A Practical Approach to the Allergic Child

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Overview

- **The atopic dance**
- **Allergy testing**
- **Principles of management of allergic disease**
- **Cases**

"Bit of a bummer really, you've got a nut allergy"

Review Article

THE ATOPIC DANCE

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The “atopic march”

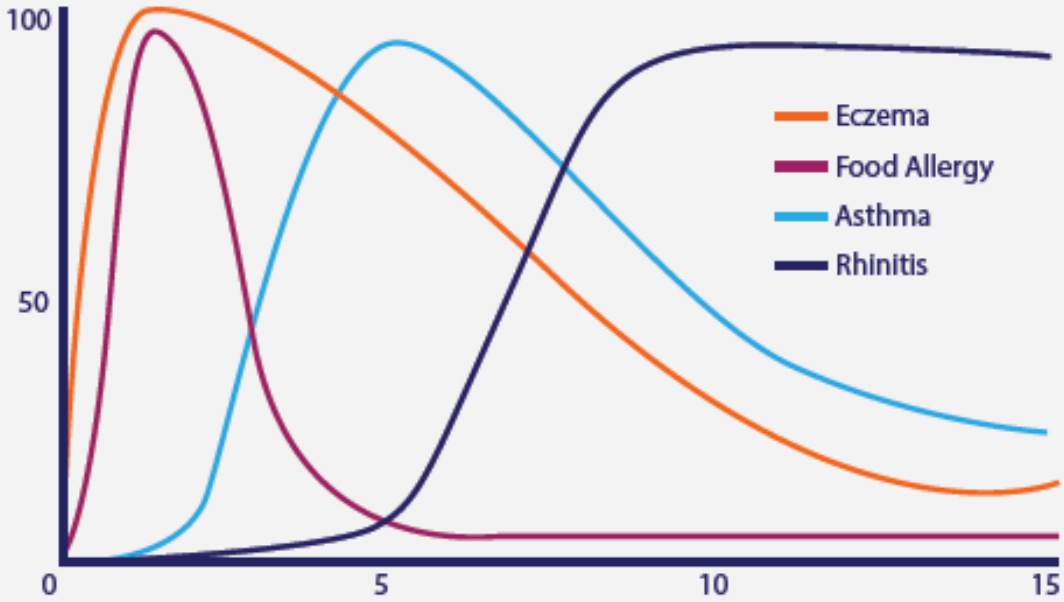


Figure 1: Diagramatic representation of the ‘atopic march’ from birth to adolescence

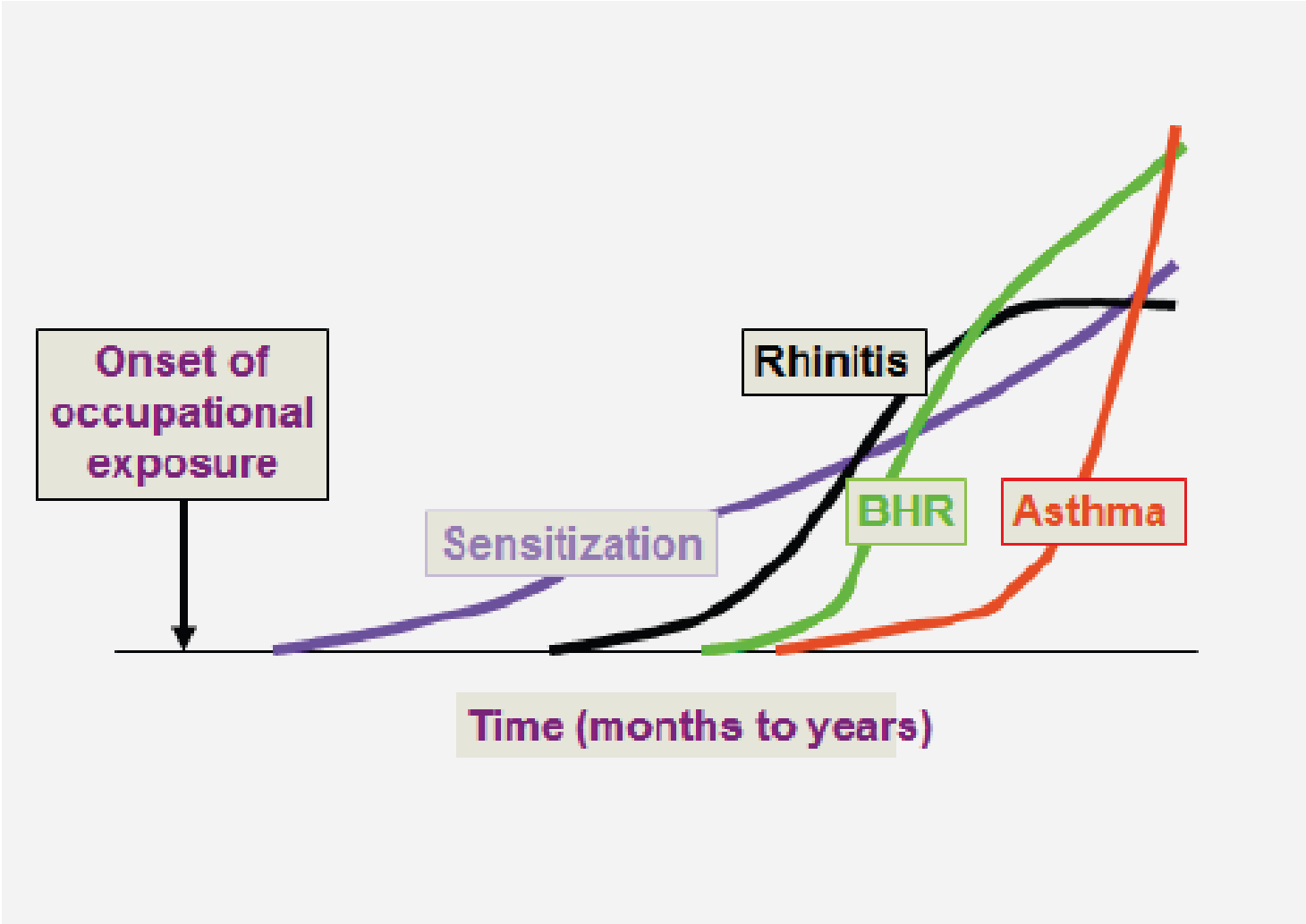


Figure 2: Sequence of events following occupational allergen exposure in susceptible subjects which leads to allergic sensitisation, allergic rhinitis and finally bronchial hyper-responsiveness (BHR) as a precursor to the onset of occupational asthma

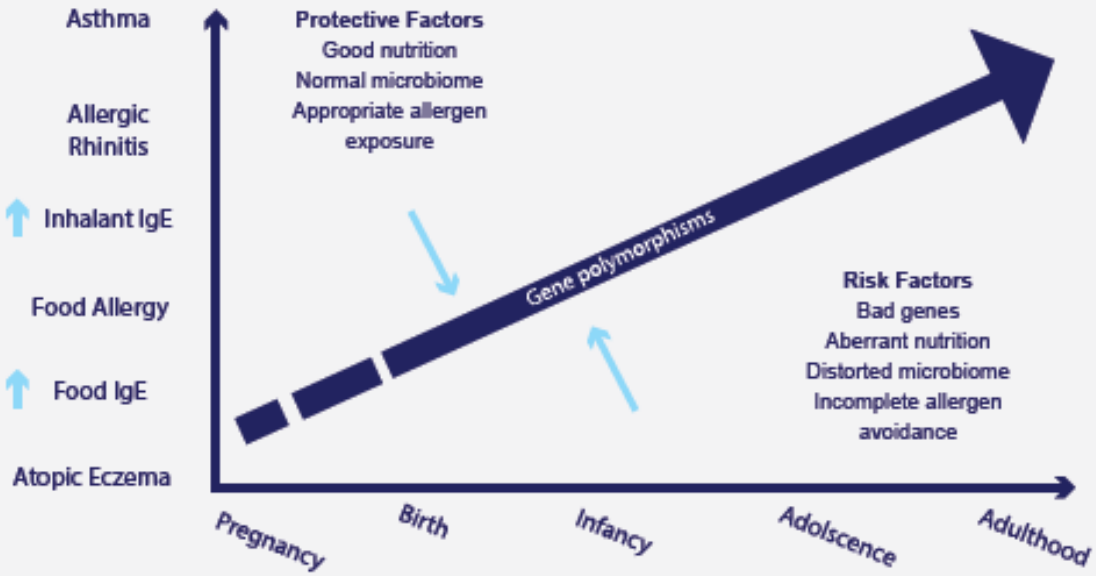


Figure 3: Protective and risk factors contributing to the evolution of allergic diseases across the life course

