FOOD ALLERGY

Epidemiology & Management

DR. KHALID O. BAWAKID

FM - ALLERGY CONSULTANT

ALLERGY & CLINICAL IMMUNOLOGY FELLOWSHIP , UK

Objectives

- Overview
- Allergy Or Intolerance ?
- Pathophysiology
- Common Allergen
- Clinical Manifestation
- Diagnosis
- Management
- Prognosis & Prevention
- Take Home Massages

Overview

Globally

- The World Allergy Organisation (WAO) estimate of allergy prevalence of the whole population by country ranges between 10 - 40% **(Pawankar R, et al, 2013)**
- More than 150 million Europeans suffer from chronic allergic diseases and the current prediction is that by 2025 half of the entire EU population will be affected **(EAACI, 2016)**

Overview

- ✓ Food allergy is a an adverse immunologic (IgE – mediated) response to a dietary protein.
- ✓ Approximately 6% of children & 4% of adults Affected.
- ✓ More than 170 foods reported to provoke IgE-mediated reactions.
- ✓ Costly, potentially life-threatening condition with Risk of severe allergic reactions (anaphylaxis) and death can occur.
- ✓ Annually, approximately 200 deaths in the USA attributed to food allergy

The Food Allergy & Anaphylaxis Network. „ 2010.

- ✓ My confused with non-IgE mediated reaction.

SUMMARY OF THE NIAID-SPONSORED EXPERT PANEL REPORT 2011

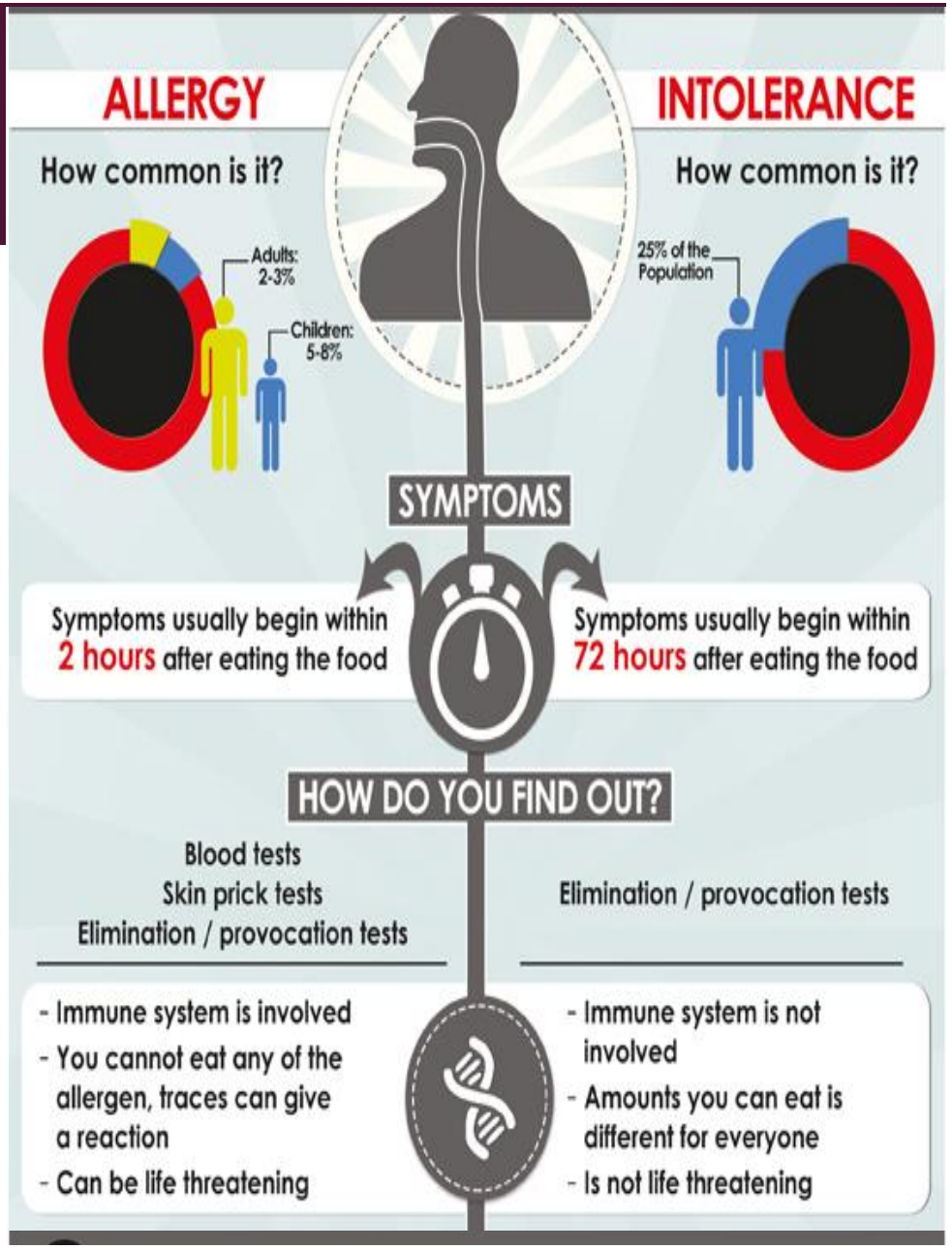
Is It Allergy Or Intolerance ?

Food Allergy

Food allergy is a serious and potentially life-threatening medical condition due to adverse immune response on exposure to a given food.

Food Intolerances

foods or food components elicit reproducible adverse reactions without immunologic mechanisms.



