

Food allergy from the clinical view, including an Australian view

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Conflicts of Interest

Principal investigator on DBV Technologies sponsored clinical trial
(EPITOPE- Epicutaneous immunotherapy, peanut allergy, toddlers)

Melbourne
Children's

Excellence in
clinical care,
research and
education



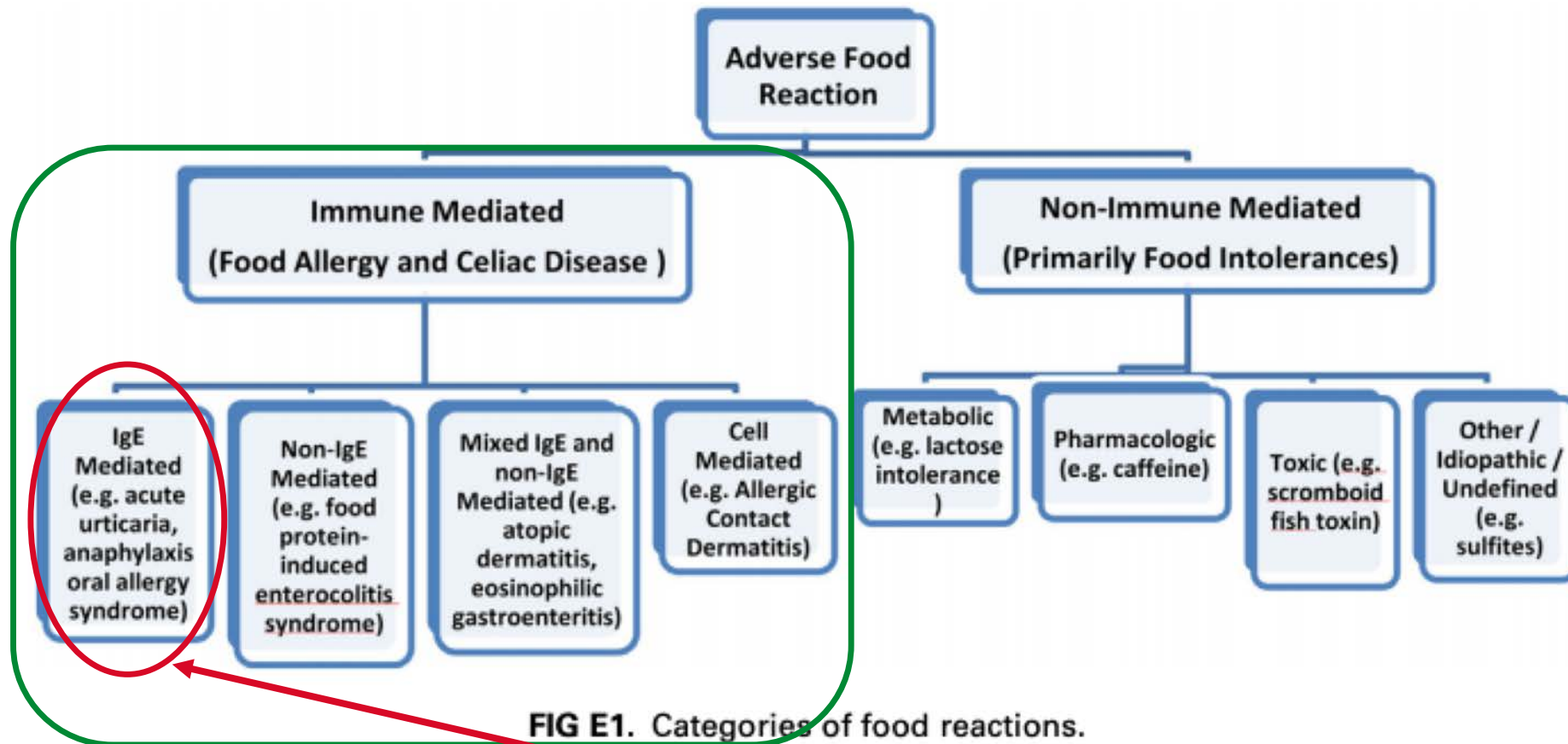
Outline

1. Adverse reactions to food
 - IgE versus Non IgE mediated food reactions
 - Pathophysiology of anaphylaxis
2. Epidemiology of food allergy in Australia
3. Why is food allergy increasing?
4. Can food allergy be prevented?
5. Management of food allergy
6. Clinical reality of living with food allergy
7. Summary: Call to action for people with food allergy

1. Adverse reactions to food

IgE versus non-IgE mediated food allergy?