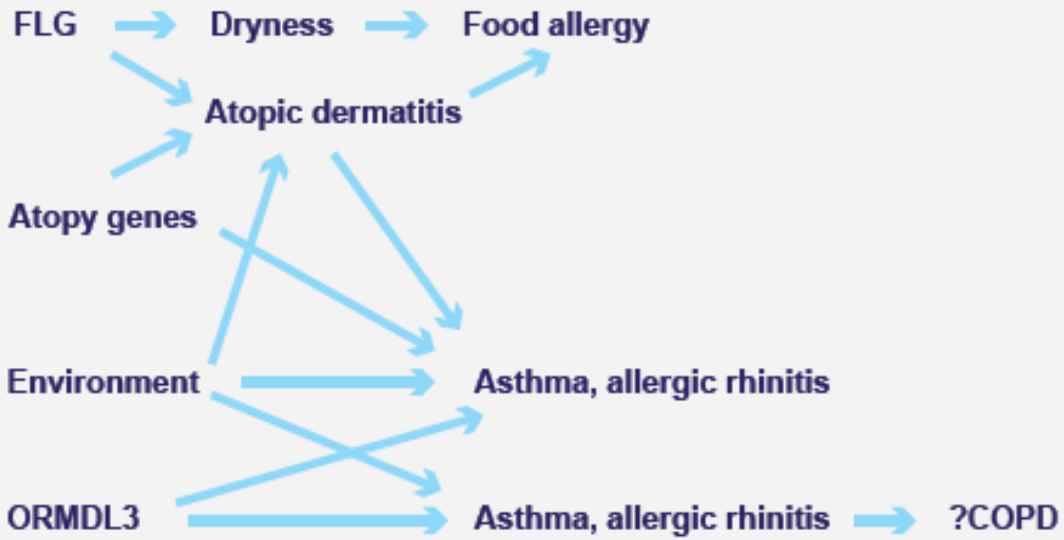


Figure 4: The Atopic Tango: Interaction between genetic, environmental factors and other allergic 'diseases' in allergy

Allergy testing

Indications for allergy testing

- Confirm atopy
- Identify specific allergens
- Exclude mimics of allergic conditions
- Allergen avoidance possible, will impact management
- Considering immunotherapy
- **NB: GUIDED BY THE HISTORY**

Investigation of the Allergic Patient

- What allergen specific tests are available?
- Screening tests
- Detecting the causative allergen

Screening tests

- **Total IgE**
  - Elevated in 60% allergic patients
  - Affected by parasites, ethnicity
  - Very limited clinical application

- **Phadiatop test**
  - Multi-allergen screen for common aeroallergens (mixture of 16 inhalant allergens)
  - Usually reported as positive or negative
  - **Disadvantages**: no specific aero-allergen identified; expensive

Identification of the causative allergen

- **Skin prick tests**

- RAST (Radioallergosorbent test)
  – replaced by **ImmunoCAP®**

- **Multi RASTs**
  – Grass mix; mould mix; food allergy mix (Fx5)

SPT vs IgE tests

SPT	SIgE
• Immediate results available • Visible to child, parents • Low cost • High sensitivity & specificity • Withhold antihistamines • Problematic in severe eczema	• Need to draw blood • Wait for results • High cost • High sensitivity & specificity (new tests) • No need to withhold medication • Can be done even in severe dermatitis

Paediatric Food Mix: Fx5

- What is the Fx5?
- Multi-allergen food screen: cow's milk, egg white, soya, wheat, fish, peanut
- Quantitative test
- If negative, unlikely that IgE-mediated allergic disease is cause of patient's clinical problems
- If positive, proceed to individual allergens

Identify specific allergens: Skin prick testing

Skin prick tests (SPTs): The "gold standard" + cost effective

1. What precautions should be taken before performing SPTs?

- Avoid antihistamines (2-5 days), consent, resuscitation equipment available

2. How does one interpret SPT results?

- Wheal 3 mm > neg control

3. Can one perform SPTs in young children? Is there a cut-off age?

- Any age; very sensitive & specific

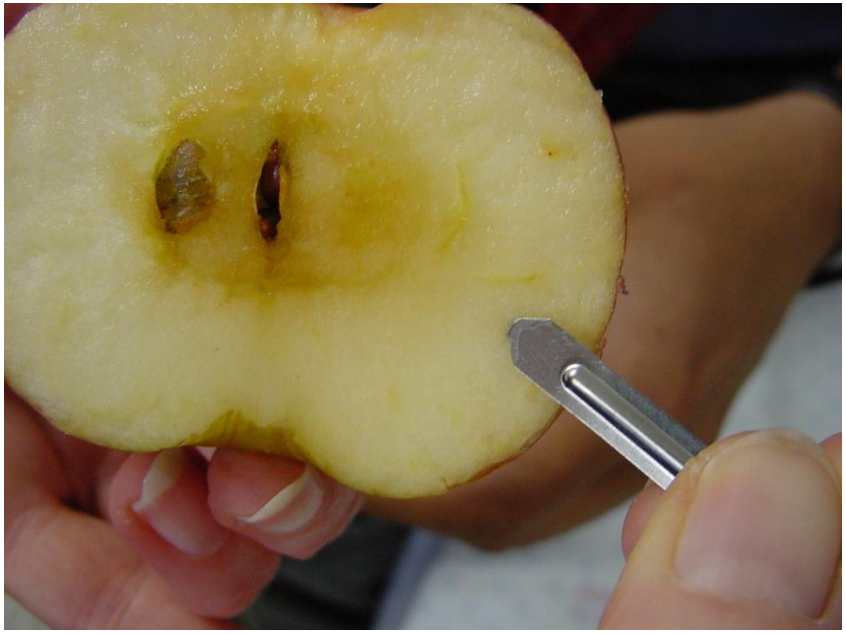
Skin prick test results

ALLERGEN	RESULT
Neg control	0 mm
H Dust mite	6 mm
Dog hair	2 mm
Tree mix	4 mm
Grass mix	6 mm
Pos control	6 mm

Skin prick test results

ALLERGEN	RESULT
Neg control	2 mm
H Dust mite	6 mm
Dog hair	3 mm
Tree mix	4 mm
Grass mix	6 mm
Pos control	6 mm

Prick-prick skin testing



Specific IgE levels (kU/l)

- <0.10 below reliably detectable limits
- 0.10-0.35 very low levels of antibody
- 0.35-0.7 low levels of antibody
- 0.70-<3.5 moderate levels of antibody
- 3.50-<17.5 clinically significant Ab levels
- 17.5-<50.0 high levels of antibody
- 50.0-<100.0 Very high levels of antibody
- >100.0 Extremely high levels of antibody

Interpreting sIgE levels

- Sensitisation: positive SPT or sIgE test
- Clinical illness: detailed medical history
  - Do not test for allergen that is clearly tolerated or where exposure not relevant
- Increasingly strong tests usually correlate with increasing likelihood of clinical reactivity
- Beware of inappropriate testing (IgG)
- Beware of cross-reactivity between allergens
- May need medically supervised open oral food challenge

TABLE III. CUT-OFF IGE VALUES FOR > 90% PREDICTABILITY FOR A SUBSEQUENT REACTION TO FOODS

> 2 years	Egg	6 kU/l
	Milk	31 kU/l
	Peanut	15 kU/l
	Fish	20 kU/l

consensus document

GUIDELINE FOR DIAGNOSTIC TESTING IN ALLERGY - UPDATE 2014

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On behalf of the Allergy Society of South Africa