SUMMARY OF THE NIAID-SPONSORED EXPERT PANEL REPORT 2011

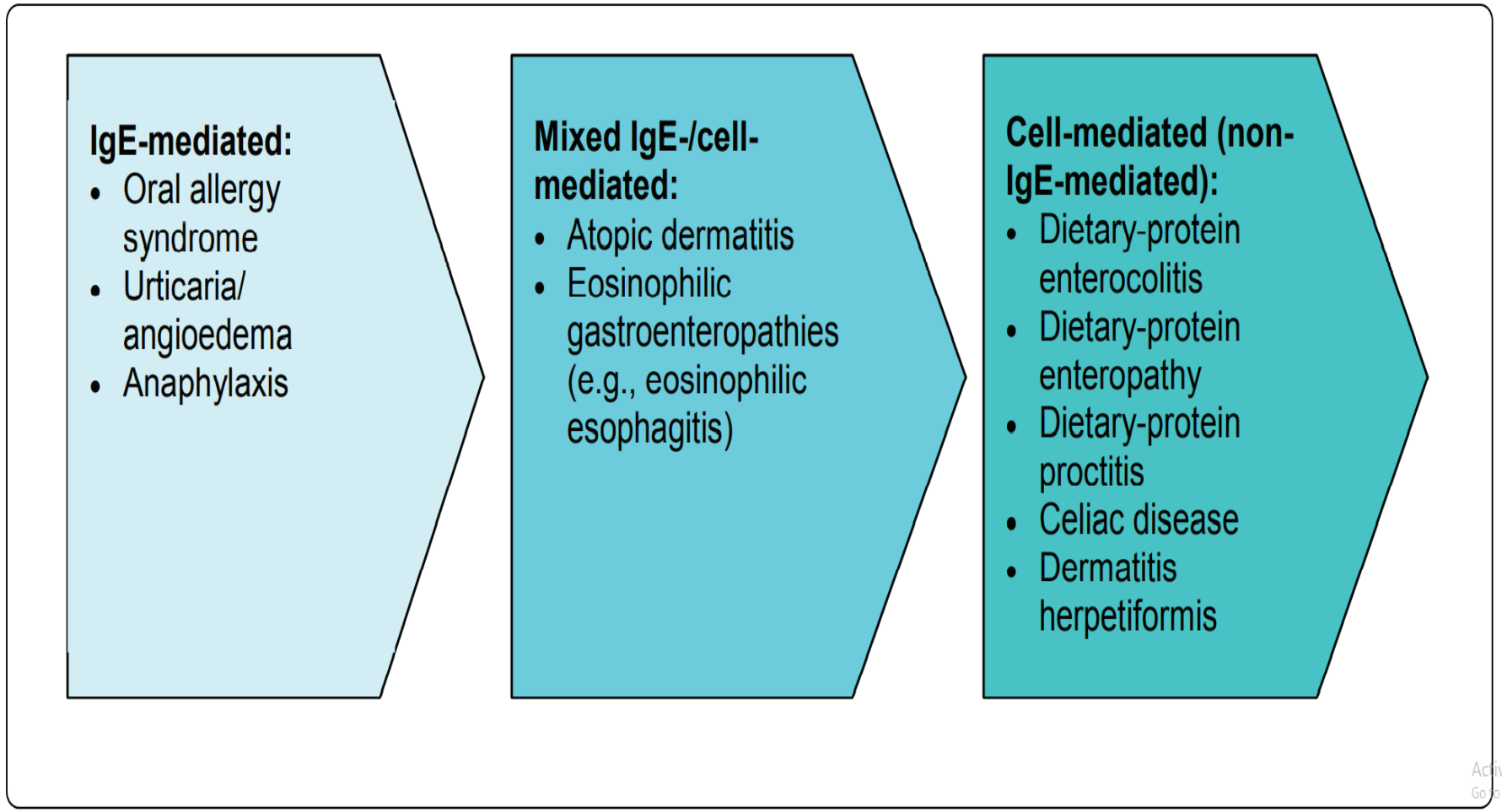
Food Allergy - Allergyplatform

Pathophysiology

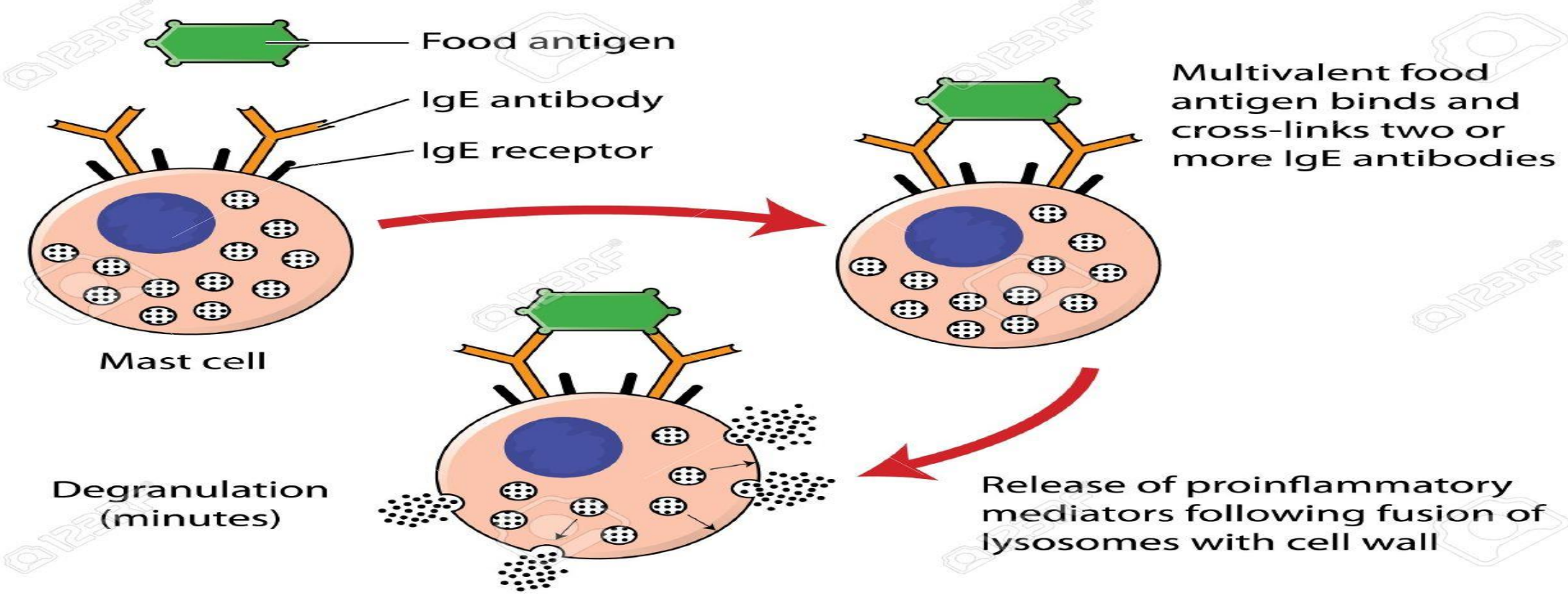
- It is the protein component, not the fat or carbohydrate component, of these foods that leads to sensitization and allergy. The allergenic segments or **"epitopes"** of these proteins tend to be small (10 to 70 kd in size), water-soluble glycoproteins that are generally **resistant to denaturation by heat or acid** and, therefore, can remain intact even after **processing, storage, cooking and digestion**
- **Examples of these glycoproteins include**
  - Caseins in milk,
  - Vicillins in peanut,
  - Ovomucoid in egg.

PATHOPHYSIOLOGY SPECTRUM OF FOOD ALLERGY DISORDER

- Food-induced allergic disorders are broadly categorized into



PATHOPHYSIOLOGY (IgE Mediated Mechanism)



Allergy

EUROPEAN JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY

EAACI

Food allergy Epidemiology in **EUROPE**

"Allergy is the most common chronic disease in Europe. Up to 20% of patients with allergies struggle daily with the fear of a possible asthma attack, anaphylactic shock, or even death from an allergic reaction"

(EAACI, 2016)

Allergy
EUROPEAN JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY
EAACI

REVIEW ARTICLE

The epidemiology of food allergy in Europe: a systematic review and meta-analysis

The lifetime and point prevalence of self-reported FA in Europe were

17.3%

Allergy **69** (2014) 62–75

JAMA The Journal of the American Medical Association

Food allergy Epidemiology in **USA**

Surveys were completed by 40443 adults, Overall, 10.8% of US adults were estimated to have 1 or more current conclusive food allergies.

Variable	Prevalence of Current FA, % (95% CI)	*P* Value	Prevalence of Adult-Onset Current FA, % (95% CI)	*P* Value
Overall	10.8 (10.4-11.1)	NA	5.2 (4.9-5.4)	NA
Sex				
Male	7.5 (7.0-7.9)	<.001	3.0 (2.7-3.3)	<.001
Female	13.8 (13.3-14.4)		7.2 (6.8-7.7)	

JAMA, Prevalence and Severity of Food Allergies Among USA dults.2019

Food allergy Epidemiology in
Saudi Arabia

ASM ANNALS OF SAUDI MEDICINE

GadElRab MO:Annals Saudi Med 1999,

- Study of 217 patients suffering from asthma, rhinitis and urticaria in Riyadh, Saudi Arabia found
  - ✓ **17.5%** to have specific IgE antibodies to various foods.
  - ✓ Peanut (23%), egg (15%) and cow's milk (13%).

GadElRab MO: Annals Saudi Med 1999,

Food allergy Epidemiology in **Saudi Arabia**

SAUDI MEDICAL JOURNAL

Saudi Med J. 2000 Jan;21(1):81-7.

Prevalence of food allergy in asthmatic patients

- Aba-Alkhail, similarly reported a **29%** prevalence rate of clinical sensitivity to food in a study of 1341 asthmatic. patients in Jeddah, Saudi Arabia.

B A Aba-Alkhail [1], F M El-Gamal

- Another study of patients attending an outpatient allergy clinic in Riyadh, Saudi Arabia, found **13%** to be sensitized to date fruits.

Kwaasi AAA, Harfi HA, Eur Allergy Clin Immunol 1999

International Journal of
Environmental Research and Public Health

MDPI

Food allergy Epidemiology in Saudi Arabia

Prevalence of Self-Reported Food Allergies and Their Association with Other Health Conditions among Adults in Saudi Arabia

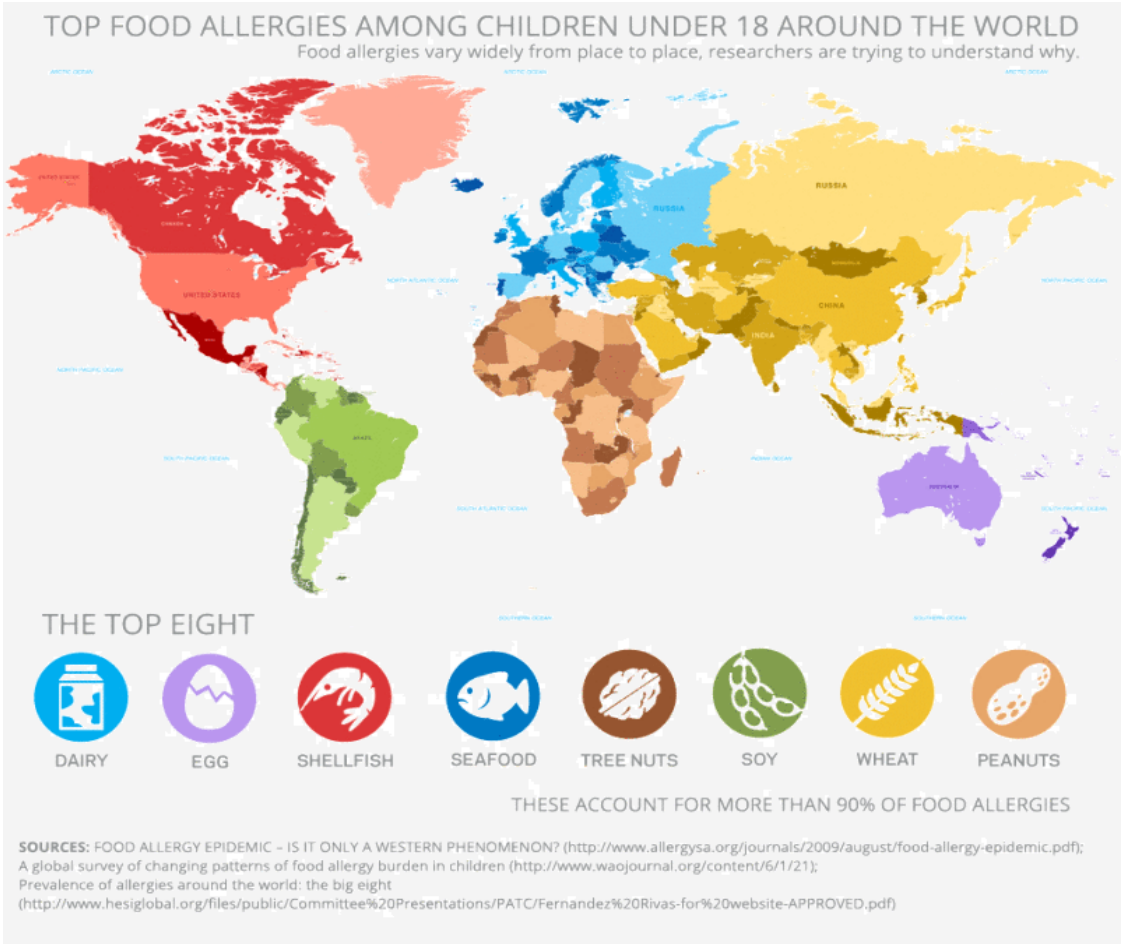
This study showed that there was a significant association between participants reporting food allergies and participants with asthma, colon disease, and bariatric surgery.

