Massage injection site for 10 seconds.

Instructions are also on the device label and at: www.allergy.org.au/anaphylaxis

For use with EpiPen® Adrenaline Autoinjectors

MILD TO MODERATE ALLERGIC REACTION

- Swelling of lips, face, eyes
- Hives or welts
- Tingling mouth
- Abdominal pain, vomiting (these are signs of a severe allergic reaction to insects)

ACTION

- For insect allergy, flick out sting if visible. Do not remove ticks.
- Stay with person and call for help
- Locate EpiPen® or EpiPen® Jr
- Give other medications (if prescribed)
- Dose:
- Phone family/emergency contact

Mild to moderate allergic reactions may or may not precede anaphylaxis

Watch for any one of the following signs of anaphylaxis

ANAPHYLAXIS (SEVERE ALLERGIC REACTION)

- Difficult/noisy breathing
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- Persistent dizziness or collapse
- Pale and floppy (young children)

ACTION

- 1 Lay person flat. Do not allow them to stand or walk. If breathing is difficult allow them to sit.**
- 2 Give EpiPen® or EpiPen® Jr**
- 3 Phone ambulance* 000 (AU), 111 (NZ), 112 (mobile)**
- 4 Phone family/emergency contact**
- 5 Further adrenaline doses may be given if no response after 5 minutes (if another adrenaline autoinjector is available)**

If in doubt, give adrenaline autoinjector
Commence CPR at any time if person is unresponsive and not breathing normally. If uncertain whether it is asthma or anaphylaxis, give adrenaline autoinjector FIRST, then asthma reliever.
EpiPen® is generally prescribed for adults and children over 5 years.
EpiPen® Jr is generally prescribed for children aged 1-5 years.
*Medical observation in hospital for at least 4 hours is recommended after anaphylaxis.

Additional information _____
Note: This is a medical document that can only be completed and signed by the patient's treating medical doctor and cannot be altered without their permission.

Aims

- Understand something of the epidemiology of childhood food allergy in NZ
- Review an approach to
 - Diagnosis
 - Investigation
 - Management
- Consider appropriate referral guidelines
- **A bit about non IgE**
- Thoughts on
 - Prevention strategies
 - The future

Non IgE gastrointestinal

	Vomiting	Diarrhoea	Growth	Foods	Onset
Proctocolitis	-	+ (blood)	N	Breast, milk, soy	0-6mo
Enterocolitis	++	++	↓	Milk, soy, egg, cereal	0-12mo
Enteropathy	+/-	+	↓	Milk, soy, egg, cereal, meat	2-24mo
FPIES	++++	+	N	Rice, root veges, poultry	6-24 mo

FPIES – Sydney experience

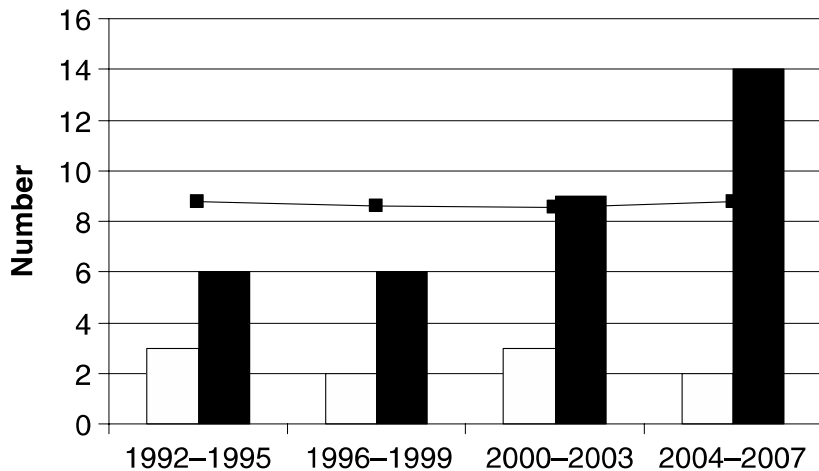


TABLE 2 Food Triggers of FPIES

Food	n (%)		Age at Initial FPIES Reaction, Mean \pm SD, mo
	All Children (N = 35)	Children With Single-Food FPIES (N = 29)	
Rice	14 (40)	9 (31)	5.2 \pm 0.8
Soy	12 (34)	10 (34)	5.4 \pm 3.1
Cow's milk	7 (20)	7 (24)	4.1 \pm 1.8
Oats	2 (6)	0 (0)	5.7 \pm 1.0
Sweet potato	2 (6)	0 (0)	7.6
Banana	1 (3)	0 (0)	6.0
Fish	1 (3)	1 (3)	9.0
Chicken	1 (3)	1 (3)	8.0
Lamb	1 (3)	1 (3)	11.2