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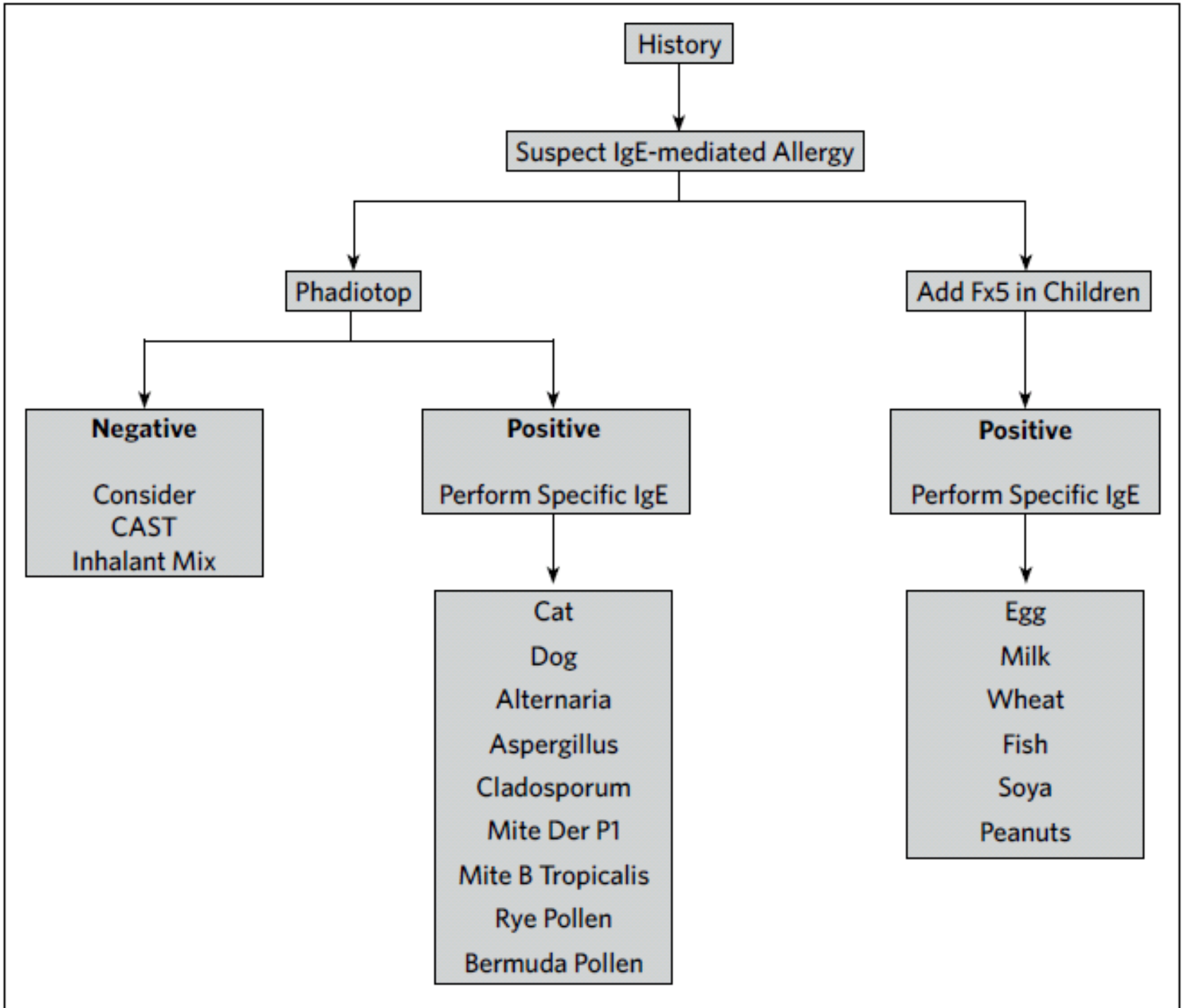
Diagnostic algorithm for in vitro inhalant allergy testing


History
Suspect IgE-mediated Allergy
Phadiotop
Add Fx5 in Children
Negative
Consider
CAST
Inhalant Mix
Positive
Perform Specific IgE
Positive
Perform Specific IgE
Cat
Dog
Alternaria
Aspergillus
Cladosporum
Mite Der P1
Mite B Tropicalis
Rye Pollen
Bermuda Pollen
Egg
Milk
Wheat
Fish
Soya
Peanuts

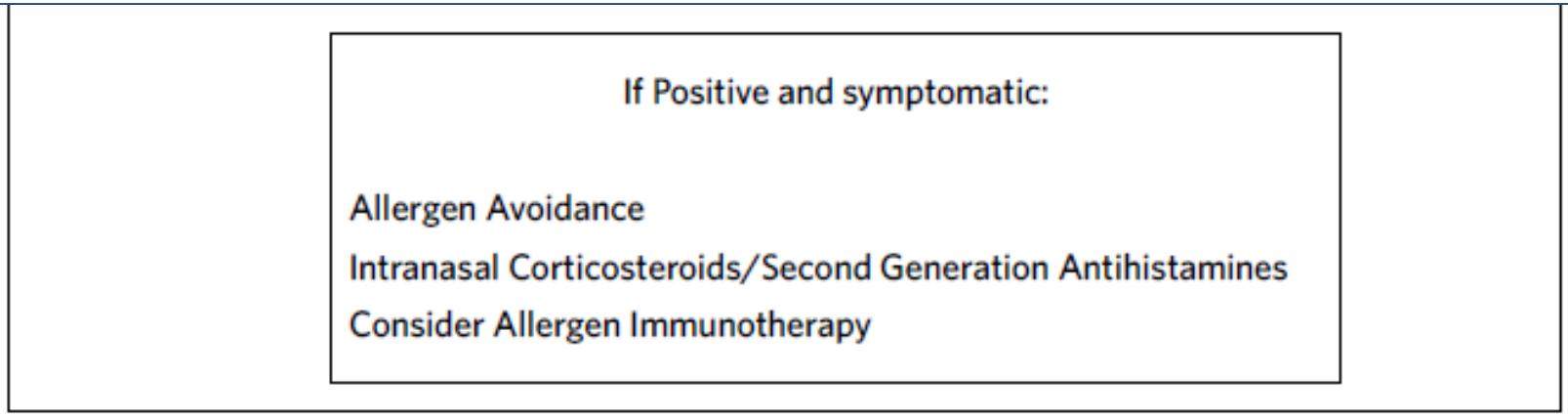
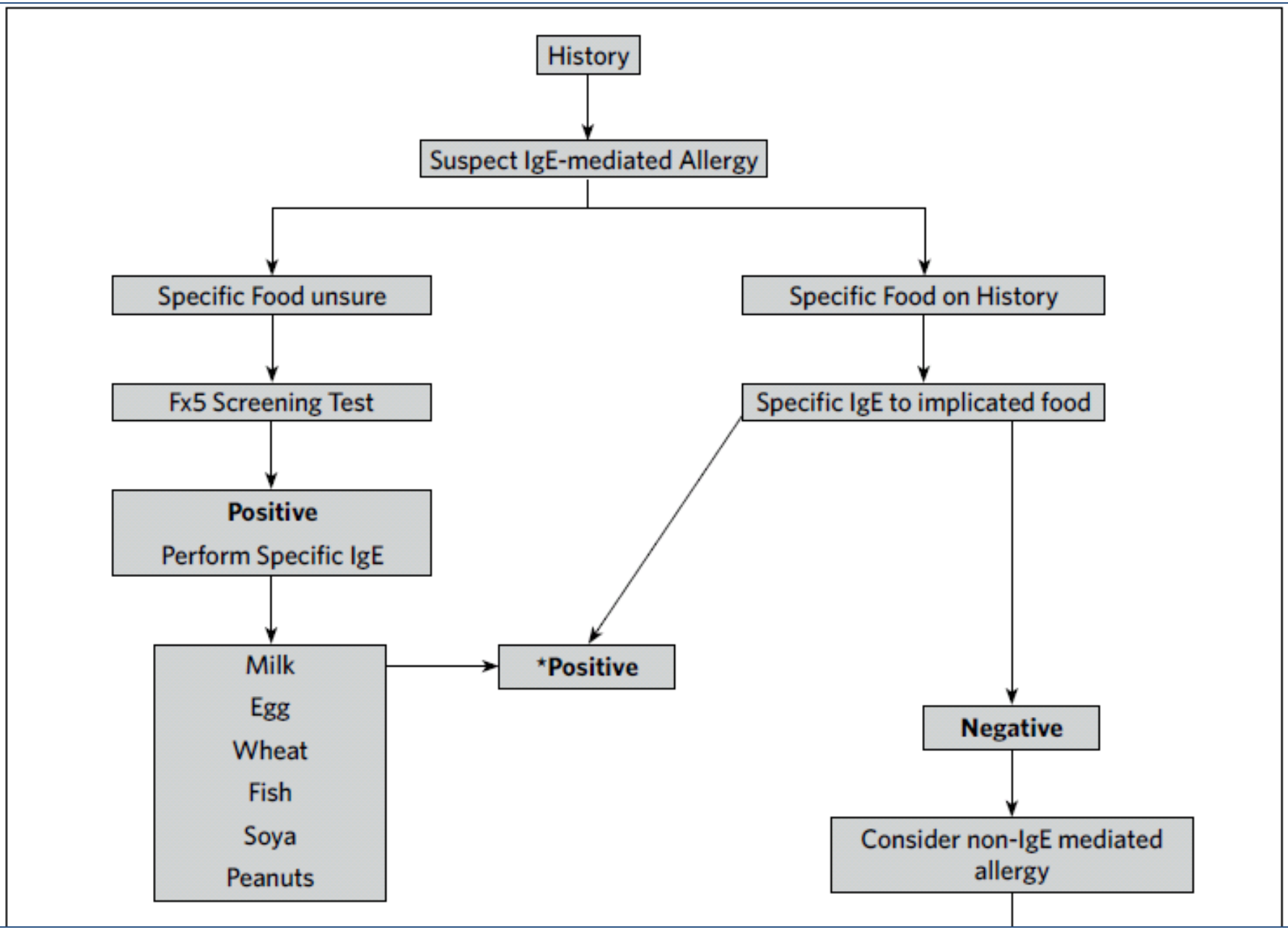


