The University of Manchester

Lancashire Teaching Hospitals NHS
NHS Foundation Trust

FOOD ALLERGY

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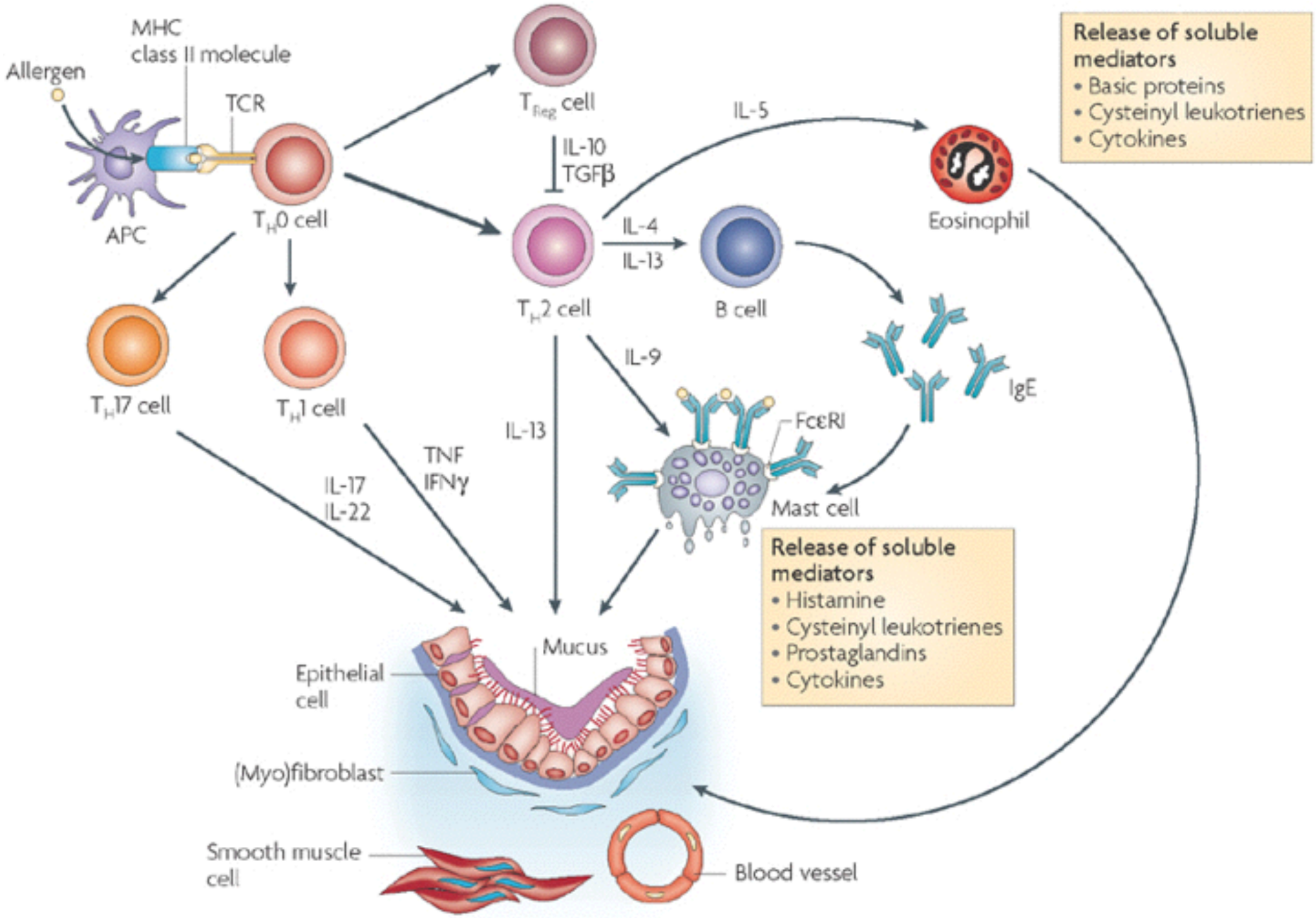
NHS
North West Allergy and Clinical Immunology Network