TABLE 3 Characteristics of FPIES Episodes

Clinical features, (N = 66)

Vomiting, n (%)	66 (100)
Lethargy, n (%)	56 (85)
Pallor, n (%)	44 (67)
Diarrhea, n (%)	16 (24)
Temperature of $<36^{\circ}\text{C}$, n (%) (N = 25)	6 (24)

Eosinophilic esophagitis S&S

Table 3. Symptoms Suggestive of Eosinophilic Esophagitis

Children	Adult
Feeding aversion/intolerance	Dysphagia
Vomiting/regurgitation	Food impaction
“GERD refractory to medical management”	“GERD refractory to medical management”
“GERD refractory to surgical management”	
Food impaction/foreign body impaction	
Epigastric abdominal pain	
Dysphagia	
Failure to thrive	

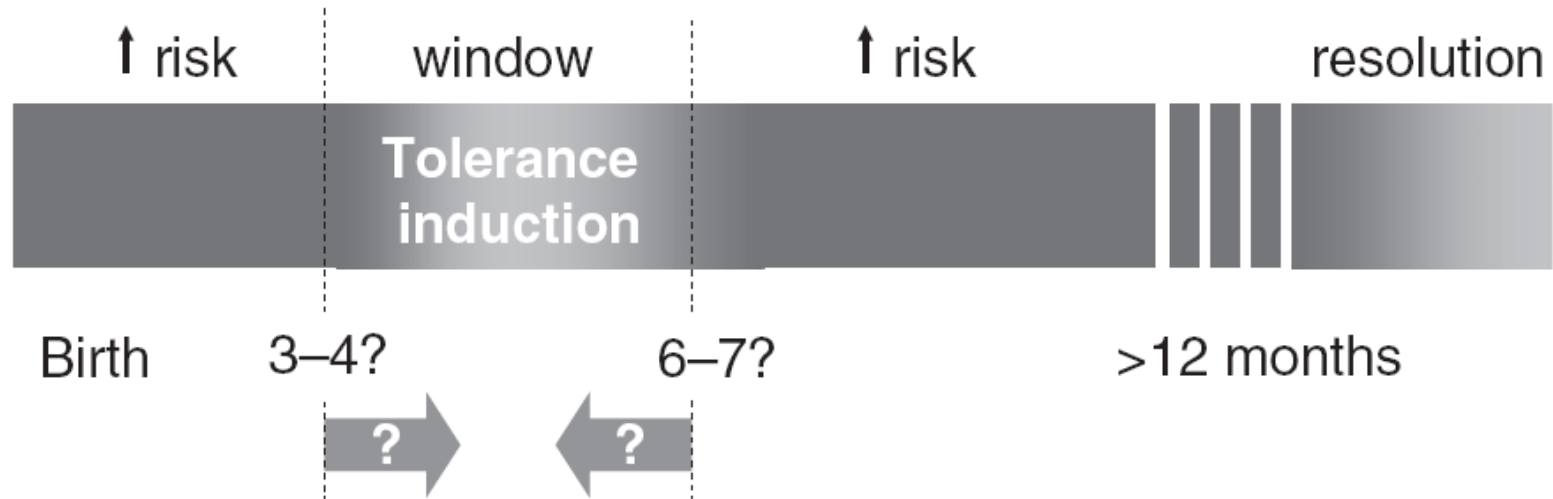
... and colic

- Affects 8-40% infants
- 60% resolution by 3 mo, 80-90% resolution by 4 mo
- Bottle fed infants
 - Conflicting data
 - 1 week trial of extensively hydrolysed formula worth considering (particularly if severe / protracted sx)
- Breast fed infants
 - Conflicting data
 - Worth considering trial dairy avoidance particularly if
 - Mother atopic
 - Infant other s&sx possible allergy (e.g. eczema, vomiting, diarrhoea)