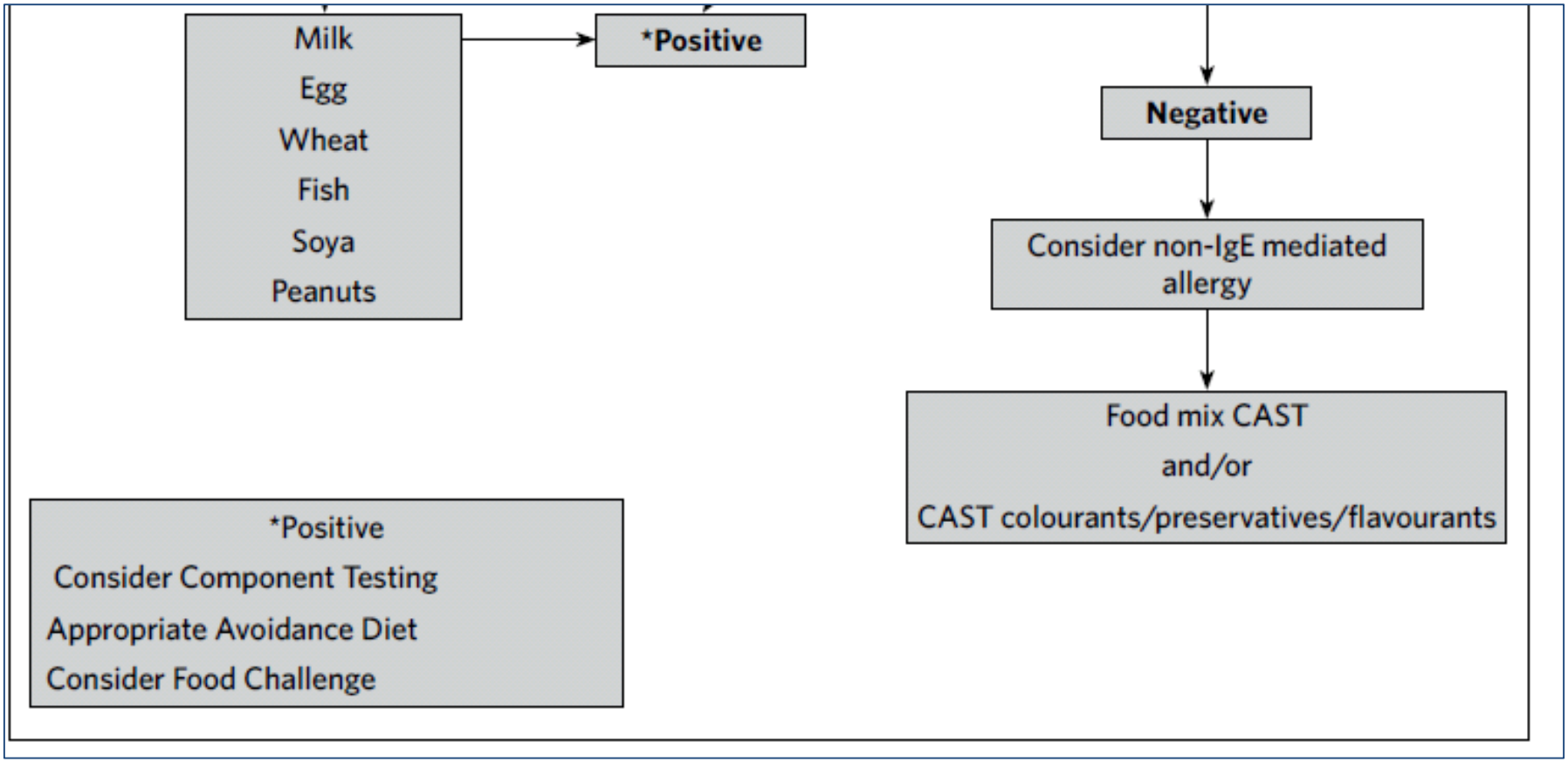
Figure 1. Diagnostic Algorithm for in-vitro Inhalant Allergy Testing.

Table I: Prevailing aero-allergens in South Africa[3]

All regions	House-dust mites (Der p 1 and Der f 1)
	Rye and Bermuda grass
	Aspergillus, Alternaria, Cladosporium
	Cat and Dog
Western Cape	Oak and plane tree pollen, Blomia tropicalis
	Epicoccium fungal spore
	Cockroach
Gauteng	Tree pollens including cypress
Farming areas	Zea mays pollen
	Horse
	Blomia tropicalis
Health care worker	Latex chlorhexidine
Grain industry	Storage mites, wheat and rye

Diagnostic algorithm for in vitro food allergy testing


History
Suspect IgE-mediated Allergy
Specific Food unsure
Specific Food on History
Fx5 Screening Test
Specific IgE to implicated food
Positive
Perform Specific IgE
Milk
Egg
Wheat
Fish
Soya
Peanuts
*Positive
Negative
Consider non-IgE mediated allergy


Milk
Egg
Wheat
Fish
Soya
Peanuts
*Positive
Negative
Consider non-IgE mediated allergy
Food mix CAST
and/or
CAST colourants/preservatives/flavourants
*Positive
Consider Component Testing
Appropriate Avoidance Diet
Consider Food Challenge

Principles of management of allergic disease

Principles of Management

- Identify the allergen
- Allergen avoidance / Environmental control
- Pharmacotherapy
- Immunotherapy

Immunotherapy

Routes

- Subcutaneous
- Sublingual (SLIT)

Indications

- Allergic rhinitis
  - HDM, grass pollen
- Bee venom allergy
- (Asthma)

Sublingual immunotherapy

Approach to the allergic child

- **? Allergic problem**
  - Take a good allergy history
  - Look for signs of allergy (shiners, Morgan-Dennie lines, allergic salute, mouth breathing)
- **Allergy testing**
  - Tailor to history;
  - Skin prick tests “gold standard”;
  - More sophisticated tests in difficult situations where allergen avoidance is possible / appropriate

Management of allergic disease

- Allergen avoidance where possible
- Environmental control (ETS avoidance)
- Pharmacotherapy
- (Immunotherapy)

Cases

Food allergy

Google images

Case 1: BP

- 6 week old boy admitted to a regional hospital with swelling of the hands and feet
- Born by NVD at 34 weeks, birth weight 2270g
- Breast fed
- Mother is an 18-year-old Grade 12 learner – had to return to school
- Started the baby on lactogen 1 week previously

BP continued

- On admission irritable; hands and feet swollen
- Strep sanguinis on blood culture – thought to be a contaminant. Other basic investigations normal.
- At the hospital changed back to breast milk – swelling subsided
- Diagnosis?

BP continued

- ImmunoCAP®:
- Specific IgE to cow's milk 47.60 kU/L (very high)
- SIgE α lactalbumin 0.13 kU/L (very low)
- SIgE ß lactoglobulin 51.90 kU/L (very high)
- SIgE casein 6.22 kU/L (high) (heat stable – risk for reaction to all forms of milk)
- Management?

BP continued

- Commenced on soya milk plus breast milk (mom does not avoid dairy but low intake)
- Attended my clinic at age 5 months – advice re introduction of solids
- Referred dietician
- Follow up 2 months later: reactions to other foods? – weetbix, sardines

BP continued

- SIgE to gluten, wheat, peanuts, fish and sardines all <0.10 kU/L
- SIgE to cow's milk 0.29 kU/L (very low)

- Management?

Case 2: TN

- Referred from sister at City Health Clinic regarding safety of measles vaccine and egg allergy
- Only brought to Allergy Clinic 2 years later, at age 4 years!
- “Born with allergy to eggs”
- At age 2 years vomited after eating cup cake; also urticarial rash following egg ingestion

TN continued

- Total egg avoidance since
- SIgE to egg white: 19.7 kU/L (very high)
- SIgE to ovomucoid: 22.50 kU/L (very high)
- Advice to continue avoidance; as manged to eat small amount of cup cake, planned egg challenge in 6 months' time

TN continued

- 3 months later ate cake at school – vomited 3x; subsequent avoidance
- Planned challenge with baked egg
- Repeated ImmunoCAP 6 months later:
- SIgE to egg white: 31.90 kU/L (very high)
- SIgE to ovomucoid: 36.00 kU/L (very high)
- Management?