Adverse Reactions to food



IgE mediated food allergy

Signs and symptoms of IgE mediated food allergy

Signs and symptoms of IgE mediated food allergy

Typically within minutes of allergen ingestion, <60 minutes

- Rash
- Urticaria/hives
- Angioedema
- Vomiting
- *Anaphylaxis*



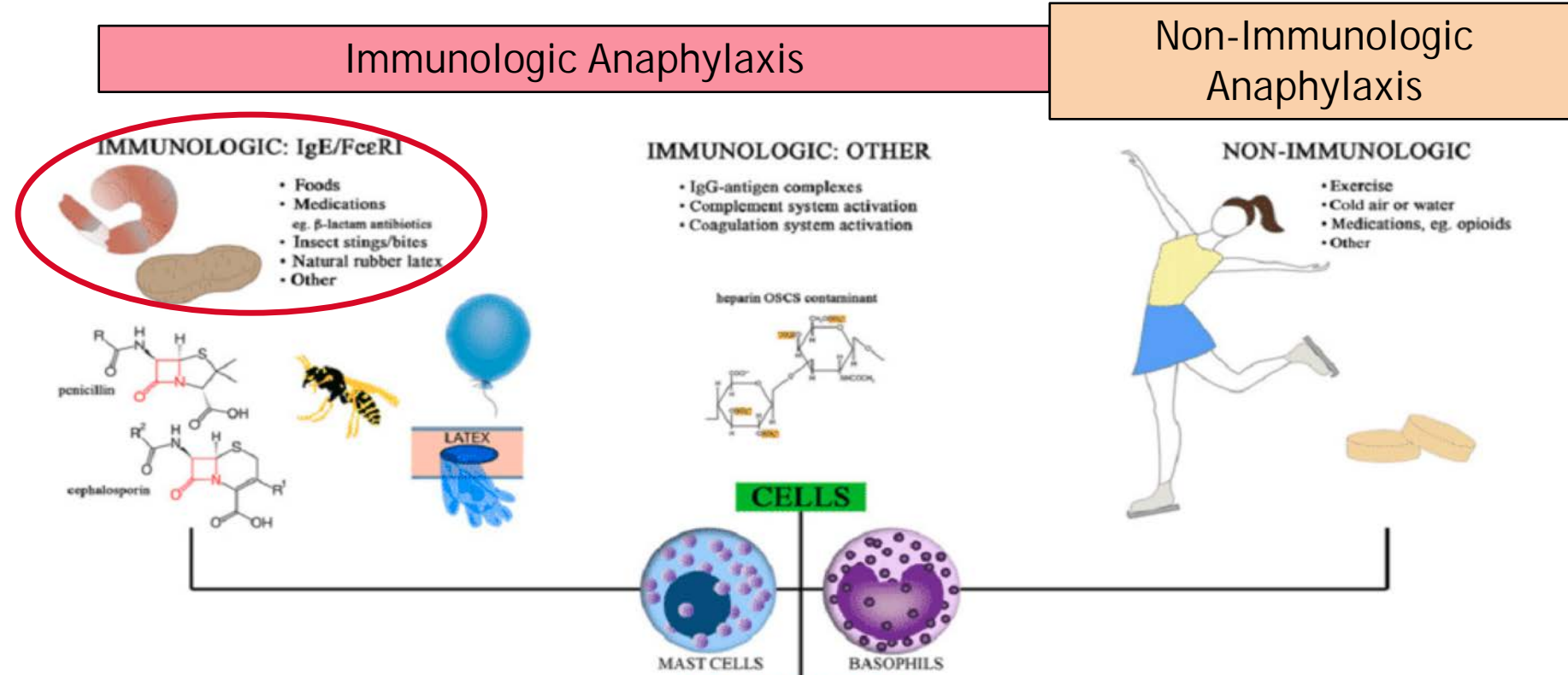
The pathophysiology of anaphylaxis

Anaphylaxis

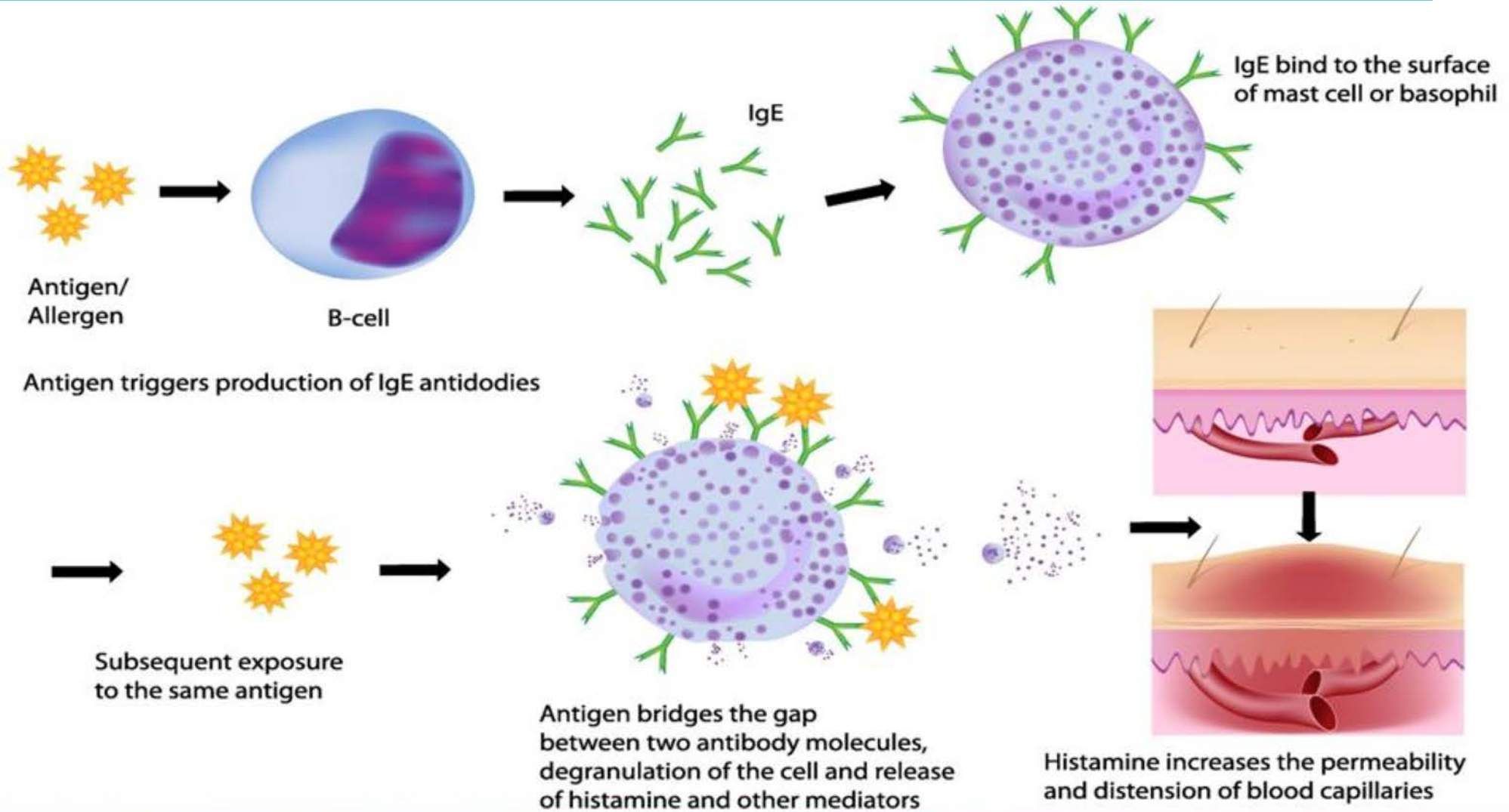
.. Is a clinical syndrome

Multiple triggers

- Immunologic IgE
- Immunologic Non IgE
- Non-Immunologic



Anaphylaxis: an exaggerated immune response to allergen(s)



