Respiratory Allergen-Immunotherapy

"Dr P.C.KATHURIA"

MD. (Chest) D.N.B (Resp.) DTCD,FCAI FCCP

ALLERGY –IMMUNOTHERAPIST

Senior Consultant

"NATIONAL ALLERGY CENTRE"

"BLK Super specialty Hospital, Delhi"

Any One Can Do Allergy Skin Tests & Blood Specific IgE Test

Few Do It Well, & Can Interpret The ***Positivity*** *by Allergy Skin Test & Blood Specific IgE Test as Sensitization vs. Clinical Allergy*

Fewer Still Can Interpret clinically

&

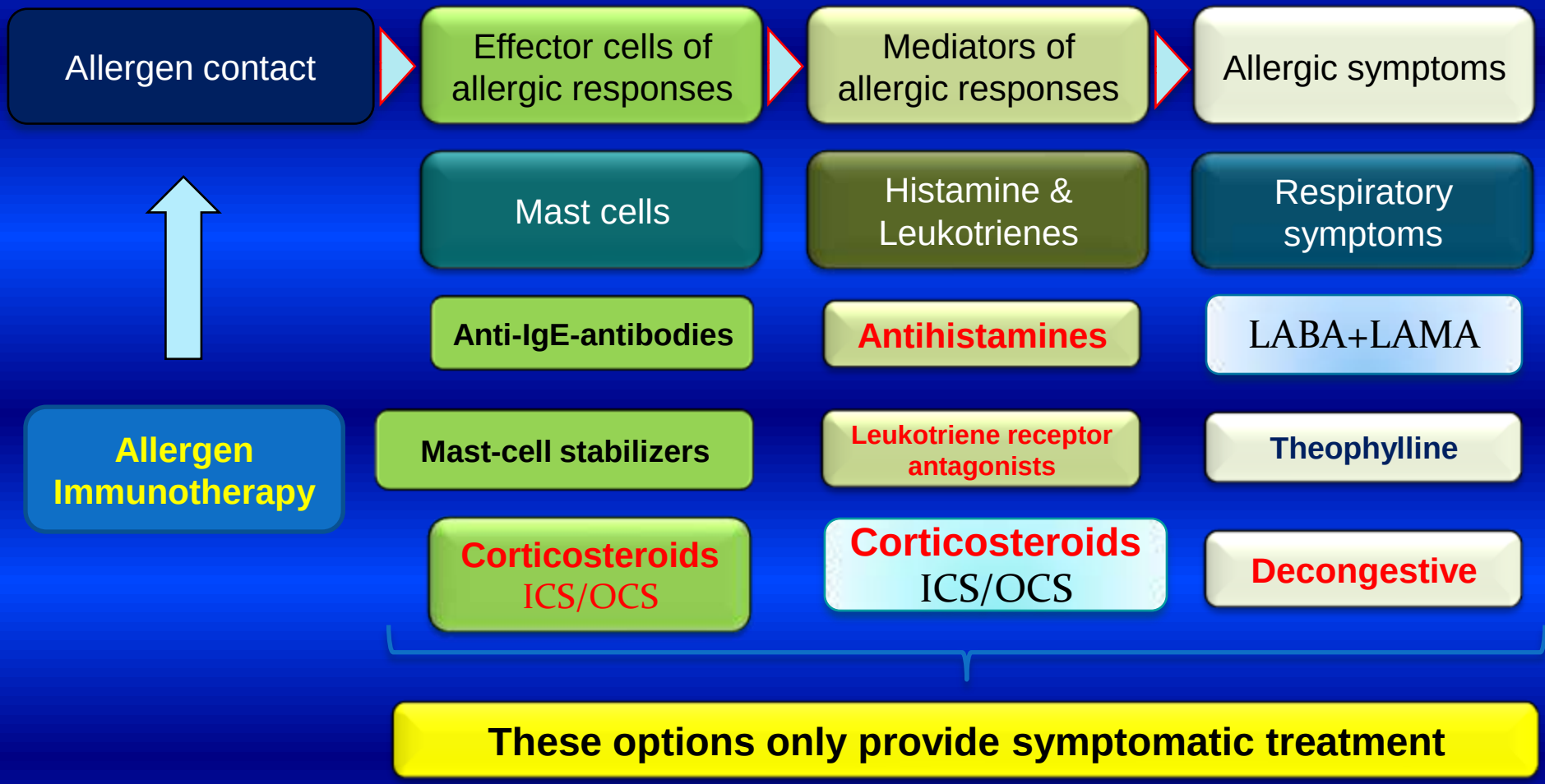
Select The Allergens For Specific Immunotherapy

Dr. P.C Kathuria

Allergic Respiratory Diseases

- *Allergic rhinitis* → *(IgE)*
- *Allergic asthma* → *(IgE)*
- *Allergic Bronchopulmonary Aspergillosis* → *(IgE + IgG)*
- *Hypersensitivity Pneumonitis* → *(IgG + Lymphocytosis)*
- *Aspirin exacerbated respiratory disease* → *(Non IgE)*

Influence of Anti-Allergic Drugs

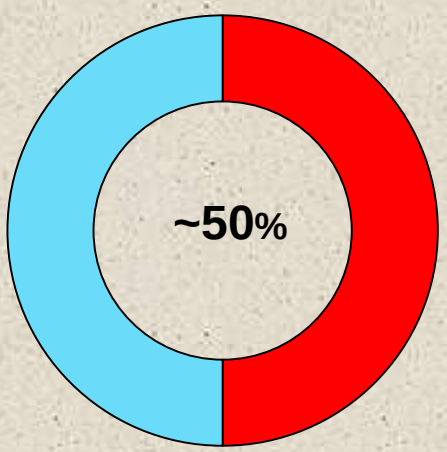


Global Prevalence Of Sensitivity To Allergens In Allergic Rhinitis (% Of Allergic Population)

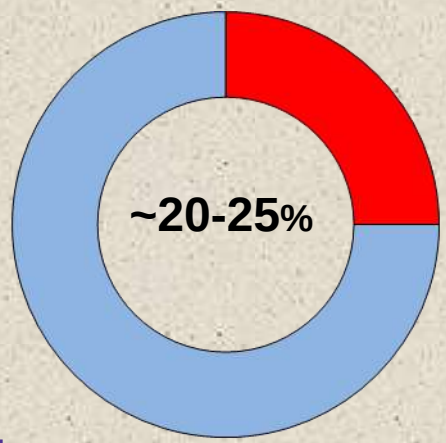
Allergen	US	EU
• Grasses	56%	52%
• House dust mite	45%	49%
• Ragweed	49%	*n/a*
• Birch	23%	14%
• Weed	n/a	27%
• Japanese cedar	10%	*n/a*
• Cat	39%	30%
• Dog	19%	*n/a*

Percentage Prevalence of Allergens

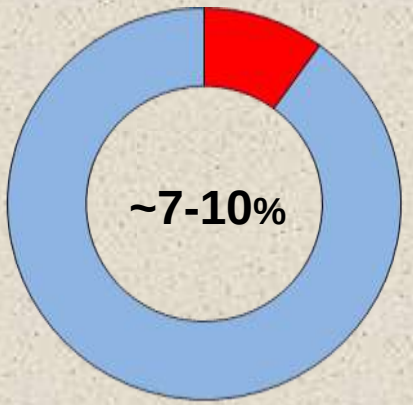
House dust mite



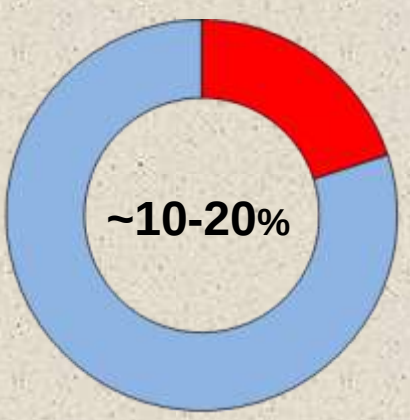
Pollen



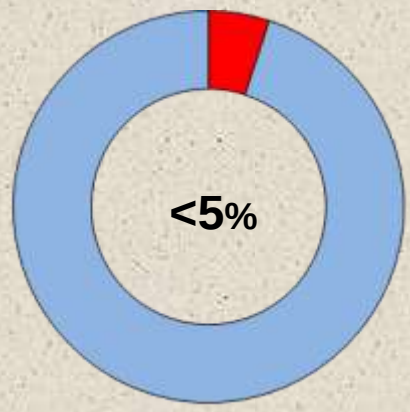
Mould



Insects



Animal Dander



NATIONAL ALLERGY CENTER -DELHI (Personal communication)

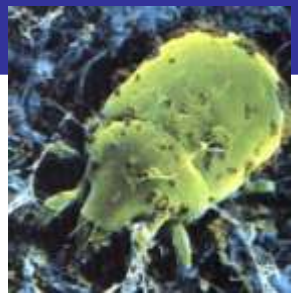
Environmental Factors:

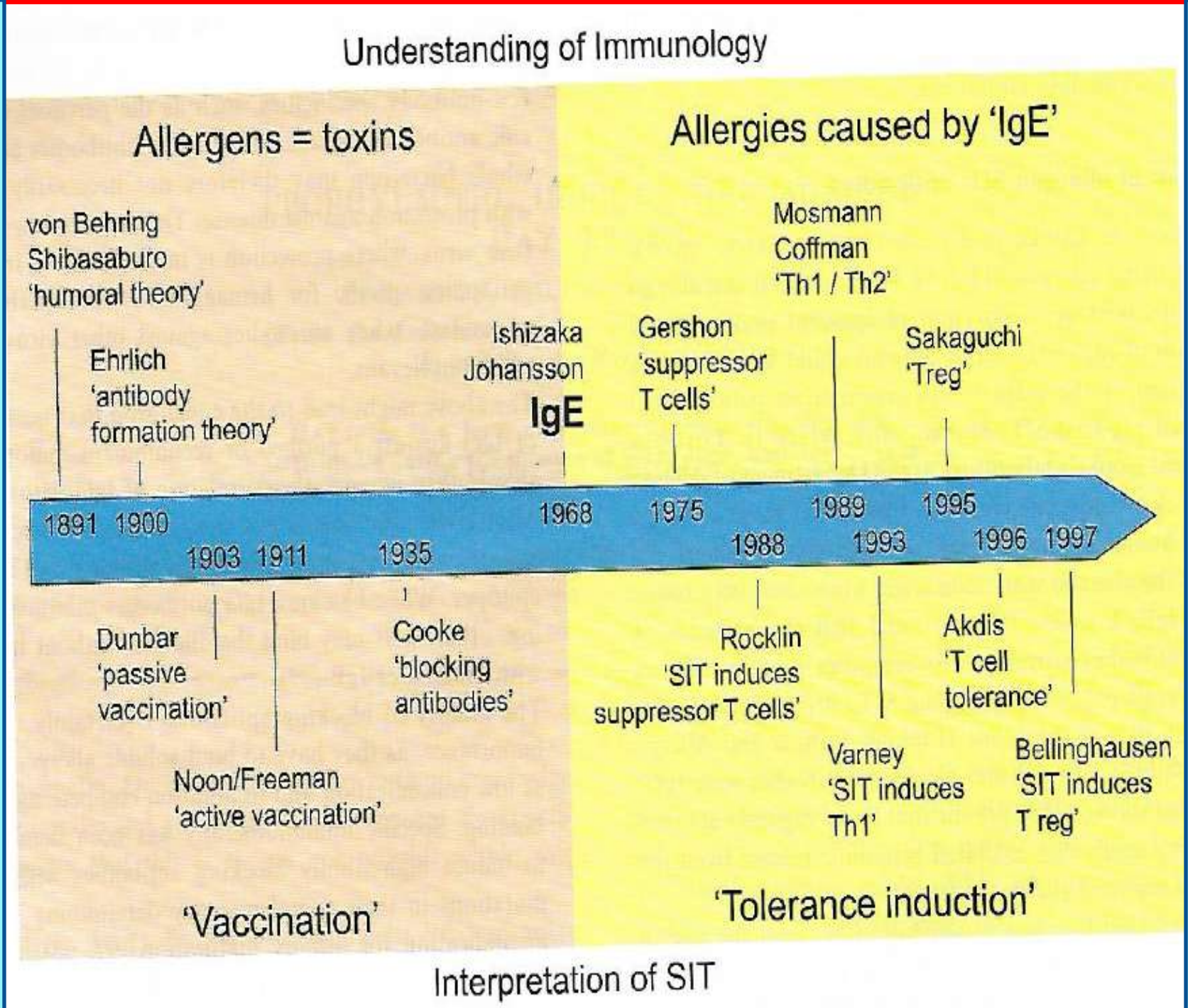
Action - Advice on allergens avoidance

These precautions alone are insufficient for significant improvements in symptomology.

-Animals **outside** the home (cats, dogs, hamsters)
Dust Mites: Allergy **Waterproof** Cases
Damp cloth and vacuum
Home Humidity <50%
No carpets in the bedroom
Washing with **hot water weekly**
Pollens: Close windows in time of pollination
Snuff: Avoid **smoking** and passive exposure
Fungi: Remove mildew **stains** on the walls

Avoid wood stoves, smoke, air fresheners, etc..



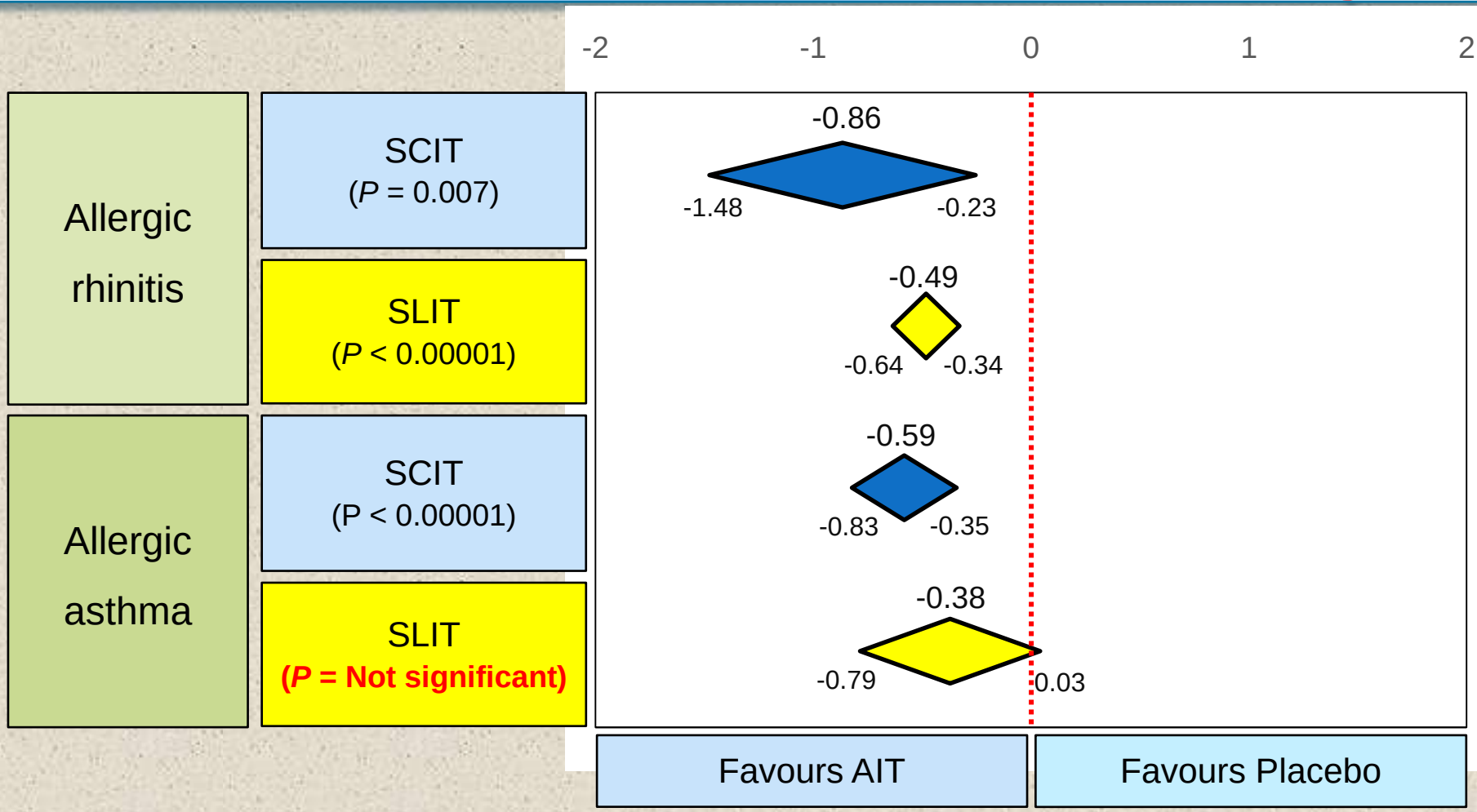

Understanding of Immunology
Allergens = toxins
Allergies caused by 'IgE'
von Behring
Shibasaburo
'humoral theory'
Ehrlich
'antibody
formation theory'
Ishizaka
Johansson
IgE
Gershon
'suppressor
T cells'
Mosmann
Coffman
'Th1 / Th2'
Sakaguchi
'Treg'
1891
1900
1903
1911
1935
1968
1975
1988
1989
1993
1995
1996
1997
Dunbar
'passive
vaccination'
Noon/Freeman
'active vaccination'
Cooke
'blocking
antibodies'
Rocklin
'SIT induces
suppressor T cells'
Varney
'SIT induces
Th1'
Akdis
'T cell
tolerance'
Bellinghausen
'SIT induces
T reg'
'Vaccination'
'Tolerance induction'
Interpretation of SIT

Allergen Immunotherapy: What can we expect?

- Improved efficacy over symptomatic medication
- Cost-effectiveness over symptomatic treatment
- Early onset of efficacy
- Sustained/increasing efficacy
- Long-lasting effect
- Prevention of sensitizations
- Prevention of asthma
- Reduction for the need of steroids in asthamatic children

Matricardi PM et al., JACI 2011;128:791-9.
Wahn U et al., J Allergy Clin Immunol 2012;130:886-93.
Kuna P et al., JACI 2011;127:502-8.
Jacobsen et al. Allergy 2007: 62: 943–948.
Bozek et al., J Allergy Ther 2014, 5:4.
Zielen S et al., J Allergy Clin Immunol 2010;126:942-9.
Meadows A et al. Health Technol Assess 2013 Jul;17(27):1-336.
Eng PA, et al. Allergy 2006;61:198-201.