Prevention



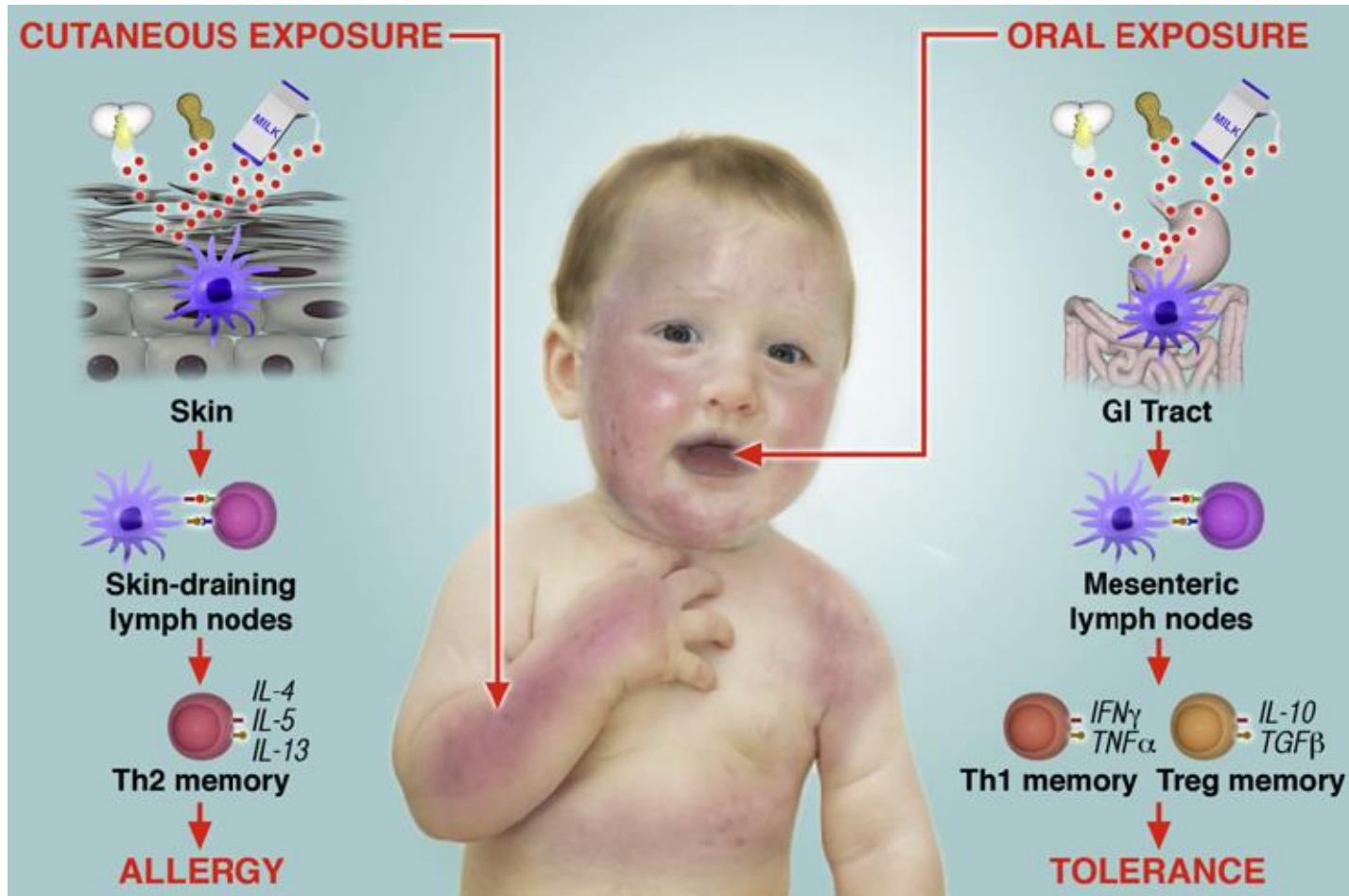
Tolerance induction



Factors that influence the capacity for tolerance:

- optimal colonisation
- genetic pre-disposition
- allergen properties (dose, interval, timing, preparation)
- gut permeability/maturity/pH
- continued breast feeding?
- other immunomodulatory factors (fatty acids? stress? antioxidants?)