NON-IMMUNOLOGIC

- Exercise
- Cold air or water
- Medications, eg. opioids
- Other

OTHER
CYTOKINES
CHEMOKINES

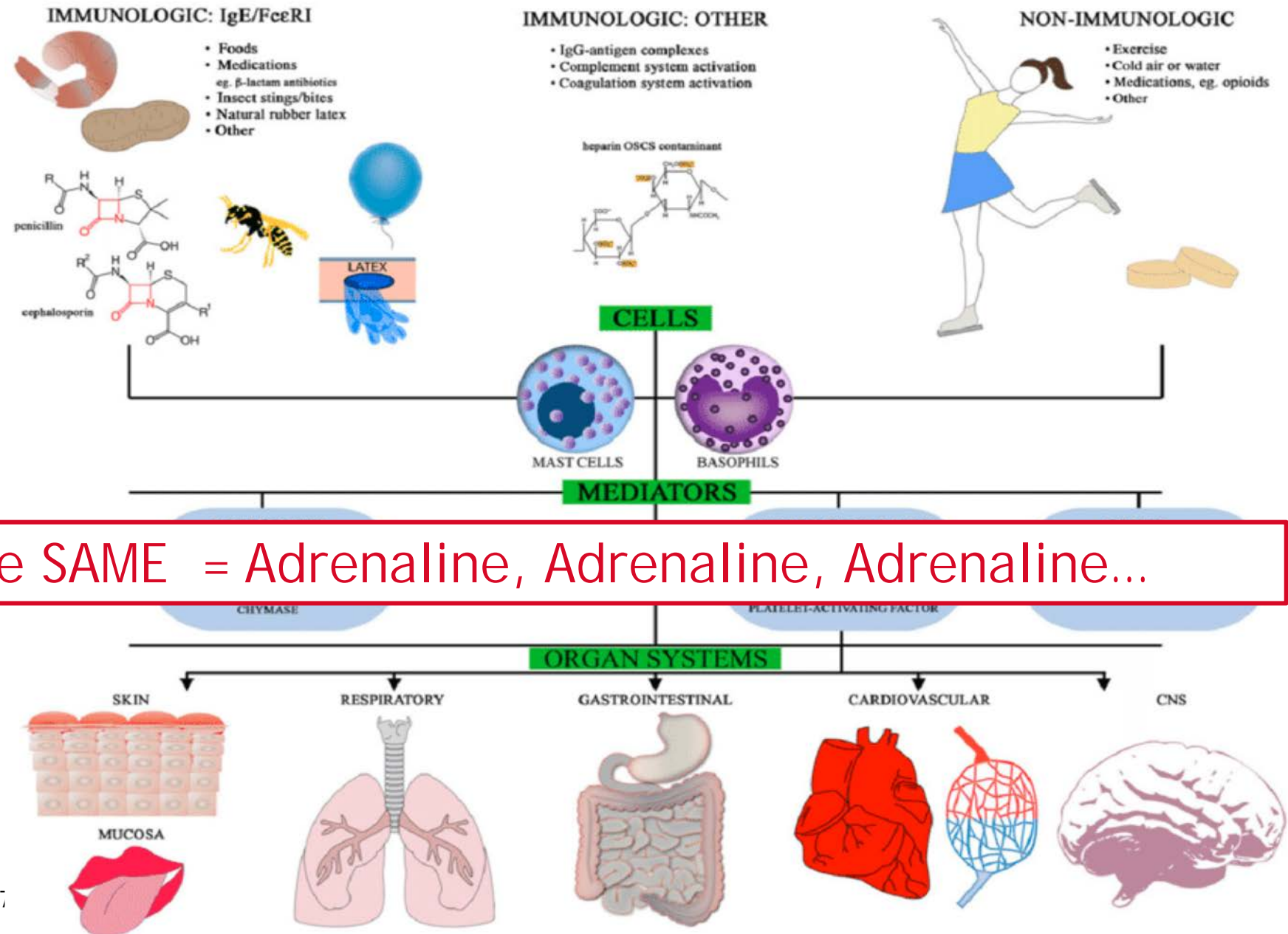
CNS

Anaphylaxis

.. Is a clinical syndrome

Immunologic Anaphylaxis

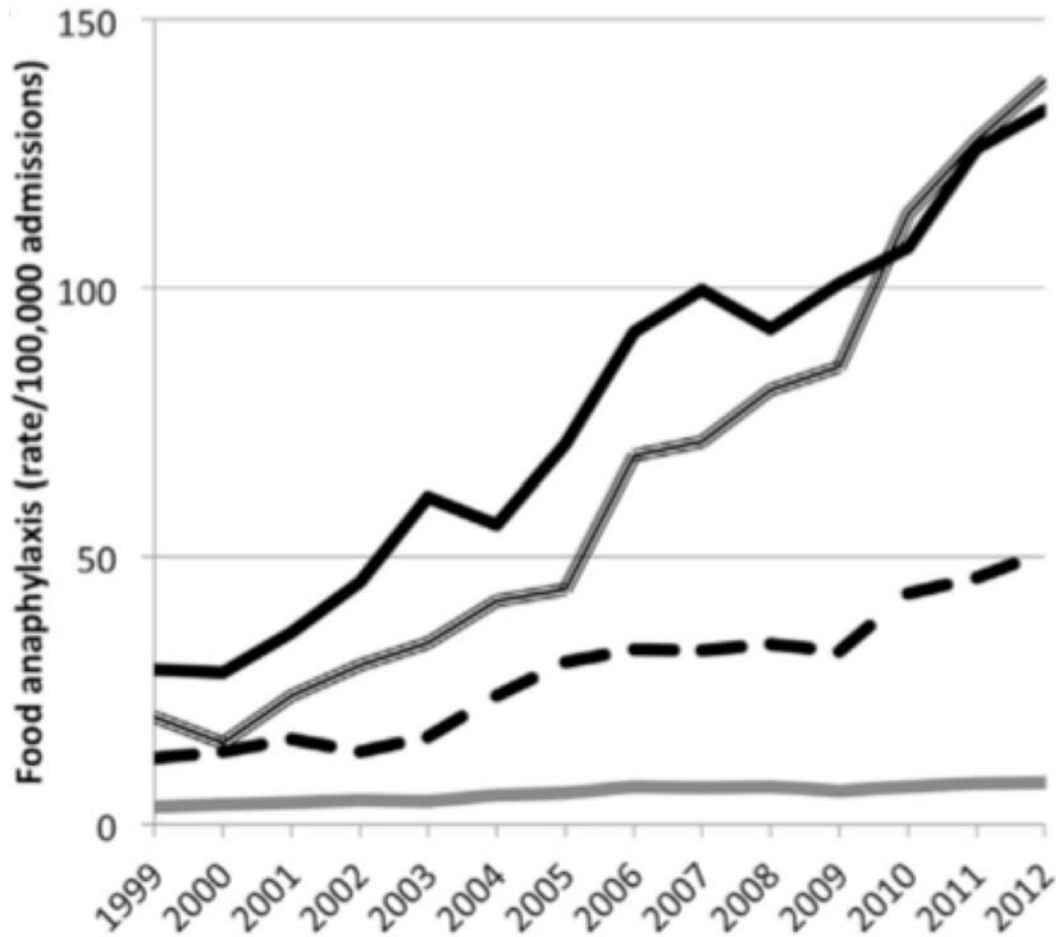
Non-Immunologic Anaphylaxis



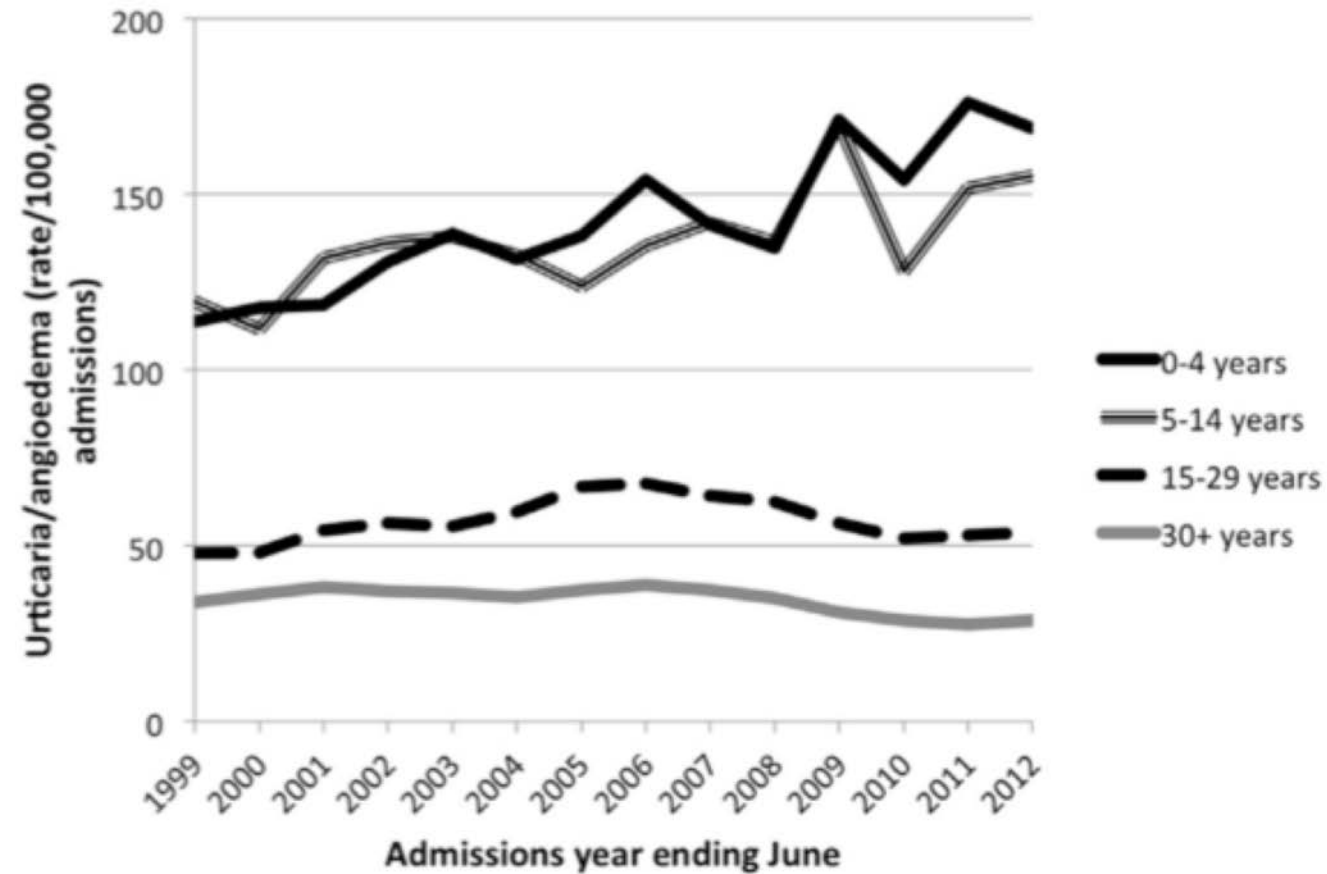
Treatment is the SAME = Adrenaline, Adrenaline, Adrenaline...

2. Epidemiology of food allergy in Australia