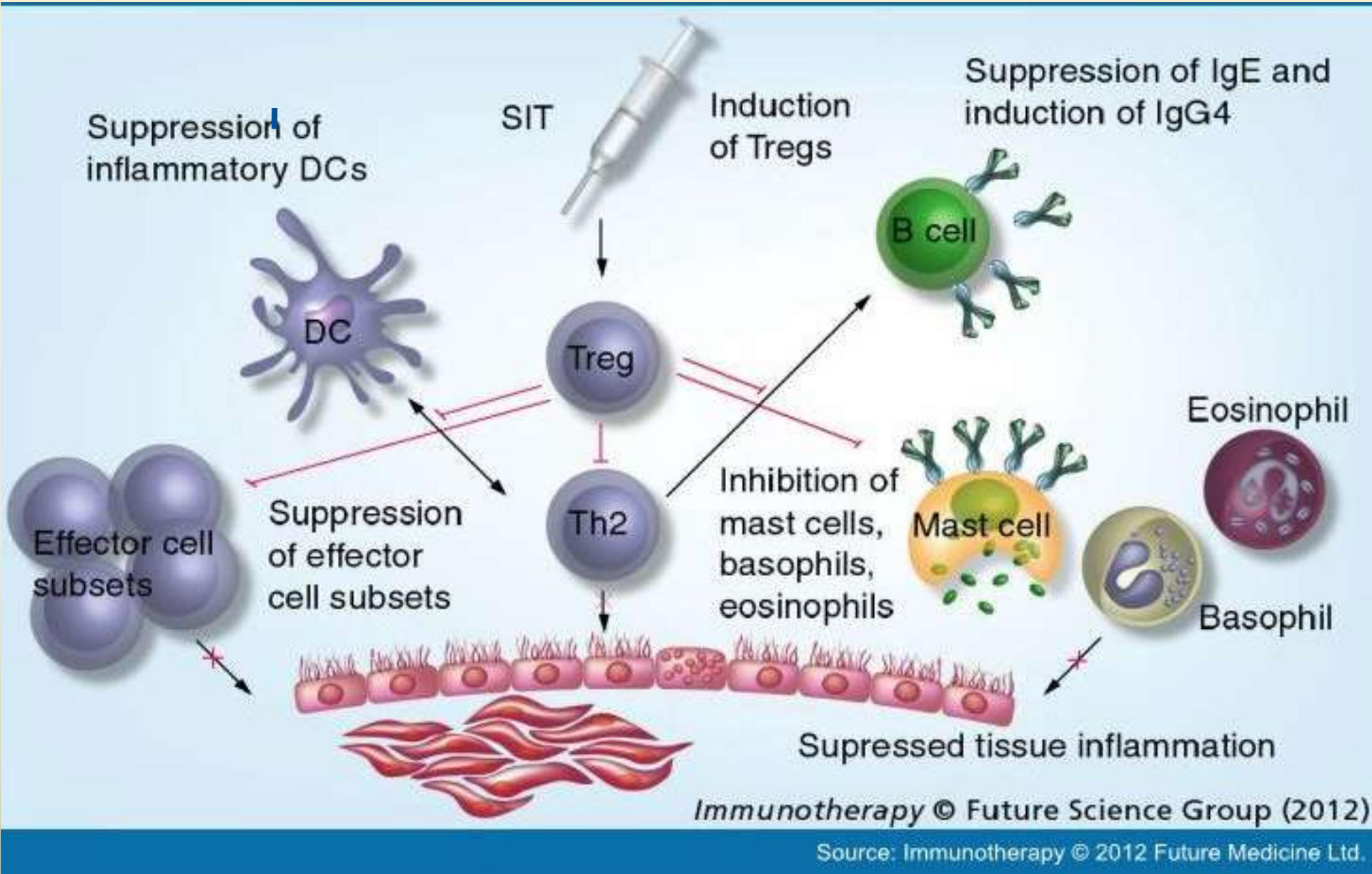
Efficacy Data:
Cochrane Review & Cochrane method Meta-analyses



Calderón MA, et al. Cochrane Database Syst Rev 2008;(2):CD007163.
Radulovic S, et al. Cochrane Database Syst Rev 2010;(12):CD002893.
AbramsonMJ, et al. Cochrane Database Syst Rev 2010;(8): CD001186.
Calamita Z, et al. Cochrane Collaboration method. Allergy. 2006;61(10):1162-1172.

Mechanism of Action of Allergen Immunotherapy

Immuno regulatory cytokines → (IL-10 & TGF-β)



Source: Immunotherapy © 2012 Future Medicine Ltd.

Improvement of Symptoms and Reduction in Medication and Bronchial Hyperrespoonsiveness after Immunotherapy*

Outcome measure	Immunotherapy target	
	House-dust mite*	Other Allergens*, #
Symptom improvement	2.7 (1.7 – 4.4)	4.8 (2.3-10.1)
Reduction in medication	4.2 (2.2 – 7.9)	ND
Reduction in bronchial hyperresponsiveness	13.7 (3.8-50.0)	5.5 (2.8-10.7)

ND – Not done. * Odds ratio (95% Confidence intervals), # Pollen, mold or animal dande

Data from Abramson et al. 74

Injection Allergen Immunotherapy For Asthma

- Eighty-eight trials were included (13 new trials)

42	house dust mite allergy
27	pollen allergy

10	animal dander allergy	2	cladosporium mould allergy
2	latex allergy	6	multiple allergens

The Cochrane Library 2010, Issue 8

NHLBI guidelines for managing asthma in 5-11 yrs of age, adolescents (≥12 yrs) and adults

- Evidence B for
  - HDMs
  - Animal danders
  - Pollens
- Evidence weak or lacking for
  - Molds
  - Cockroaches
- Evidence is strongest for IT with single allergens

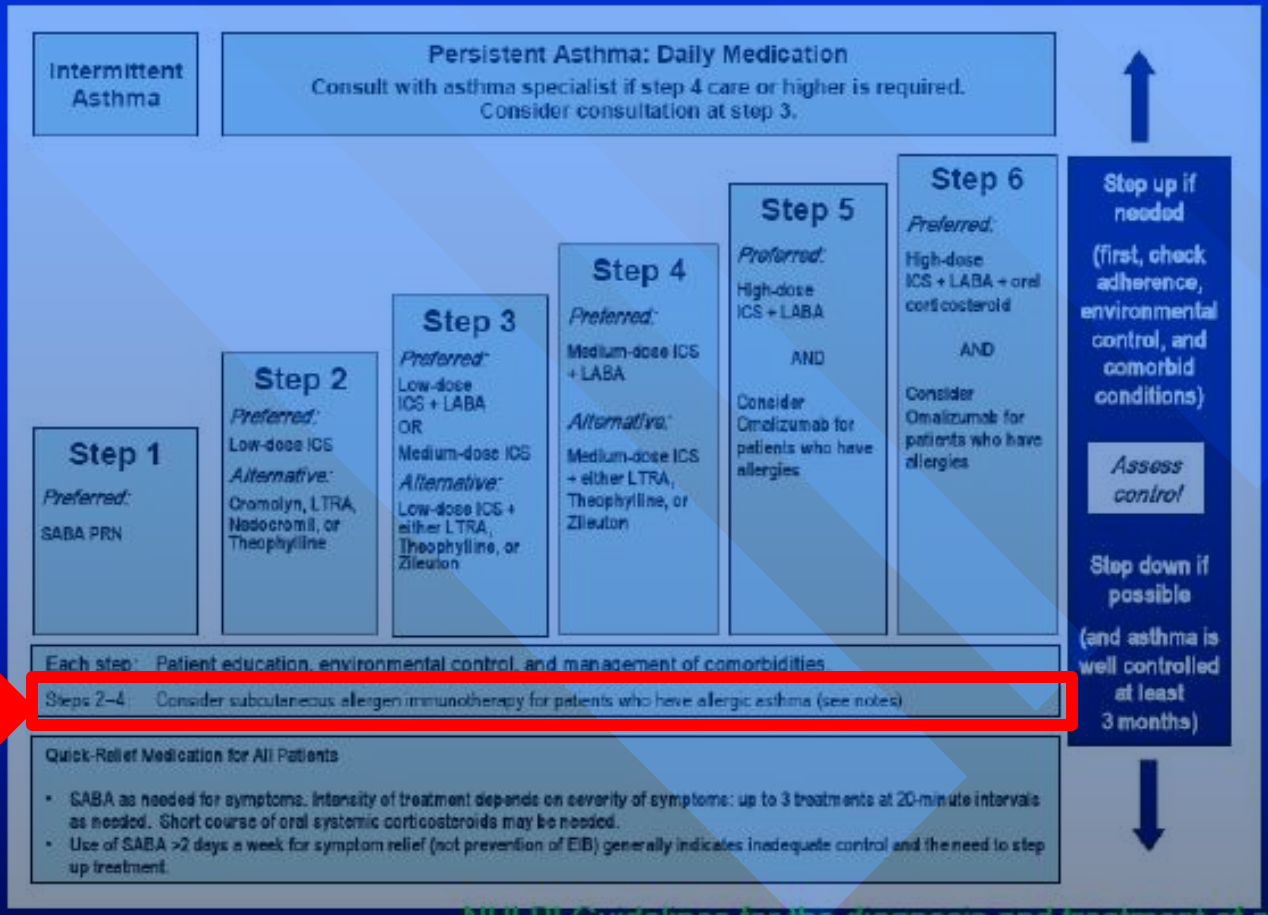
Allergens of Proven Efficacy

Allergen	Level of Evidence	Availability of Data
House Dust Mite	A	++++
Pollen	A	++++
Mould	A	++
Animal Epithelia	A	++
Hymenopteral venom	A	++
Cockroach	B	+

++++ = **Multiple long-term randomized controlled trials available;**
++ = **Few randomized controlled trials available**
+ = **Limited data; no placebo-controlled trials**

Cox et al. J Allergy Clin Immunol 2011;127:S1-55
Kleine-Tebbe et al. *Allergologie, Jahrgang 33, Nr. 1/2010*

NHLBI guidelines for managing asthma in 5-11 yrs of age, adolescents (≥12 yrs) and adults



NHLBI Guidelines for the diagnosis and treatment of asthma:
The National Asthma Education and Prevention Program JACI 2007

SIT: GINA Executive Summary

Eur REspir J 2008;31:143-178 www.ginasthma.com

- **Allergen specific immunotherapy**
- Appropriate immunotherapy requires the identification of a single well-defined clinically relevant allergen
- The value of IT using multiple allergens does not have support
- Side effects range from local reactions to anaphylaxis
- Abramson Cochrane Database Syst Review 2003:
  - symptoms reduce
  - asthma medications reduce
  - BHR (allergen specific and non-specific) reduces
- Calamita Cochrane Collaboration Method Allergy 2006:
  - SLIT results equal to ref. Abramson

Allergen Immunotherapy in Asthma Indications

- FEV1>70%
- Not controlled with allergen avoidance and pharmacotherapy
- Nasal and bronchial symptoms
- Do not wish long term pharmacotherapy
- Have undesirable side effects from pharmacotherapy

(CJACI 2001;6:122)

Is Allergen Immunotherapy Effective in Asthma?

Abramson AJRCCM 95;151:969

- 20 RCT placebo studies allergen IT in asthma
- Asthma symptoms, medications required, lung function, BHR
- Symptom scores combined OR 3.2 (2.2-4.9)
- Reduced medications for HDM 4.2 (2.2-7.9)
- Mean 7.1% improvement in FEV 1
- But noted possible publication bias, but additional 33 negative studies required to overturn results

Q. WHY IMMUNOTHERAPY?

Efficacy of specific immunotherapy

- **Early effect**
  - reduction in symptoms(60%)/need for medication(70%)
- **Progressive effect**
  - reduction in symptoms/need for medication
  - reduction in hyperresponsiveness/late phase response
- **Persistent effect**
  - long-term reduced symptoms/need for medication
  - long-term reduced hyperresponsiveness/late phase response
- **Preventive effect**
  - prevention of new sensitivities and exacerbation of disease (rhinitis into asthma)
- **Immunological effect**
  - immunomodulation

Vs PHARMOCOTHERAPY

→ Treats the symptoms, not the underlying disease

→ After treatment symptoms usually re occur and there are no long term benefits

→ Continued life-long treatment

Q. WHY IMMUNOTHERAPY?

IT: prevention of new sensitizations

New sensitizations after 3 years:
55% SIT group vs 100% control group.

Des Roches et al, JACI 1997

New sensitizations after 3 years:
25% SIT group vs 67% control group.

Pajno et al, Clin Exp Allergy 2001

New sensitizations after 4 years
23% SIT group vs 68% control group.

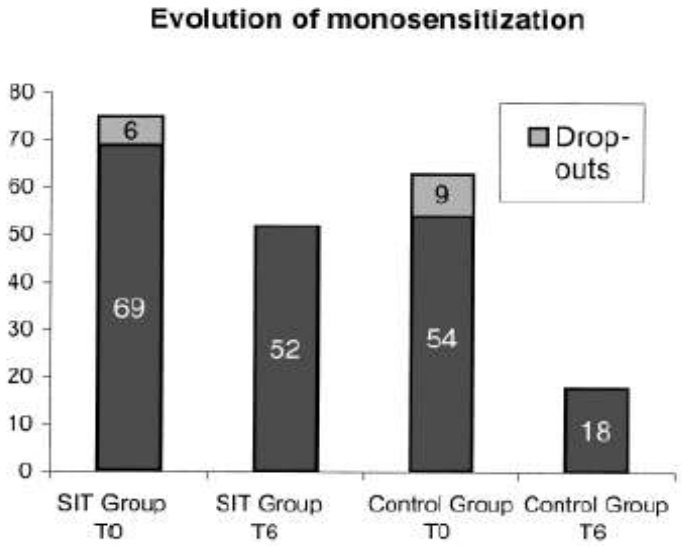
Purello D'Ambrosio et al, Clin Exp Allergy 2001

Q. WHY IMMUNOTHERAPY?

Prevention of new sensitizations in asthmatic children monosensitized to house dust mite by specific immunotherapy. A six-year follow-up study.

G. B. PAJNO*, G. BARBERIO*, Fr. DE LUCA*, L. MORABITO*, and S. PARMIANI†

		Number of patients	
		SIT Group	Control Group
Sex:	Female	42	38
	Male	33	25
Mean age: yrs (range)		7.14 (6–8)	6.38 (5–7)
Mean duration of allergy before enrolment: yrs		3.6	3.2
Symptoms		Intermittent asthma/ intermittent asthma and rhinitis	Intermittent asthma/ intermittent asthma and rhinitis
Sensitization		house dust mite	house dust mite



Sensitization rates after 6 yrs: SIT: 24.6% ; CG : 66.7%

 Clinical and Experimental Allergy, **31**, 1392–1397

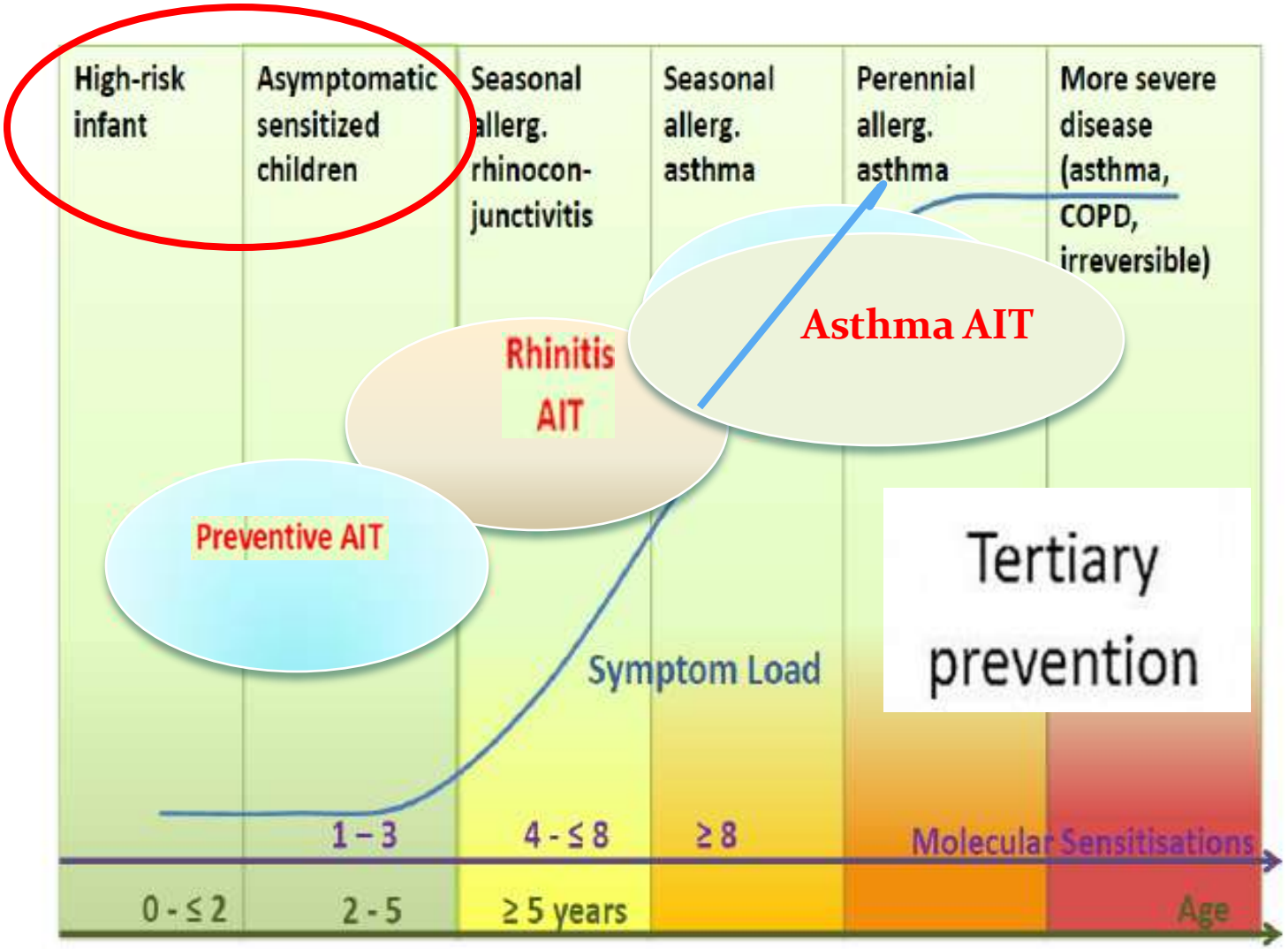
Q. WHY IMMUNOTHERAPY?

Prevention of allergic asthma

- **Primary prevention**
  - Allergen avoidance
    - prevention of allergic sensitisation and symptoms
  - Prevention by infant allergen vaccination (ITN)
- **Secondary prevention**
  - ETAC/EPAAC
    - prevention of asthma in AD children (antihistamines)
  - Immunotherapy
    - prevention of asthma in rhinitis (PAT)
    - prevention of new allergies
- **Tertiary prevention**
  - START
    - prevention of asthma exacerbations (steroids)

{ ↓ Asthma symptoms }

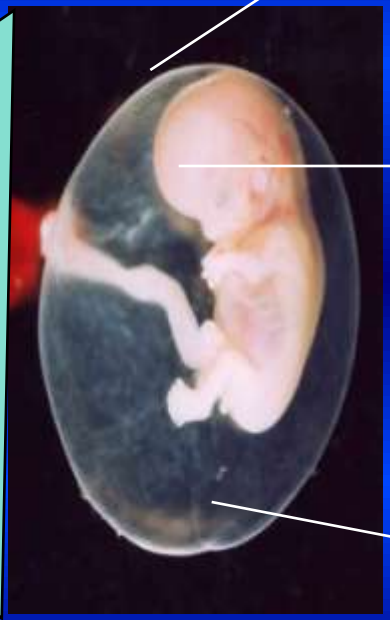
Allergy Prevention by AIT
Age-Dependent Windows of Opportunity



Mother, fetus and infant interaction In the development of allergy

TH-2

Allergen, IgE, Th2 promoters



Fetal Swallowing

IgE facilitated allergen uptake and sensitization

New Born infants immune response dominated by TH2 ,genetically controlled.