Prevalence of self-reported food allergies, overall, and by gender, age group, region, and presence of comorbidity in the study sample (n = 4709).

Variable	n (%)	Chi-Square p-Value
Overall	1009 (21.4)	-
Gender		
Male	490 (20.8)	0.329
Female	519 (22.0)	
Age Group		
18–19	59 (23.1)	0.416
20–29	335 (21.5)	
30–39	228 (22.6)	
40–49	202 (19.3)	
50–59	127 (22.9)	
60+	58 (20.0)	
Region		
Al-Jouf	54 (15.0)	<0.001
Northern Border	68 (18.8)	
Tabuk	84 (23.2)	
Hail	81 (22.6)	
Madinah	68 (23.5)	
Qassim	102 (28.3)	
Macca	70 (19.3)	
Riyadh	60 (16.5)	
Eastern Province	70 (19.4)	
Baha	75 (20.6)	
Asir	73 (19.9)	
Jazan	72 (19.9)	
Najran	114 (31.5)	
Presence of comorbidities		
No diagnosed health condition	551 (25.8)	<0.001
≥1 diagnosed health condition	458 (17.8)	

Int. J. Environ. Res. Public Health **2021**, *18*, 347. https://doi.org/10.3390/ijerph18010347

Major Allergenic Food In Various Geographic Regions



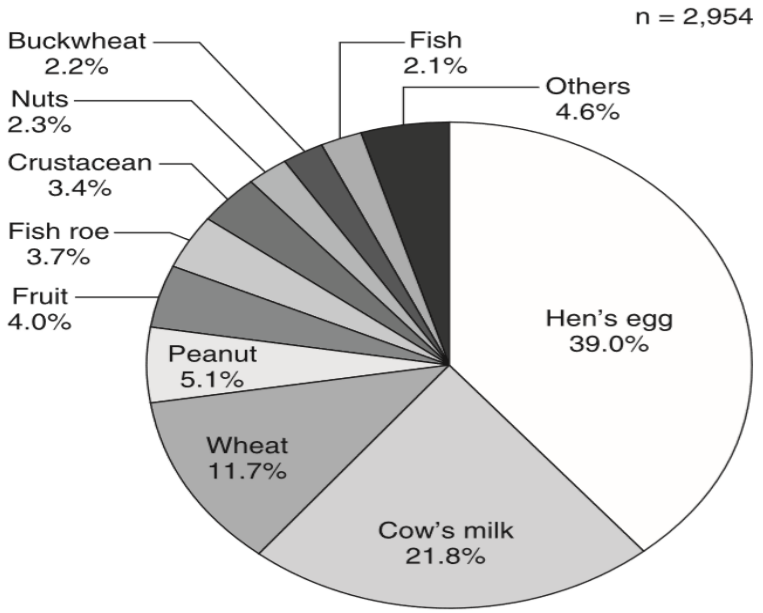
Geographic region	Country	Most common allergens reported	References
Asia	China	Shellfish, egg, peanut, beef, cow's milk, tree nuts	[15]
		Egg, cow's milk, peanut, soy, wheat,	[13]
	Hong Kong	Milk, egg, fish, wheat, soy, peanut	[13]
	Thailand	Shellfish, peanut, soy, rice, egg, milk	[13]
	Philippines	Milk, shellfish, egg, fish, wheat, soy	[13]
	Taiwan	Egg, milk, peanut, soy, shellfish, wheat	[13]
	Indonesia	Peanut, shellfish, fish, egg, milk, rice	[13]
	Malaysia	Milk, soy, egg, fish, rice	[13]
	Singapore	Shellfish, milk, egg, wheat, peanut, soy	[13]
		Egg, shellfish, peanut, fish, cow's milk, sesame	[15]
	Korea	Egg, milk, fish, pork, seafood (6–12 yr)	[21]
		Seafood, milk, peach, egg, fish (12–15 yr)	
Middle East	Saudi Arabia	Peanut, egg, cow's milk, wheat, banana, fish	[30]
	Israel	Egg, milk, sesame	[32]
Africa	Mozambique	Seafood, meat, fruits/vegetables	[42]
	Zimbabwe	Apple, tomato, soy, crab, peanut	[35]
	Morocco	Egg, peanut, wheat	[45]
	Ghana	Peanut, pineapple	[41]
	South Africa	Wheat, peanut, fish, soy, egg, milk	[36]
	Egypt	Peanut, fish, egg, cow's milk, sesame, banana	[44]
South America	Mexico	Dairy, egg, fish, shrimp, beans, soy	[51]
		Fish, milk, seafood, soy, orange	[55]

Food allergies in developing and emerging economies:, 2012

Allergology International
Open access
Japanese guidelines for food allergy 2017

CAUSATIVE FOODS OF NEW-ONSET FOOD ALLERGIES

	<1 year old (884)	1 year old (317)	2–3 years old (173)	4–6 years old (109)	7–19 years old (123)	≥20 years old (100)
1	Hen's egg 57.6%	Hen's egg 39.1%	Fish roe 20.2%	Fruit 16.5%	Crustacean 17.1%	Wheat 38.0%
2	Cow's milk 24.3%	Fish roe 12.9%	Hen's egg 13.9%	Hen's egg 15.6%	Fruit 13.0%	Fish 13.0%
3	Wheat 12.7%	Cow's milk 10.1%	Peanut 11.6%	Peanut 11.0%	Hen's egg Wheat 9.8%	Crustacean 10.0%
4		Peanut 7.9%	Nuts 11.0%	Buckwheat Fish roe 9.2%		Fruit 7.0%
5		Fruit 6.0%	Fruit 8.7%		Buckwheat 8.9%	



M. Ebisawa et al. / Allergology International 66 (2017)

The Saudi Journal of Gastroenterology

Common Food Allergen In Saudi Arabia

GadElRab MO:. Saudi J Gastroenterol 1998

- Further studies with 100 adult asthmatic patients found
  - ✓ up to **58%** reacting to at least one of 24 allergens tested.
  - ✓ Peanut (11%),
  - ✓ Egg white (3%),
  - ✓ Milk (3%),
  - ✓ Wheat (3%),
  - ✓ Banana (3%) and fish (2%)

Common Food Allergen In **Saudi Arabia**

SAUDI MEDICAL JOURNAL

Saudi Med J. 2000 Jan;21(1):81-7.

Prevalence of food allergy in asthmatic patients

B A Aba-Alkhail [1], F M El-Gamal

The most common food allergen suspected in asthmatic patients with clinical sensitivity to food (n.392)

Suspected food	No. of subjects (%)
Egg	312 (80)
Banana	264 (67)
Fish	233 (59)
Tomatoe	136 (35)
Cirtus fruits	132 (34)
Strawberry	124 (32)
Nuts	80 (20)
Cow's milk	68 (17)
Beer	52 (13)
Melon	48 (12)
Mushroom	36 (9)

Aba-Alkhail BA, El-Gamal FM:. Saudi Med J 2000,

Common Food Allergen

Saudi Arabia

International Journal of *Environmental Research and Public Health*

MDPI

Prevalence of Self-Reported Food Allergies and Their Association with Other Health Conditions among Adults in Saudi Arabia

Int. J. Environ. Res. Public Health **2021**, *18*, 347. https://doi.org/10.3390/ijerph18010347

Prevalence of self-reported specific food allergies in general adult population weighted sample (n = 4709).

Type of Food Allergy	n (%) [a]
Egg	172 (3.7)
Shellfish and Shrimp	145 (3.1)
Peanut	141 (3.0)
Milk	123 (2.6)
Fish	118 (2.5)
Tree Nuts	82 (1.7)
Soy	44 (0.9)
Wheat	39 (0.8)
Other	410 (8.8)

[a] Participants were able to report food allergy to more than one allergen.

Common Food Allergen

1- EGG allergy

- Egg allergy is more common in childhood.
- Half of children will grow out of it by the age of 3.
- In a few cases, an egg allergy can cause anaphylaxis.
- Three proteins cause egg allergy:
  ovomucoid,
  ovalbumin
  conalbumin.
- Cooking can destroy some of these allergens, but not others. So, some people might react to cooked eggs, as well as raw eggs.
- Occasionally, someone might react to egg because they have an allergy to chicken, or turkey meat, or to bird feathers. This is called **BIRD-EGG SYNDROME**

2- MILK ALLERGY

Common Food Allergen

- A reaction can be triggered by small amounts of milk, either passed through the mother's breast milk, or from feeding cows' milk directedly .
- Children usually grow out of milk allergy by age 3 to 5.
- In very few cases, milk allergy can cause anaphylaxis.