Dual allergen exposure hypothesis



Optimal timing

Peanut DuToit JACI 2008

- Low rates peanut allergy in Israel cf London Jews
- Associated with high peanut consumption (40% of 6 month old infants)

Wheat Poole Pediatrics 2006

- Lower wheat allergy if have wheat at <6 months cf >7 months

Egg Koplin JACI 2010

- Lowest rates egg allergy if start having egg 4-6 months
- OR 3.4 if delay egg until >12 months

Milk Katz JACI 2011

- Birth cohort n=13,029
- Cow milk introduction
 - Mean 61 days in tolerant
 - Mean 116 days in allergic

Other dietary factors

- Prebiotics
 - Nondigestible CHO that stimulate the growth and/or activity of beneficial colonic bacteria, high in breast milk
- Probiotics are live microorganisms that benefit the host
- Synbiotics are a combination of prebiotics and probiotics
- Current reviews suggest too early to make a definite recommendation

- Fish oil – n 3 PUFA studies showing:
 - Fish intake / fish oil supplementation in pregnancy associated with protection against allergic disease

Food allergy prevention

- Recently revised US, European and Australasian guidelines ~ similar
- Exclusive breast feeding to 4 months
- Introduction of solid/complementary foods at 4-6 months of age
 - No data to support delay in introducing any particular food

Food allergy prevention

ascia

Australasian Society of Clinical Immunology and Allergy
www.allergy.org.au

INFANT FEEDING ADVICE

KEY POINTS

BREASTFEEDING

- It is considered that breastfeeding during the period that foods are first introduced may help prevent the development of allergy to those foods.
- Breastfeeding is recommended for at least 6 months for many reasons and is encouraged for as long as the mother and infant wish to continue.
- Exclusion of allergenic foods from the maternal diet has not been shown to prevent allergies.
- If infant formula is required in the first months of life before solid foods are introduced, there is some evidence that hydrolysed formulas may reduce the risk of allergic disease in high risk infants, with a history of allergy in their parents or siblings. Hydrolysed formula is cow's milk based formula that has been processed to break down most of the proteins which cause symptoms in cow's milk allergic children. In Australia and New Zealand only partially hydrolysed formulas (usually labeled 'HA' or Hypoallergenic) are recommended for allergy prevention. These are different to extensively hydrolyzed formula (EHF), which are only available on prescription for treatment of cow's milk allergic children.
- Infants are unlikely to develop a new allergy to any milk that is already tolerated, if it is given regularly.

INTRODUCTION OF SOLID FOODS

- More research is needed to determine the optimal time to start complementary solid foods. Based on the currently available evidence, many experts across Europe, Australia and North America recommend introducing complementary solid foods from around 4-6 months.
- There is little evidence that delaying the introduction of complementary solid foods beyond 6 months reduces the risk of allergy.
- There have been some suggestions that delaying introduction of foods may actually increase (rather than decrease) allergy, however at this stage this is not proven.
- There is insufficient evidence to support previous advice to specifically delay or avoid potentially allergenic foods (such as egg, peanuts, nuts, wheat, cow's milk and fish) for the prevention of food allergy or eczema. This also applies to infants with siblings who already have allergies to these foods.

RECENT REVIEW PAPERS AND POSITION STATEMENTS ON WHICH THESE KEY POINTS ARE BASED

- Agostoni C, et al. Complementary feeding: a commentary by the ESPGHAN Committee on Nutrition J Pediatr Gastroenterol Nutr 2008; 46:99-110.
- Allen CW, Campbell DE, Kemp AS. Food allergy: Is strict avoidance the only answer? Pediatr Allergy Immunol. 2008 Sep 15.
- Greer FR, et al.. Effects of early nutritional interventions on the development of atopic disease in infants and children: the role of maternal dietary restriction, breastfeeding, timing of introduction of complementary foods, and hydrolyzed formulas. Pediatrics 2008; 121:183-91
- Høst A et al. Dietary prevention of allergic diseases in infants and small children. Pediatr Allergy Immunol. 2008 Feb;19(1):1-4.
- Prescott SL. Pediatr Allergy Immunol 2008 Feb 9; [Epub ahead of print]
- Sicherer SH, Burks AW. Maternal and infant diets for prevention of allergic diseases: Understanding menu changes in 2008. J Allergy Clin Immunol 2008; 122:29-33
- Snijders BE et al Age at first introduction of cow milk products and other food products in relation to infant atopic manifestations in the first 2 years of life: The KOALA Birth Cohort Study. Pediatrics 2008;122:e115-e122

The Australasian Society of Clinical Immunology and Allergy (ASCI) has developed this advice to provide a summary of information on infant feeding, including:

- KEY POINTS (page 1), explaining why parents may choose not to delay the introduction of potentially "allergenic" foods
- PRACTICAL ADVICE (page 2), which is intended as advice for the general community, but may be of particular interest to parents and families with a history of allergy.