A 'Designer' Allergic Infant

atopic parents

C/section

1st born

male

atopic siblings

mum smokes

bottle fed

early weaning ?

warm high humidity home

little contact with other young children

Food Allergenic Protein

Diet

Non-allergenic antigens

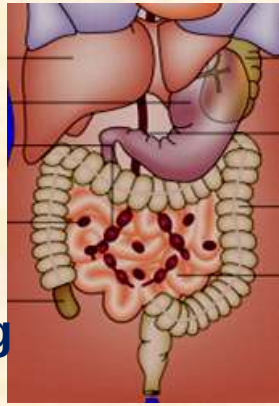
Adjuvant components

Processing

Genetics

Environmental factors

Pre-existing allergies



Pre-existing diseases

Condition of digestive & immune systems

Iatrogenic factors

Age (in relation to Allergic march

Atopic History

- *A 5-year old male presents with a history of seasonal nasal symptoms and recurrent otitis media for the last 2.5 years with intermittent ear pain. His nasal symptoms include rhinorrhea, congestion, itching, repetitive sneezing, and watery/ itchy eyes, and are present primarily during spring and fall . he has had decreased hearing and five episode of otitis media over the last two years, which were treated with antibiotics because of prolonged fluid in the middle ear. The patient's father has allergic rhinitis. The patients has two indoor cats, the patients had atopic dermatitis as an infant during physical examination , it is observed that he is a mouth breather, and repeatedly wipes his nose. The upper airway reveals a pale blue and boggy nasal turbinate with clear rhinorrhea. The patient has a nasal crease and dark circles under the eyes. Examination of the ear reveals a dull immobile tympanic membrane bilaterally. There is cobble stoning in the posterior pharynx with clear postnasal drip . the chest is clear on auscultation.*

If Pharmaco therapy fails with risk factors

- Topical nasal corticosteroids
- Nasal cromonyl sodium
- Environmental control
- Oral non sedating anti-histamine

Would you consider this patient a good candidate for Immunotherapy? :- YES

Discordance >50% in food allergy between SPT & specific-IgE

Atopic Dermatitis & Wheezing at age of 6 months

Dr Lal PathLabs

Name	MST SACHIN JHANGIANI	Collection Centre	HANUMAN ROAD
Lab Number	04 2061560	Reg.Date	21/12/04
Age	3 years Sex Male	Collection Date	21/12/04
Reffered By	DR. KATHURIA	Payment Status	P P

Test Name	Result	Units	Ref. Range
ALLERGY COMPREHENSIVE PROFILE, PAEDIATRIC			
Allergy Screen			
Immunoglobulin IgE, Total	758.00	IU/mL	(1.00 - 181.00)
AlaTOP (Paedia...	Positive		

Total IgE →

Explanation:

Total IgE:

...test gives the quant...tive measurement of total immunoglobulin ... useful to distinguish between IgE and non-IgE mediated reactions, early detection of ... in infants and as a means for predicting future atopic manife...

AlaTOP:

This is a qualitative test which detects ... antibodies to inhalant allergens in the serum. AlaTOP detects the atopic ... anaphylactic type of reaction as in case of extrinsic asthma, hay fever or atopic ...

Dust Panel	Negative
Food Panel	Negative
Animal Panel	Negative
Mold Panel	Negative
Grass Panel	Negative
Tree Panel	Negative

Allergy, Panel-wise Individual Confirmation

Allergy, Dust Panel

House Dust	Negative
Cockroach	Negative
Dermatop. pteronyssinus	Negative
Dermatophagoides farinae	Negative

Allergy, Food Panel

Egg White	Negative		
Milk			
Wheat	Positive, 5.41	KU/L	(< 0.35)
Peanut	Negative		
Soyabean	Negative		
Shrimp	Negative		
Gluten	Positive, 4.23	KU/L	(< 0.35)

Wheat →

http://www.lalpathlabs.com/online2.asp?lab_no=2061560&psd=SACHIN 28/12/2...

Dr. P. C. Katuria
Specialist - Asthma & Allergic Skin Diseases

NATIONAL ALLERGY CENTRE
1/2, East Patel Nagar, N. Delhi-8
Phones: 5749237, 40136, 5749292

SKIN TEST REACTION

PRICK ... INTRADERMAL ... SCRATCHTEST ... ABSORPTION TESTS / C.A.S.T.

Patient's Name : SACHIN JHANGIANI Age : 3yrs

Address : EAST PATEL NAGAR.

Delivery Address : DELHI-8. Tel. No. : –

Date of Skin Test : 10.12.04. Ref. No. –

Set required : ATOPIC DERMATITIS & WHEEZING.

Treatment Set		Maintenance Set	

SKIN TEST RESULTS

Negative Control (Saline)	–
Positive Control (Histamine)	+++

No.	Allergen POLLENS / FUNGI / DUSTS / MITES / FOODS	Skin Test Result (mm) or (plus Sine)	IgE/C.A.S.T.
1	MILK	+++	+Ve (758.10 IU/ml)
2	CHEESE	+++	
3	Egg WHITE	++++	
4	WHEAT	+	
5	D. pteronyssinus	++	
6	D. Farinae	++	

I, Dr. P. C. KATHURIA wish to order this treatment set / maintenance vial. The above data has been checked by me and found to be correct. I further confirm that the hyposensitisation treatment will be carried out by trained specialists in our clinic which is equipped with the necessary emergency kits, oxygen cylinder etc.

Doctor's Signature/Qualifications : P. Kathuria

Name of Institution & Addres :

Immunotherapy – SLIT

11

Diagnosis: Allergic rhinoconjunctivitis to suspicion of bronchial asthma

House dust Mite- Positive by SPT & specific IgE

- 5 year old boy is admitted to hospital in June with acute wheezy bronchitis and dyspnea
- Itchy eyes and runny nose since early June
- Wheezy bronchitis in March of same year treated with oral salbutamol
- Both parents allergic to grass pollen, father with seasonal asthma

- **Discordance >15 % in Aero allergns between SPT & specific-IgE**

Early HDM **sensitisation** and **multiple LRI** are the main risk factors for wheeze at **5 years**

ALLERGY SKIN TEST

Total IgE **530** kU/L

Negative control (Saline)	**Negative**
Positive control (Histamine)	**+++ (5/7)**

No	***Aero-Allergens***	***Result***	Specific IgE
1	*Dermatophagoides farinae*	+++ (5/14)	**20 kU/L**
2	*Dermatophagoides pteronyssinus*	+++ (6/15)	**25kU/L**

Initiation of **House dust Mite**,

immunotherapy?

Administration route?

Age Issue?

SLIT Efficacy/ Risk /Dose/Duration?

Immunotherapy is the only treatment that may affect the natural course of allergic diseases, and it also may prevent the development of asthma in patients with allergic rhinitis

WHO Position Paper in 1998.

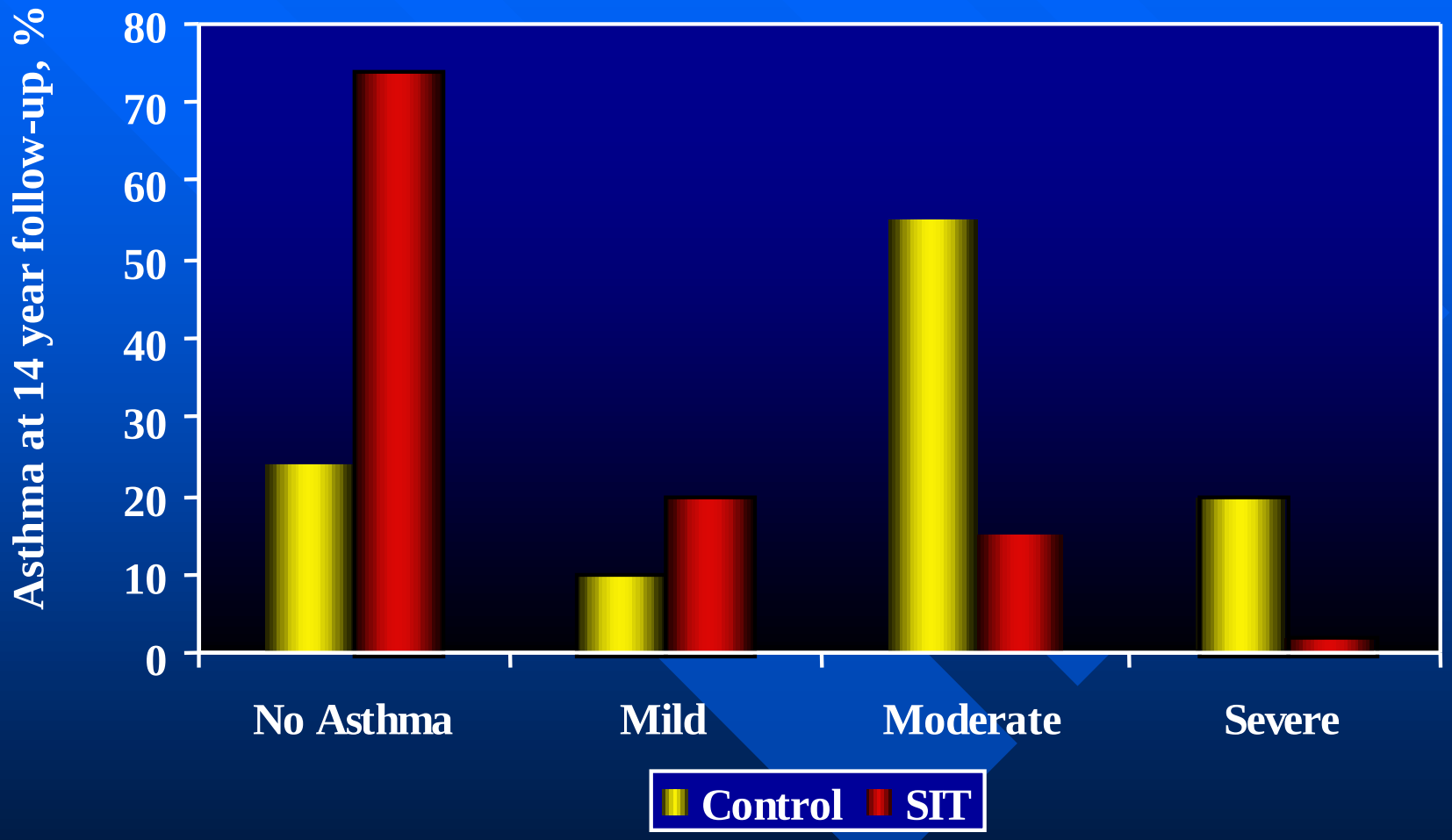
Allergen immunotherapy: therapeutic vaccines for allergic diseases

Long-Term Study on Children

- 14-year study on preventive effects of immunotherapy published in *Pediatrics*
- Allergy shots reduced number of children who developed asthma

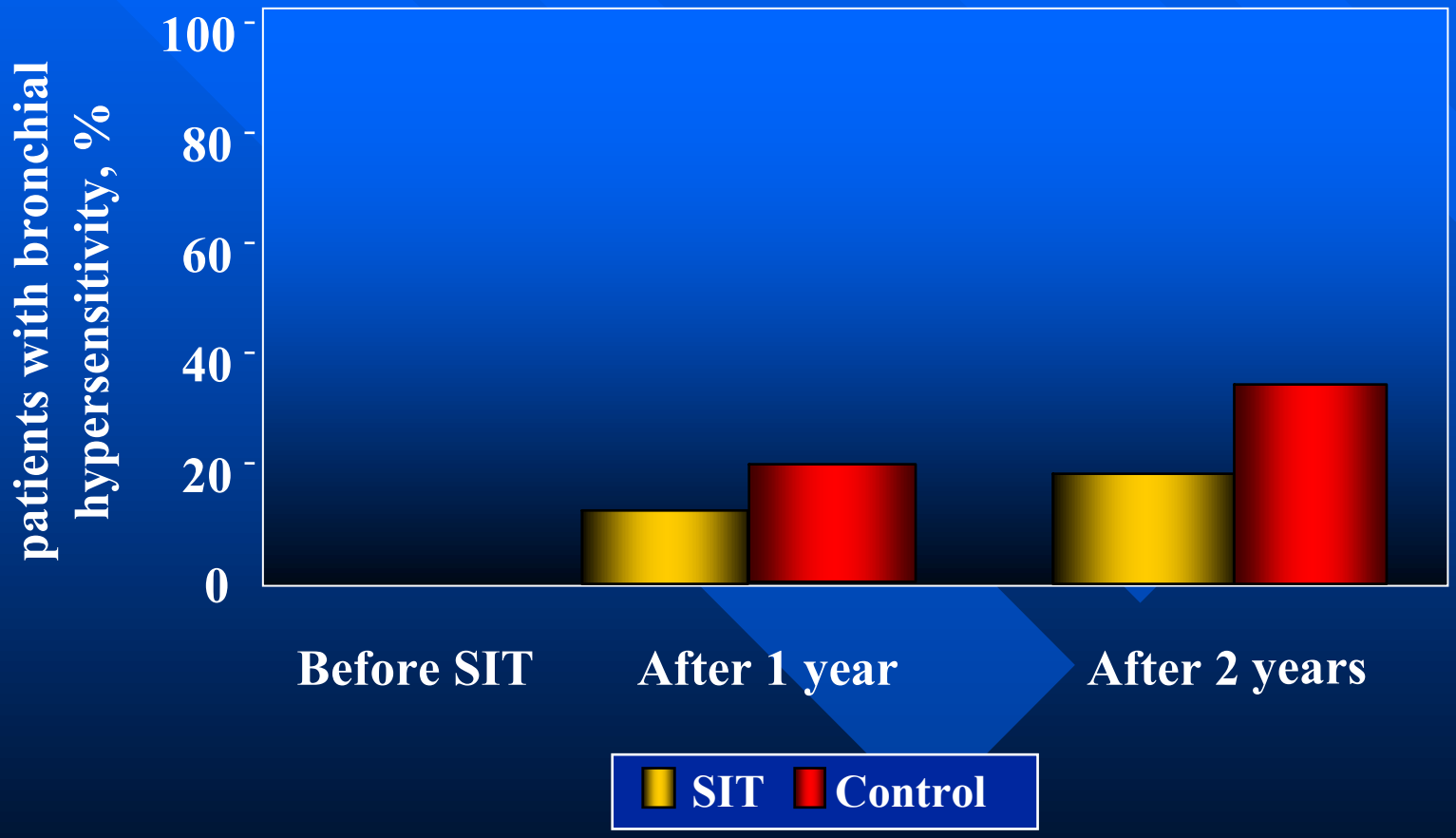
Source: Johnstone DE, Dutton A. *Pediatrics* 1968