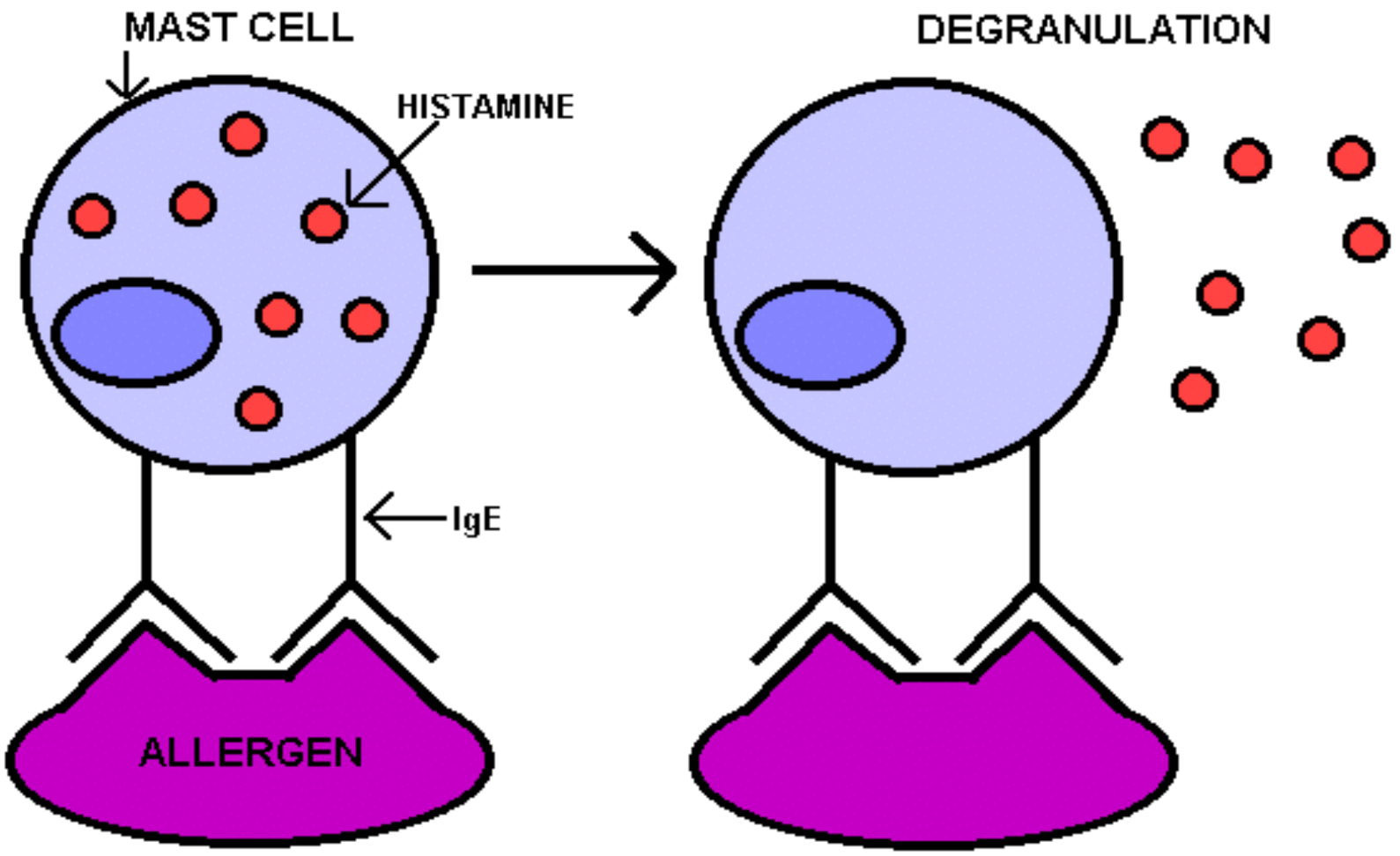
LEARNING OUTCOMES

- Pathophysiology
- Presentation
- Diagnosis
- Investigation
- Management
- Milk Allergy
- Egg Allergy
- Vaccinations

