

Diagnosis of Allergy – Clinical perspectives

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- **Employment**
 - UCC, HSE, Ireland
- **Research funding**
 - NCRC, Ireland
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 - DBV Technologies
 - Aimmune Corporation
 - City of Dublin Skin and Cancer Hospital Charity
- **Stockholding / directorships**
 - None
- **Gifts**
 - None
- **Consultancies**
 - Aimmune Corporation
 - ALK Abello
- **Patent**
 - Challenge outcome predictor
- **Societies**
 - IFAN, IAAI, EAACI, AAAAI, BSACI,
 - Clemens von Pirquet Foundation
- **Speaker fees**
 - Thermofisher
 - Danone



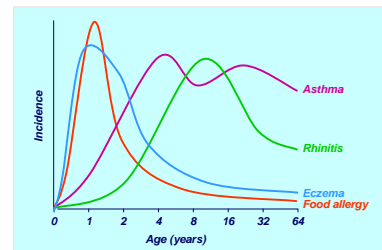
Diagnosing allergy isn't a matter of chance.....



But it isn't rocket science either

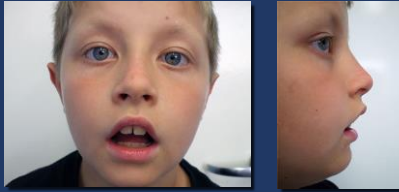


Atopic Marathon



Redrawn from Durham SR & Church MK, Allergy 2nd edition, 2001, Mosby

Signs: mouth breathing and malocclusion



Malocclusion is 5x more common in children with AR

de Freitas FCN. *Int J Paediatr Dent* 2001; 11:365-71

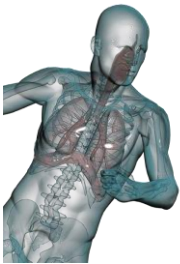
Reliance on history only leads to:

- overestimation of:
prevalence
number of foods

And

- underestimation of
severity

The United Airway



Allergy in the airway

80% of children with asthma have +
SPT to HDM or cat

The United airway

- 80% of asthmatic children have rhinitis
- 20-30% of rhinitic children have asthma

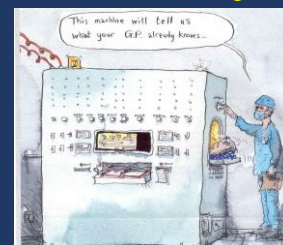


The United Airway

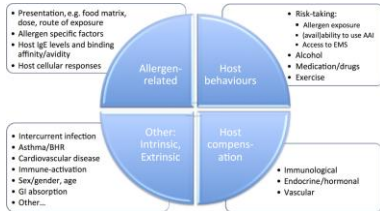
- ISAAC study in Italy
 - 16.8% rhinitis
 - 20% asthma
 - 25% wheeze in last 12 months
 - No rhinitis
 - 6% asthma
 - 9% wheeze in last 12 months

Peroni, 2003

Machine learning I

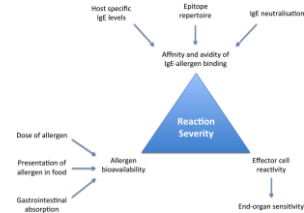


Can we identify patients at risk of life-threatening allergic reactions to food?



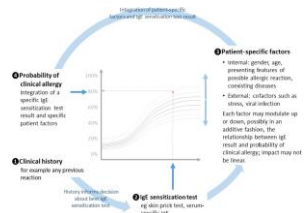
Allergy
Volume 24, Issue 5, pages 1243-1250, 1 JUN 2016 DOI: 10.1111/all.12824
<http://onlinelibrary.wiley.com/doi/10.1111/all.12824/abstract>

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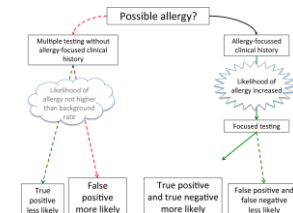
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A new framework for the interpretation of IgE sensitization tests



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THE SWISS CHEESE MODEL OF ACCIDENT CAUSATION

SOME HOLES DUE TO ACTIVE FAILURES
(eg. mistakes, procedural violations)