Prevention of Asthma 14 Years Later



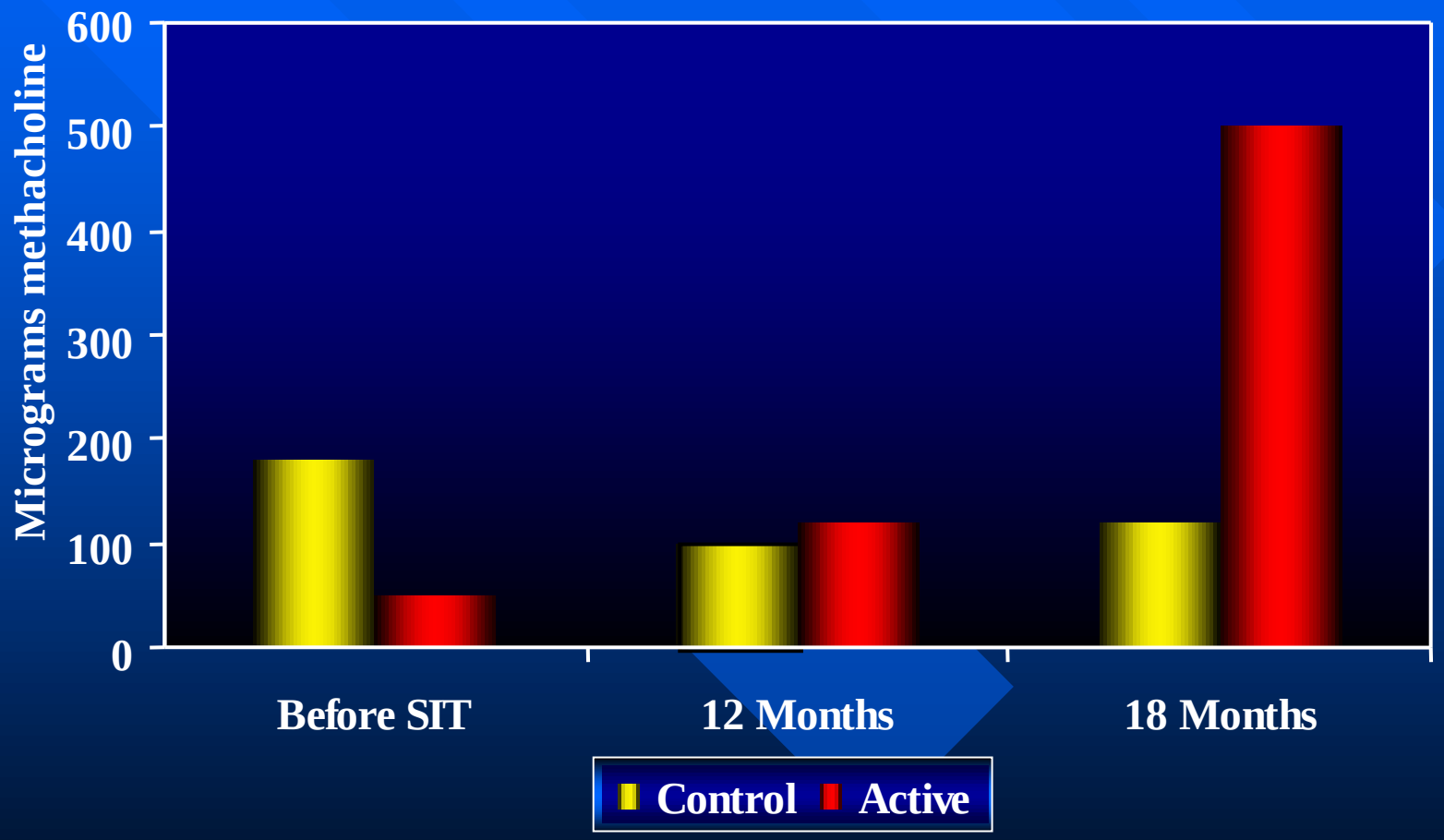
Source: Johnston & Dutton 1968

Development of Bronchial Hypersensitivity



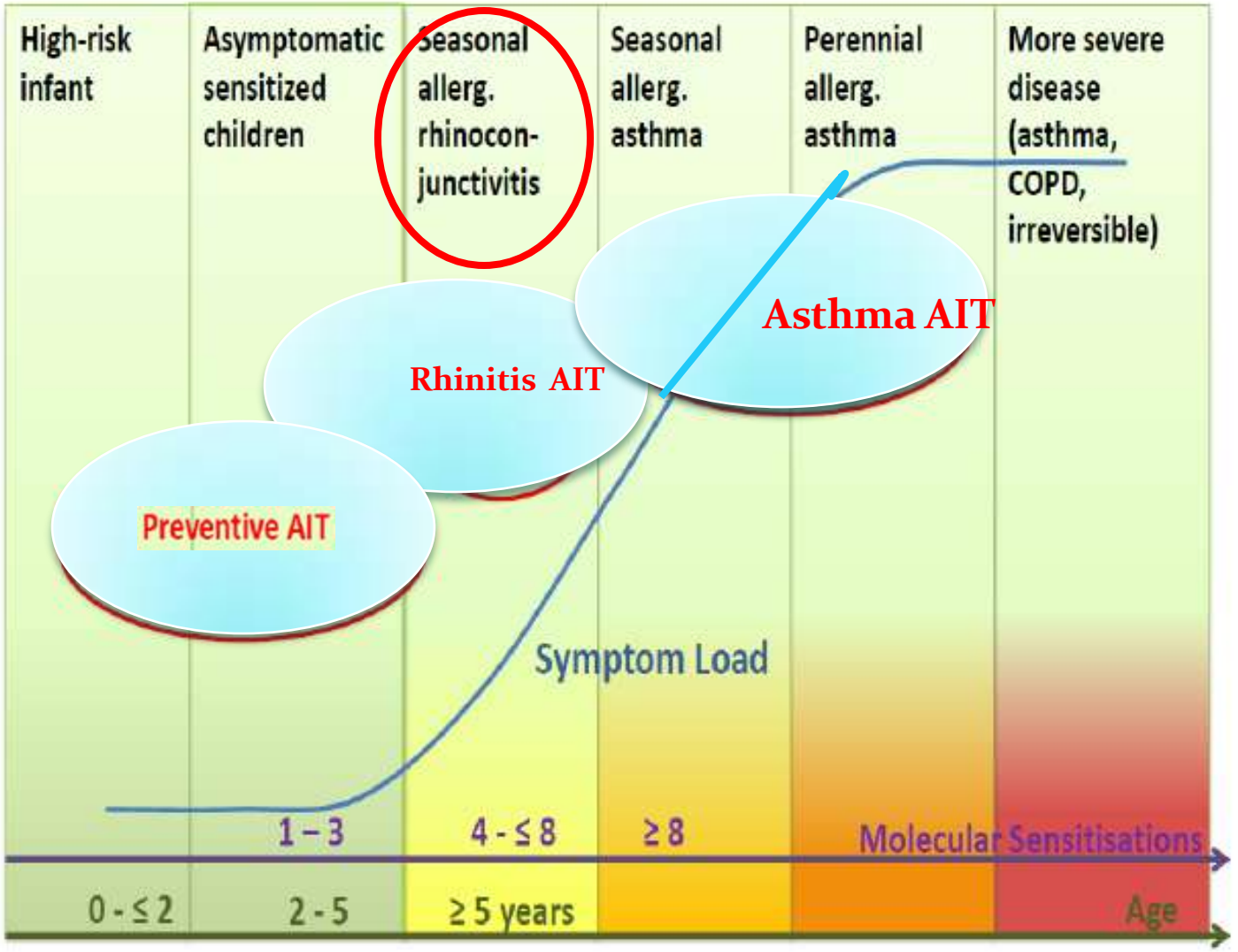
Source: Bauer CP. 1993

Bronchial Hyperresponsiveness After Immunotherapy



Source: Pichler et al. 1997

Allergy Prevention by AIT
Age-Dependent Windows of Opportunity



Respiratory Allergies

Allergic rhinitis

32% of rhinitis patients develop asthma

40-50% of patients with allergic rhinitis also have asthma

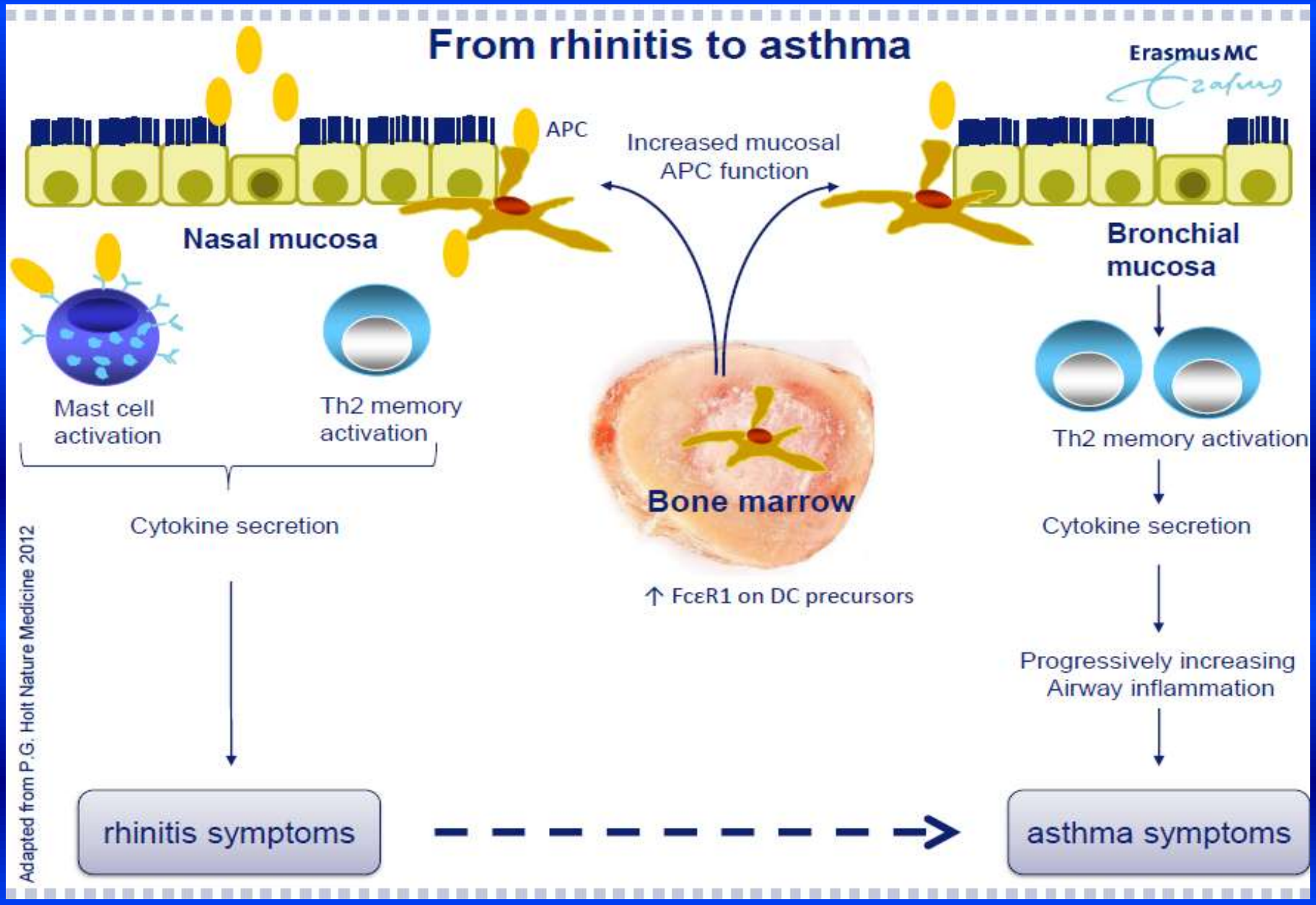
Allergic asthma

50% of patients with asthma alone develop rhinitis

70-90% of patients with asthma also have rhinitis

World Allergy Organization http://www.worldallergy.org/public/allergic_diseases_center/caras/

Rhinitis as a Risk Factor for Asthma



Differential Diagnosis of AR

Consistent With AR	Rule Out
• Nasal symptoms	• Infection
• Comorbidities	• Occupational allergy
• Pallor	• Drug-induced
• Turbinate edema	• Hormonal
• Clear mucous	• Mechanical

Seidman MD, et al. *Otolaryngol Head Neck Surg*. 2015;152:s1-s43.

Comorbid Conditions

Seidman MD, et al. *Otolaryngol Head Neck Surg*. 2015;152:s1-s43.

Case Presentation

- 22-year-old woman
- Year-round allergic symptoms for 3 years
  - Nasal stuffiness and rhinorrhea
  - Fatigue
  - Minimal seasonal fluctuations
- Past medical history:
  - Recurrent clinically diagnosed sinusitis
  - No asthma nor pneumonias

- Social history:
  - Nonsmoker
  - Resides in older carpeted apartment
  - Forced air heat and window air conditioning
  - No pets

(cont)

- Physical Examination:
  - Infraorbital edema
  - Turbinate enlargement
  - Pallor and clear mucous
- Current treatment:
  - OTC first-generation antihistamines nightly
  - OTC second-generation antihistamines as needed

Is It Truly an Allergy?

When knowledge of the causative allergen is needed to target therapy

HDM Sensitisation: in allergic rhinitis Risk Factor for progressive Disease

History : House Dust Mite Allergy in Allergy Rhinitis

In vivo:	In vitro:
SPT (wheal/flare in mm):	Total IgE 200 kU/l
histamine 5/7	Spec. IgE
Dermatophag. pter. 6/15	D. pter. 20 kU_A/l
Dermatophag. Farinae. 7/15	Dermatophag. Farinae. 25 kU A/l
NPT: D. pter. positive	

House Dust Mite Allergy and Allergic Rhinitis

- HDMs are the most common cause of perennial AR
- 22% to 80% of the population are sensitized to HDM
- 10% to 30% of adults and 40% of children are affected by AR

- AR is associated with comorbidities, including:
  - Asthma
  - Sinusitis
  - Decreased quality of life
  - Sleep disorders

Calderon MA, et al. *J Allergy Clin Immunol*. 2015;136:38-48; Bousquet J, et al. *Allergy*. 2008;63:8-160; Nathan RA. *Allergy Asthma Proc*. 2007;28:3-9.

HDM Facts

- HDM are arachnoids
- Invisible to the naked eye
- *Dermatophagoides* (skin-eaters)
  - *D pteryonyssinus*
  - *D farinae*
- Require heat and humidity for growth
- Live on skin scales, organic debris, and fungi
- Lifecycle:
  - Reach adulthood in 3 to 4 weeks
  - Can colonize a home in 1 year
  - HDM bodies and feces are the allergens

Mites-Seafood

→ Sensitization to tropomyosin

→ Sensitization to arginine kinase and sarcoplasmic binding protein

Environmental Controls for HDM Allergy

- Reduce household humidity to <50%
- Encase mattresses, box springs, pillows with covers that are <20 microns
- Wash all bedding, drapes, etc in hot water
- Remove carpeting (if possible), otherwise vacuum weekly
- Freeze stuffed toys for 24 hours once weekly

These precautions alone are insufficient for significant improvements in symptomology.

Calderon MA, et al. *J Allergy Clin Immunol*. 2015;36:38-48.

Conventional Treatment of HDM Allergy

→ allergen immunotherapy

Antihistamines	Intranasal Corticosteroids	Decongestants	Other Medications
• Oral and nasal • Limited benefit • First (sedating)and second generation (non-sedating)	• Benefits itching, sneezing, nasal congestion and drainage • Poor compliance	• Oral and nasal • Not recommended in people with hypertension, hyperthyroidism, CVD, or in pregnancy	• Leukotriene receptor antagonist • Cromolyn sodium

Seidman MD, et al. *Otolaryngology Head Neck Surgery*. 2015;152:s1-s43.

AIT for House Dust Mite (HDM) Allergy: Why?

HDM allergens play a major part of allergic disease

45 to 85%	of asthmatics are sensitized to mites

In the Copenhagen Allergy Trial

50%	of HDM-induced rhinitis patients had HDM induced asthma
95%	of HDM-induced asthma patients also had HDM-induced rhinitis

Curr Allergy Asthma Rep (2014) 14:482

HDM AIT Proves Beneficial in Monosensitized and Polysensitized Patients

- Thirty AR patients polysensitized to both HDMs and seasonal allergens (group A) and 30 patients sensitized to HDMs only (group B) were enrolled in this study.
- All subjects who received immunotherapy against HDMs for more than 2 years

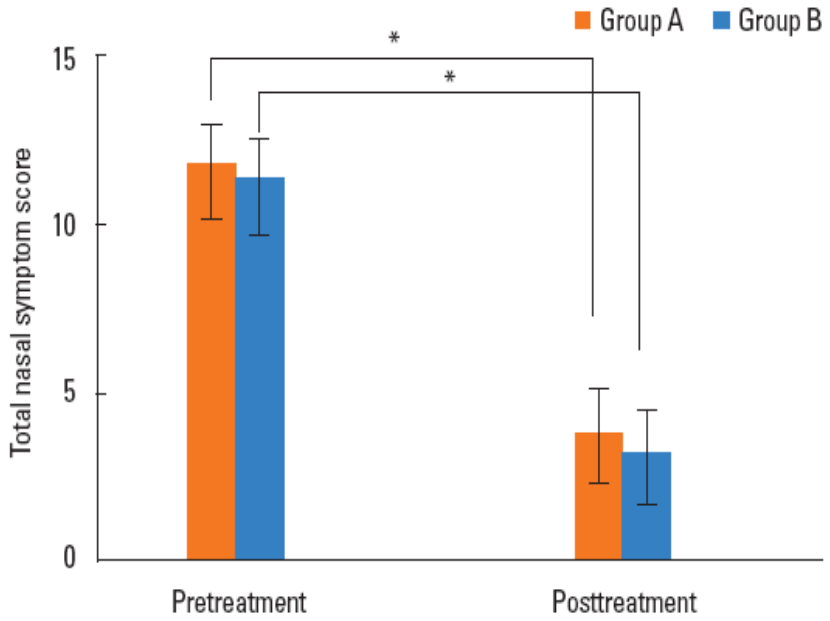


Fig. 2. Comparison of total nasal symptom scores pre- and post-treatment between Groups A and B (*P<0.05).

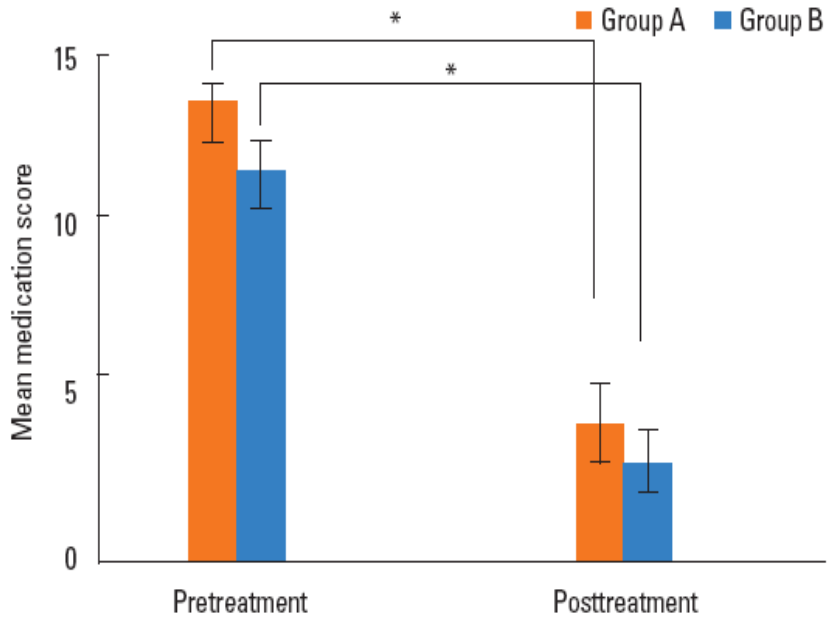


Fig. 4. Comparison of mean medication scores pre- and post-treatment between groups A and B (*P<0.05).

Group A: sensitized to both HDMs and seasonal allergens
Group B: sensitized to HDMs only

Allergy Asthma Immunol Res. 2014

Concluding Remarks

- House dust mite allergy is a common condition
- Proper evaluation and treatments are paramount
- Immunotherapy offers the ability to lead to improved outcomes for patients suffering with this condition

Nine Yrs Follow-up in 35 Patients of Persistent Allergic Rhinitis & Intermittent Br. Asthma after discontinuation of H.D. Mites (D.farinae/D.pteronyssinus) Immunotherapy (SCIT)

Dr. P.C. Kathuria, Dr.Neelam etal.
NATIONAL ALLERGY CENTRE DELHI -8Ph.: 09312285947

SENIOR CONSULTANT :

BLK Super Speciality Hospital

Tel. : 30403040

Nine year Follow-up of 35 patients of Persistent Allergic Rhinitis and Intermittent Bronchial Asthma after Discontinuation of HDM SCIT

Conclusions

1. Specific Allergen immunotherapy - DOSE & Duration- dependent
2. Standardized Allergen Extract of Mites (Df&Dp)
   - ↓70% Symptoms Scoring
   - ↓50% Medication Scoring
   } after 6 Months
   - ↓ 50% Repeat Skin Test Wheal Size by SPT
   - ↓ 10% Diuranal Variability by PEFM
   } after 1yr

   and Considerable Improvement by Physician's Assessment of Patients ' Condition
3. Specific Allergen immunotherapy - Long Lasting Effect for 6 yrs after 3yrs of Standardized Allergen Extract of Mites (Df&Dp)
4. Polysensitization - not an obstacle

Subcutaneous Immunotherapy (SCIT)

- Systematic review of 74 RCTs
- High strength evidence support the use of SCIT

Symptoms	Number of Trials	N
Rhinitis, rhinoconjunctivitis	26	1764
Conjunctivitis	14	1104
Nasal, ocular, bronchial	6	591
Rhinitis, rhinoconjunctivitis, asthma	11	768
Rhinoconjunctivitis disease-specific quality of life	6	889

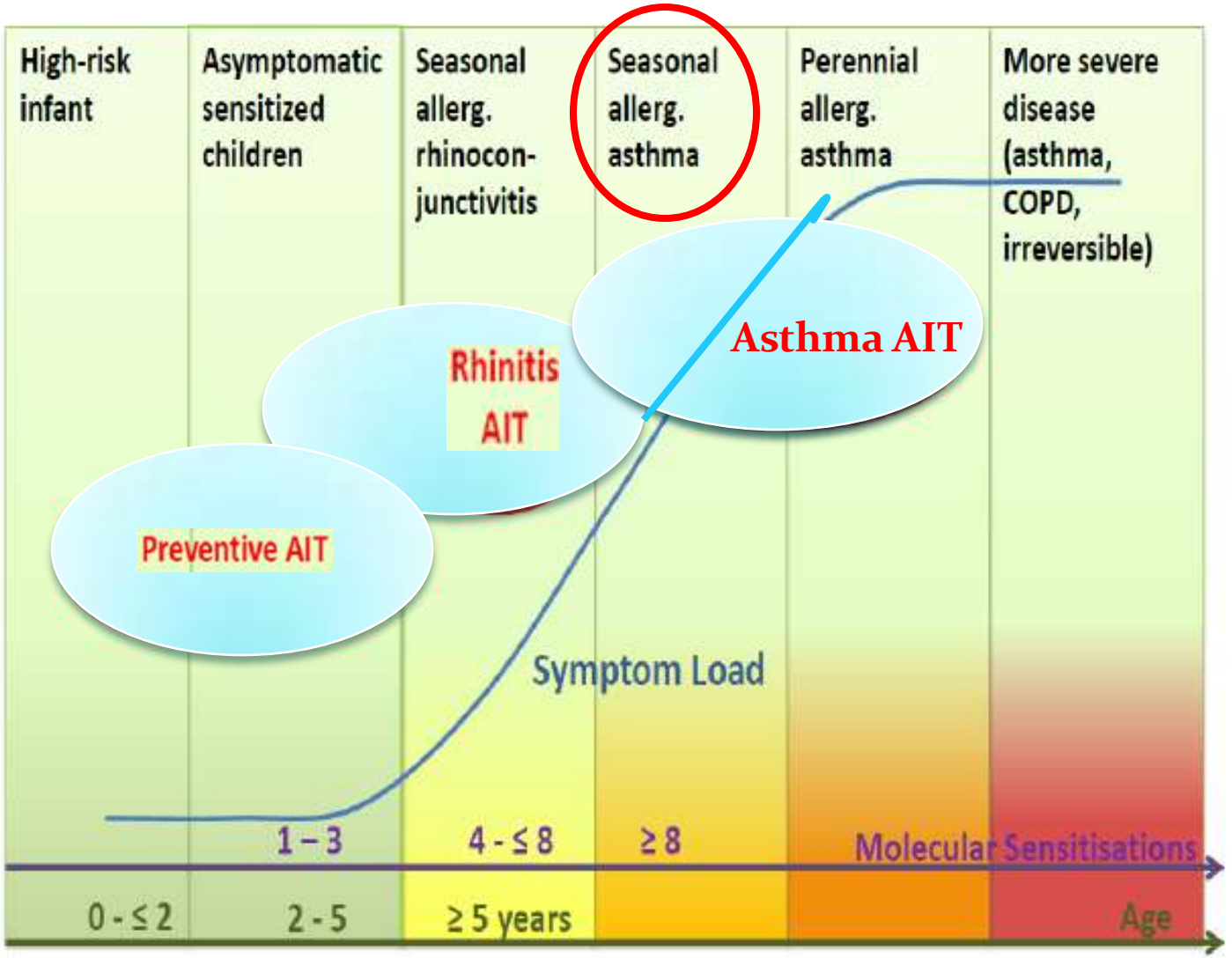
AHRQ website.