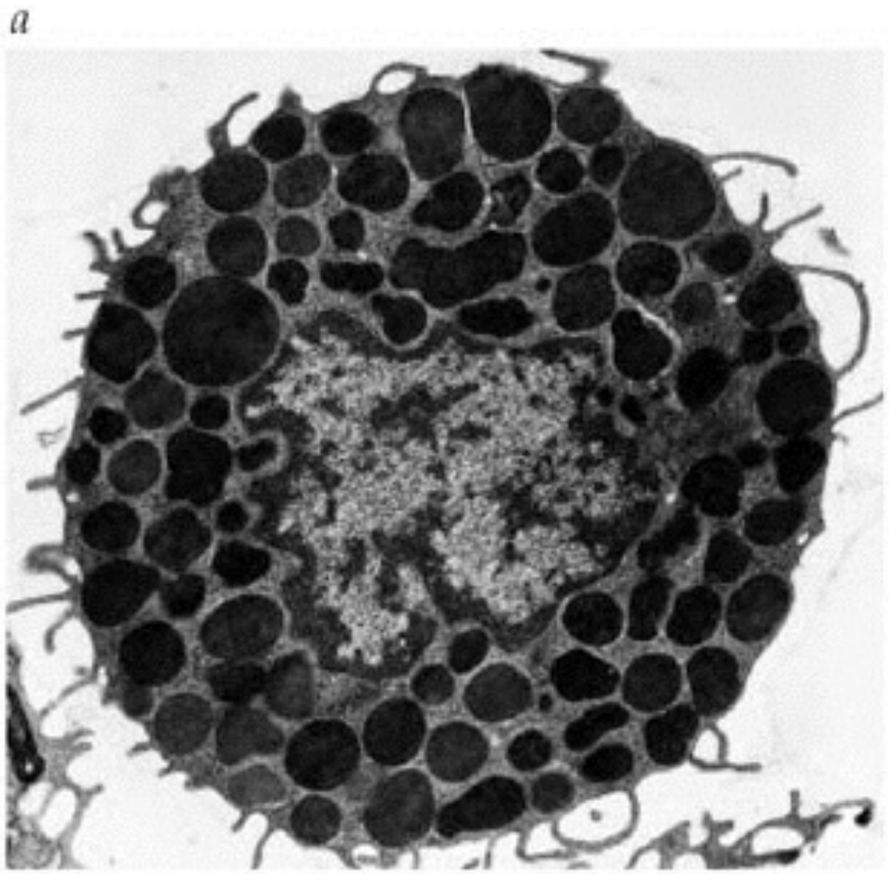


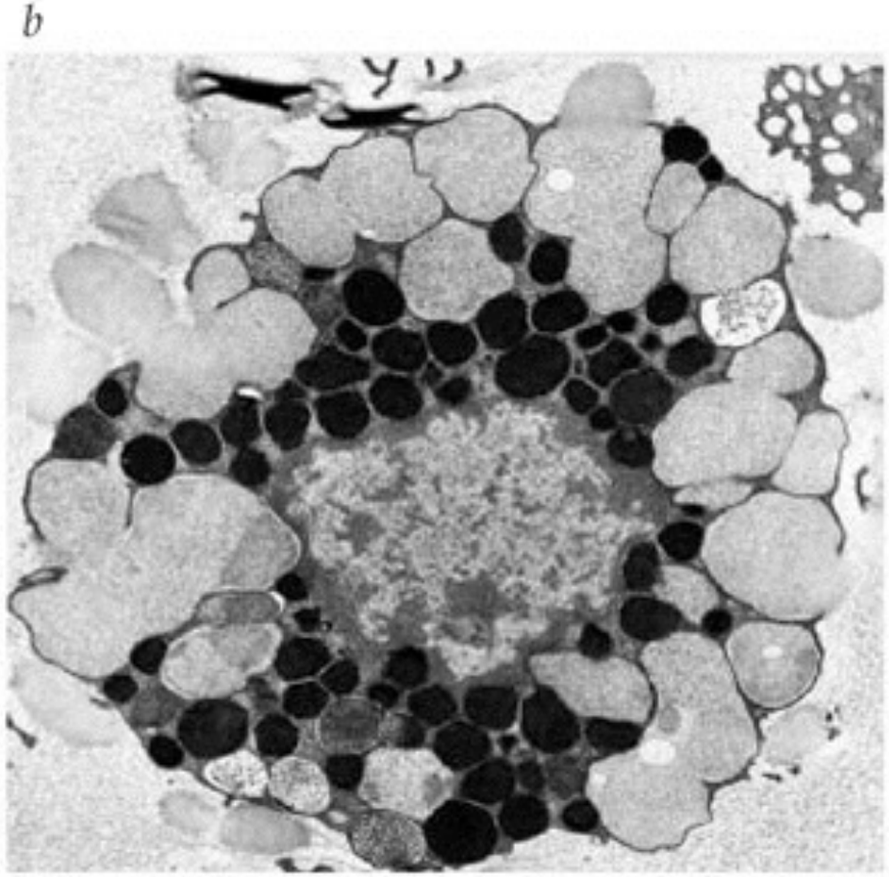
Nature Reviews | Immunology

PATHOPHYSIOLOGY



MAST CELL



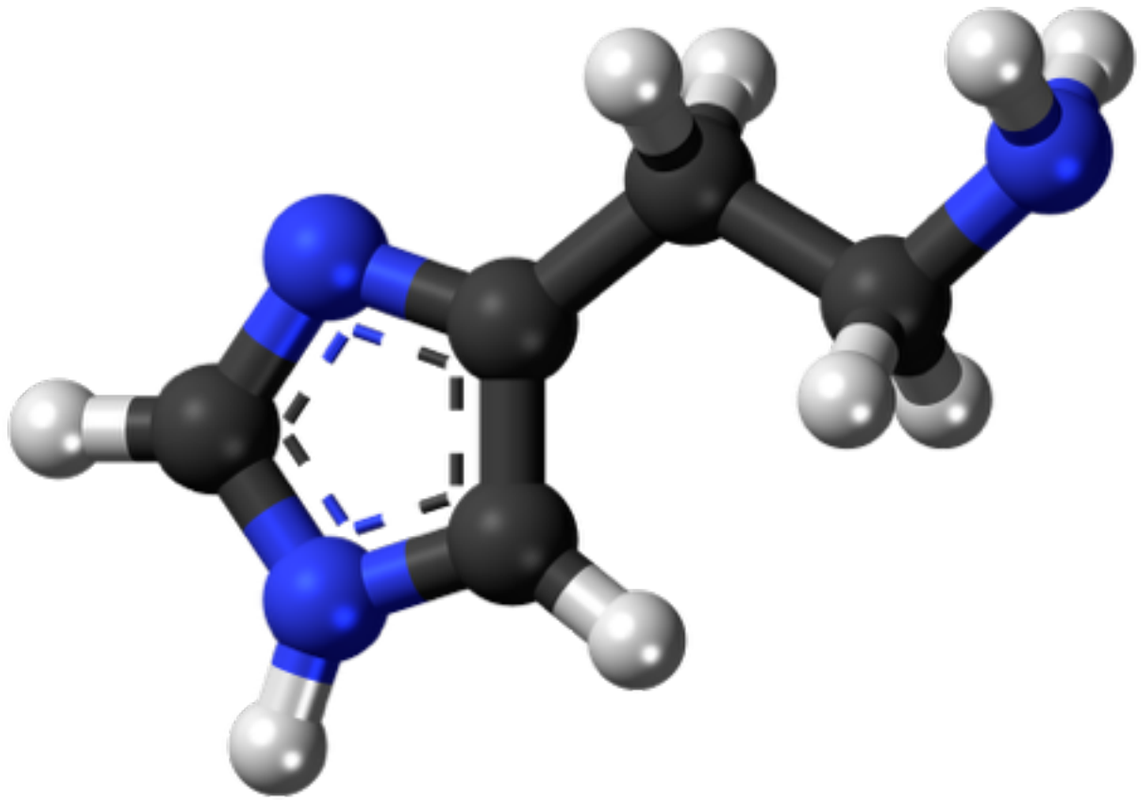


MAST CELL DEGRANULATION

- Rapid release and onset of symptoms
- Histamine , Tryptase, Hydrolase
- Later release with subsequent effects (Biphasic reaction)
- Secreted inflammatory mediators – Prostaglandins, Leukotrienes, Cytokines

HISTAMINE

- Bronchial smooth muscle contraction
- Vasodilation
- Separation of endothelial cells (responsible for hives)
- Pain and itching



GENETIC INFLUENCE

- Parental atopy (maternal)
- Concordance for allergy in twins
- Neither parent with atopy 14%, one 30% and two parents 60%
- Hygiene hypothesis

IS IT ALLERGY?

- Rapid onset
- Histamine mediated reactions
- Urticaria, itching, Angioedema, Pallor / sweating, Wheeze
- Improvement with antihistamines
- Relatively quick resumption of symptoms

WHAT CAUSED THE REACTION?