The reason for the continued rise in allergic diseases is complex and not well understood.

Many previous prevention strategies have been ineffective. Although children with a family history of allergy are at higher risk of allergy, many children with no family history of allergy also develop allergy.

This advice is relevant for all families, including those in which other children already have allergies. It takes into account current evidence (as at September 2008).

INFANT FEEDING ADVICE

ascia
Australasian Society of Clinical Immunology and Allergy
www.allergy.org.au

PRACTICAL ADVICE

BREASTFEED FOR AT LEAST 6 MONTHS:

- There are many nutritional and non-nutritional benefits of breastfeeding for both the mother and infant.
- Breastfeeding is recommended for at least 6 months.
- Breastfeeding can continue beyond 12 months, or for as long as mother and infant wish to continue.

BEFORE 4 MONTHS:

- If complementary infant formula is required before solid foods are started, a standard cow's milk infant formula may be used (where there is no history of allergic disease in the infant's parents or siblings).
- Infants with a history of allergic disease in the infant's parents or siblings may be placed on a partially hydrolysed formula (usually labeled "HA" or hypo-allergenic). These formulas are not suitable for children who have already developed cow's milk allergy.
- Soy milk and other mammalian milks such as goat milk are not recommended for allergy prevention.

FROM 4-6 MONTHS:

- When your child is ready, consider introducing a new food every 2-3 days according to what the family usually eats (regardless of whether the food is thought to be highly allergenic).
- Give one new food at a time so that reactions can be more clearly identified. If a food is tolerated, continue to give this as a part of a varied diet (see Table for examples).
- Breast milk or an appropriate infant formula should remain the main source of milk until 12 months of age, although cow's milk can be used in cooking or with other foods.

FEEDING GUIDE:

EXAMPLES ONLY:

Specific food choices will depend on what the family eats

Start with smooth, pureed foods

Start with plain cereals (e.g. rice, oats, semolina) then add other foods such as smooth, cooked vegetables and smooth, cooked fruits, pureed meats.

Move on to mashed foods and finger foods

Meats and fish and a wider variety of vegetables. Fresh fruits and wider variety of cereals and legumes. Yoghurt, egg custard and nut pastes.

Move on to a chopped texture. Drinks can be offered from a cup (from a developmental perspective, this is usually around 8 months)

Continue to increase variety as above (e.g. bread, crackers, pasta, wheat based breakfast cereals, cow's milk on cereal, cheese, egg, fish, other seafood, nut products and foods containing nuts).

This is just a guide and is not intended to indicate precisely when specific foods should be offered. You may also refer to local health department infant feeding advice or guidelines. Take care to prevent choking on food: Grate, cook or mash all hard fruits or vegetables and do not give your infant foods that have small hard pieces such as raw apple, carrot or whole nuts.

NOTE:

- There are no particular allergenic foods that need to be avoided
- Some children will develop allergies. If there is any reaction to any food, you should seek medical advice and that food should be avoided until your child is reviewed by a medical practitioner with experience in food allergy.
- Infants who already have eczema are at higher risk of allergies. In general this advice applies to these children, however if your child develops a reaction to a food this should be discussed with your doctor (as above).
- If you are uncertain about this advice you should discuss this with your doctor.

This approach is based on the best evidence that is currently available (as at September 2008). The change from previous guidelines is based on some recent studies suggesting that avoiding allergenic foods does not appear to reduce allergies, and may even be associated with an increased risk. Further research is ongoing in this area.

DISCLAIMER

This document has been developed and peer reviewed by ASCIA members and is based on expert opinion and the available published literature at the time of review. The development of this document is not funded by commercial sources and is not influenced by commercial organisations. Information contained in this document is not intended to replace medical advice and any questions regarding a medical diagnosis or treatment should be directed to a medical practitioner.