Long-lasting efficacy of IT: controlled studies

AUTHOR	ALLERG	ROUTE	DISEASE	LONG - LASTING
Mosbech 1988	Grass	SCIT	Rhinitis	6 yrs
Hedlin, 1995	Cat/dog	SCIT	Rhin/Asthma	3 yrs
Jacobsen, 1997	Birch	SCIT	Rhin/Asthma	6 yrs
Ariano, 1999	Pariet	SCIT	Rhinitis	4 yrs
Durham, 2000	Grass	SCIT	Rhinitis	5 yrs
Eng 2002	Grass	SCIT	Rhinitis	3 yrs

Data kindly provided by Canonica (2003)

Allergy Prevention by AIT
Age-Dependent Windows of Opportunity



Seasonal Br. Asthma

A 13 YEAR OLD MAN H/O RECURRENT EPISODES OF allergic rhinitis

C/O Severe, Recurrent Sneeze, Nonproductive Cough & Wheezing

Worst months –March, April, September , October

Skin Test -Positive (Pollens & Mites)

Specific IgE- Positive (Pollens & Mites)

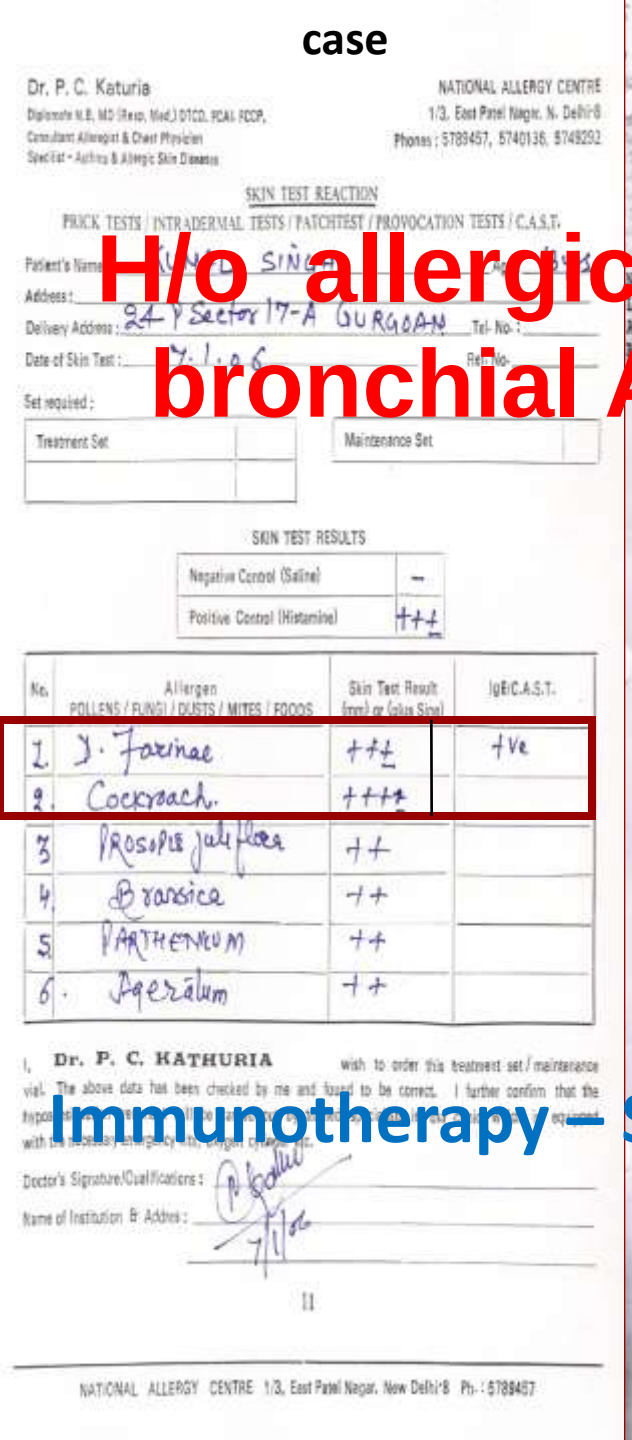
Total IgE 500Iu

PFT –Normal Medication- LABA+ICS X sos

SPECIFIC IMMUNOTHERAPY : SCIT X 3yrs

IgE inflammation

case



Dr. P. C. Katuria
Diplomate N.B. MD (Resp. Med.) DTCD, FCAI, FCCP,
Consultant Allergist & Chest Physician
Specialist - Asthma & Allergic Skin Diseases

NATIONAL ALLERGY CENTRE
1/3, East Patel Nagar, N. Delhi-8
Phones : 5789457, 5740136, 5748292

SKIN TEST REACTION

PRICK TESTS / INTRADERMAL TESTS / PATCHTEST / PROVOCATION TESTS / C.A.S.T.

Patient's Name : [illegible] SINGH
Address :
Delivery Address : 24 P Sector 17-A GURGAON Tel. No. :
Date of Skin Test : 7.1.06 Ref. No.
Set required :

Treatment Set		Maintenance Set	

SKIN TEST RESULTS

Negative Control (Saline)	–
Positive Control (Histamine)	+++

No.	Allergen POLLENS / FUNGI / DUSTS / MITES / FOODS	Skin Test Result (mm) or (plus Sign)	IgE/C.A.S.T.
1.	D. Farinae	+++	+Ve
2.	Cockroach.	++++	
3	PROSOPIS juliflora	++	
4.	Brassica	++	
5.	PARTHENIUM	++	
6.	Ageratum	++	

I, Dr. P. C. KATHURIA wish to order this treatment set / maintenance vial. The above data has been checked by me and found to be correct. I further confirm that the [illegible] with the [illegible]

Doctor's Signature/Qualifications :

Name of Institution & Address :

7/1/06

II

NATIONAL ALLERGY CENTRE 1/3, East Patel Nagar, New Delhi-8 Ph. : 5789457

H/o allergic rhinitis with seasonal bronchial Asthma

Immunotherapy – SCIT X 3 yrs. = Remission

Dr Lal PathLabs Pvt Ltd

DIAGNOSTIC CENTRE: C-1/B, OLD DLF COLONY, SECTOR-14
GURGAON-122 001 PHONES : 95124-222 2253/54/56/57 FAX : 95124-222 2258
MAIN LABORATORY: 'ESKAY HOUSE', 54 HANUMAN ROAD, NEW DELHI-110 001

05 3926580
LPL-GURGAON

DR. ARVIND LAL
M.B.B.S. D.C.P.
Chief of Laboratory Medicine

DR. VANDANA LAL
M.B.B.S. M.D. (Path)
Chief of Pathology

Name : [illegible]
Lab. No : 05 3926580
Age : 13 years Sex: M
Ref. By : DR. S.(FLT. LT.)KALAAN, MBBS

Reg. Date : 26/12/05
Collection Date : 26/12/05
Print Date : 30/12/05
A/c Status : P

Test Name | Result | Units | Ref. Range

ALLERGY COMPREHENSIVE PROFILE, PAEDIATRIC

ALLERGY SCREEN

Phadiatop	Positiv		

Interpretation:
[illegible] demonstrates the presence of atopic allergy to common allergens. This test differentiates between atopic & non-atopic diseases. The test comprises a balanced mixture of relevant allergens that react with specific IgE antibodies in the patient serum.

Immunoglobulin IgE, Total, Serum	247.00	IU/mL	(1.00 - 181.00)

Interpretation:
Total serum IgE represents a small fraction of total serum immunoglobulins. Concentration of IgE is dependent on age. Infants have very low levels. A progressive increase in levels is seen in children upto 10 to 15 years of age followed by a decline to adult levels.

High levels are seen in:

1. Hyper - IgE syndrome
2. Allergic bronchopulmonary aspergillosis
3. Parasitic diseases
4. Allergic Asthma
5. Allergic rhinitis
6. Atopic dermatitis

ALLERGY PANELS:

Mixed Panels	Result
Dust Panel	Positive
Food Panel	Negative
Animal Panel	Negative
Mold Panel	Negative
Grass Panel	Negative
Tree Panel	Negative

Dr Lal PathLabs Pvt Ltd

DIAGNOSTIC CENTRE: C-1/B, OLD DLF COLONY, SECTOR-14
GURGAON-122 001 PHONES : 95124-222 2253/54/56/57 FAX : 95124-222 2258
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: 13 years Sex: M
By : DR. S.(FLT. LT.)KALAAN, MBBS

Reg. Date : 26/12/05
Collection Date : 26/12/05
Print Date : 30/12/05
A/c Status : P

Test Name | Result | Units | Ref. Range

ALLERGEN SPECIFIC IgE, QUANTITATIVE:

DUST PANEL	Result		Units	Ref.Range
House Dust	Negative	-	-	-
Cockroach	Positive,	9.47	kUA/L	(< 0.35)
Dermatop. pteromyssinus	Negative	-	-	-
Dermatophagoides farinae	Negative	-	-	-

FOOD PANEL	Result		Units	Ref.Range
Egg White	Negative	-	-	-
Milk	Negative	-	-	-
Wheat	Negative	-	-	-
Peanut	Negative	-	-	-
Soyabean	Negative	-	-	-
Shrimp	Negative	-	-	-
Gluten	Negative	-	-	-
Rice	Negative	-	-	-
Chicken	Negative	-	-	-
Fish	Negative	-	-	-

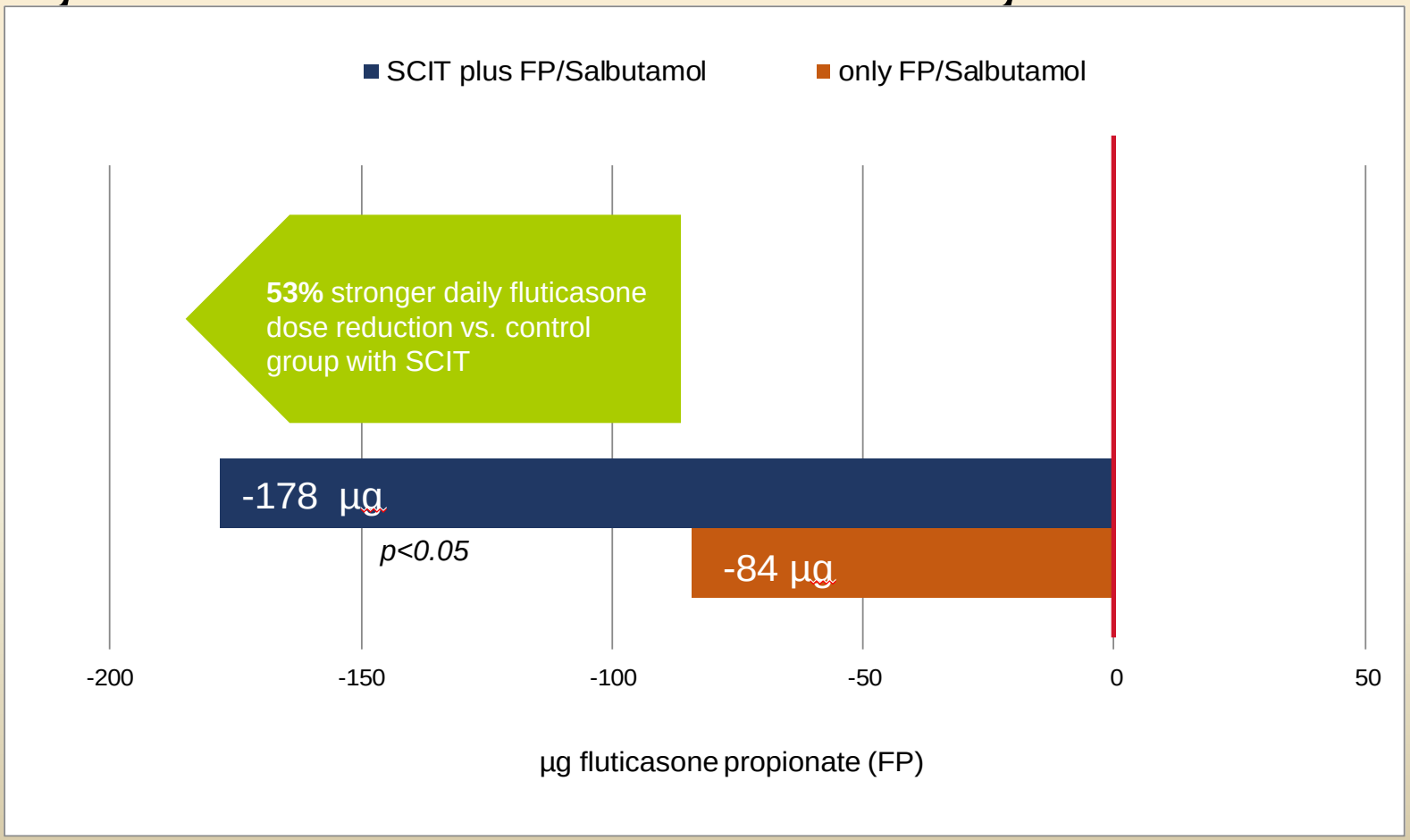
ANIMAL PANEL	Result		Units	Ref.Range
Cat Epithellium & Dander	Negative	-	-	-
Horse Dander	Negative	-	-	-
Dog Dander	Negative	-	-	-

MOLD PANEL	Result		Units	Ref.Range
Penicillium notatum	Negative	-	-	-
Cladosporium herbarum	Negative	-	-	-
Aspergillus fumigatus	Negative	-	-	-
Candida albicans	Negative	-	-	-
Alternaria tenuis	Negative	-	-	-

Page 2

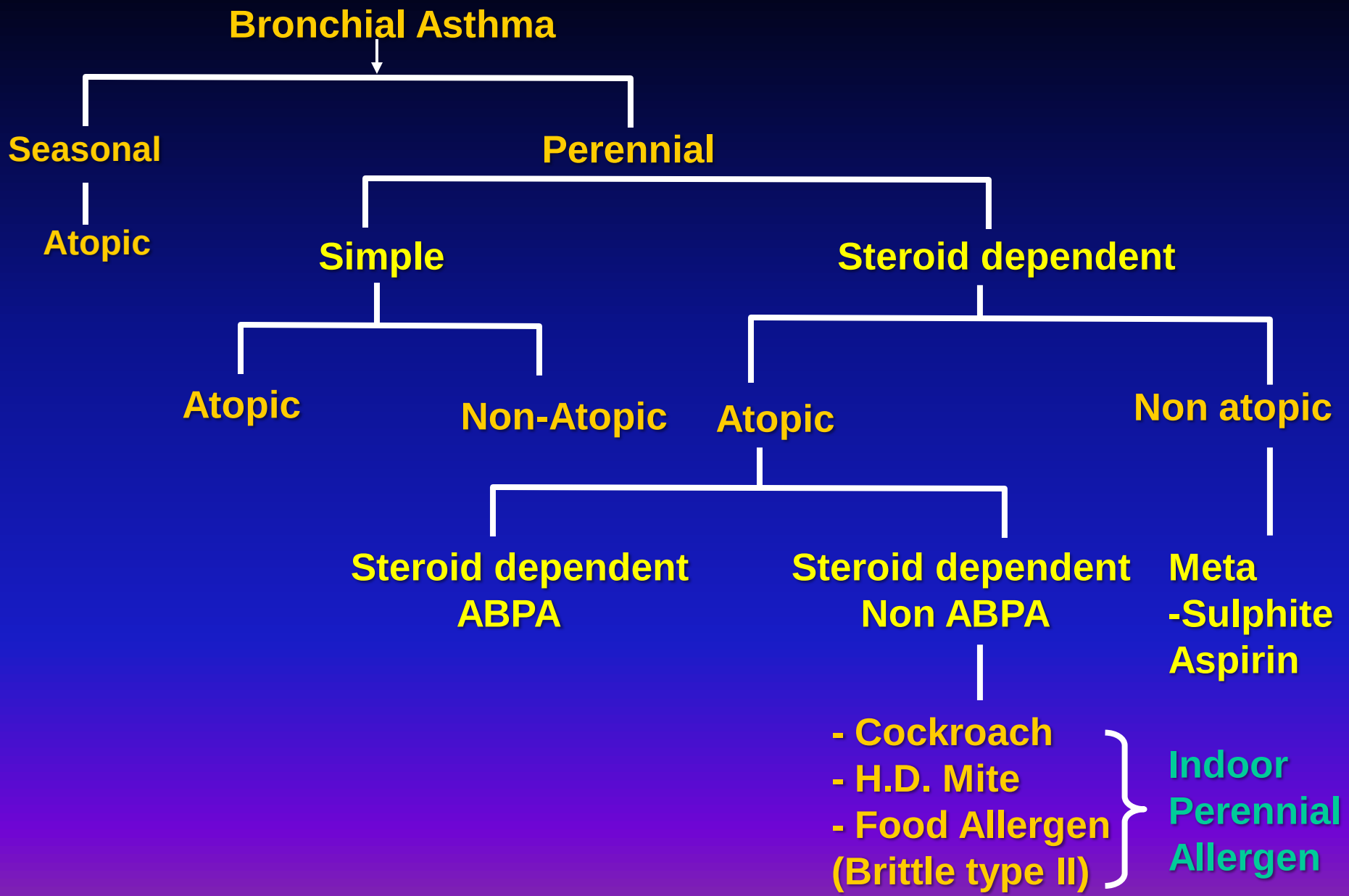
House dust mite SCIT in asthma

- Daily fluticasone dose reduction after 2 years of SCIT

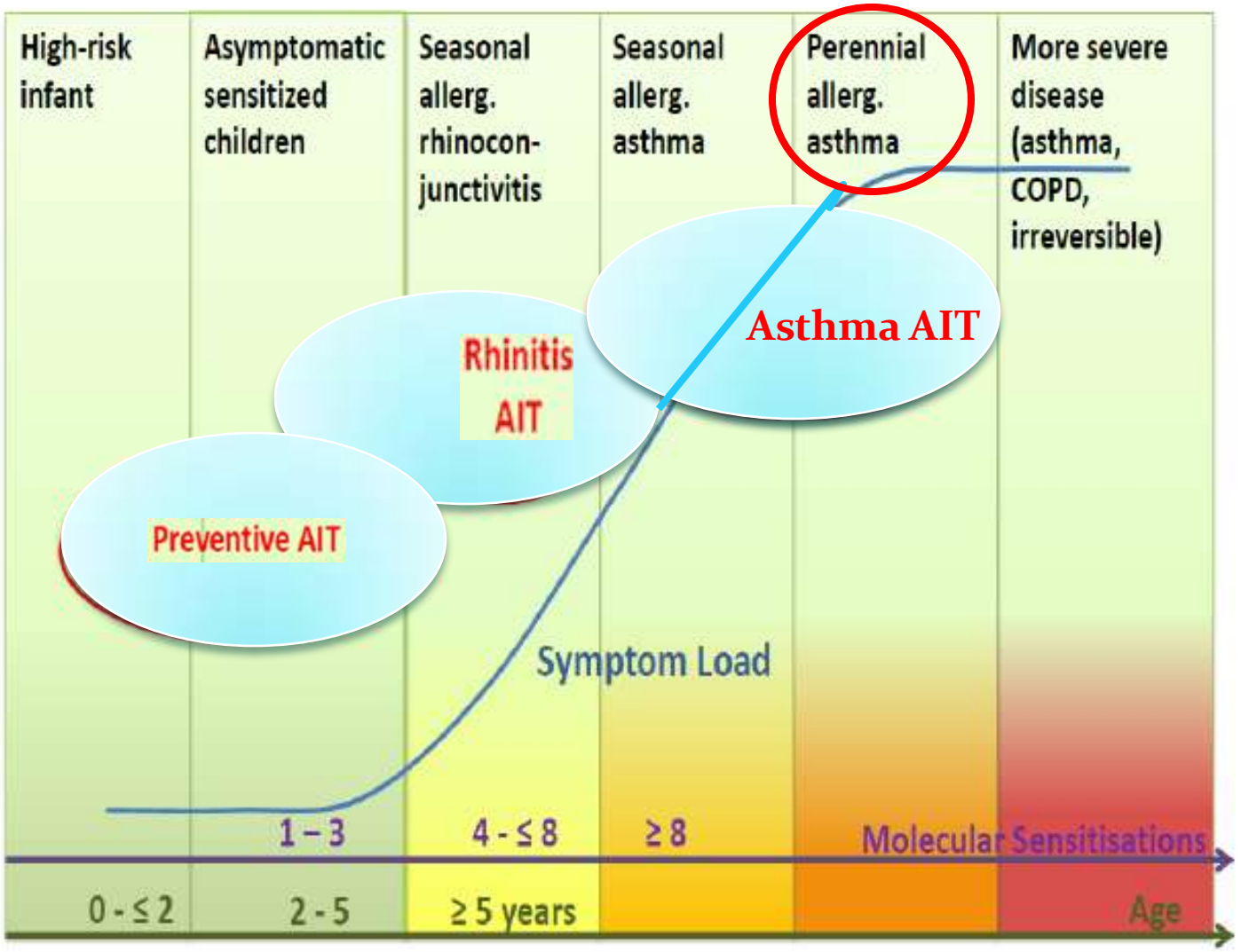


Zielen S et al., J Allergy Clin Immunol 2010;126:942-9.