Australia: Allergies are increasing



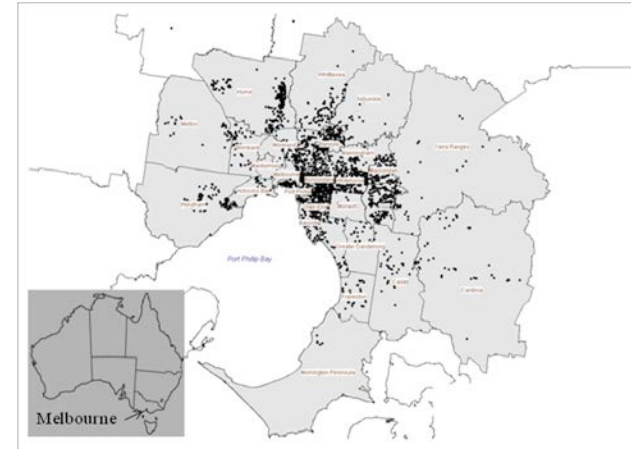
Food-related anaphylaxis



Urticaria/Angioedema

The *HealthNuts* Study... 2007-2011

- Population sample, greater Melbourne
- 12-month-old infants (n=5276)
- *Skin prick test*: peanut, egg, cow's milk, sesame
- *Oral Food Challenge*
 - All sensitised children (n=1089)
 - 200 negative controls
- Follow up: at age 2, 4, 6 and 10 years