TN continued

- SPT to fresh egg: 18 mm
- Proceeded to baked egg challenge: vomited after ¼ cupcake
- Plan?
- Continue egg avoidance

Case 3: TR

- Referred at age 18 months with ?cow's milk allergy: vomiting, facial swelling 2 hours post ingestion of milk. Urticaria after exposure to dairy products and peanut butter
- Investigations?
- Fx5: <0.2 kU/L
- SIgE to cow's milk, α lactalbumin, ß lactoglobulin and casein all <0.10 kU/L

TR continued

- Management?
- SPT to fresh milk and commercial extract = 0 mm
- Proceeded to cow's milk challenge – tolerated

TR continued

- Additional history: swelling of face and wheezing after taking cotrimoxazole and erythromycin
- Likely cause?
- Preservative? Parabens, hydroxybenzoate
- Test?
- CAST: Sodium benzoate 123 pg/ml (above cut off point of 90 pg/ml

Asthma

Case 4: AB

- 11 year-old girl
- Referred by GP: asthma control poor

History

- Diagnosed with asthma at age 18 months
- Generally good control, but recently asthma had deteriorated
- 1 month previously to ED with acute exacerbation; Rx nebulised Pulmicort®; not admitted because family could not afford it.

History 2

- Triggers: wind, change of seasons, exercise, URTI
- Allergens: Pollen, cat hair, grass, moulds, house dust mite (tested 5 years ago)
- Other allergic diseases:
  - Eczema: dry skin; periorbital, perioral
  - Allergic rhinitis: blocked and runny; sneezes ++

Current therapy

- Asthma:
  - Seretide® 50/250 mcg 2x/day
  - Singulair® 5 mg at night (stopped as unaffordable)
  - Salbutamol MDI 2x/day
- Eczema: topical steroid mixture; diprogenta®
- AR: chlorpheniramine prn; received IMI steroid injections

Family history

- Father allergic rhinitis; Rx steroid injections
- Mother allergic rhinitis; Rx chlorpheniramine
- 2 brothers
  - 17y – allergic rhinitis, no Rx
  - 8y – intermittent asthma
- 1 foster brother – 8 years - ADHD

Environment

- Pets: 3 dogs, 5 cats
- No clinical reaction to cats, but dogs precipitate hay fever
- No sport. Enjoys horse riding but very allergic to horses
- No smokers

Examination

- Wt 54,7 kg > 97th centile
- Ht 153 cm 90th centile
- General: allergic facies
- Skin: dry, no active eczema
- RS: Hyperinflation, bilateral wheezes
- ENT: tm's scarred; swollen nasal turbinates; cobbled pharyngeal wall

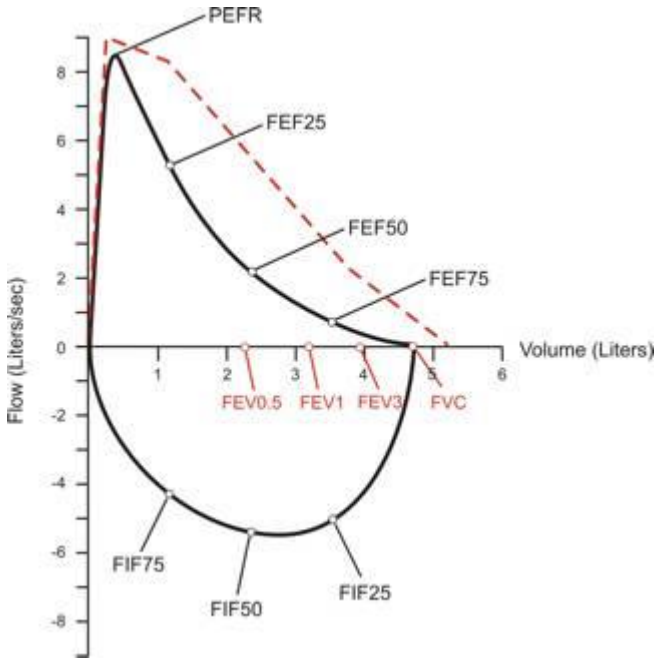
Assessment

- Severe asthma, current poor control with excessive use of beta agonists
- Allergic rhinitis – not treated
- Eczema – stable
- Atopic child, heavy exposure to potentially allergenic pets
- Obesity

Investigations?

Lung functions

- FEV 1 1.85 L (76%)
- FVC 2.57 L (90%)
- FEV 1/FVC 72%
- PEF 223 L/min (67%)



Childhood Asthma Control Test for children 4 to 11 years.

How to take the Childhood Asthma Control Test

- **Step 1** Let your child respond to **the first four questions (1 to 4).** If your child needs help reading or understanding the question, you may help, but let your child select the response. Complete the remaining **three questions (5 to 7)** on your own and without letting your child's response influence your answers. There are no right or wrong answers.
- **Step 2** Write the number of each answer in the score box provided.
- **Step 3** Add up each score box for the total.
- **Step 4** Take the test to the doctor to talk about your child's total score.

19 or less

If your child's score is 19 or less, it may be a sign that your child's asthma is not controlled as well as it could be. No matter what the score, bring this test to your doctor to talk about your child's results.

Have your child complete these questions.

1. How is your asthma today?

0	1	2	3	SCORE
Very bad	Bad	Good	Very good	

2. How much of a problem is your asthma when you run, exercise or play sports?

0	1	2	3	
It's a big problem, I can't do what I want to do.	It's a problem and I don't like it.	It's a little problem but it's okay.	It's not a problem.	

3. Do you cough because of your asthma?

0	1	2	3	
Yes, all of the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.	

4. Do you wake up during the night because of your asthma?

0	1	2	3	
Yes, all of the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.	

Please complete the following questions on your own.

5. During the last 4 weeks, how many days did your child have any daytime asthma symptoms?

5	4	3	2	1	0	
Not at all	1-3 days	4-10 days	11-18 days	19-24 days	Everyday	

6. During the last 4 weeks, how many days did your child wheeze during the day because of asthma?

5	4	3	2	1	0	
Not at all	1-3 days	4-10 days	11-18 days	19-24 days	Everyday	

7. During the last 4 weeks, how many days did your child wake up during the night because of asthma?

5	4	3	2	1	0	
Not at all	1-3 days	4-10 days	11-18 days	19-24 days	Everyday	

TOTAL

Patient's Name:_____ Today's Date:_____

Asthma Control Test™ (ACT) is:

- A quick test that provides a numerical score to assess asthma control.
- Recognized by the National Institutes of Health (NIH) in its 2007 asthma guidelines.[1]
- Clinically validated against spirometry and specialist assessment.[2]

PATIENTS:

1. Answer each question and write the answer number in the box to the right of each question.
2. Add your answers and write your total score in the TOTAL box shown below.
3. Discuss your results with your doctor.

									SCORE
1. In the past **4 weeks**, how much of the time did your **asthma** keep you from getting as much done at work, school or at home?	All of the time	1	Most of the time	2	Some of the time	3	A little of the time	4	None of the time 5	
2. During the past **4 weeks**, how often have you had shortness of breath?	More than once a day	1	Once a day	2	3 to 6 times a week	3	Once or twice a week	4	Not at all 5	
3. During the past **4 weeks**, how often did your **asthma** symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?	4 or more nights a week	1	2 or 3 nights a week	2	Once a week	3	Once or twice	4	Not at all 5	
4. During the past **4 weeks**, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?	3 or more times per day	1	1 or 2 times per day	2	2 or 3 times per week	3	Once a week or less	4	Not at all 5	
5. How would you rate your **asthma** control during the **past 4 weeks**?	Not controlled at all	1	Poorly controlled	2	Somewhat controlled	3	Well controlled	4	Completely controlled 5	
									TOTAL	

If your score is 19 or less, your asthma may not be under control.

The Asthma Control Test is for people with asthma 12 years and older.

HEALTHCARE PROVIDER:

- Include the ACT score in your patient's chart to track asthma control.

References: 1. US Department of Health and Human Services, National Institutes of Health, National Heart, Lung and Blood Institute. *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma (EPR-3 2007).* NIH Item No. 08-4051. http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm. Accessed September 10, 2007. **2.** Nathan RA et al. *J Allergy Clin Immunol.* 2004;113:59-65.

Asthma Control Test

- 17/ 25 = poor control

- 25 – well controlled
- 20-25 – partly controlled
- < 20 – poorly controlled

Skin prick testing

ALLERGEN	WHEAL (mm)
Neg control	0
Rye grass	Not done
Bermuda grass	**11**
Tree pollen mix 1	**15**
Mould mix 1	0
Aspergillus fumigatus	6
House dust mite	**10**
Cat dander	4
Dog dander	8
Cockroach	0
Pos control	**12**

Poor asthma control - Why?

If asthma control not achieved…

- Is diagnosis correct?
- Any co-morbidities?
- Check
  - adherence
  - technique
  - delivery system
  - triggers

Causes of non-adherence

- Poor patient education
- Cost / transport
- Lack of awareness of symptoms
- Embarrassment in using medication
- Side-effects of medication

AB and poor asthma control

- Is diagnosis correct? - yes
- Any **co-morbidities**? – yes, no Rx
- Check
  - **adherence - poor**
  - technique - good
  - delivery system - good
  - triggers – pets?