NASO Bronchial Allergy with Bronchial Asthma



Allergy Prevention by AIT
Age-Dependent Windows of Opportunity



CASE

*27 YEARS OLD SIMPLE PERENNIAL BR.ASHTMA, FREQUENT ATTACKS WHICH MAY TAKE HOURS TO DAYS TO REVERSE (MARCH – APRIL – AUG.- SEPT.)

*OFTEN NOCTURNAL SYMPTOMS AND CHANGE OF SEASON ++

*P.E.F.R. VARI > 20% BUT NORMAL P.E.F.R. – >500 l/pm & F.E.V_1 >70% WITH STEROIDS

- SKIN TESTING- POLLEN , FUNGI & DUSTMITES INDUCED.

Ch. INFLAMMATION

✓SPECIFIC IMMUNOTHERAPY : SCIT

30 y old female patient,

She has sneezing, itching, runny nose and stuffiness for 4 years. She also has wheezing and chest tightness occasionally at nights. Her complaints are

- all the year around
- getting worst at spring and summer
- severity and frequency of her symptoms increased by the Change of season

Personal history

- Working in a bank covered with wall to wall carpet,
- Atopy in family history
- Dog owner for 7 years.
- Suffered with chronic urticaria for the last 10months

Taking LABA & ICS and antihistaminic tablets regularly.

History : Suggesting allergy ?

YES NB Allergy with Br Asthma

Which allergen(s) may be responsible for her respiratory symptoms ?

Perennial allergens ? (mites ?, Dog ?, molds ?)

Seasonal allergens ? (pollens ?, molds ?)

How can we detect this allergen(s) ?

Skin tests ?

In vitro test ?

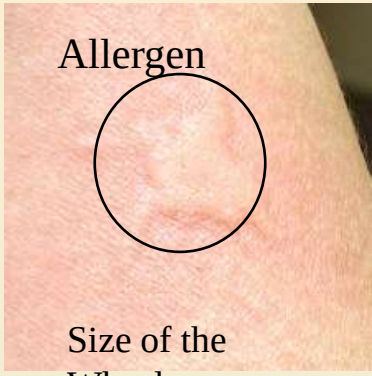
Positive Allergy Test V/s Challenge / Provocation Tests (95%)

J Allergy Clinical Immu. 1995:96:580-587

Respiratory Allergens

(S.P.T.)

- **Seasonal Allergen > 32.4mm²**
- **Dermatophagoides pt > 31.2mm²**
  (H.D. MITES)



ALLERGY SKIN TEST

Negative control (Saline)	**Negative**
Positive control (Histamine)	**+++**

No.	***Aero-Allergens***	***Result***	**specific IgE**	
1	*Dermatophagoides farinae*	**+++-**	34.4 kUA/L	
2	*Dermatophagoides pteronyssinus*	**++**	26.5 kUA/L	
3	*Blomia Tropicalis*	**++-**		
4	*Cockroach*	**++**	Food allergens	
5	*Pennisetum*	**++**	PEANUT	++
6	*Ricinius communis (castor)*	**+++-**	EGG	++
7	*cynodon dac*	**++-**		

POLYSENSETIZATION

H/o childhood asthma, dermatitis,urticaria (of & on)

H/0 Known allergy to Milk

Dr. P. C. Kathuria
Diplomate N.B. MD (Resp. Med.) DTCD. FCAI, FCCP.
Consultant Allergist & Chest Physician
Specialist - Asthma & Tuberculosis

NATIONAL ALLERGY CENTRE
1/3, East Patel Nagar, N. Delhi-8
Phones: 5789457, 5740136, 5742792

SKIN TEST REACTION

PRICK TESTS / INTRADERMAL TEST / PATCH TEST / PROVOCATION TESTS/C.A.S.T.

Patient's Name : SHUBHANGI A CHAKRAPOPA Age : 45 yrs.

Address : B-14/215, Sec 34, NOIDA-07

Delivery Address : Tel. No. : —

Date of Skin Test : 2-11-2002. Ref. No. : —

Set required :

Treatment Set		Maintenance Set	

FVC- 3.5 L/s
FEV1- 3.1 L/s
PEFR- 550 L/m

TLC- 8500
DLC- 60, 30, 10%
ESC- 780 lw

SKIN TEST RESULTS

Negative Control (Saline)	—
Positive Control (Histamine)	+++

No.	Allergen POLLENS / FUNGI / DUSTS / MITES / FOODS	Skin Test Result (mm) or (plus sign)	IgE/C.A.S.T.
1	D. farinae	+++	Positive
2	D. pteronyssinus	+++	(326.00)
3	Prosopis juliflora	++	
4	Brassica	++	
5	Acacia	++	
6	MILK	+++	

I, Dr. P. C. KATHURIA wish to order this treatment set / maintenance vial. The above data has been checked by me and found to be correct. I further confirm that the hyposensitisation treatment will be carried out by trained specialists in our clinic which is equipped with the necessary emergency kits, oxygen cylinder etc.

Doctor's Signature/Qualifications : Kathuria

Name of Institution & Address :

POLYSENSETIZATION Immunotherapy –SCIT X 3 yrs.

Question: what do you do in polysenstized patients

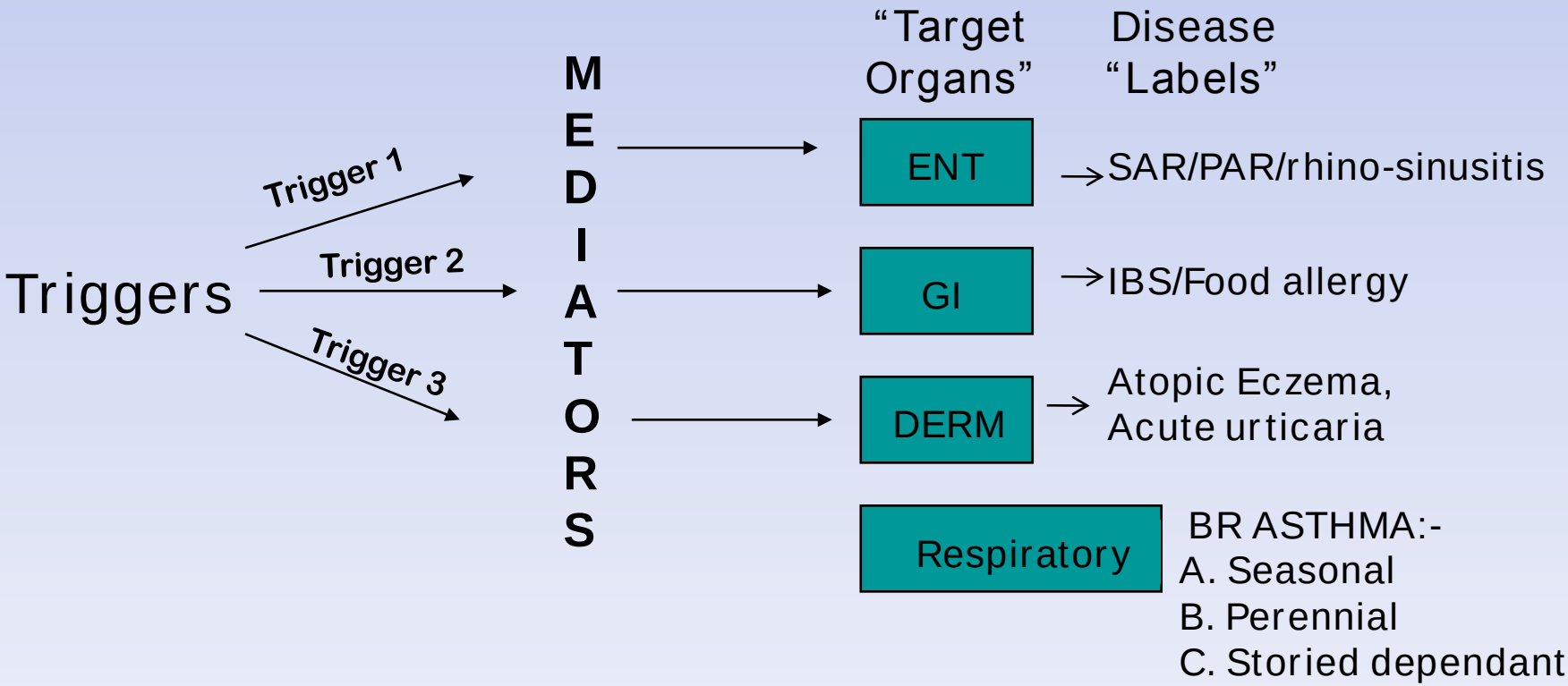
- What happens to an allergic patient with an immune system that is already up-regulated in Th2 bias,(Increased total IgE & specific IgE) who becomes the recipient of chronic antibiotic usage and corticosteroids?
- What are the therapeutic implications?

POLYSENSITIZED PATIENTS

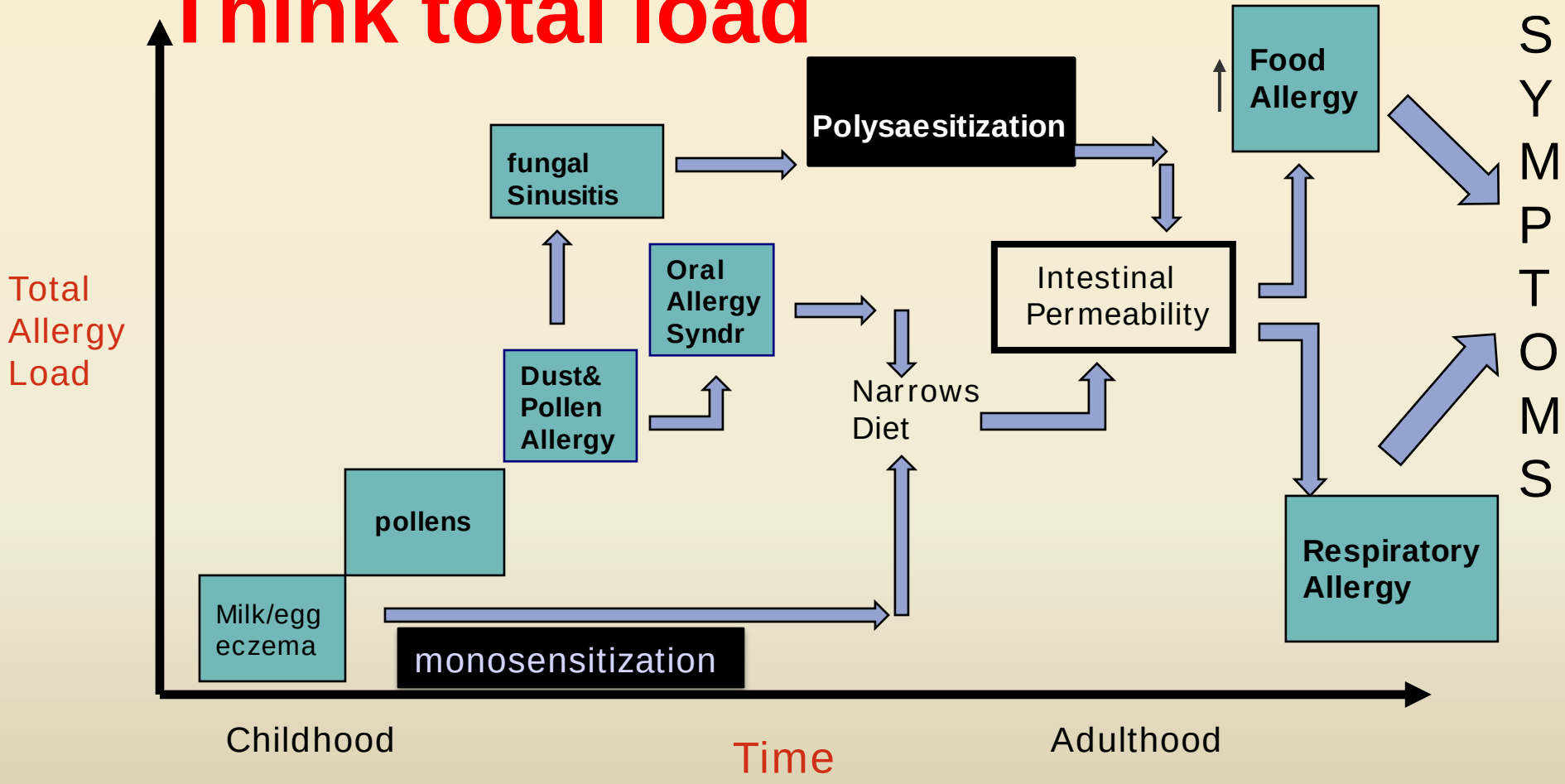
- “Once an allergen, always a **potential** allergen”
- An allergen early in life causing an acute reaction (urticaria, eczema, asthma) may go into remission and then “resurface” in adulthood, causing symptoms once again**—often more insidious—and often in a different target organ**

POLYSENSITIZED PATIENTS

- Different allergenic triggers may “target” different end organ systems in the same patient



Multiple symptoms, Multiple targets.. Think total load



POLYSENSITIZED PATIENTS

- When you do a “test” for “allergies,” you are only measuring **one** of the **two** essential items that determine an allergic reaction**:**

Allergic Reaction = Allergic Sensitivity x Allergic Load

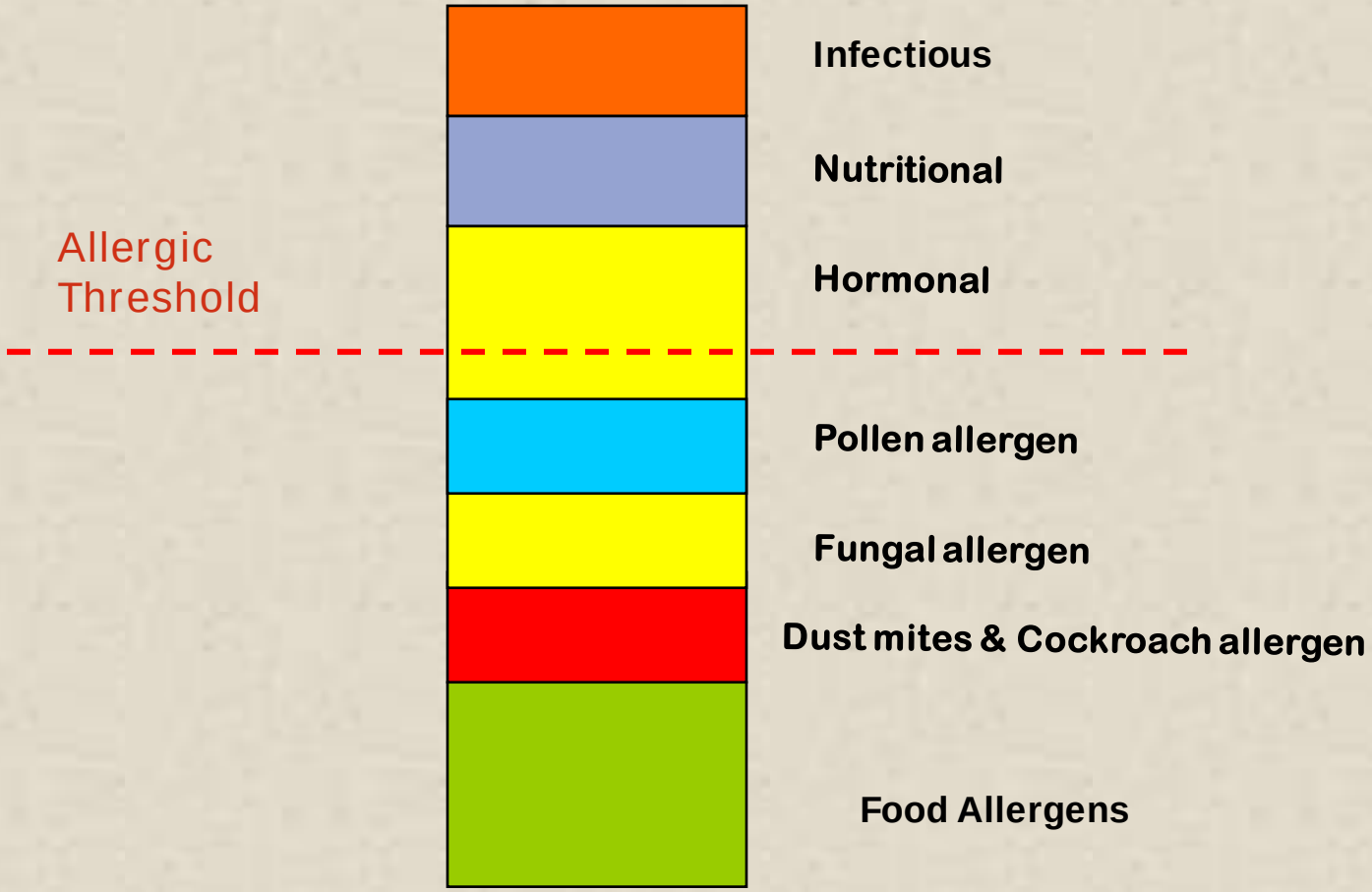
ALLERGY
Our testing

SPECIFIC IMMUNOTHERAPY (SCIT/SLIT)