11% Food Allergy 1-year old infants, Melbourne 2007-11



Adults:
2% food allergy

Aged 1 year:

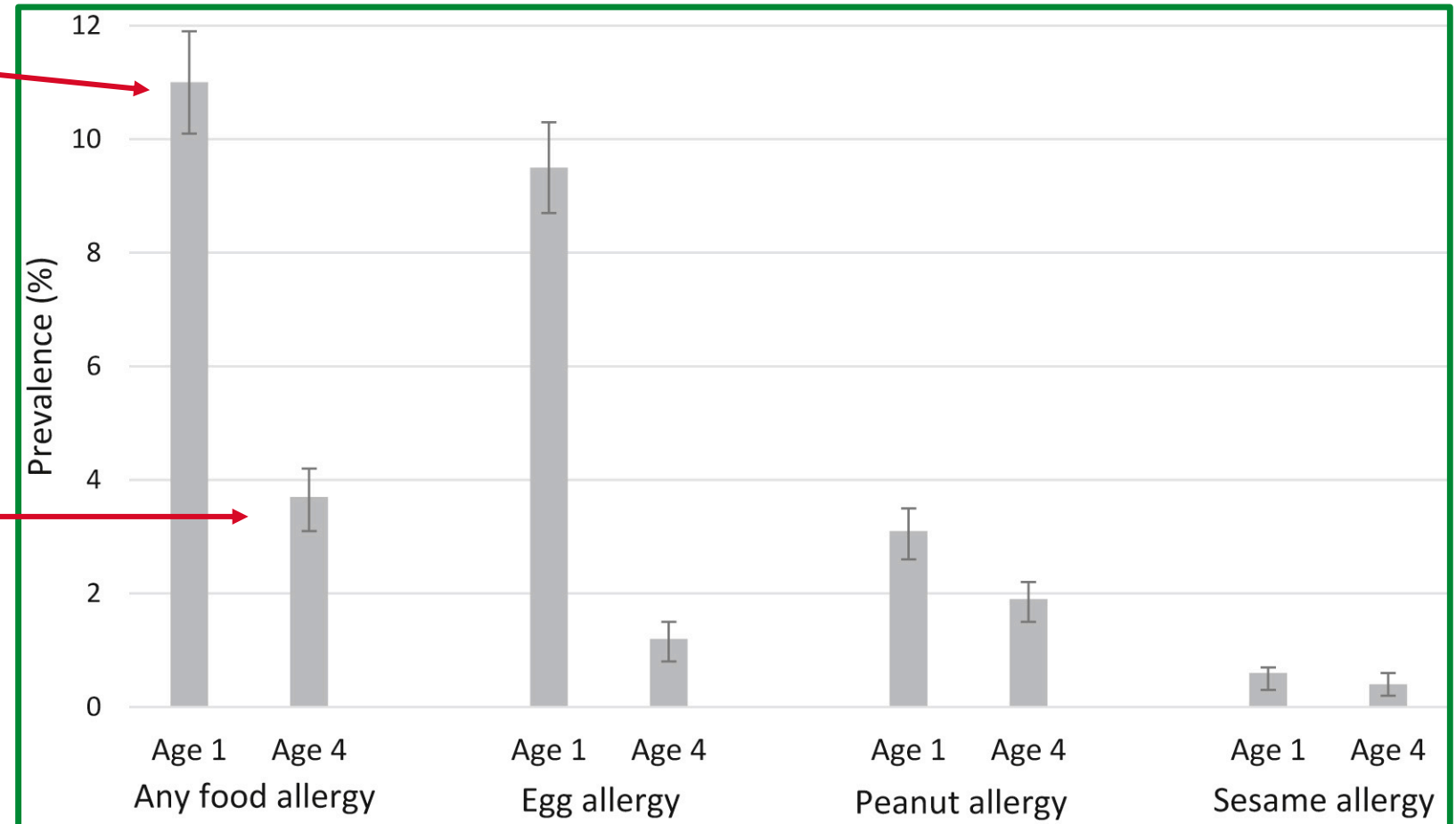
11% food allergy

- Egg 9%
- Peanut 3%
- Sesame 0.6%

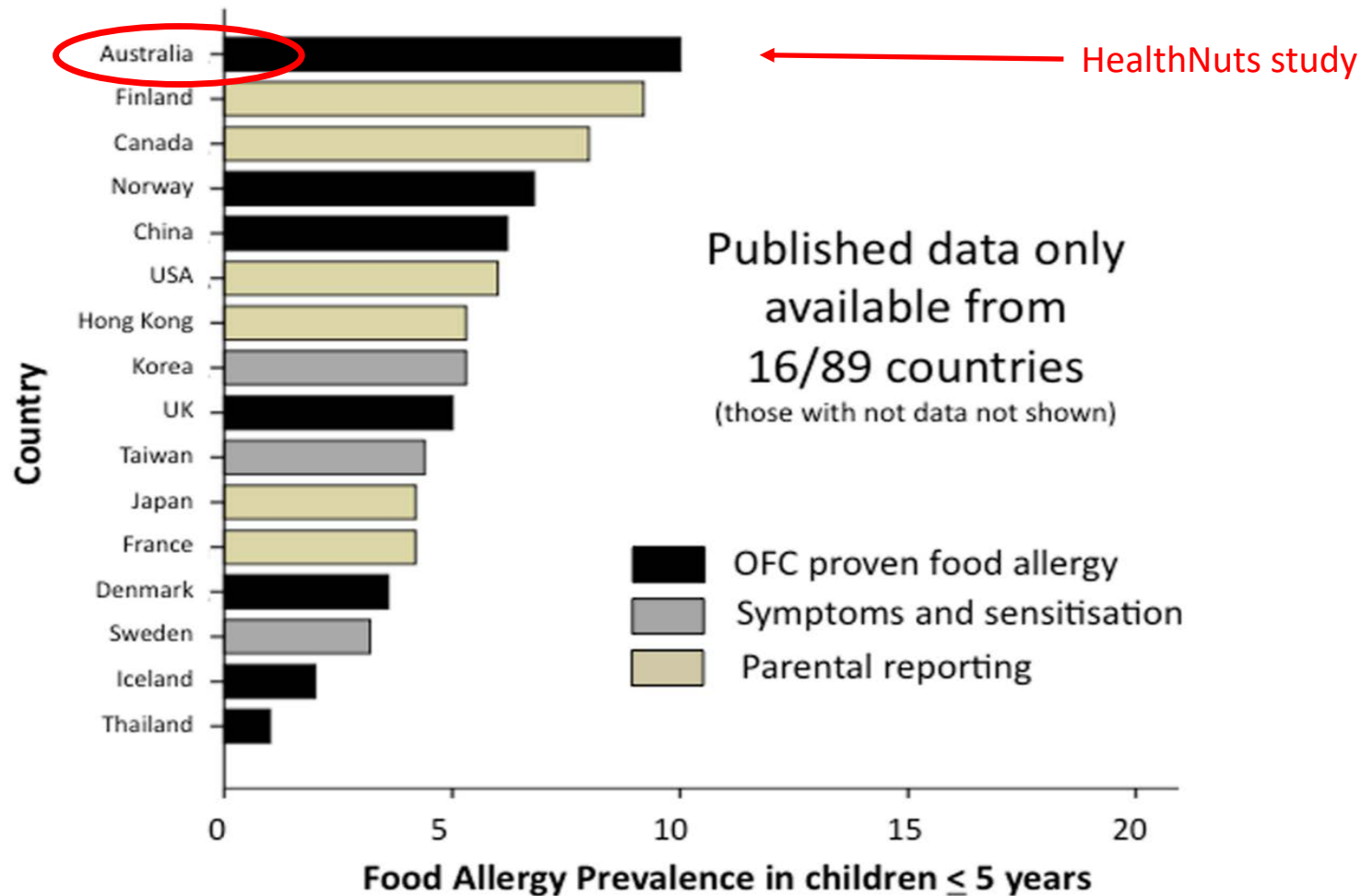
Aged 4 years:

3.8% food allergy

- Egg 1.2%
- Peanut 1.9%
- Sesame 0.4%

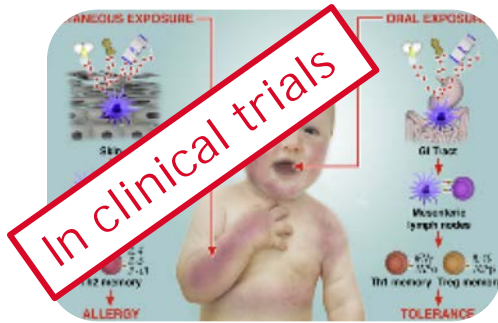


Australia: the highest prevalence of food allergy in the world



3. Why is food allergy increasing?

Leading hypotheses for the rise in food allergy- 5 D's



Dry skin

Dual-allergen hypothesis

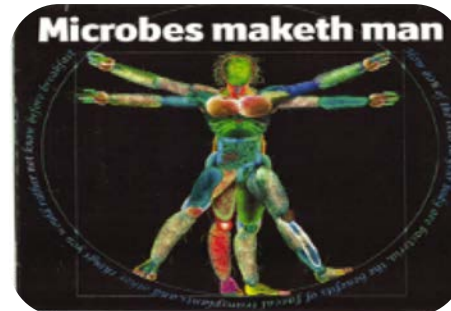


Diet



Vitamin D

Vitamin D hypothesis



Dribble/dirt (internal microbial milieu)



Dogs (external microbial exposure)

Hygiene hypothesis

4. Can food allergy be prevented?

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Randomized Trial of Peanut Consumption in Infants at Risk for Peanut Allergy

George Du Toit, M.B., B.Ch., Graham Roberts, D.M., Peter H. Sayre, M.D., Ph.D., Henry T. Bahnson, M.P.H., Suzana Radulovic, M.D., Alexandra F. Santos, M.D., Helen A. Brough, M.B., B.S., Deborah Phippard, Ph.D., Monica Basting, M.A., Mary Feeney, M.Sc., R.D., Victor Turcanu, M.D., Ph.D., Michelle L. Sever, M.S.P.H., Ph.D., Margarita Gomez Lorenzo, M.D., Marshall Plaut, M.D., and Gideon Lack, M.B., B.Ch., for the LEAP Study Team*

- The LEAP Trial (n=628, 4-11 months of age, OFC at 60 months age)
- High risk cohort (early onset eczema and/or egg allergy)

81% reduction in peanut allergy in consumption group

Allergy Prevention: infant feeding guidelines

Recent evidence in allergy prevention has resulted in a paradigm shift in clinical practice
from avoiding allergenic foods in young children to introducing them before aged 1

ASCIA Infant feeding guidelines¹

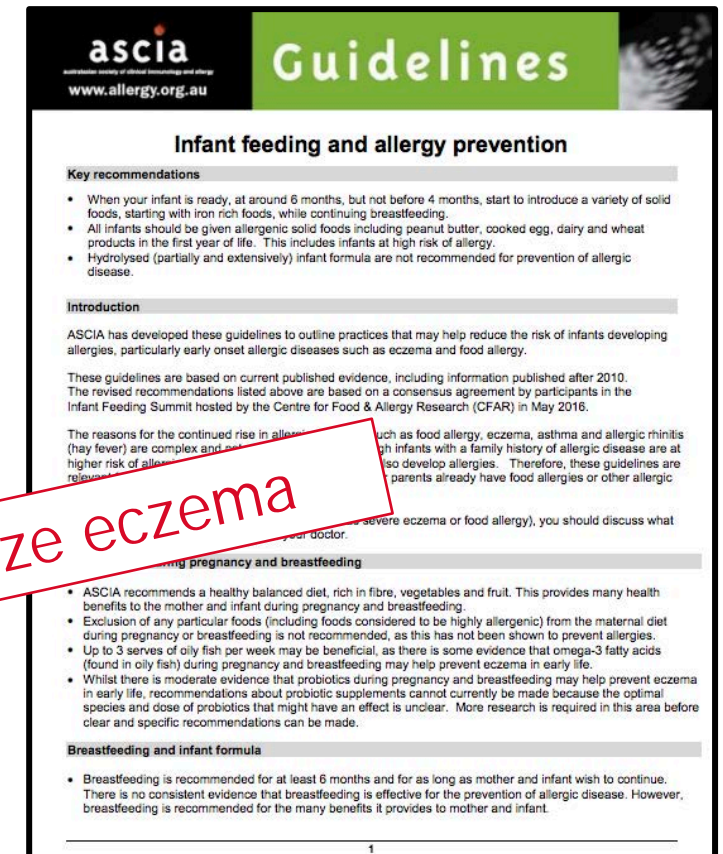
Australian Infant Feeding Guideline Consensus²

- Start solids at around 6 months, not before 4 months
- All allergenic solid foods in the 1st year of life
 - Cooked egg, peanut, milk, wheat, fish, soy, sesame...