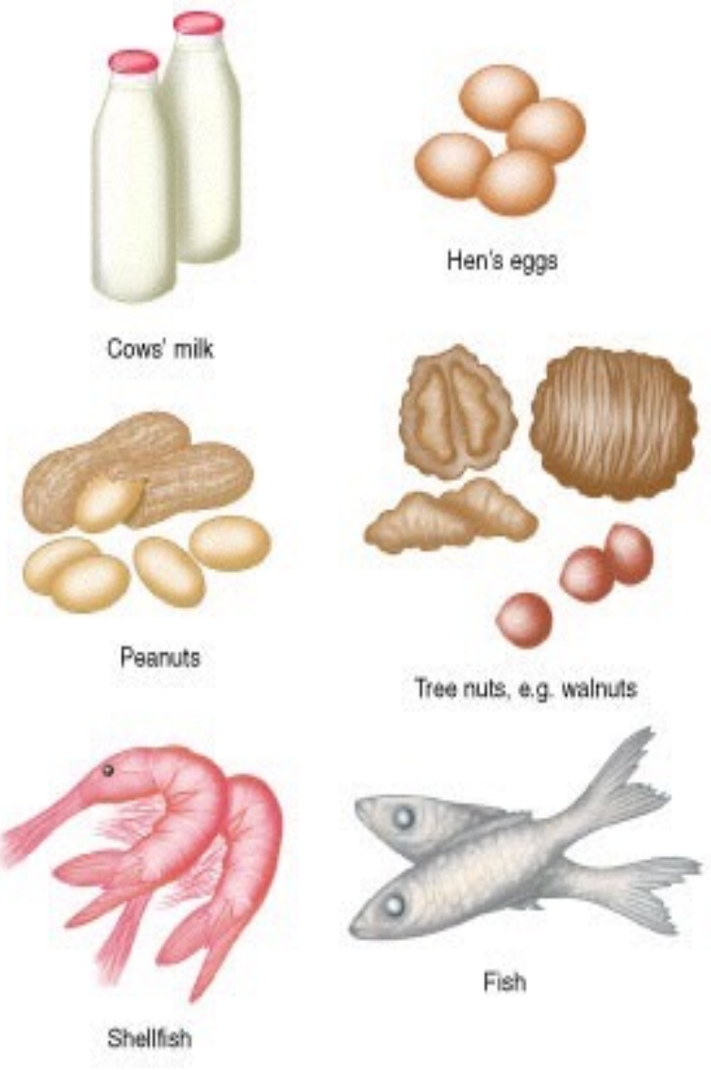
- Food
- Contact
- Environmental Allergen
- No cause?

CAUSES

- Food 33%
- Bee sting/wasp 14%
- Drugs 13%
- Exercise 7%
- Idiopathic 19%

COMMON FOOD ALLERGENS

- Milk
- Hen's Egg
- Peanut
- Tree Nuts
- Soya
- Wheat
- Fish
- Sesame



HOW SEVERE WAS THE REACTION?

- **Mild/moderate** - Angioedema (not involving airway)

- Urticaria and rash

- **Severe** - Angioedema of airway (stridor)