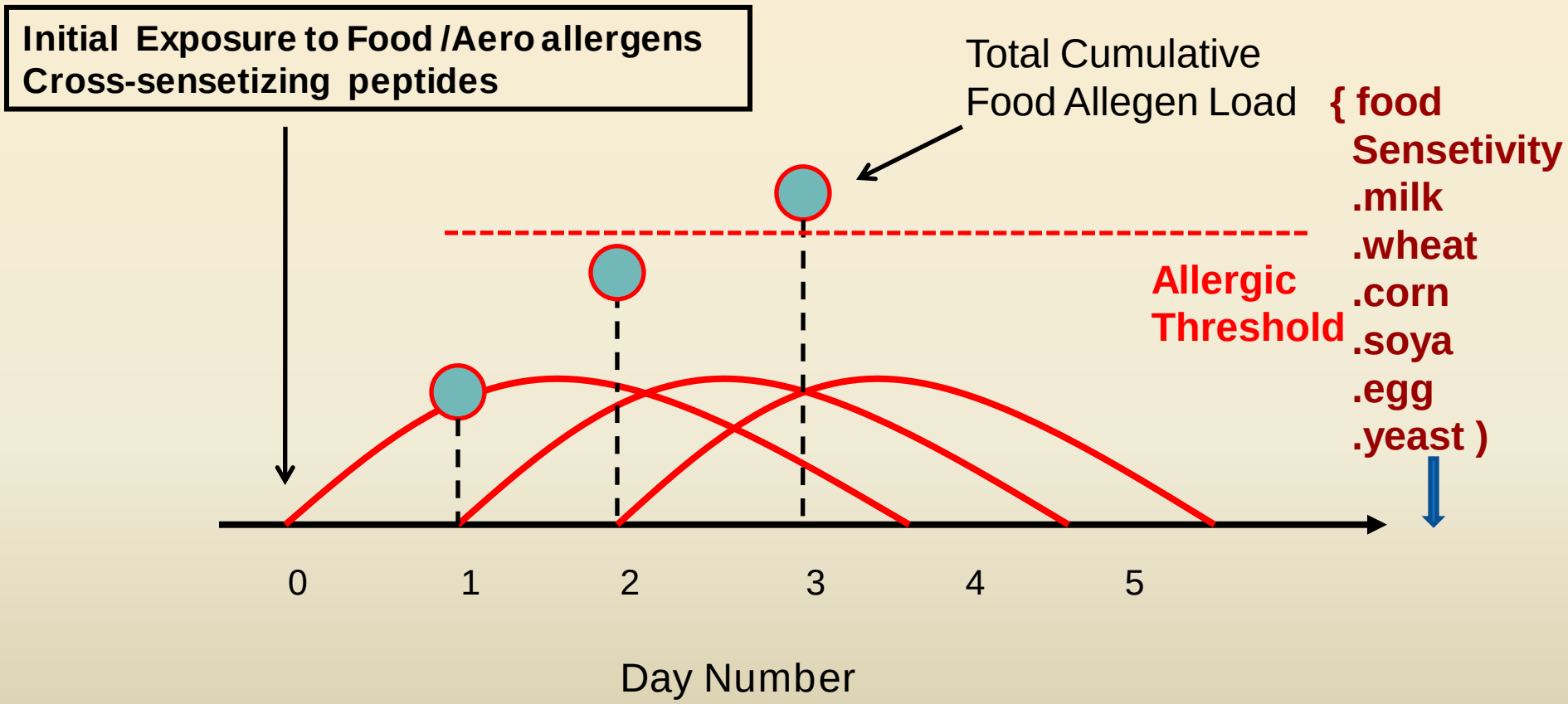
Patient’s exposure
(FOOD x AEROALLERGENS

AVOIDANCE

Multiple symptoms, Multiple targets.. Think total load



POLYSENSITIZED PATIENTS

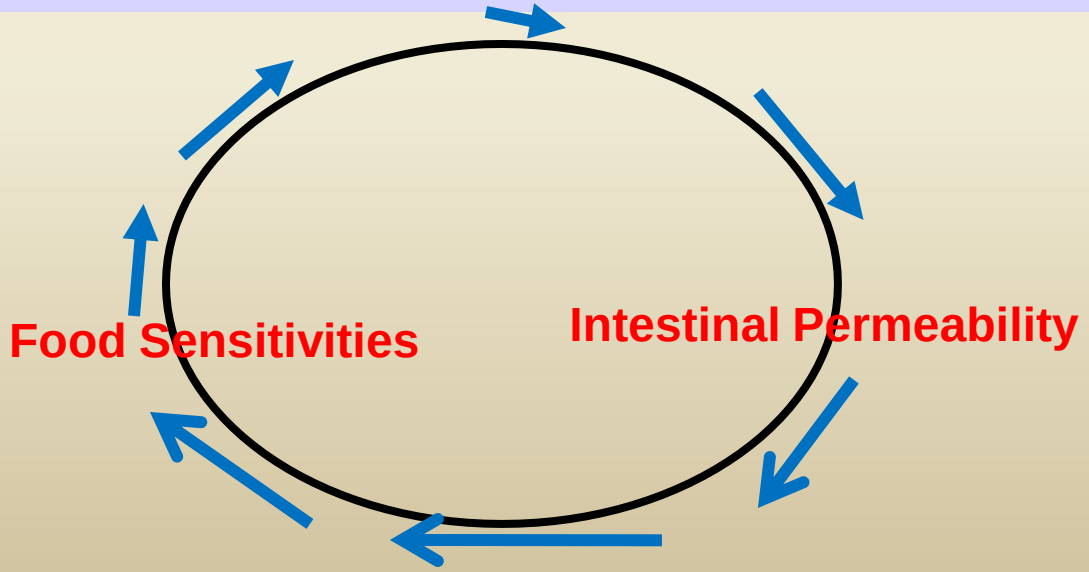


Mix (IgE & Non - IgE mediated reaction)

Concept Six: Hidden Food Sensitivities

- Important corollary:

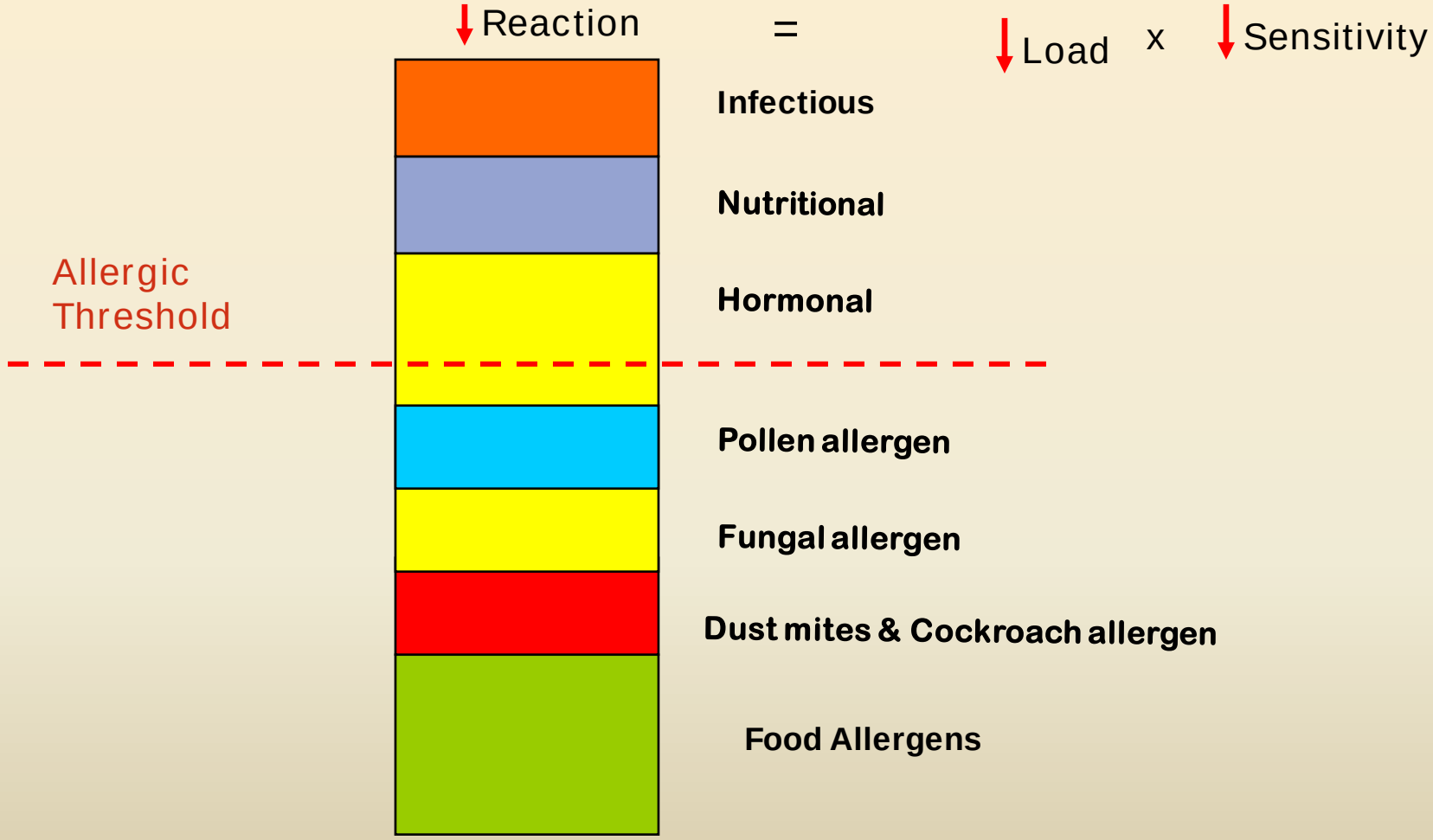
  Hidden food sensitivities worsen intestinal permeability AND increased intestinal permeability worsens hidden food sensitivities!



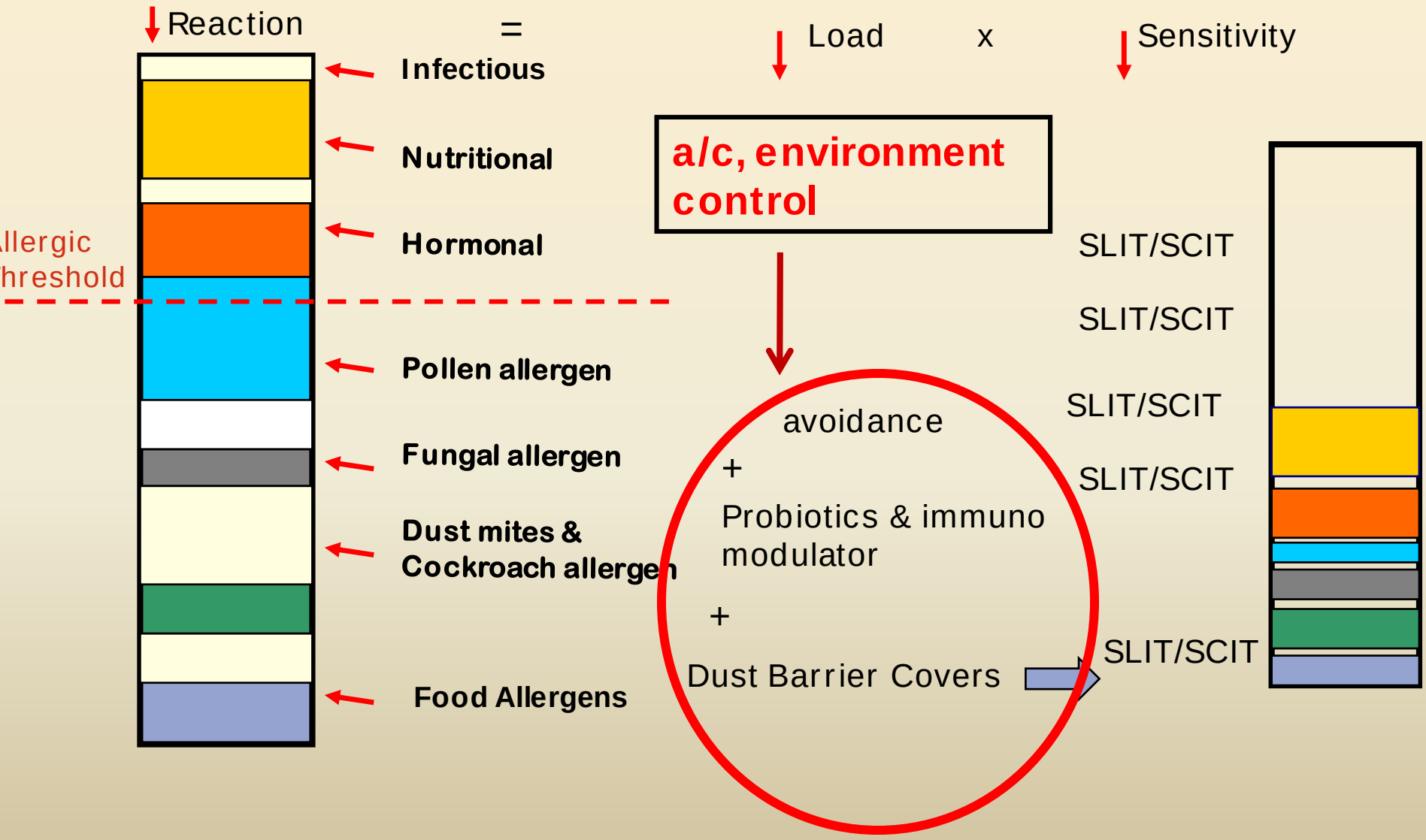
POLYSENSITIZED PATIENTS

- Frequently eaten foods may be responsible for chronic, fluctuating symptoms in allergic patients
- No immediate reaction **consistently** reported after eating these foods
- Common hidden food sensitivities include milk, wheat, corn, soy, egg, yeast