Causes of non-adherence

- Poor patient education
- **Cost** / transport
- Lack of awareness of symptoms
- Embarrassment in using medication
- Side-effects of medication

Cost of asthma medications

- Seretide® 50/250 R264,71
- Singular® 5 mg R277,00
- Diprogenta® 20 g R155,96

Plan for AB

- Education
- Advice re environmental control
- Continue high dose ICS + LABA, but use more affordable generics
- Treat co-morbid conditions
- Emphasise adherence

Cost of medication

- Budeflam® 200 mcg R194,93
  (2.5 months)
- Foratec® DP caps R76,20
- Lenovate® 15 g R14,39

Case 5: CH

- 10 year old boy
- Cough x 5 months, started after visit to trampoline park
  - Persistent, frequent. Sent home from school as extremely disruptive to class. Missed 21 days 1st quarter and 10 days 2nd quarter.
  - Brassy, non-productive
  - Worse when upright; never wakes him
  - Treated with antibiotics and prednisolone
  - Slow improvement over past 2 months but still troublesome

CH continued

- First episode of prolonged coughing at age 4 years – diagnosed as croup
- 2 years before admitted to private hospital with tight chest, wheezing and cough. Treated with beta-2 agonist / ipratropium nebulisations, antibiotics, prednisolone. Cough lasted 1 month
- What else would you like to know?

CH continued

- Minimal nasal symptoms. Recent sinus washout, adenoidectomy and inferior turbinoplasty
- No eczema
- No perinatal problems
- Normal diet; not breast fed

- Recent 3 week course of azithromycin

CH Family history

- Mother hay fever
- 18-year-old brother seasonal allergies, eczema
- 14-year-old sister alopecia areata, depression, anxiety. Mild hay fever. Had eczema – resolved. Mild asthma when younger

CH social / environment

- School grade V – does well despite absenteeism
- Father professional, academic
- Mother at home
- Own room – tiled floor, protective mattress and pillow covers
- Dog – Yorkie
- Father smokes - outside

CH Examination

- Growth normal
- “Allergic” facies with Morgan-Dennie lines
- Intermittent deep brassy cough
- Chest: no hyperinflation, no wheeze
- ENT: nose slightly enlarged turbinates with evidence of recent trimming; cobbled posterior pharyngeal wall
- Other systems normal

Diagnosis?

Investigations?

Special investigations

- CXR: Normal
- FBC, CRP all normal
- Total IgE 1533 kU/L
- Phadiatop 50 kU/L
- Previous ImmunoCAP: house dust mite >100 kU/L; cat 2.39; dog 1.52; moulds and grasses all negative

Is this asthma?

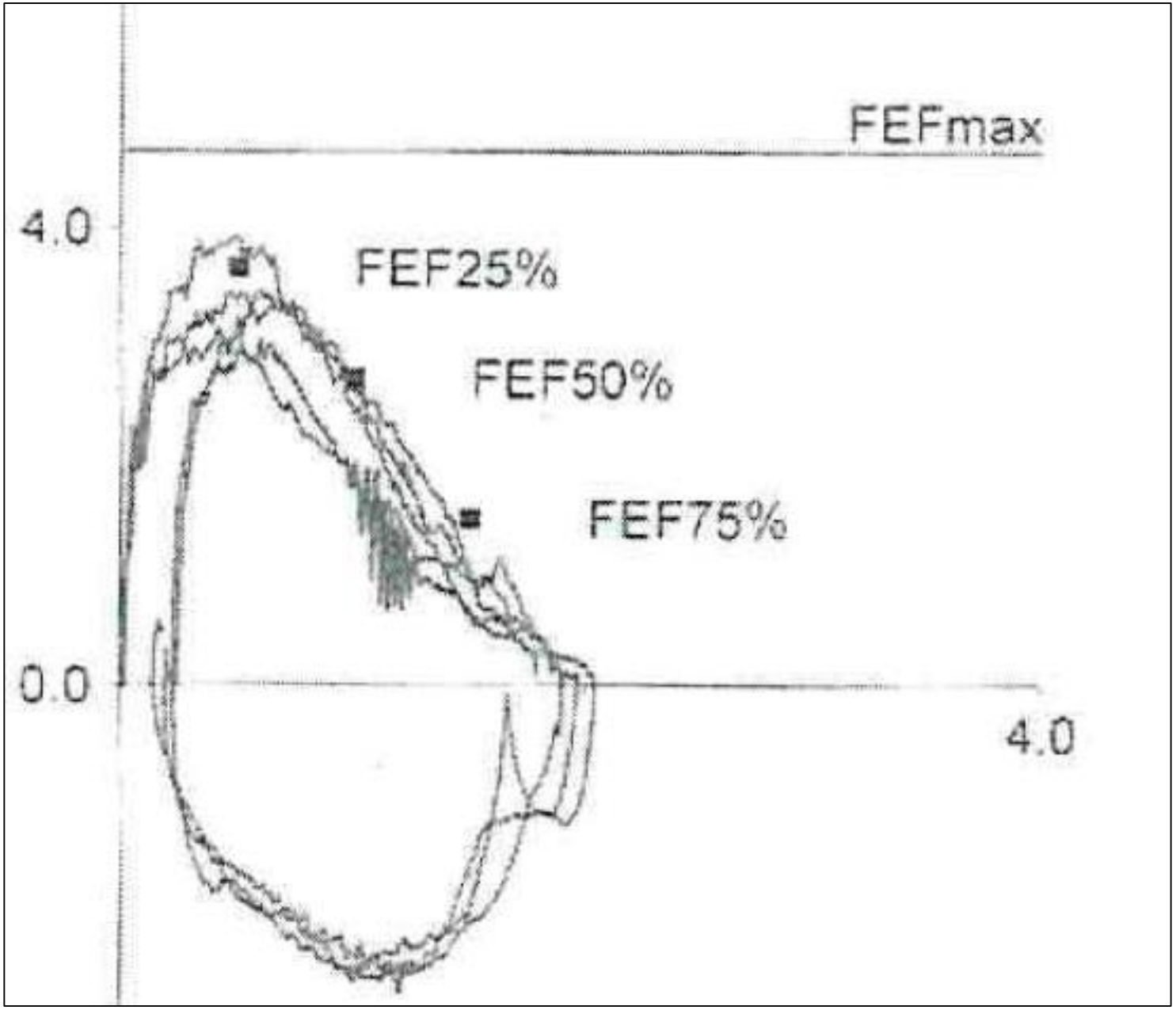
Medication

1. Home nebulizer with Budoneb, Duolin and hypertonic Kuroflo solution
2. Symbicort 160 BD
3. Topraz 10mg daily po
4. Avamys nasal
5. Asthavent MDI 100ug without spacer device
6. Pholtex jr cough mixture and Bronchipret cough mixture

Lung function tests

Spirometry

	Predicted (Favor Mean)	Pre Drug Effort 1	Pre Drug Effort 2	Pre Drug Effort 3	Pre Drug Reported	Pre Drug % Predicted
FEV1	1.90	1.74	1.81	1.69	1.81	96
FVC	2.01	2.05	1.97	1.91	2.05	102
FEV1/FVC	89.54	84.90	91.76	88.43	88.44	99
FEF25%	3.64	3.36	3.92	3.03	3.36	92
FEF50%	2.69	2.70	2.64	1.93	2.70	100
FEF75%	1.47	0.84	1.13	1.04	0.84	57 <
FEFmax	4.68	3.43	3.92	3.10	3.43	73 <


FEFmax
4.0
FEF25%
FEF50%
FEF75%
0.0
4.0

Other investigations

- Barium study normal
- Bronchoscopy with bronchoalveolar lavage:
  - Severe nasal obstruction
  - Lower airways normal anatomy but marked tracheal inflammation and secretions
  - Culture of BAL fluid: Haemophilus parainfluenza

Treatment

Acute:

1. Zinnat BD for 14 days
2. Aspelone 10ml daily po for 2 weeks then wean over 2 weeks
3. Sterimar nasal irrigation QID for 2 weeks
4. Salex SSR Paed hypertonic nasal irrigation BD for 1 week

Chronic:

1. Dulera 100/5 inh BD via Aerochamber (Blue)
2. Monte air 5mg daily chew (After Cortisone course completed)
3. Avamys nasal nocte
4. Neoclarityne 5mg daily po

And now?

Diagnosis?