3- FISH ALLERGY

Common Food Allergen

- It cause severe reactions, including anaphylaxis.
- allergic to one type of fish, such as cod, often react to other types of fish, such as hake, haddock, mackerel, and whiting.
- Cooking doesn't destroy fish allergens.

4- SHELLFISH ALLERGY

Common Food Allergen

❖Shellfish allergy is quite common.

❖ Many different types of shellfish can cause reactions, including
- ✓ shrimp
- ✓ lobster
- ✓ crab
- ✓ crayfish
- ✓ oysters
- ✓ scallops
- ✓ Mussels and clams.

❖Shellfish allergy can often cause severe reactions, and some people can even react to the vapors from cooking shellfish

5- NUTS ALLERGY

Common Food Allergen

- Nuts allergy is usually **lifelong.**
- Types include
  walnuts,
  hazelnuts,
  almonds,
  pecans,
  Brazil nuts,
  pine nuts,
  macadamia nuts
  cashew nuts.
- It can cause **anaphylaxis.**
- Allergy to one type will also react to other nuts.

6- PEANUTS ALLERGY

Common Food Allergen

- also known as groundnuts and monkey nuts.
- Often lifelong.
- Can cause severe reactions, including anaphylaxis.
- Not destroyed by cooking or roasting.
- Tiny amounts can cause a reaction.
- Peanut allergy might also react to other legumes such as soybeans, green beans, kidney beans, and green peas

7- WHEAT ALLERGY

Common Food Allergen

- Wheat allergy is **common**, particularly among babies.
- One of the main allergens in wheat is a protein called gliadin, which is found in **gluten**.
- Because of this, people with a wheat allergy are sometimes recommended **to eat a Gluten-free diet**.

Common Food Allergen

8- SULPHITES ALLERGY

- Sulphites used to
  - ✓ preserve food flavor and color,
  - ✓ inhibit bacterial growth,
  - ✓ increase shelf life.

- Cause allergy-like reactions commonly
  - ✓ Asthma symptoms in those with underlying asthma,
  - ✓ Allergic rhinitis (hay fever) like reactions,
  - ✓ Occasionally Urticaria,
  - ✓ Rarely Anaphylaxis.

- ✓ Sex, female > Male
- ✓ Age, Children > Adults.
- ✓ Familial atopic history (the presence of other allergic diseases or allergic sensitization in the subjects, their parents, or siblings were strong risk factors.
- ✓ Cesarean section delivery were not associated with increased risk BUT with the use of infant formula risk increase.

Allergy **69** (2014) 62–75 © 2013 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd

CLINICAL MANIFESTATIONS

- Food allergy is associated with a well-defined signs and symptoms, involve muti-system including the Skin, GIT, Respiratory, and cardiovascular system.
- Skin reactions are the most common and include acute urticaria (hives), angioedema (swelling) and erythema (redness of the skin).
- Respiratory tract symptoms include laryngeal edema, rhinorrhea, and bronchospasm.
- GI-related signs and symptoms include nausea, vomiting, abdominal pain, and diarrhea.

CLINICAL MANIFESTATIONS

insemarDrawings | Shutterstock

CLINICAL MANIFESTATIONS CROSS-REACTIVITY

Cross-Reactivity

- It is antibody reaction not only with the original allergen, but with similar allergen that shares the same structural or sequence similarity, and trigger an adverse reaction similar to that triggered by the original allergen.

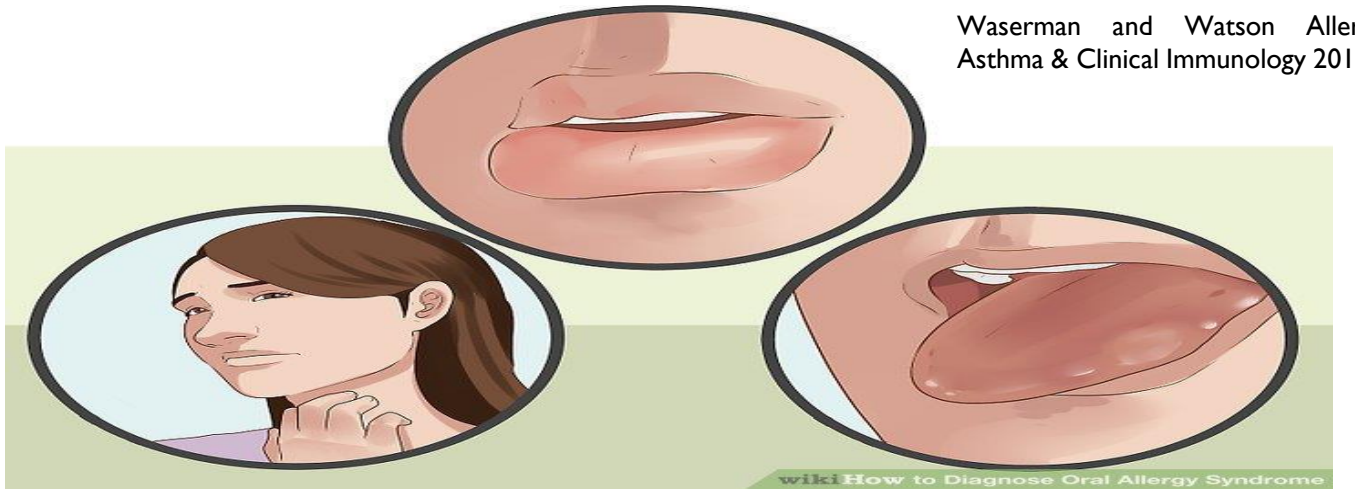
- E.g. among different shellfish and different tree nuts.

SUMMARY OF THE NIAID-SPONSORED EXPERT PANEL REPORT 2011

CLINICAL MANIFESTATIONS ORAL ALLERGY SYNDROME I

- **Oral Allergy Syndrome**, mild IgE-mediated reaction.
  - Causes TINGLING and ITCHING of the mouth and pharynx.
  - Triggered after consumption of fresh fruits and vegetables in pollen-allergic individuals.
  - Caused by cross reactivity of IgE antibodies to certain pollens with proteins in some fresh fruits and vegetables.

Waserman and Watson Allergy, Asthma & Clinical Immunology 2011



CLINICAL MANIFESTATIONS ORAL ALLERGY SYNDROME2

- **Oral Allergy Syndrome**, mild IgE-mediated reaction.
  - These proteins are heat labile, enabling allergic individuals to eat these foods when cooked.
  - Allergy skin tests are usually negative to commercial food extracts, but are positive to the fresh food.

Waserman and Watson Allergy, Asthma & Clinical Immunology 2011

CLINICAL MANIFESTATIONS ORAL ALLERGY SYNDROME

ORAL ALLERGY SYNDROME (OAS)

Allergy & Asthma NETWORK

People with OAS develop symptoms around their mouth from eating the following raw fruits and vegetables when birch trees, grasses and ragweed are pollinating:

What foods cause oral allergy syndrome?

The following lists show foods that are botanically related to birch, grasses and ragweed:

Birch pollen

- almond
- apple
- carrot
- celery
- cherry
- hazelnut
- kiwi
- peach
- pear
- plum
- potato
- pumpkin seed

Grass pollen

- kiwi
- melon
- peach
- tomato

Ragweed pollen

- banana
- chamomile
- cucumber
- echinacea
- melon (watermelon, cantaloupe, honeydew)
- sunflower seed
- zucchini

www.allergyasthmanetwork.org

If Allergic to:	Risk of Reaction to at Least One:	Risk:
A legume* (peanut)	Other legumes (peas, lentils, beans)	5%
A tree nut (walnut)	Other tree nuts (brazil, cashew, hazelnut)	37%
A fish* (salmon)	Other fish (swordfish, sole)	50%
A shellfish (shrimp)	Other shellfish (crab, lobster)	75%
A grain* (wheat)	Other grains (barley, rye)	20%
Cow's milk*	Beef (hamburger)	10%
Cow's milk*	Goat's milk (goat)	92%
Cow's milk*	Mare's milk (horse)	4%
Pollen (birch, ragweed)	Fruits/vegetables (apple, peach, honeydew)	55%
Peach*	Other Rosaceae (plum, pear, apple, cherry)	55%
Melon* (cantaloupe)	Other fruits (watermelon, banana, avocado)	92%
Latex* (latex glove)	Fruits (kiwi, banana, avocado)	35%
Fruits (kiwi, avocado, banana)	Latex (latex glove)	11%

Clinical implications of cross-reactive food allergens

Scott H. Sicherer, MD *New York, NY*

Cross-reactivity between shellfish:

There is a high degree of cross-reactivity among crustacean shellfish (e.g., shrimp, lobster, crab, crawfish).

Cross-reactivity between latex and food:

30 to 70% of IgE-mediated allergies to latex experience symptoms with any of several fruits, most commonly banana, avocado, kiwi, and chestnut **Latex-Fruit Syndrome.**

Cross-reactivity between peanut and tree nuts or seeds:

20 to 30 % of peanut allergy are allergic to 1 or > of tree nuts.