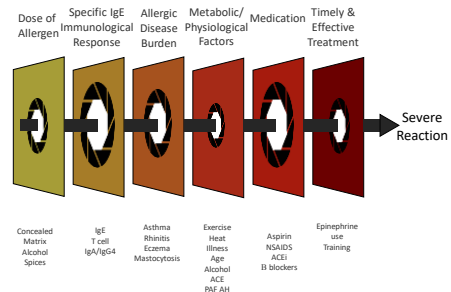


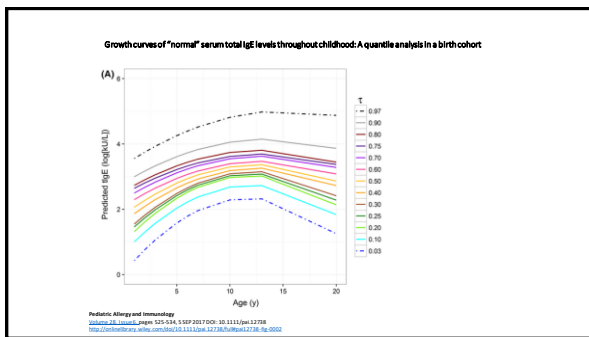
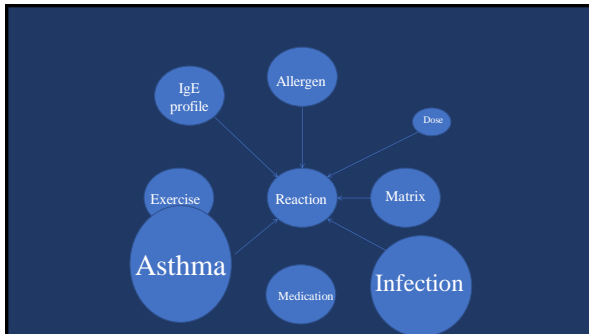
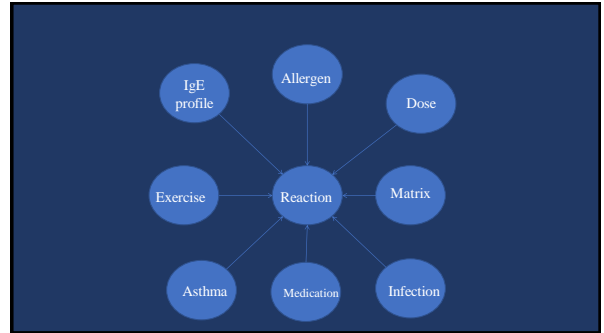
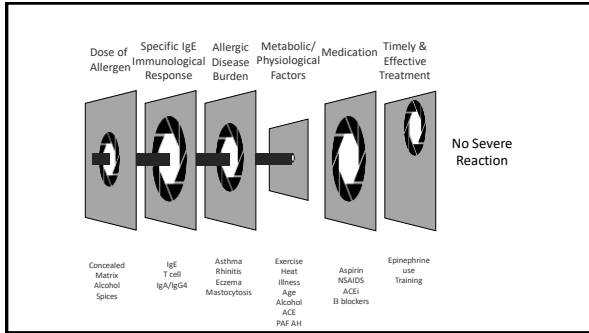
OTHER HOLES DUE TO LATENT CONDITIONS
(eg. faulty equipment, lack of staff training)

SUCCESSIVE LAYERS OF DEFENCES, BARRIERS AND SAFEGUARDS

Adapted by Meredith Baumgartner from the work of James Reason and Sir Liam Donaldson

Medscape





Using SpIgE fall over 1 yr to predict tolerance

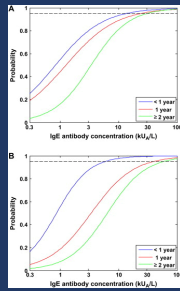
% fall in SpIgE	Egg	Milk
50%	0.5	0.31
75%	0.65	0.45
90%	0.78	0.66
99%	0.95	0.94

Shek, JACI, 2004

SpIgE predictive value affected by age

Egg

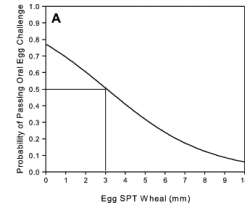
Milk



Komata JACI 2007

Use of SPT and SpIgE together:

In children with egg spIgE <2.5



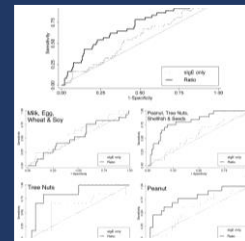
Knight, JACI, 2006

Weighting of factors better than routine simple tests

Peanut	Sens	Spec	Accuracy %
SpIgE only	75	46	61
SPT only	86	67	75
SpIgE and SPT	88	75	81
Cork- Southampton Calculator	96	90	93

DunnGalvin et al JACI 2011

Ratio of spIgE/total IgE



- Retrospective study
- Lower risk challenges - only tested when looking for resolution

Figure 1

Gupta 2014

Pitfalls with the data – can it be generalised to your clinic

- Differences in SPT extract, method & reading time
- Differences in populations studied eg referral base, co-morbidity
- Challenge +ve based on different criteria
- Differences in IgE assay systems

Eigenmann P.Clin Exp All 2005.

Machine learning 2



“how your battles inspired me
— not the obvious material
battles but those that were
fought and won behind your
forehead.”

James Joyce, letter to H Ibsen

Conclusion

- We now have guidelines to help us
- Technological explosion could confuse us and our patients
- Clinicians must decide what tests to do, not families or laboratories

AFTER

- TAKING AN ALLERGY-FOCUSED CLINICAL HISTORY