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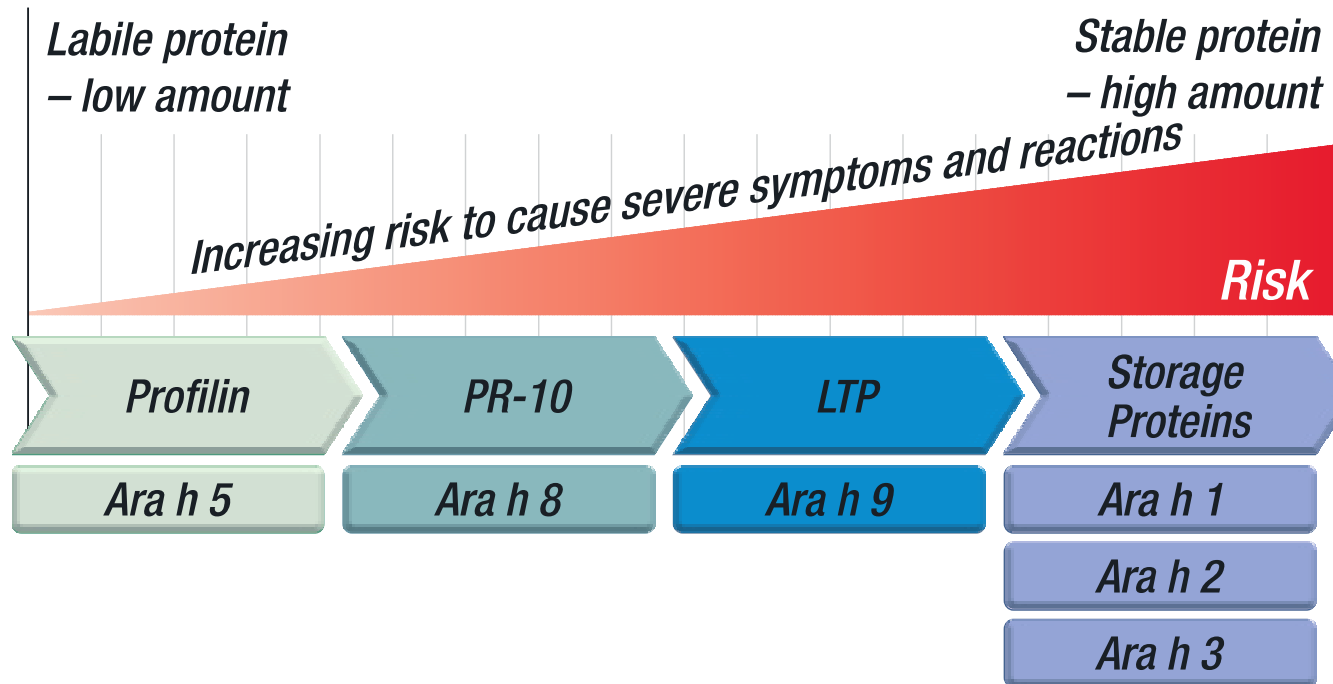
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The Australasian Society of Clinical Immunology and Allergy (ASCI) is the peak professional body of Clinical Immunologists and Allergists in Australia and New Zealand. Website: www.allergy.org.au

Aims

- Understand something of the epidemiology of childhood food allergy in NZ
- Review an approach to
 - Diagnosis
 - Investigation
 - Management
- Consider appropriate referral guidelines
- A bit about non-IgE
- Thoughts on
 - Prevention strategies
 - **The future**

C_{omponent} R_{esolved} D_{iagnos}tics e.g. Ara h 2



- CRD will hopefully result in
 - More accurate diagnosis
 - Possibly improved prediction of risk and natural history

Food oral tolerance induction

- Peanut oral immunotherapy
 - Children 7-15 years, including with hx anaphylaxis
 - Up to 800 mg peanut protein daily (5 peanuts)

	Control (n=46)	Active (n=39)	p value
First phase			
Number desensitised	0	24	<0.001*
Number not desensitised	46	15	
Proportion desensitised	0 (0 to 0.091)	0.62 (0.45 to 0.78)	..
Proportion able to tolerate daily ingestion	0	0.84 (0.70 to 0.93)	..
Median absolute change in NOAEL, mg	0 (-95 to 45)	1345 (45 to 1400)	0.002, <0.001†
Median fold change in NOAEL, mg	0.81 (0.05 to 1.82)	25.5 (1.82 to 280)	0.003, <0.001†

Key points

- Food allergy is a common paediatric condition.
- The history of an immediate allergic reaction is critical in interpretation of skin-prick test (SPT) or serum specific IgE (ssIgE, also referred to as RAST or EAST).
- Specialist paediatric referral should occur in any child with anaphylaxis, allergy to more than one food allergen, or where the primary care practitioner is not confident about diagnosis, test interpretation, or management.
- Children and young people with food allergy should have advice about allergen avoidance and a written management plan detailing the signs, symptoms and management of allergic reactions.
- Children with IgE-mediated food allergy require regular follow-up. Many food allergies are not persistent and need reassessment over time.