- Psychogenic or Habit cough?
- Now Somatic Cough Syndrome and Tic cough
- **Management?**
- Ipratropium bromide MDI
- Referral physiotherapist
- Referral psychologist
- Hypnotherapy?
- Follow up

Case 6: RS

- Age 3 years, 9 months - girl
- Referred by GP:
  - Persistent rhinitis since infancy
  - Frequent episodes of upper and lower respiratory infections with associated wheezing over last year
  - Clinical features of allergic rhinitis and asthma
  - In crèche, frequent viral infections
  - Rx cetirizine; asthavent and budeflam MDIs with spacer

RH History

- Recurrent cough and wheeze over past 6 months. No response to MDIs and parents stopped treatment
- Completely well past 6 weeks
- Repeated courses of antibiotics and prednisolone
- Admissions at ages 4, 18 and 24 months of age with LRTI
- Ts & As March 2017

RH History 2

- Spent 2 months in crèche during 2017; in again for 6 months in 2018 – not convinced removal made any difference
- PMH: term NVD, 2,4 kg. No perintal problems. No eczema.
- FH: mother “sinus”. Had eczema. Father ?asthma as a young child. Older brother well. Mother’s family asthma and AR
- Recently purchased a home nebuliser
- Both parents smoke

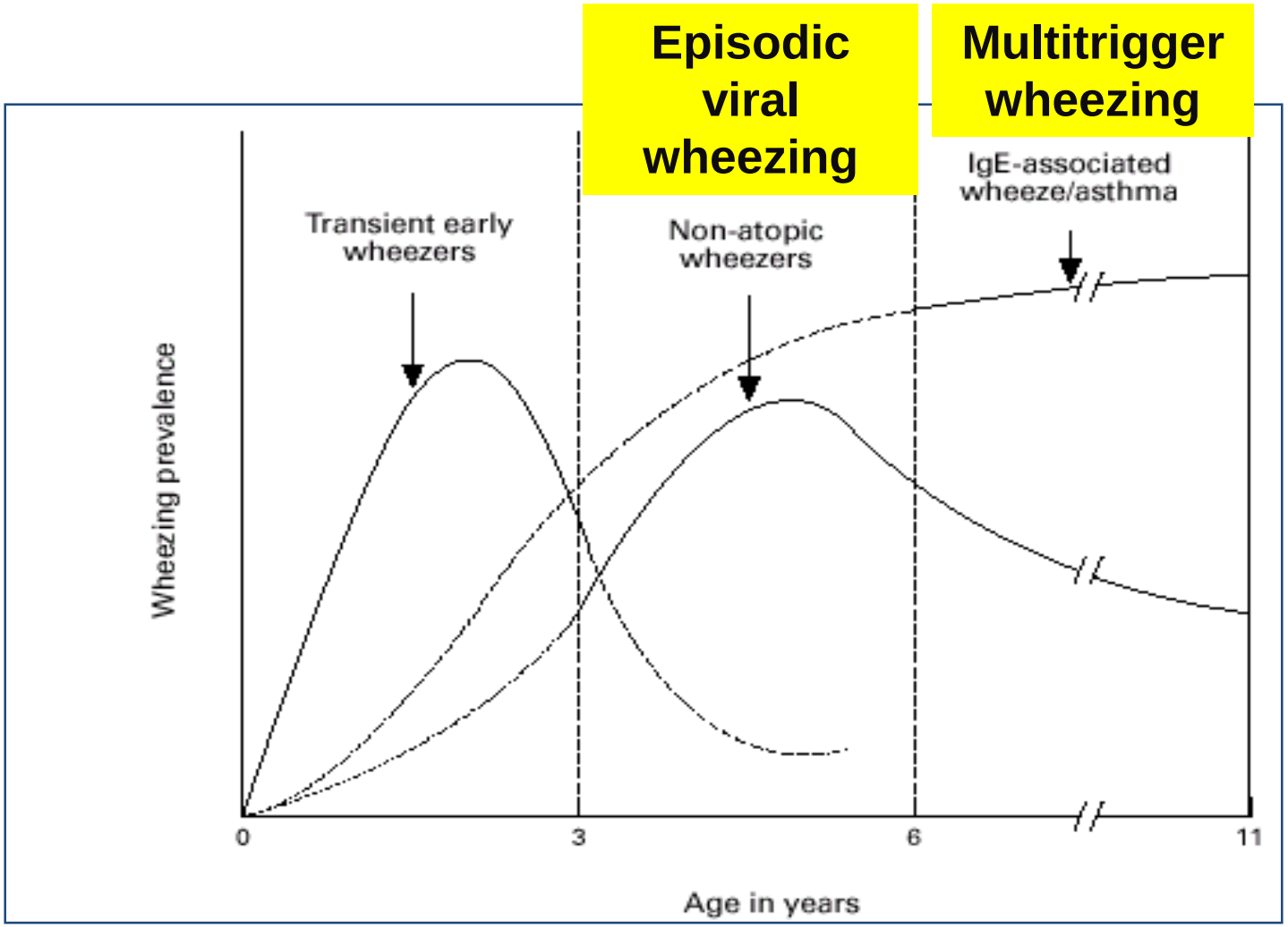
RH Examination

- Growth normal
- Mild allergic shiners
- Skin normal
- ENT normal
- Chest normal

Differential diagnosis?

- Asthma
- Transient viral wheezer
- Episodic viral wheezer
- Crèche syndrome
- Primary immune deficiency
- Protracted bacterial bronchitis
- Smoke exposure

Different “Asthma” Phenotypes



Investigations?

- FBC / differential
- IgG, IgA, IgM
- Phadiatop

- Normal E=330
- Normal
- IgE to inhalants <0.35 kU/L

Further management

- Avoid smoke exposure
- Cetirizine
- Treat episodes as they arise
- Consider montelukast with viral infections
- Follow up

Case 7: KG

- 19 month old boy
- Born at 37 weeks, birth weight 3220g, 49 cm
- No perinatal problems
- Onset of symptoms at ± 6 months of age: noisy breathing, not gaining weight, coughing
- **Diagnosis**: gastro-oesophageal reflux, poor weight gain, laryngomalacia and incoordinate swallowing

KG: Allergy related symptoms

- Eczema: flexural and behind ears
- Coughing when he ingests dairy products
- Ate peanut butter once and egg once; on both occasions he coughed ++, vomited and started to wheeze
- Allergy workup done showed abnormal Fx5 and specific IgE tests for foods - referred to allergy clinic

KG: Dietary history

- Exclusively breast fed till 4 months of age
- Purity, boiled vegetables introduced at 4 months
- Breast fed until ± 1 year of age
- Dairy introduced at ± 10-11 months
- Milk changed to Isomil (soya milk) with good response
- Current diet: cooked food, chicken, mince
- Avoidance: dairy, eggs, peanut butter

KG: Family history

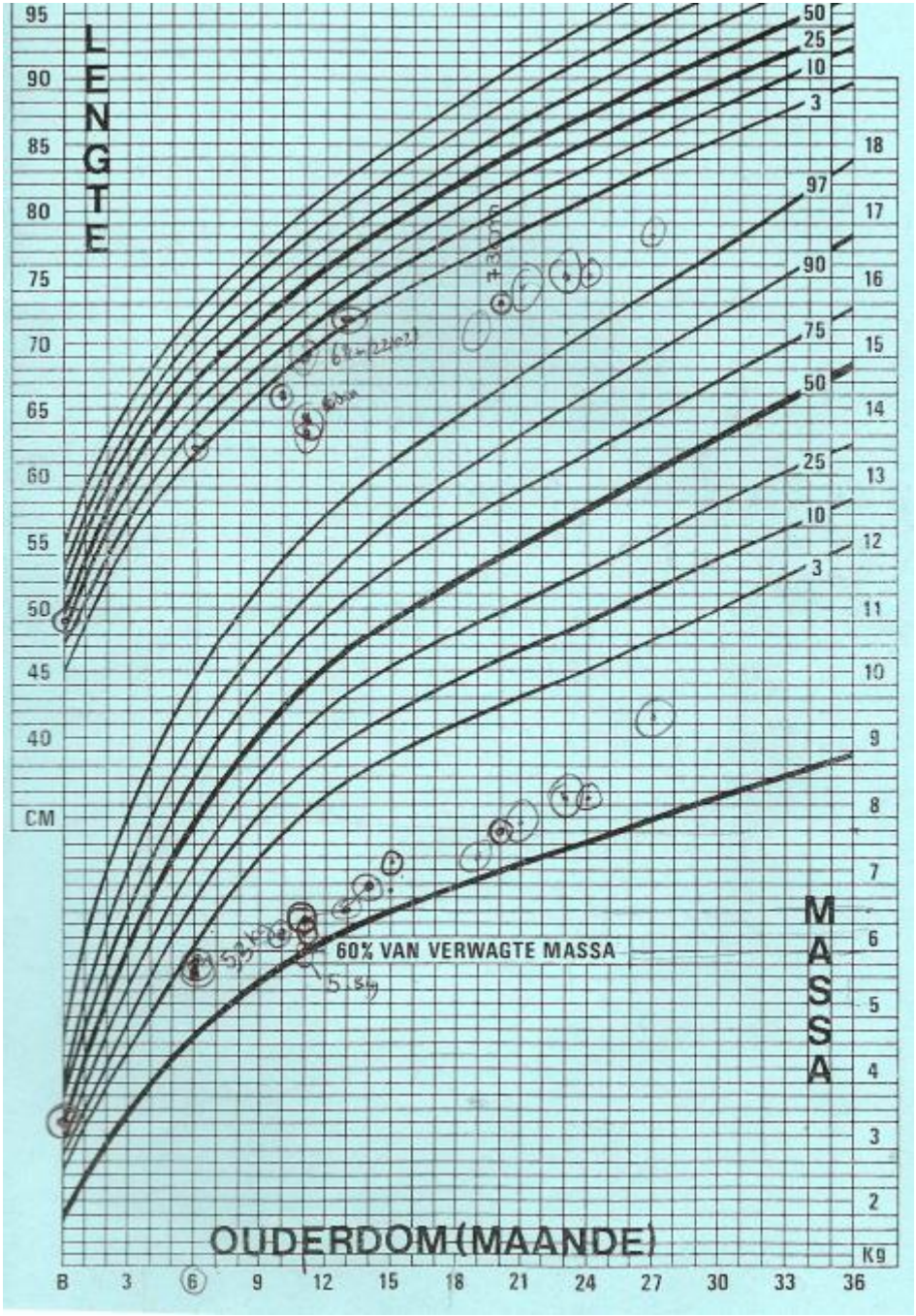
- 3 older siblings, currently well. 11-year-old sister had eczema – resolved
- Parents well