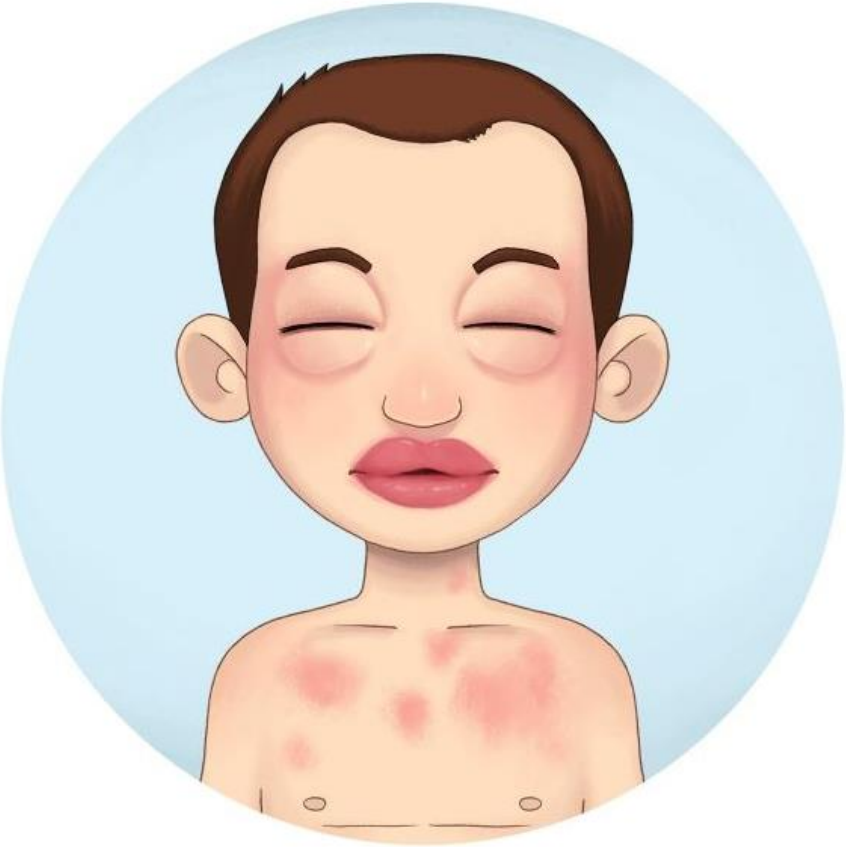
Additionally, walnut, pecan, and hazelnut comprise a group of strongly cross-reactive tree nuts.

Approximate rate of clinical reactivity to at least 1 other related food. The probability of reacting to related foods varies, depending on numerous factors (see text). *Data derived from studies with DBPCFCs.

CLINICAL MANIFESTATIONS ANAPHYLAXIS

Anaphylaxis

- The most severe and serious allergic reaction
- Rapid in onset and may cause death.
- Signs and symptoms develop within minutes up to 2 hours of food exposure.
- Early symptoms should not be ignored.
- Reactions can be highly unpredictable, vary from person to person, and from attack to attack in the same person.



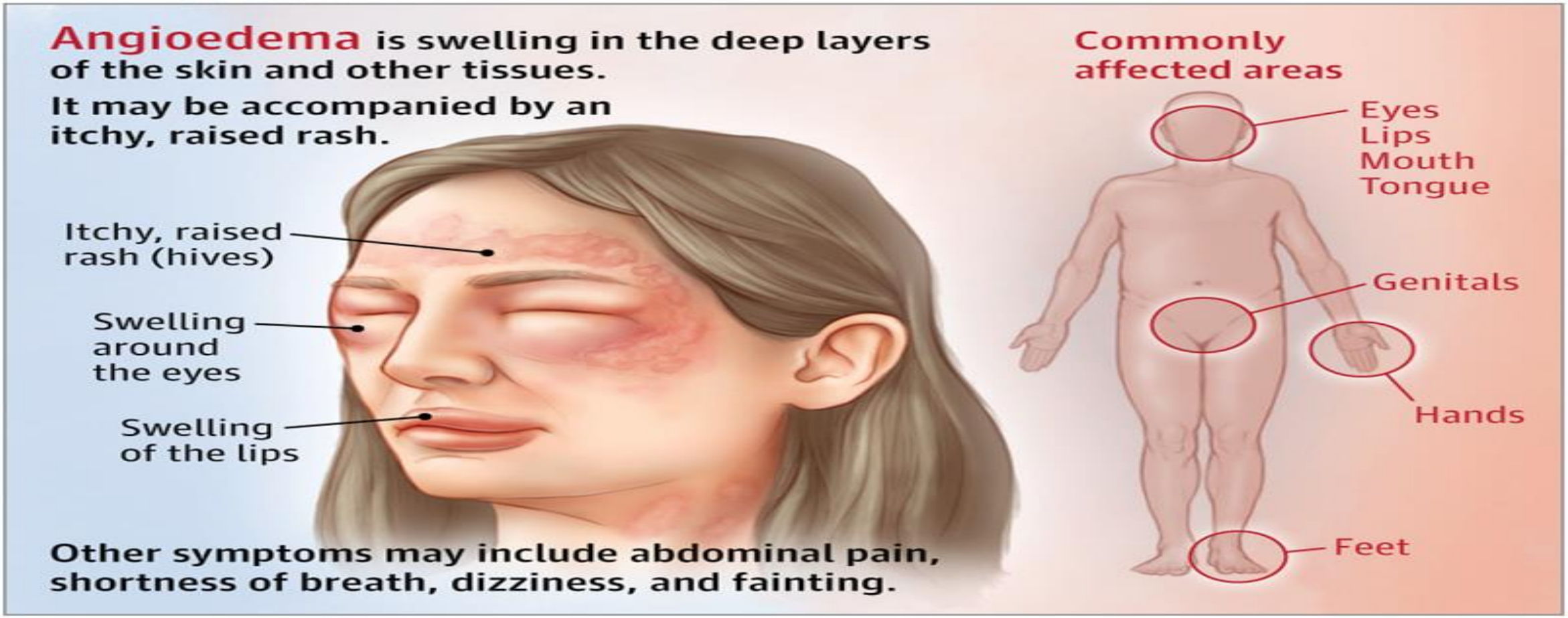
CLINICAL MANIFESTATIONS ANAPHYLAXIS

3 sets of criteria for making a diagnosis of anaphylaxis[27]

1	Involvement of ≥ 2 of 4 organ systems after exposure to a likely allergen for that patient, with acute onset (minutes to several hours): • Skin–mucous membrane (eg, urticaria, flushing, angioedema, oral itching, nasal congestion, sneezing) • Respiratory (eg, coughing, wheezing, chest tightness, shortness of breath, dyspnea) • Gastrointestinal (eg, nausea, vomiting, diarrhea, abdominal pain) • Cardiovascular (eg, dizziness, hypotension, syncope)
OR	
2	Hypotension after exposure to known allergen for that patient, with acute onset (minutes to several hours): • Adults: Systolic BP < 90 mm Hg or > 30% decrease from baseline • Infants and children: Low age-specific systolic BP or > 30% decrease from baseline
OR	
3	1 or both of the following plus acute onset (minutes to several hours) of skin–mucous membrane involvement (eg, urticaria, flushing, angioedema, oral itching, nasal congestion, sneezing) • Respiratory symptoms (eg, coughing, wheezing, chest tightness, shortness of breath, dyspnea) • Cardiovascular involvement (eg, dizziness, hypotension, syncope)

BP, blood pressure.
Adapted with permission from: Sampson et al. *J Allergy Clin Immunol*. 2006.[27]