- Bronchospasm

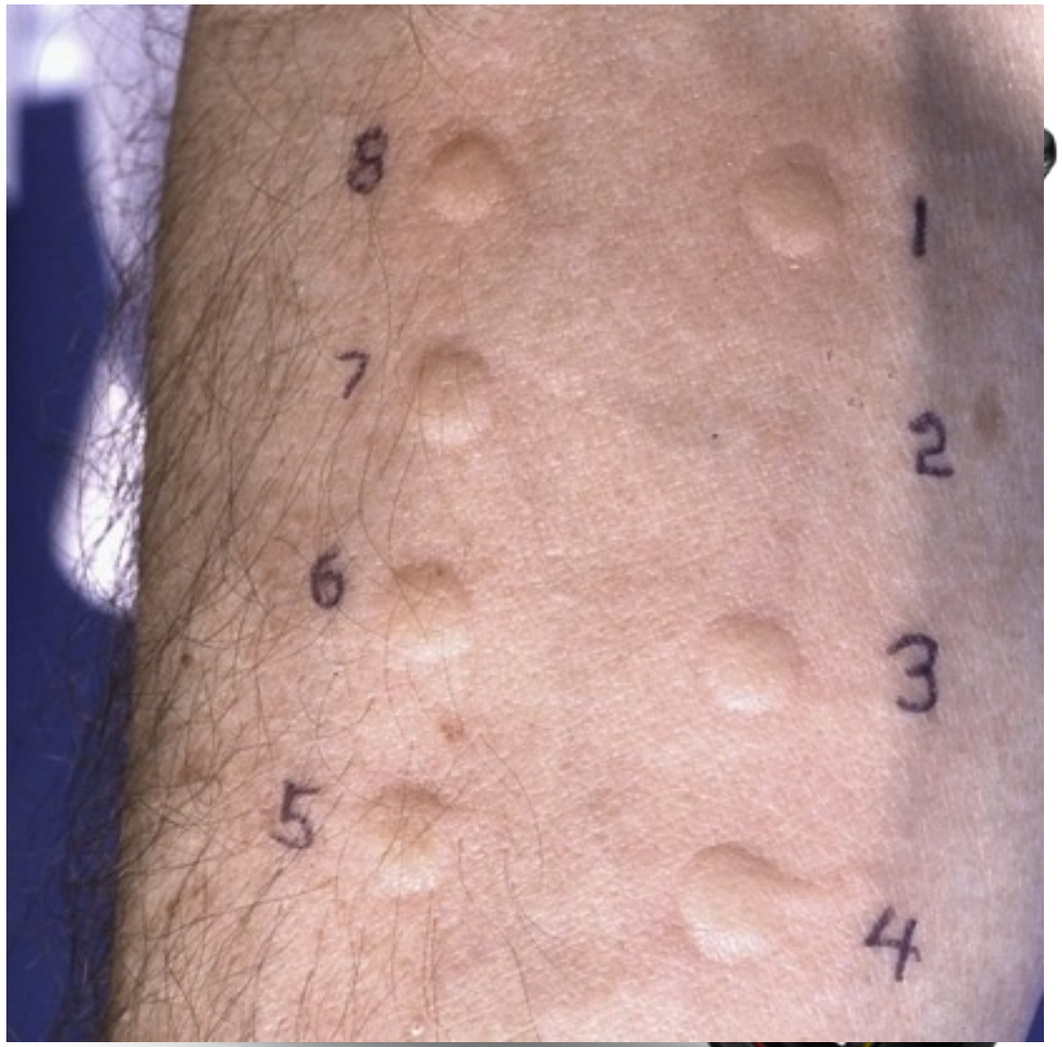
- Hypotension

SUPPORTING EVIDENCE

- Previous reactions
- Atopy
- Family history
- Response to treatment
- Co-existing Asthma

INVESTIGATIONS

- Skin Prick Testing
- Specific IgE
- Oral Food Challenge



SKIN-PRICK TESTING

- Easy to perform
- Non-invasive
- Immediate results
- Cheap
- Negative SPT is an excellent predictor for a negative IgE mediated food reaction in patients with anaphylaxis

PITFALLS

- Must stop antihistamines 48hrs prior
- Broken skin
- Theoretical risk of reactions
- Dermatographism
- Over-interpretation of positive results
- Avoid random tests

SPECIFIC IGE

- No-need to stop antihistamines
- No risk of reactions
- Expensive and invasive
- Delay in obtaining results
- Less sensitive and specific than SPT
- Highly unreliable results in eczema

ORAL FOOD CHALLENGE

- Day case procedure
- Gold standard
- What actually happens upon contact or ingestion

MAKING THE DIAGNOSIS

- Clear History
- Worst reaction
- Supporting evidence from investigations
- Identify and advise on allergen avoidance

WHAT IF I CAN'T FIND THE ALLERGEN

- There often is no allergen found!
- Idiopathic Urticaria +/- Angioedema
- Chronic after 6 months
- prn non sedating anti-histamines
- Regular non-sedating anti-histamines
- Leukotriene antagonist or H2 receptor antagonist

ANAPHYLAXIS

- Laryngeal Oedema
- Hypotension/collapse
- Bronchospasm
- Feeling of impending doom
- Onset usually in minutes

LARYNGEAL OEDEMA

ANGIOEDEMA

CLINICAL FEATURES

- Almost invariably symptoms begin within 60 mins
- The later the onset the less severe the attack
- 20% have biphasic reaction 1-8 hrs later therefore need steroids and hospital admission

FATALITIES IN CHILDREN

- 5yr study Children's Hospital Philadelphia
- 7 cases of fatal anaphylaxis in 16/12
- 6/7 had unwittingly ingested a food that had provoked a previous reaction
- UK 1990-2000 8 deaths : 0.02/100 000 children

UK PREVALENCE

- Unknown but increasing
- Peanut allergy in pre-school children has increased to 1 in 70
- Anaphylaxis occurs 1 in 3500 of UK population per year
- Hospital admissions sevenfold increase last 10 years - 20 deaths per year UK

RISK FACTORS FOR ANAPHYLAXIS

- Asthma (poorly controlled)
- Stress
- Exercise
- Viral infection
- Alcohol


Jext
Jext
Jext 300 micrograms: patients greater than 30kg
Jext 150 micrograms: patients 15 - 30kg


END
END


Emerade 150 micrograms,
solution for injection in a pre-filled pen. Adrenaline. For intramuscular injection.
Emerade 300 micrograms,
solution for injection in a pre-filled pen. Adrenaline. For intramuscular injection.
Emerade 500 micrograms,
solution for injection in a pre-filled pen. Adrenaline. For intramuscular injection.
The product delivers 500 micrograms Adrenaline per single dose (0.50 ml).
Excipients: sodium chloride, sodium metabisulfite (E223), disodium edetate, hydrochloric acid and water for injections.
EXP:
Lot:

ADRENALINE PEN

- Adult/Junior
- Education on use home/school
- 1st line treatment of anaphylaxis
- Early use is associated with better outcomes
- Potential interaction with B-blockers and tricyclics

ADRENALINE

- Reverses peripheral vasodilation
- Increases peripheral vascular resistance
- Improves BP and coronary perfusion
- Decreases angiooedema
- Causes bronchodilation
- Decreases release of inflammatory mediators

WHAT MANAGEMENT DO I GIVE?