KG: Examination

- Weight 7,16 kg ↓↓ 3rd centile; wt/ht 78% E
- Length 71 cm ↓↓ 3rd centile; 86% E
  - i.e. wasted and stunted
- Allergic appearance; mouth breather; nasal obstruction
- Darkly pigmented lips and buccal mucosa
- Skin: Flexural & post-auricular eczema

KG: Examination 2

- Respiratory System:
  - Mild inspiratory stridor
  - Chest deformity: Harrison's sulcus, pectus carinatum
  - No adventitious sounds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KG: Assessment

- Severe FTT – stunted and wasted, not syndromic
  - Growth chart: malnutrition
- Laryngomalacia / swallowing incoordination
- Eczema
- Food allergy? – cow's milk protein, egg, peanut

KG: Investigations

- FBC, Chemistry normal
- Sweat test normal
- Stool steatocrit negative
- Genetics – not syndromic
- Immune workup: HIV negative; immunoglobulins and B and T cells normal
- Endocrine workup (?Addison's) normal

KG: Investigations 2

- **Total IgE** **7698 kU/L (5.7; 23.0)**
- **Egg white** 557 kU/L
- **Cow's milk** 42.6 kU/L
- α lactoglobulin 64.3 kU/L
- ß lactoglobulin 39.6 kU/L
- Casein 25.8 kU/L
- **Peanut** 330; rAra h2 321 kU/L
- **Soya** 7.26 kU/L
- **Wheat** 40.30 kU/L

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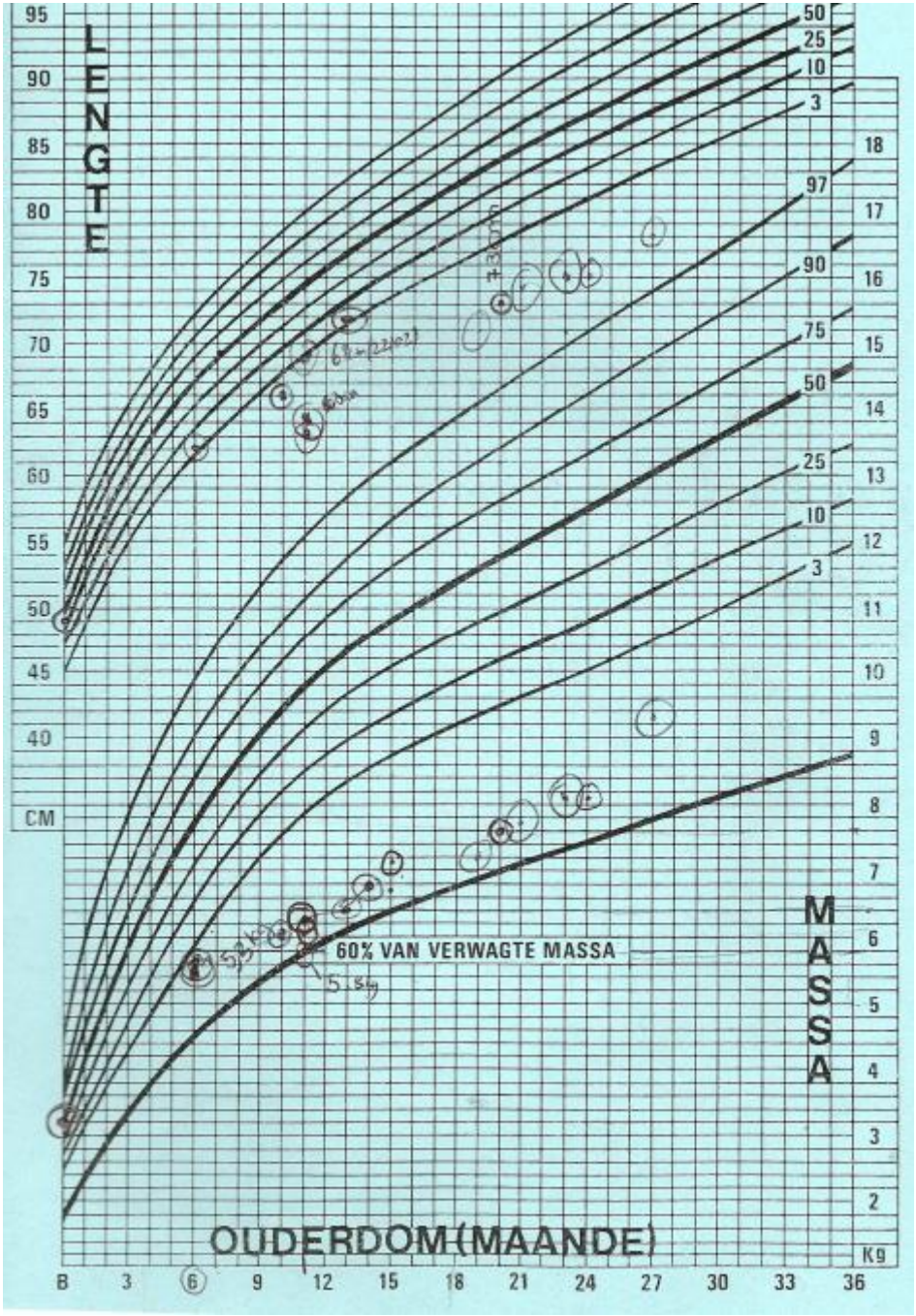
KG: Management

- Careful dietary advice: avoid egg as levels extremely high; also peanut avoidance
- Introduce milk:
  - Peptamen junior (whey based) – not tolerated
  - Tolerated UHT Everfresh milk: protein denatured by heating process; often tolerated by whey allergic children
- Multivitamins, calcium, zinc
- Started to gain weight and grow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Urticaria

Case 8: ZL

- 12 year old boy
- Presented with acute urticaria – 3 days
- Rx CHC with chlorpheniramine and prednisone
- Acute exacerbation of urticaria – referred

ZL History

- 5 days previously ?bitten on R upper arm
- Also fell, injuring R elbow
- Presented with severe urticarial rash and possible anaphylaxis – wheezing and swollen tongue
- Managed as anaphylaxis, referred
- Severe generalized urticaria
- Painful swollen R elbow

Course

- U/S elbow ? Septic arthritis
- Taken to OT for I&D: abscess above elbow; no septic arthritis
- 5 ml pus drained
- Culture: Staphylococcus aureus
- Urticaria resolved with drainage of pus
- Treated with IV antibiotics 5 days, discharged
- Anaphylaxis?

Acute urticaria

- Usually self limiting, but can present as anaphylaxis
- Cause can often be identified
- Infections are important cause in children
- Other causes: food additives and drugs
- IgE and non IgE mediated
- Small number are idiopathic

Summary

- Treatment decisions for infants and children with allergy should be made on the basis of history and, when appropriate, identified through directed sIgE or SPT testing
- Allergy tests for sIgE must be selected and interpreted in the context of a clinical presentation
- Positive sIgE tests = sensitisation, not necessarily clinical allergy

Sicherer, Wood Pediatrics Jan 2012 193-7

Summary 2

- Positive sIgE tests may be influenced by cross-reactive proteins and generalised hyper IgE response
- Increasingly higher levels of sIgE tend to correlate with increased risk of clinical allergy
- SIgE test results do not reflect the severity of allergies
- In suspected food allergy, beware of causing malnutrition – involve a dietician!

Sicherer, Wood Pediatrics Jan 2012 193-7

Allergy Foundation of South Africa

http://www.allergyfoundation.co.za

Thank you