CLINICAL MANIFESTATIONS ANAPHYLAXIS - ANGIOEDEMA



Photos from Anesthesia and Intensive Care Knowledge's post

ALLERGY, ASTHMA & CLINICAL IMMUNOLOGY

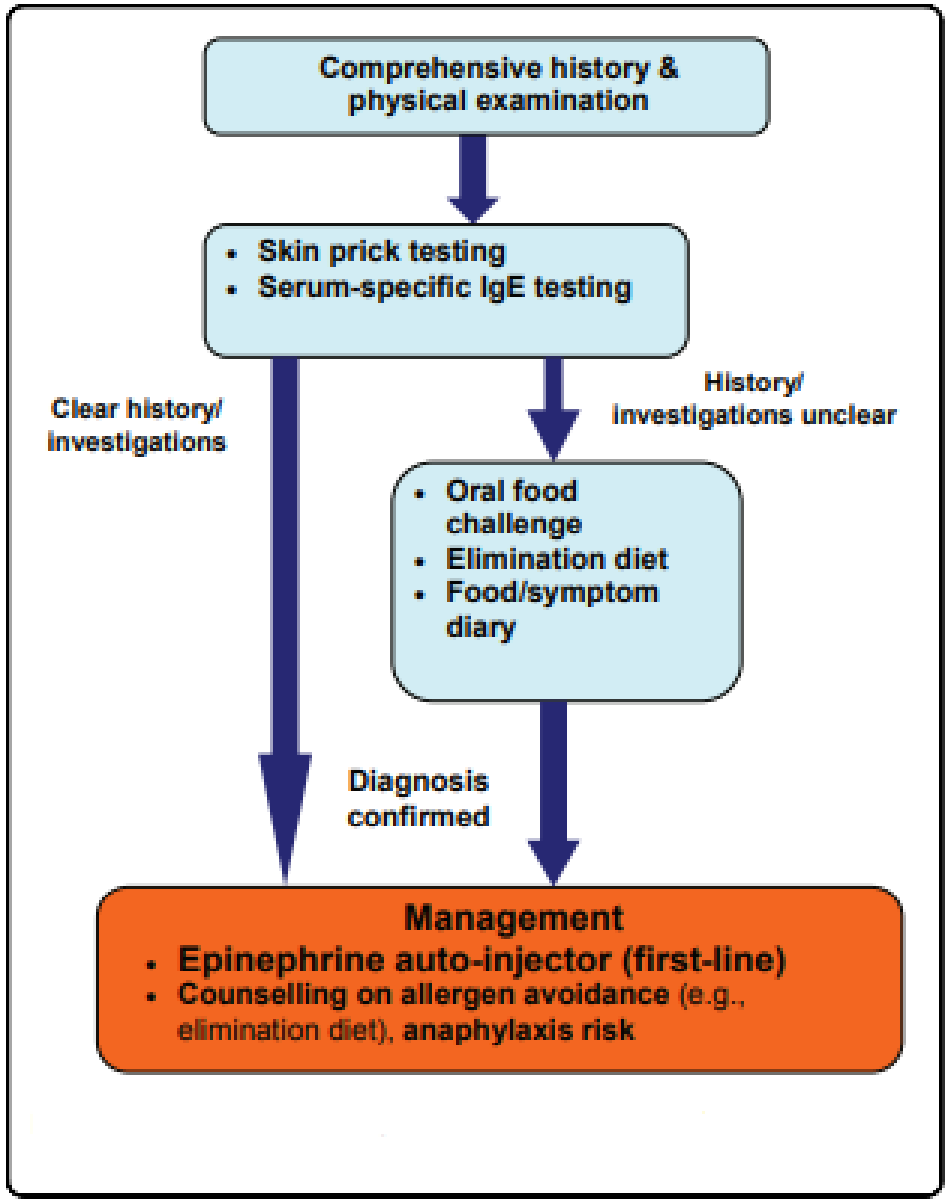
DIAGNOSIS OF FOOD ALLERGY

Detailed History :-

- Inquire about all suspect foods
- Discuss the manner of food preparation
  (e.g. Cooked, Raw, Spices, Ingredients).
- Time of onset of symptoms in relation to food exposure, symptom duration and severity,
- Reproducibility of symptoms in recurrent exposure.
- factors impulsive allergic reaction, as exercise or alcohol.

Physical Examination

- Any evidence of atopy or allergic diseases (e.g., atopic dermatitis, asthma, and allergic rhinitis).
- Assessing overall nutritional status and growth in children



Waserman and Watson Allergy, Asthma & Clinical Immunology 2011

ALLERGY, ASTHMA & CLINICAL IMMUNOLOGY

DIAGNOSIS OF FOOD ALLERGY

Diagnostic Tests

1- Skin prick tests (SPT)

- sensitivity 90%; specificity 50%.
- for foods relevant to the patient's history.
- Negative predictive value >95%, therefore, a negative SPT confirms absence of IgE-mediated reactions.

2- Serum-specific IgE

- high sensitivity.
- 95 % specificity in children with atopic dermatitis who are allergic to eggs, milk, peanuts, or fish.

Waserman and Watson Allergy, Asthma & Clinical Immunology 2011, 7(Suppl 1):

Sampson HA, Ho DG. Relationship between food-specific IgE concentrations. *J Allergy Clin Immunol.* 1997

ALLERGY, ASTHMA & CLINICAL IMMUNOLOGY

DIAGNOSIS OF FOOD ALLERGY

Diagnostic Tests

3- Oral food challenges

- Gradual feeding of the suspected food.
- Medically-supervised assessment for any symptoms.
- Discontinued if any symptoms.
- Conducted only in clinics or hospitals equipped with both the personnel and equipment to treat anaphylaxis.

Waserman and Watson Allergy, Asthma & Clinical Immunology 2011, 7(Suppl 1):

Sampson HA, Ho DG. Relationship between food-specific IgE concentrations. *J Allergy Clin Immunol.* 1997

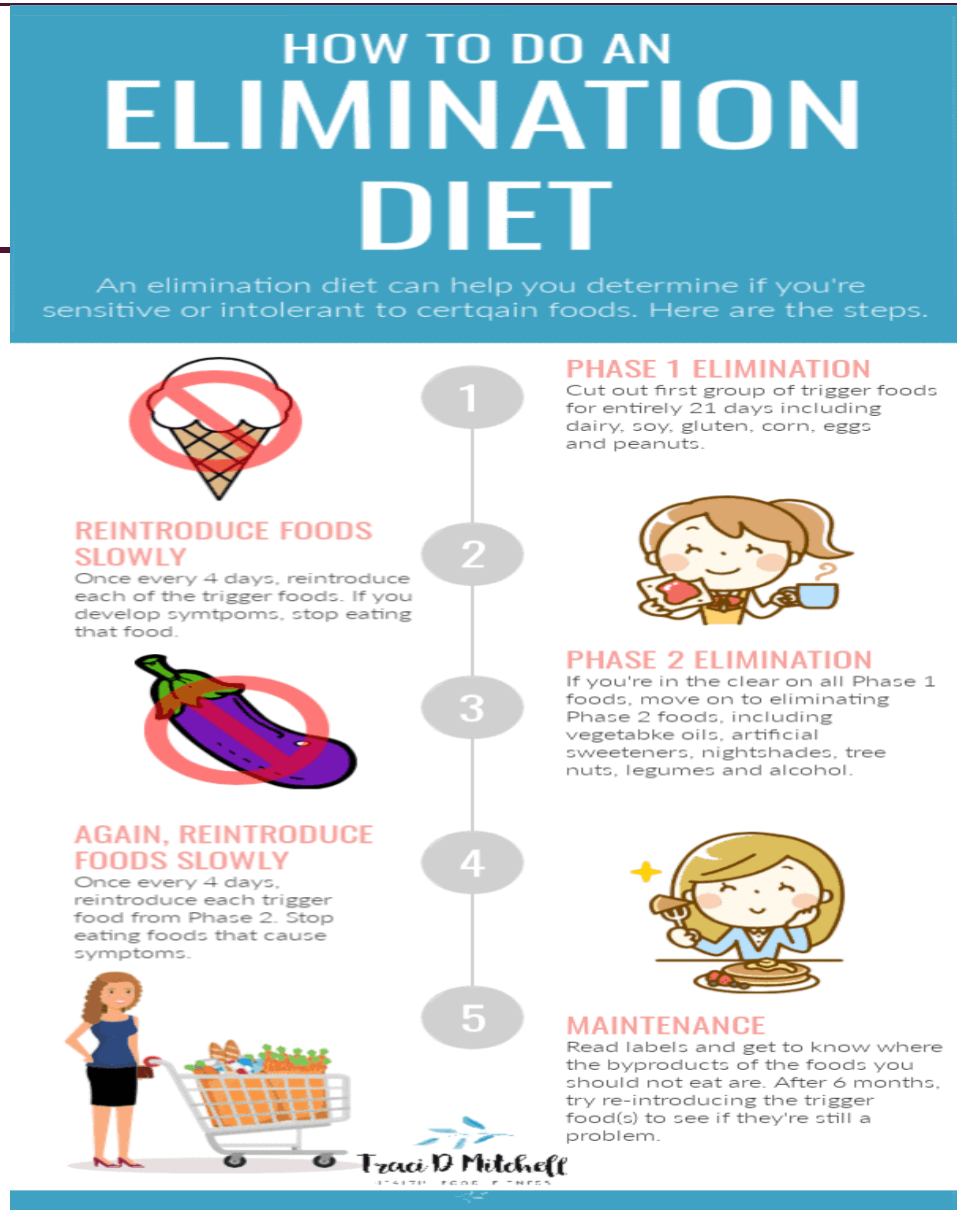
ALLERGY, ASTHMA & CLINICAL IMMUNOLOGY

DIAGNOSIS OF FOOD ALLERGY

Diagnostic Tests

4- Elimination diet

- Complete avoidance of suspected foods.
- Monitoring for an associated decrease in symptoms.
- Success depends on:-
  - ✓ Identifying the correct food allergen
  - ✓ Complete elimination.
  - ✓ Patient compliance.



Waserman and Watson Allergy, Asthma & Clinical Immunology 2011

ALLERGY, ASTHMA & CLINICAL IMMUNOLOGY

DIAGNOSIS OF FOOD ALLERGY

Diagnostic Tests

5- Food/symptom diaries

- Chronological record of all foods eaten and any associated adverse symptoms.
- **Help identify** food but **Not diagnostic**.