- Allergen avoidance
- Anti-histamine
- Adrenaline Injectors (Asthma, Anaphylaxis)
- Dietary advice
- Optimise Asthma control

DIETARY ADVICE - THE "MAY CONTAIN" QUESTION

- Common sense
- Previously eaten
- In some cases justified - Bakery
- In general most foods can be eaten safely
- Peanut oil – insufficient protein to cause reaction

EMERGING THERAPIES

- Immunotherapy
- Peanut - News
- There is potential
- Will people want it?

"MY CHILD IS ALLERGIC TO FRUIT AND VEGETABLES"

- ... but only some of the time
- Oral Allergy Syndrome
- Cross reactivity of tree/plant pollens and foods
- Causes mainly oral symptoms - itching, mouth swelling, tongue discomfort etc…
- Birch - kiwi, apple, pear, nectarines
- Alder - celery, pear, apple, cherry
- Ragweed - watermelon, banana, cucumber

ORAL ALLERGY SYNDROME

- Mugwort - celery, fennel, carrots
- Grass pollen - melon, tomato, orange
- Peeling or cooking often reduces symptoms
- Antihistamine
- Avoidance
- Highly unlikely to cause anaphylaxis

QUESTIONS?

MILK ALLERGY

- Common food allergy in Infancy
- Most children grow out of it
- Usually by 3 years of age
- Often causes confusion

IGE MEDIATED COW'S MILK ALLERGY

- Rapid onset
- Histamine based reactions
- Symptoms may include vomiting and occasionally diarrhoea
- Can be identified by SPT or SpIgE

NON IGE MEDIATED COW'S MILK ALLERGY

- Not histamine based
- Varying presentations - Diarrhoea, vomiting, irritability, infantile eczema, bloating, bleeding PR
- No diagnostic test other than dietary management
- Improves with withdrawal of milk protein

LACTOSE INTOLERANCE

- Similar presentation to non IgE
- Stool reducing substances (no longer used)
- Hydrogen breath test (no-one uses this)
- Improves with dietary management and most children develop some level of tolerance

INVESTIGATION

- History
- Skin Prick Testing
- Specific IgE
- Therapeutic trial of exclusion under dietetic review


Cow & Gate
1 2 3 4
Next Steps
A satisfying milk drink From 9 months
Supports your baby's natural Immune System
Cow & Gate
2 Plus
Immune System
Keep supporting your baby's natural immune system from 6 months to 3 years
£1.43
COW & GATE 4 MONTH PURE BABY RICE 100G
£14.30 per kg
HEINZ
farley's rusks
original
£1.65
FARLEY'S RUSKS 4 MONTH ORIGINAL
46p

MILK FORMULAS

- Cow's Milk
- EHF with / without Lactose
- PHF (not currently commercially available)
- Lactose Free formulas
- AA
- Soya / wheat / coconut / almond / hazelnut

MANAGEMENT IGE:CMA

- Maternal avoidance of Cow's Milk (need to supplement Calcium and Vit D)
- EHF formula
- AA formula if not tolerated
- Soya Milk > 1 year of age or not tolerated above

MANAGEMENT NON-IGE:CMA

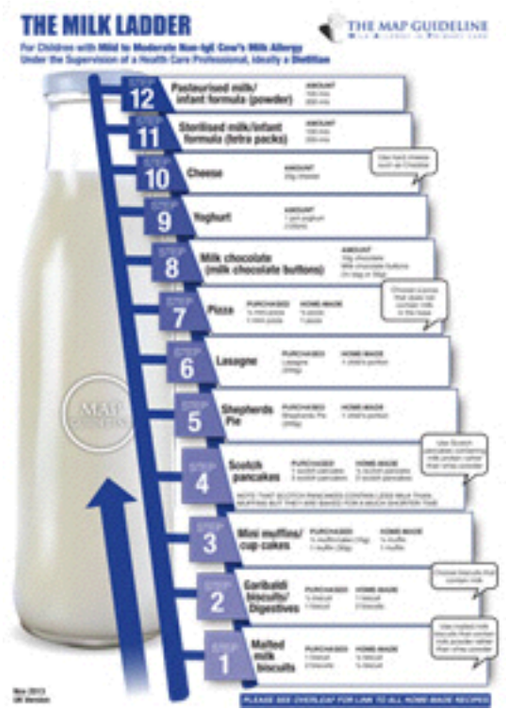
- Maternal avoidance of Cow's Milk (need to supplement Calcium and Vit D)
- EHF formula
- AA formula if not tolerated or severe
- Soya Milk > 1 year of age or not tolerated above