+ Optimize eczema

Clinical Trial Evidence: LEAP, EAT, BEAT, STEP, STAR...



5. Management of food allergy

Management of Food Allergy = AVOIDANCE

- There is currently no cure
- No registered treatment

- Immunotherapy = desensitisation (\neq cure)

Oral immunotherapy (OIT) - feeding an allergic individual increasing amounts of an allergen with the goal of increasing the threshold that triggers a reaction

- Individuals on OIT will continue to carry an epipen, read labels etc
- High risk of anaphylaxis (x3 risk compared to avoidance)¹

Epicutaneous immunotherapy (EPIT) - daily application of a skin patch that delivers minute quantities of allergen to induce desensitisation

- Better safety profile than OIT, less efficacious?

Experimental
(in clinical trials)

¹Chu et al, The Lancet, 2019, April 25

Management of Food Allergy

1. Carry adrenaline autoinjector and ASCIA Action Plan at all times
2. Know the signs and symptoms of allergic reactions
3. Know what to do when a reaction occurs



Mild to moderate allergic reactions (such as hives or swelling) may not always occur before anaphylaxis

ascia
australian society of clinical immunology and allergy
www.allergy.org.au

ACTION PLAN FOR Allergic Reactions

Name: _____
Date of birth: _____

SIGNS OF MILD TO MODERATE ALLERGIC REACTION

- Swelling of lips, face, eyes
- Hives or welts
- Tingling mouth
- Abdominal pain, vomiting (these are signs of anaphylaxis for insect allergy)

ascia
australian society of clinical immunology and allergy
www.allergy.org.au

ACTION PLAN FOR Anaphylaxis

For use with adrenaline (epinephrine) autoinjectors

Name: _____
Date of birth: _____

SIGNS OF MILD TO MODERATE ALLERGIC REACTION

- Swelling of lips, face, eyes
- Hives or welts
- Tingling mouth
- Abdominal pain, vomiting (these are signs of anaphylaxis for insect allergy)

ACTION FOR MILD TO MODERATE ALLERGIC REACTION

- For insect allergy - flick out sting if visible
- For tick allergy ☐ seek medical help or ☐ freeze tick and let it drop off
- Stay with person and call for help
- Locate adrenaline autoinjector
- Give other medications (if prescribed).....
- Phone family/emergency contact

Mild to moderate allergic reactions (such as hives or swelling) may not always occur before anaphylaxis

WATCH FOR ANY ONE OF THE FOLLOWING SIGNS OF ANAPHYLAXIS (SEVERE ALLERGIC REACTION)

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

ACTION FOR ANAPHYLAXIS

- 1 Lay person flat - do NOT allow them to stand or walk
 - If unconscious, place in recovery position
 - If breathing is difficult allow them to sit
- 2 Give adrenaline autoinjector
- 3 Phone ambulance - 000 (AU) or 111 (NZ)
- 4 Phone family/emergency contact
- 5 Further adrenaline doses may be given if no response after 5 minutes
- 6 Transfer person to hospital for at least 4 hours of observation

If in doubt give adrenaline autoinjector
Commence CPR at any time if person is unresponsive and not breathing normally

ALWAYS give adrenaline autoinjector FIRST, and then asthma reliever puffer if someone with known asthma and allergy to food, insects or medication has SUDDEN BREATHING DIFFICULTY (including wheeze, persistent cough or hoarse voice) even if there are no skin symptoms

Asthma reliever medication prescribed: ☐ Y ☐ N

How to give EpiPen® adrenaline (epinephrine) autoinjectors

- 1 Form fist around EpiPen® and PULL OFF BLUE SAFETY RELEASE
- 2 Hold leg still and PLACE ORANGE END against outer mid-thigh (with or without clothing)
- 3 PUSH DOWN HARD until a click is heard or felt and hold in place for 3 seconds. REMOVE EpiPen®

EpiPen® is prescribed for children over 20kg and adults. EpiPen® Jr is prescribed for children 10-20kg.

© ASCIA 2018 This plan was developed as a medical document that can only be completed and signed by the patient's medical or nurse practitioner and cannot be altered without their permission

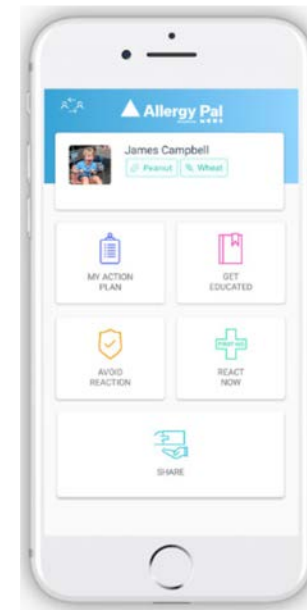
Management of Food Allergy

1. Carry adrenaline autoinjector and ASCIA Action Plan at all times
2. Know the signs and symptoms of allergic reactions
3. Know what to do when a reaction occurs
4. **Read and understand food labels** for food allergy, precautionary labelling
5. Tell wait staff that they have a food allergy when eating out
6. Be aware of cross contamination of food allergens when preparing food
7. Teach “touch test”



Management of Food Allergy

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5. Tell wait staff that they have a food allergy when eating out
6. Be aware of cross contamination of food allergens when preparing food
7. Teach "touch test"
8. Optimise asthma and allergic rhinitis
9. Advise about the *AllergyPal* App
10. Provide written information and references



FOOD ALLERGY MANAGEMENT CHECKLIST

When you are going out remember:

1. Take your EpiPen® with you at ALL times. Keep it insulated and don't let it overheat.



2. If you suffer from asthma make sure it is well-controlled



If you have a cough or wheeze when you run around or at night, or need Ventolin more than twice a week you need to have your asthma reviewed.

3. DO NOT share food with others.



4. When eating out, ring the restaurant/friend before you go and see if they can accommodate you. See if the restaurant also has an allergy friendly menu.



5. Double-check what is in the food before eating it.



To eat or not to eat....