Clever Guts Daily Food & Symptoms Diary

the clever guts diet

www.cleverguts.com

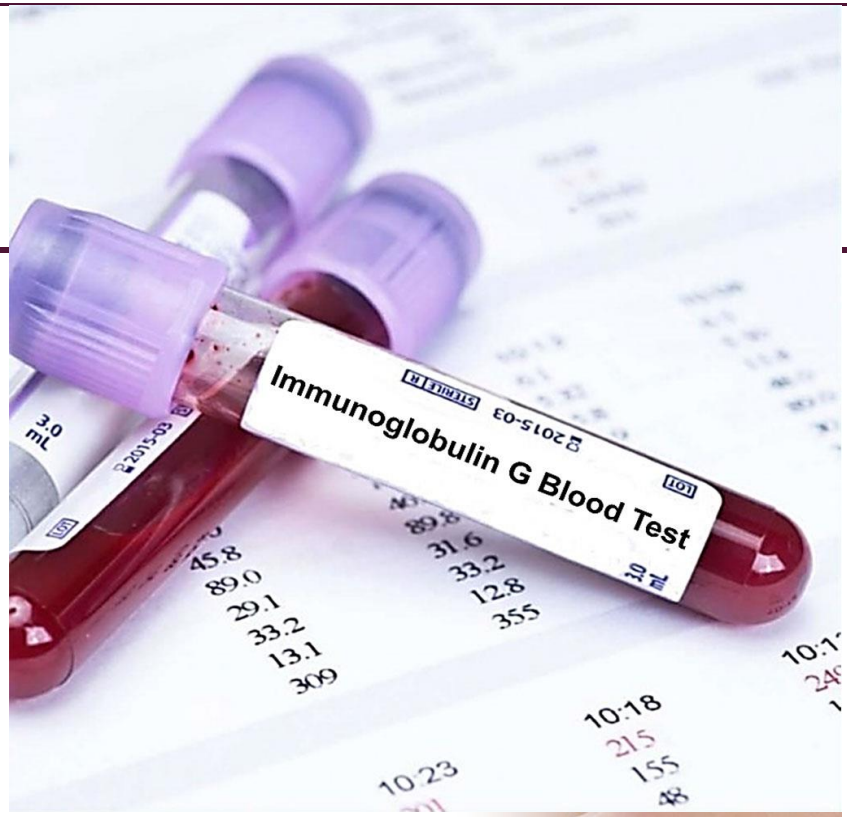
Date					
Meal	Time	**Food & drink content & quantity**	**Symptoms;** eg bloating, abdominal pain, nausea, sickness, diarrhoea, brain fog, irritability, headache	**Symptom time & duration**	**Other factors;** including stress, poor sleep, exercise, illness, medicines & remedies
Breakfast					
Snack?					
Lunch					
Snack?					
Supper					
Snack?					

Notes	

Waserman and Watson Allergy, Asthma & Clinical Immunology 2011

ALLERGY, ASTHMA & CLINICAL IMMUNOLOGY

DIAGNOSIS OF FOOD ALLERGY



Diagnostic Tests

6- serum immunoglobulin G (IgG) (ImuPro)™

- High positive IgG food rates, BUT still **CONTROVERSIAL**
- Most of IgG food test papers are cohort, cross sectional, retrospective, case reports
- No Randomized Control Trials RCTs available until now.

7- Patch testing

- Commercially prepared food extracts applied to skin and occluded with patch.
- Positive predictive value of RAST or skin-prick test combined with patch test is high.
- Overall clinical usefulness unclear.

Roehr CC, Atopy path tests, *J Allergy Clin Immunol.* 2001

TREATMENT OF FOOD ALLERGY

1) Adjustment Of Nutritional Behaver

Education for both Patient, Family and school

- ✓ Food Avoidance,
- ✓ A Properly Managed, Well-Balanced Elimination,
- ✓ Food Alternatives as e.g. in Cow Milk Allergy
  - Extensively Hydrolyzed Formula.
  - Amino Acid Based Formula.
  - Soy Milk formula.
- ✓ How to read food lab and food warnings as:-
  - "Natural flavor"
  - "Spices"
  - "May contain".

Snack Ideas for kids with a Peanut Allergy	Snack Ideas for kids with a Gluten Allergy	Snack Ideas for kids with a Egg and Dairy Allergy
1. Pretzels	1. Veggie Straw Puffs	1. Cheerios
2. Animal Crackers	2. Yogurt	2. Apple Sauce
3. Popcorn	3. Mandarin Oranges	3. Raisins / Craisains
4. Goldfish	4. Grapes / Bananas	4. Rice Chex
5. Cheese Sticks	5. Rice Cakes	5. Fig Newton's
6. Granola	6. Apple Sauce	6. Potato Sticks
7. Corn Chips	7. Hummus & Gluten Free Pretzels	7. Pretzels
8. Vanilla Wafers	8. Gluten Free Pepperoni	8. Oreos
9. Cheese Its	9. 100% Juice popsicles	9. Fruit Cups
10. Pudding	10. Dehydrated Fruit (Apples)	10. Marshmallows
11. Yogurt / Go Gurt	11. Gummy Candies	11. Popcorn
12. Rice Krispy Treats	12. Almond Joy Candy Bars	12. Teddy Grahams
13. Tootsie Rolls	13. String Cheese	13. Fruit Snacks
14. Triscuits	14. Raisins	14. Corn Chips
15. Go-Go Squeeze Apple Sauce	15. Pickles	15. Animal Crackers

The Realistic Mama

* I'm not a doctor or an expert, I'm just a mom sharing my advice. I would highly recommend any questions, doubts, or concerns be directed to a school nurse or medical professional. The information and reference materials contained here are intended solely for the general information of the reader. We encourage your own research to better familiarize yourself with the individuals needs.

TREATMENT OF FOOD ALLERGY

2) Symptomatic Treatment

- **Anti-histamines** H-1 receptor antagonists or H-1 blockers
  - ✓ First-generation antihistamines.
    - Brompheniramine (Children's Dimetapp Cold).
    - Chlorpheniramine (Chlor-Trimeton)
    - Dexchlorpheniramine Dimenhydrinate (Dramamine).
    - Doxylamine (Tylenol Cold).
  - ✓ Second-generation antihistamines.
    - Azelastine (Astelin).
    - Loratadine (Claritin).
    - Cetirizine (Zyrtec).
    - Desloratadine (Clarinex).
    - Fexofenadine (Allegra).
- **Prednisone** Oral or Topical (creams or ointments)

TREATMENT OF FOOD ALLERGY

3) Emergency Treatment

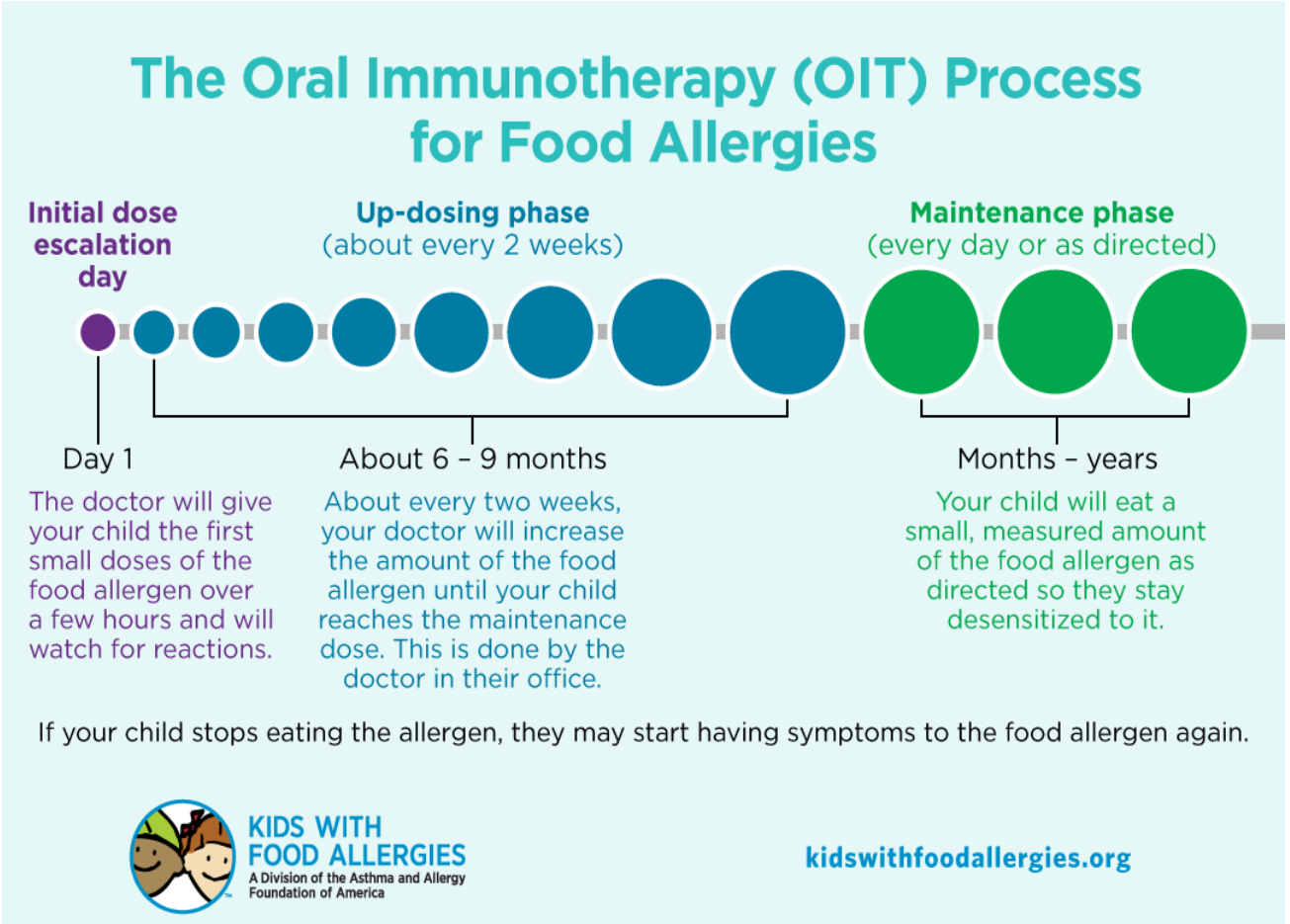
- **Written Plan** for the treatment of accidental exposure.
- **Training Programs f**or teachers and other caregivers on :-
  - Recognition and management of anaphylaxis
  - Anaphylaxis action plans for daycares, home and schools
- **Epinephrine Auto-Injectors** (emergency)
  - 0.30 mg for 30 kg or more, body weighing .
  - 0.15 mg for children 15–30 kg. body weighing.
- **Hydrocortisone** 5 mg/kg, or approximately 250 mg IV.
- **Wear Medical Identification** (bracelet / necklace).