PROGNOSIS

- Most children better by age 3 (IgE Mediated)

- Early introduction of CMP

- Milk Ladder



THERAPEUTIC MILK FORMULAS

	Allergy	CMPI	Lactose
Breast Milk	✓ ✕	✓ ✕	✕
Infant Formula	✕	✕	✕
EHF	✓ ✕	✓ ✕	✓
Aptamil Pepti	✓ ✕	✓ ✕	✕
Lactose Free	✕	✕	✓
Amino Acid	✓	✓	✓
Soya	✓	✓	✓

MAP GUIDELINES

COW'S MILK ALLERGY GUIDELINE

EGG ALLERGY

- Estimated 2% Prevalence in children and 0.1% in Adults
- Most common presentation to allergy clinic in infancy
- Almost all grow out of it by age 5
- Usually mild and benign but can be severe
- Tolerate well cooked egg first and raw egg last

MANAGEMENT

- Avoidance
- Re-introduction
- Egg ladder

VACCINATIONS AND FOOD ALLERGY

Dr Colin J Lumsden

EGG ALLERGY AND VACCINES

- MMR
- Influenza
- Yellow Fever

MMR

- Cultured in fibroblasts from chick embryos
- The amount of protein is negligible
- BSACI recommends that " All children with egg allergy should receive routine vaccinations by their Family Doctor or Nurse"

EVIDENCE

- 500 egg allergic children given MMR in the outpatient setting over 8 years

- No anaphylactic reactions were observed

- 5 children showed minor rashes within 2 hours of vaccination

- Freigang B, Jadavji TP, Freigang DW. Lack of adverse reactions to measles, mumps and rubella vaccine in egg allergic children. Annals of Allergy 1994;73:486-88.

INFLUENZA VACCINE

- At risk groups > 6 months of age
- Little evidence on the benefit of Influenza vaccine in Asthma : Severity or number of exacerbations
- Derived from Extra-embryonic fluid of chicken embryos inoculated with virus
- Measurable quantities of egg white protein

SNIFFLE II

- 2014/15 LAIV (Fluenz Tetra)
- 779 children (2-18years) in 30 centres
- 270 anaphylaxis to egg, 445 Asthma or wheeze
- No systemic reactions

Children

JCVI has advised (JCVI, 2015) that, except for those with severe anaphylaxis to egg which has previously required intensive care, children with an egg allergy can be safely vaccinated with Fluenz Tetra® in any setting (including primary care and schools); those with clinical risk factors that contraindicate Fluenz Tetra® should be offered an inactivated influenza vaccine with a very low ovalbumin content (less than 0.12 μg/ml).

Children with a history of severe anaphylaxis to egg which has previously required intensive care, should be referred to specialists for immunisation in hospital. LAIV is not otherwise contraindicated in children with egg allergy. Egg-allergic children with asthma can receive LAIV if their asthma is well-controlled (see the above section on severe asthma).

Children in a clinical risk group and aged under nine years who have not been previously vaccinated against influenza will require a second dose whether given LAIV or inactivated vaccine.

HIGH RISK

- Anaphylaxis or respiratory involvement
- Moderate to Severe Asthma on BTS / SIGN Step 4 or above
- Refer to Allergy centre
- Split dose schedule

WHO CAN'T I VACCINATE?

- Contraindicated in those with Anaphylaxis to Influenza Vaccine (BNF) or any component of the Vaccine

YELLOW FEVER

- All egg allergic or those with previous reactions to the vaccine and who are travelling to countries where YF Vaccine is compulsory should be referred to an Allergist.

Rash, urticaria, bronchospasm and anaphylaxis occur rarely. In a passive surveillance system in the US, the rate of anaphylaxis following yellow fever vaccine was estimated to be one case per 130,000 doses of vaccine (Kelso *et al*., 1999). Reactions are most likely related to egg protein in the vaccine. It is possible that some persons are sensitive to and react to the gelatin that is used as a stabiliser in this vaccine as well as in other vaccines.

Yellow fever

QUESTIONS?