6. Do the 'touch test': To check if the food is ok to eat, put a small amount of food on the inside of your lower lip, if there is a tingling sensation don't eat it.

The touch test is only for foods that you have already checked are safe by asking about their ingredients.



7. If you are kissing others, make sure they haven't just eaten anything that you are allergic to!



Have fun and remember if you're not sure don't risk it!!

Checklist for Daily Management for Food Allergies

Don't let your child miss out on activities, some forward planning and be part of preschool. There may have to be some adjustments for the individual with allergies.

- Always leave children with allergies reaction and are able to administer ALWAYS have the adrenaline auto injector and easily accessible. (Visit www.allergyfacts.org.au for information on anaphylaxis) Don't even forget an emergency kit.
- If you forget your adrenaline auto injector, Read the ingredient label each time a food.
- If you are unsure about a food, don't eat it - Teach young children not to swap food with a mum and dad.
- If adrenaline auto injector is administered, an ambulance should be called and the child transported to the nearest hospital for further treatment.
- If an individual has an anaphylactic reaction they must be monitored for at least 4 hrs in case of a rebound reaction.
- Visit your allergy specialist every 12-24 months or as advised.
- Check the expiry date of your adrenaline auto injector.

There is currently no cure for food allergy; education is the key. If you suspect a food allergy, please do not rely on your own diagnosis. Consult a doctor as soon as possible.

Permission is granted to make copies of this document for educational and awareness raising purposes. Last updated AUG 2012

ACN 129 809 931
www.allergyfacts.org.au
ABN 47 129 809 931

Allergy & Anaphylaxis Australia
Your trusted charity for allergy support

EATING OUT WITH FOOD ALLERGIES

DISCLOSE YOUR ALLERGY AND ENJOY EATING OUT WITH CAREFUL PLANNING

AVOIDING HIGH RISK PLACES AND MENU ITEMS

- If fish or shellfish allergic, avoid seafood restaurants. Keep cross contamination in mind at other restaurants.
- Be aware that fried foods may share cooking oil with shellfish, fish, egg and other allergens.
- If egg or milk allergic, avoid crumbed or battered foods (eg, schnitzels, tempura) and creamy sauces that contain these ingredients.
- Some pasta dishes, meatballs and hamburgers may contain milk, egg or nuts.
- If peanut or tree nut allergic, it is best to avoid Asian/Indian style dishes and restaurants.
- If peanut or tree nut allergic, check salad garnishes.
- Vegetarian style food often contains nut ingredients.
- Remember pastries and desserts can contain tree nuts or peanuts in their decorations or bases.
- If sesame allergic, avoid Middle Eastern style pastries and restaurants where serving of food on your outer lip and see if any oral hygiene products contain sesame.

PLACING YOUR ORDER

- Read the menu carefully and ask questions.
- Always disclose your food allergy before ordering but it can never be removed.
- Do not ask for a guarantee. Risk can be reduced but it can never be removed.
- Ask the staff if the dish you have chosen is free from the allergen, if they do not seem sure it would be better to avoid that dish.
- Be prepared to wait while they check an ingredients folder, labels or whilst they speak to someone more informed on food allergy.
- You may be served first or last, be patient.
- Watch out for 'hidden' ingredients. For example:
 - pesto may contain cashews or peanuts
 - satay sauce contains peanuts
 - Worcestershire sauce contains anchovies
 - tahini is made from sesame seeds
 - hummus contains chickpeas, tahini/ sesame
 - sweet pastry bases may contain ground nuts
 - marzipan contains ground nuts
 - praline and nougat contain nut products
 - breads, cakes and pastries that are shiny have probably been glazed with milk or egg
- Teens and adults can consider doing a touch test of food on your outer lip and see if any oral hygiene products develop e.g. tingling, burning, swelling. **DO NOT EAT** that food.



<https://www.rch.org.au/allergy/>
<https://allergyfacts.org.au/>
<https://250k.org.au/>

6. Clinical reality of living with food allergy

Clinical Reality of living with food allergy



1. People with food allergy do not know when their next reaction will occur or how severe it will be
2. Reaction thresholds will differ *between* and *within* individuals
 - depend on type of food and amount ingested, other activities at time of ingestion (e.g.: exercise, menstruation, alcohol)
3. Maintaining allergen avoidance has become increasingly difficult
 - proliferation and *variable* use of precautionary labelling (PAL) (E.g: “may contain”) statements

65% of all food goods in an Australian supermarket have a PAL (882/1355)

- Current use does not allow for adequate assessment of allergen exposure risk, results in:
 - Severe restrictions on dietary choices
 - An increase in risk taking behaviour



Message from Cadbury: March 2019

Same product... 3 different allergen statements

39g Crème Egg

Contains: Milk, Wheat
Glucose Syrup, Soy and Egg
May contain: Traces of
Peanuts and Tree Nuts



Contains: Milk, Soy + Egg and Wheat

130g Crème Egg Minis

Contains: Milk & Soy
May contain: Traces of
Peanuts and Tree Nuts



Contains: Milk, Soy

234g Crème Egg Bag

Contains: Milk, Wheat,
Glucose Syrup, Soy and Egg
May contain: Traces of
Peanuts and Tree Nuts



180g Cadbury Dairy Milk Packed with Crème Egg Block

Contains: Milk and Soy
May Contain: Traces of
Wheat, Peanuts and Tree Nuts.



Severe allergic reactions and anaphylaxis are increasing

School-Nuts study (n= 9663, 10-14 year-old)¹

- Population-based study, Melbourne
- 44% reported a reaction to food over the past year (243/547 with IgE mediated FA)
- 9.7% were anaphylaxis (n=10)

HealthNuts study (n= 5276, 6 year-old)²

- Population-based study, Melbourne
- Around 45%* reported a reaction to food over the past year
- >10%* were anaphylaxis

¹McWilliam et al, J Allergy Clin Immunol, 2018 141 (3) 982-90, ²Wang et al, *Data under analysis

We want all children
to have the opportunity
to live a healthy and
fulfilled life



It is time for better regulation of allergen labelling to
reduce risks and improve quality of life for those living with food allergy

Acknowledgements

- Professor Katie Allen
- Dr Jen Koplin
- Dr Rachel Peters
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- Melbourne Children's Clinician Scientist Fellowship
- Children and their families



Thank you



Melbourne
Children's

Excellence in
clinical care,
research and
education



murdoch
children's
research
institute