TREATMENT OF FOOD ALLERGY

4) Desensitization Treatment

Oral immunotherapy (OIT) protocols, small amounts of allergen are administered orally and in gradually increasing amounts, with the immediate goal to induce desensitization.

Desensitization is conducted for peanut , egg and milk allergy, Results are promising.



Oral immunotherapy for food allergy

Author: Anna Nowak-Węgrzyn, MD, PhD
Section Editor: Scott H Sicherer, MD, FAAAAI
Deputy Editor: Elizabeth TePas, MD, MS

UpToDate®

- Peanut (Arachis hypogaea) Allergen.
- First oral immunotherapy drug approved by FDA (January 2020)
- Powder-dnfp (Palforzia), for 4 to 17 y. old confirmed peanut allergy.
- indication
  - Reduce allergic reactions,
  - Risk of anaphylaxis.
- Contraindicated in
  - Uncontrolled asthma
  - Eosinophilic esophagitis.

Literature review current through: **Apr 2022.** | This topic last updated: **Jan 28, 2022.**

TREATMENT OF FOOD ALLERGY

5) Potential New Directions

- **Anti-IgE antibodies**
  - ✓ As an adjunctive therapy with OIT, showing a satisfactory safety profile.
  - ✓ The optimal dosage, duration of treatment and long-term effects remain to be elucidated.

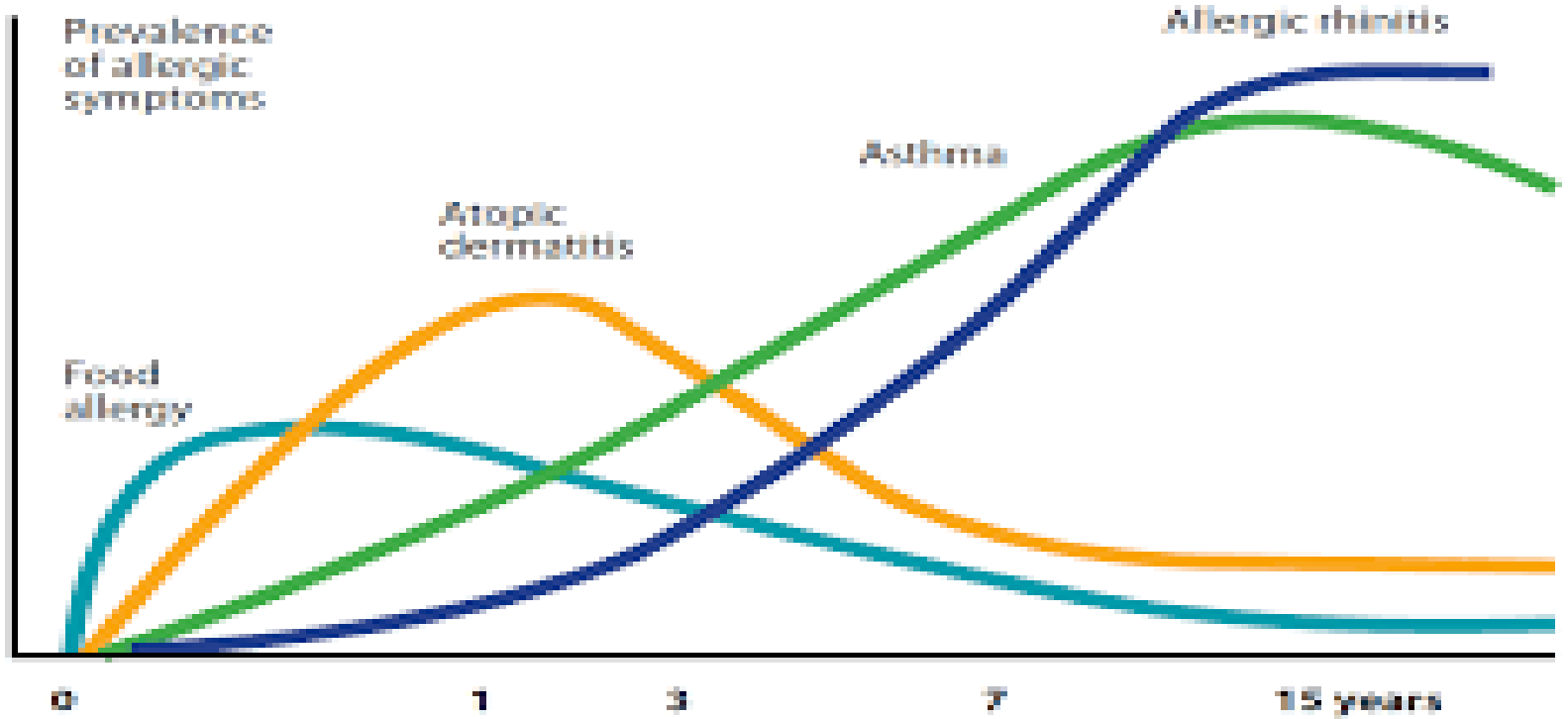
- **Injection Of Monoclonal IgG**
  - ✓ It binds to IgE and masks regions responsible for receptor binding to mast cells and basophiles partially protects patients with peanut allergies and shows promise for use in other food allergies.

- **Non-allergen-specific molecules** as
  - ✓ Cytokines,
  - ✓ probiotics,

Currently Being Investigated, But Their Use In Humans Is Still Far From Clinical Application.

PROGNOSIS

Typical evolution of allergic disease



Adapted from Holgate S, Church MK, eds. Allergy. London: Gower Medical Publishing, 1993

Prevention of food allergy

George du Toit, MD,[a] Teresa Tsakok, MRCP,[b] Simon Lack, BA,[c] and Gideon Lack, MD[a] *London, United Kingdom*

Strategies for the prevention of FA might include

- Primary prevention, To prevent the onset of IgE sensitization.
- Secondary prevention, To interrupt the development of FA in IgE-sensitized children.
- Tertiary prevention, To reduce the expression of end-organ allergic disease in children with established FA.

Prevention of food allergy

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WILEY

POSITION PAPER

EAACI guideline: Preventing the development of food allergy in infants and young children (2020 update)

Susanne Halken[1] | Antonella Muraro[2] | Debra de Silva[3] | Ekaterina Khaleva[4] | Elizabeth Angier[5] | Stefania Arasi[6] | Hasan Arshad[7,8,9] | Henry T. Bahnson[10] | Kirsten Beyer[11] | Robert Boyle[12,13] | George du Toit[14] | Motohiro Ebisawa[15] | Philippe Eigenmann[16] | Kate Grimshaw[8,17] | Arne Hoest[1] | Carla Jones[18] | Gideon Lack[19,20,21,22] | Kari Nadeau[23] | Liam O'Mahony[24] | Hania Szajewska[25] | Carina Venter[26] | Valérie Verhasselt[27] | Gary W. K. Wong[28] | Graham Roberts[4,7,9] | European Academy of Allergy and Clinical Immunology Food Allergy and Anaphylaxis Guidelines Group

Prevention of food allergy

The American College of Allergy, Asthma and Immunology Recommends

1- Exclusive breastfeeding for the first six months in infants with a atopic family

2- Solid food not being introduced until after six months of age.

3- Breast-feeding mother should avoid eggs, milk, tree nuts, peanuts, and seafood.

4- In the child's diet, nuts, shellfish, and fish are delayed until three to four years of age.

5- Hydrolyzed formulas for high-risk infants.

- Globally, 200 to 250 million suffer from food allergies. with a true rise over the past 10–20 years.
- Milk, Egg, Soy, & Wheat Allergy usually outgrown by school age.

Wood RA: The natural history of food allergy. Pediatrics 2003

- Peanut, Tree nuts, Fish, & Shellfish Allergy often lifelong.

Hourihane JO: Resolution of peanut allergy: case control study. BMJ 1998

- Peanut & TreeNuts cause the most serious & fatale allergic reactions.

MacDougall CF . Arch Dis Child 2002

Take Home Messages

FOOD ALLERGY
Epidemiology & Management