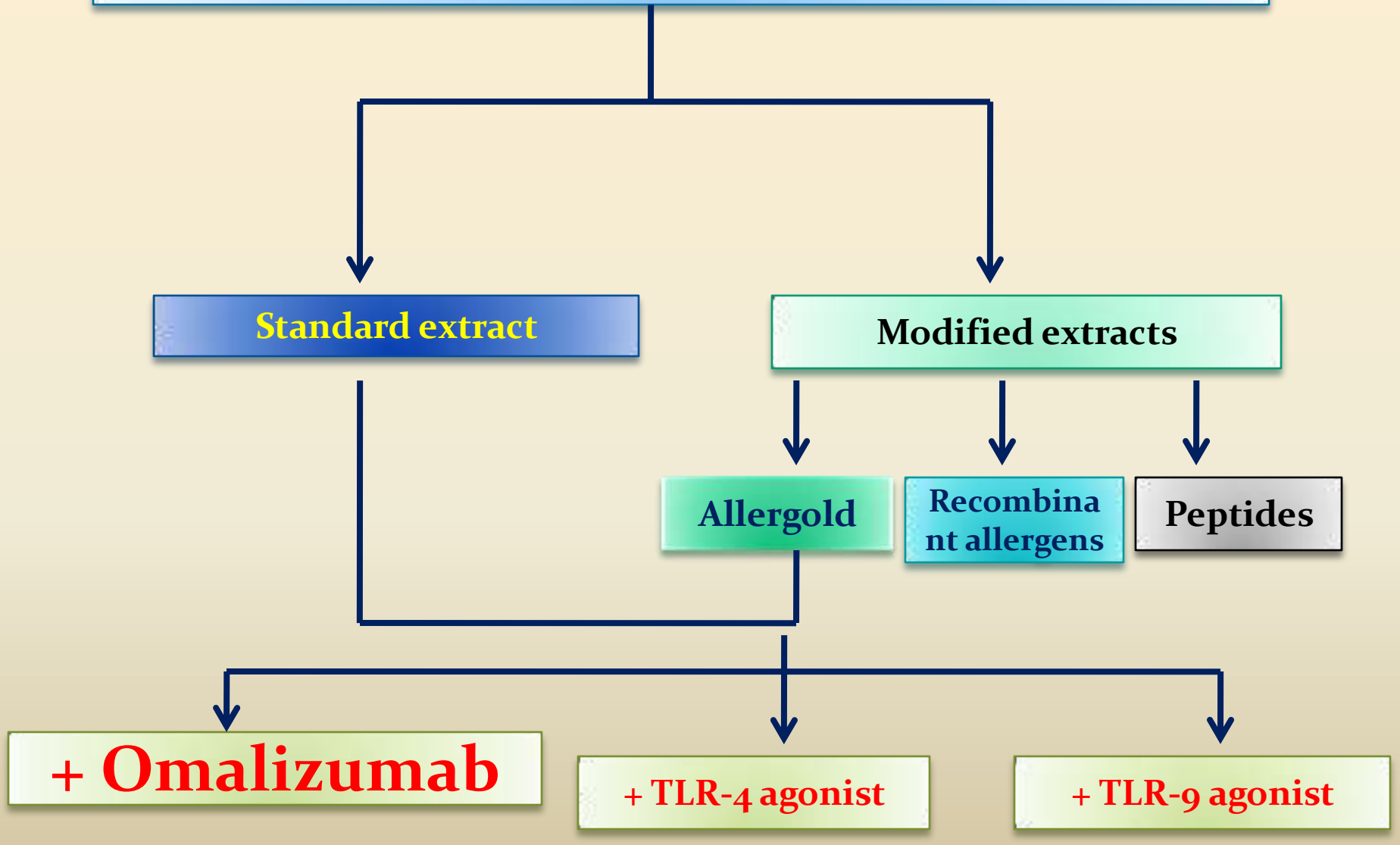
POLYSENSITIZED PATIENTS

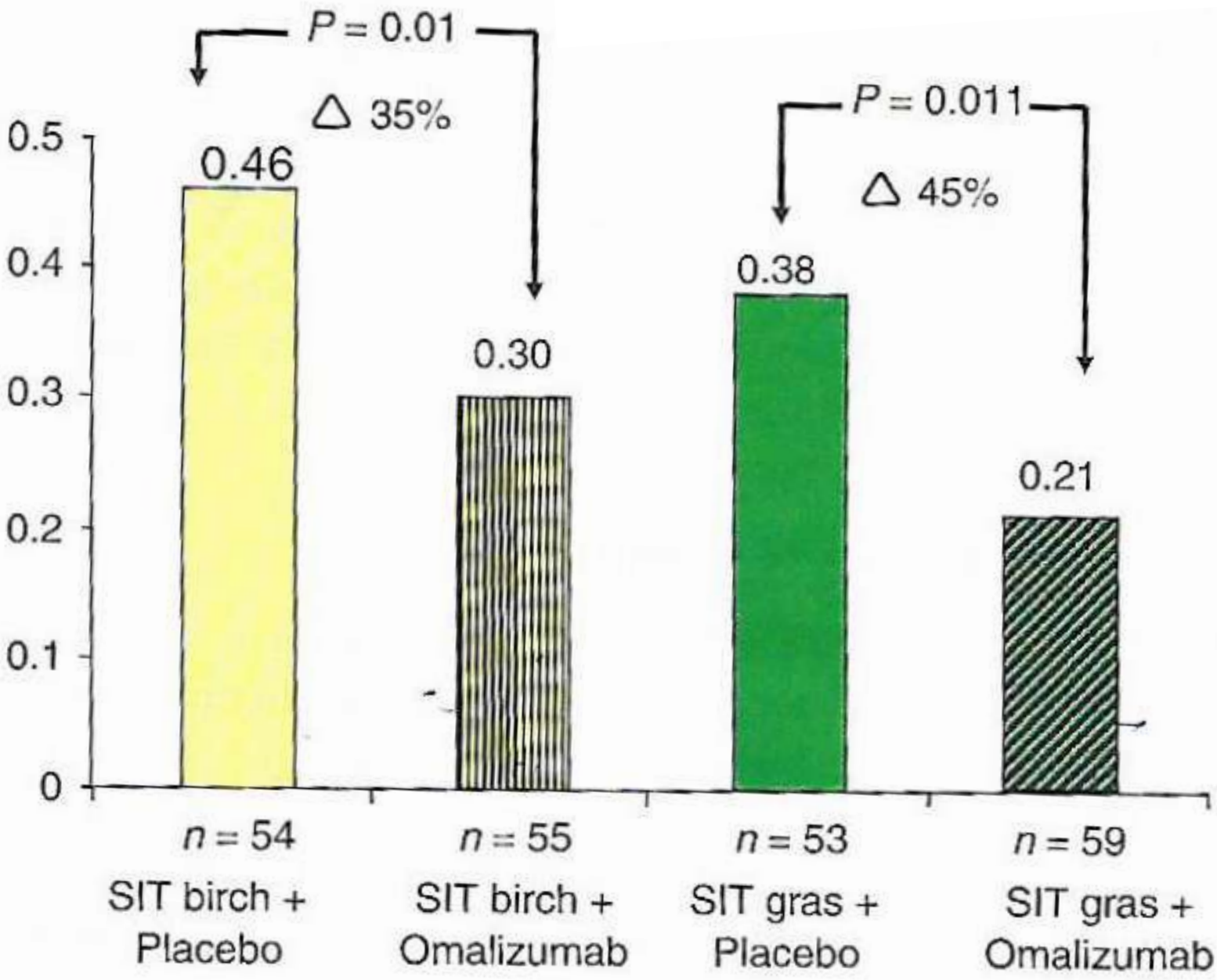


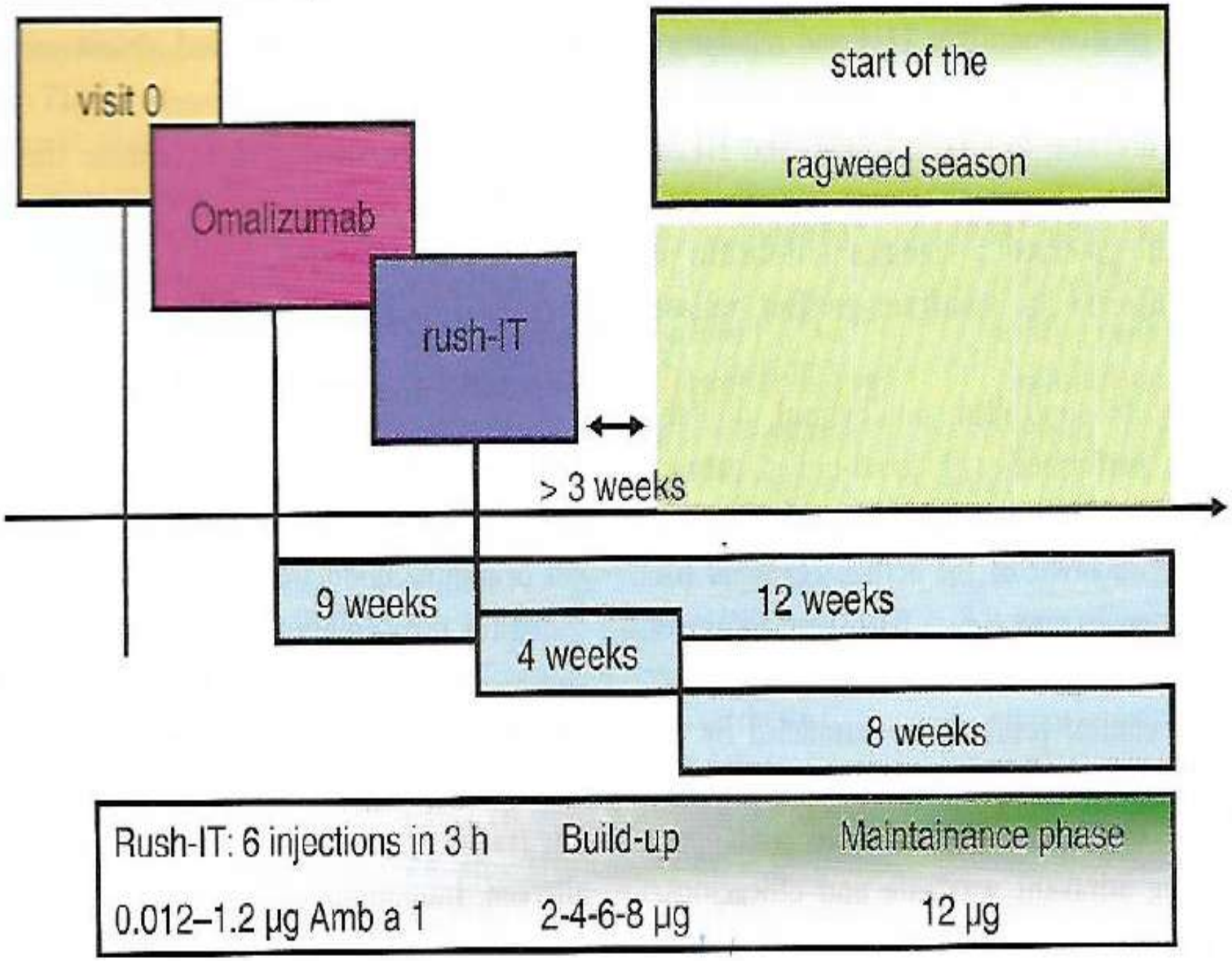
POLYSENSITIZED PATIENTS



Allergen specific immunotherapy and Immunmodulation




P = 0.01
Δ 35%
P = 0.011
Δ 45%
0.5
0.4
0.3
0.2
0.1
0
0.46
0.30
0.38
0.21
n = 54
SIT birch + Placebo
n = 55
SIT birch + Omalizumab
n = 53
SIT gras + Placebo
n = 59
SIT gras + Omalizumab


visit 0
Omalizumab
rush-IT
start of the
ragweed season
> 3 weeks
9 weeks
12 weeks
4 weeks
8 weeks
Rush-IT: 6 injections in 3 h
Build-up
Maintainance phase
0.012–1.2 µg Amb a 1
2-4-6-8 µg
12 µg

Combined Omalizumab & allergen immunotherapy

Safety of Accelerated Schedules of Cluster Allergen Immunotherapy with House dust mites in Sixty Five Patients with Perennial rhinitis & BR. Asthma

Dr. PC. Kathuria, & Dr. Neelam et al

Allegy & Asthma Clinic, BLK Super-speciality Hospital, National Allergy Centre, New Delhi, INDIA

CONCLUSIONS

1. Combined (anti - IgE) omalizumab and cluster Immunotherapy is without an IgE mediated adverse systemic reaction & maintenance maximum tolerance dose (MTD) of 1000 / ml achieved in 3 visits in 36 days (> 1month) in our 9 patients

2. Cluster Immunotherapy in 40 patients is efficacious, well tolerated than conventional immunotherapy of 4 months of single Allergen Injection as maintenance maximum tolerance dose (MTD) of 1000 - Au achieved in more than 75% in 4 visits of 46 days duration but 20% of patients in cluster Immunotherapy develop grade II/III adverse systemic reaction (J Allergy Clin Immunol 125:569-574, e567 2010)

3. Waiting period after allergen vaccine was one hour if there is H/O of large local reaction of >10cm, size of weal >7mm (HEP), positive specific IgE to D.farinae, and D pteronyssinus > 3.5 ku/ ml, Total IgE > 300 to 700 / ml, in poly - sensitized patients, On high doses of ICS (>1000ug) & variability in PEFM > 10% with FEV1 / FVC > 70% , In such cases Fexofenadine 180mg & Methyl - prednisolone 8mg was given three hours before cluster immunotherapy to minimize adverse systemic reaction

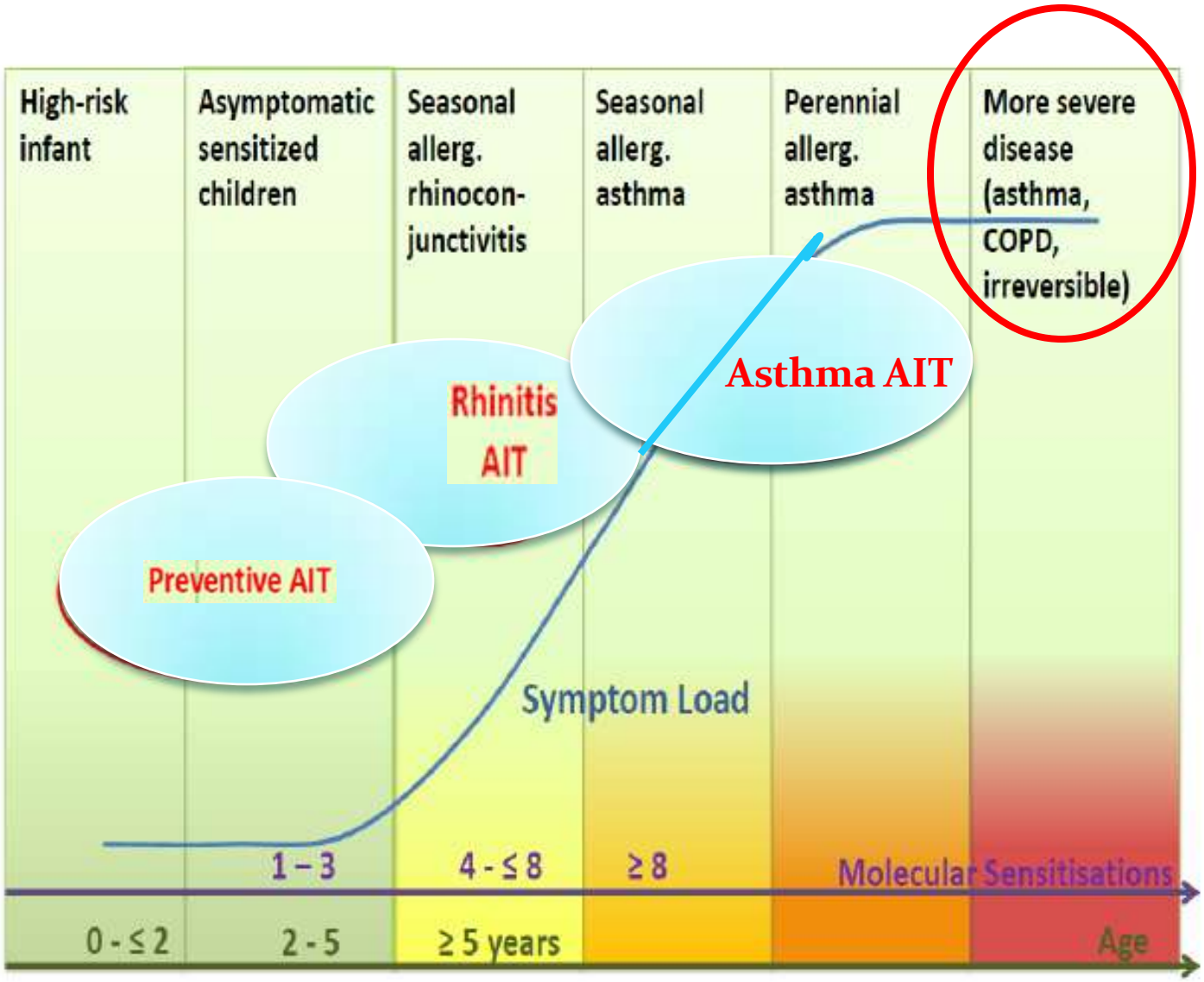
4. In our patients, if there is > 50% reduction of weal size after repeat S.P.T (7mm to 3mm) and > 50% reduction of symptoms scoring, gives us an indirect measurement of MTD (maximum tolerance dose.)

5 We Could not find any influence of gender and numbers of allergy shots (injections) as development of adverse systemic reaction

Clinical Pearls

- Poly-sensitized patients struggling with multiple symptoms of multiple target organs with a personal past, current or family history of allergic - asthma disease should have allergy consultation. to down regulate the B-lymphocytic IgE inflammation by SLIT/SCIT & Diet Elimination.
- Is there evidence? Yes

Allergy Prevention by AIT
Age-Dependent Windows of Opportunity



Polysensetization with comorbid-Diseses poorly reversible lung function

Patient –A 44 years old female with severe persistent BR. ASTHMA was diagnosed 10 years ago and had remained Poorly controlled inspite of optimal inhaled and oral drougs inclouding corticosteroids.Her serum IgE level was 310 ku/l with a positive RAST (specific IgE) & SPT to house dust mite & Asp. fumigatus negative

SPT : multiple sensitivity to pollens & HDM & fungi

Symptoms presents for 3 months	**Cormorbid diseses:**
Frontal maxillary facial pain **Green nasal discharge** **Post nasal drip** **hoarseness** ***intermittent wheezing***	**HYPOTHYROIDISM** **PEPTIC ULCER DISEASE** **OSTEOPOROSIS** **DEPRESSION** **DEPRESSION IBS**

PMH:

- infant-atopic eczema from eggs& dairy products.
- Adolescence: - allergic rhinitis
- Youngage- intolerance (diarrhoea) with recurrent sinusit &vaginitis

PFT :

The peak flow rate was 180/min (the predicted value was 450 l/min. Pulmonary function tests showed a moderate severe obstructive defect with mild air trapping and hyperinflation .there was significant improvement in expiratory flow after bronchodilator inhalation (more than 18 %).

Therapy

(a) Intranasal corticosteroid (1 sprays of mometasone furate monohydrate 50 mcg per nostril once daily)

(b) oral antihistamine (10mg daily of cetirizine at bedtime)+montelukast 5mg.

(c) antibiotic for acute or chronic infectious sinusitis (500mg ofciprofloxcin twice daily for 3weeks)

(d) inhaled corticosteroid & LABA for hyper reactive airways (2 puffs of Budesonide 400 mcg & formetrol 6 mcg /puff two to three times daily vialupihaler)+doxyphyllina 400mg X BD oral steroids as per advised

(e) inhaled beta2- agonist when needed for wheezing (salbutamol 2-4 puffs every 4-6 hours as needed)

SIT: SCIT-contra indication/ SLIT???

Anti-IgE therapy?

House Dust Mite
(D.farine D. Pteronyssinus)
Immunotherapy in 45 patients of Perennial & Steroid dependent BR. Asthma

Follow up study upto 6 yrs – during & after Immunotherapy

DR. P.C. KATHURIA

Conclusions

Dust Mite Specific Immunotherapy

House Dust Mite Immunotherapy in 45 patients of
Perennial & Steroid dependent BR. Asthma
Follow up study upto 6 yrs – during & after Immunotherapy

- **Steroid Sparing, safe in Perennial BR. Asthma**
- **But less Effective in Steroid dependent BR. Asthma**
- **There is improvement in BHR (PEFR variability & reversiblity) ↓ in both the groups**
- In steroid BR. Asthma 3 yrs during immunotherpy, BHR impove but after discontinuation the amount of drug intake increase indicative of ongoing inflammation and or new sensitization

History : Positive Perennial Allergic Br. Asthma Seasonal *Exacerbations In steroid dependent*

In vivo:

SPT (wheal/flare in mm):

All pollen positive

i. e. pollen, mites, animal dander, molds

In vitro:

Which allergen sources require "additional" IgE-testing?

D/D Genuine /cross reactive positive ?

Polysensitization

Vs.

polyallergic

History : Positive Perennial Allergic Br. Asthma
Seasonal *Exacerbations In steroid dependent*

In vivo:

SPT (wheal/flare in mm):

All pollen positive

i. e. pollen, mites, animal

da

In vitro:

Total IgE 150 kU/l

Spec. IgE

Phl p 12 (profilin) 3 kU_A/l

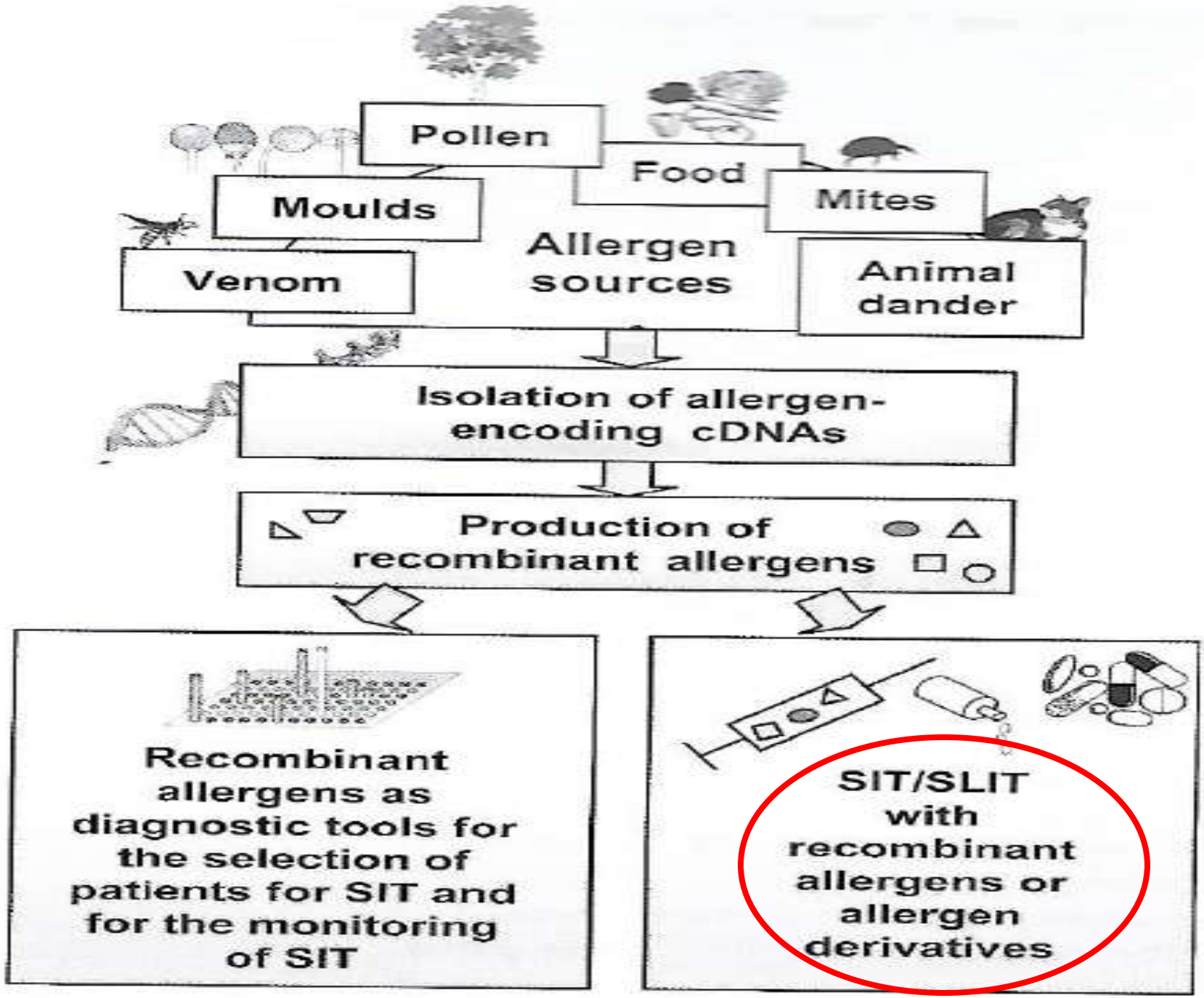
Phl p 7 (polcalcin) 15 kU_A/l

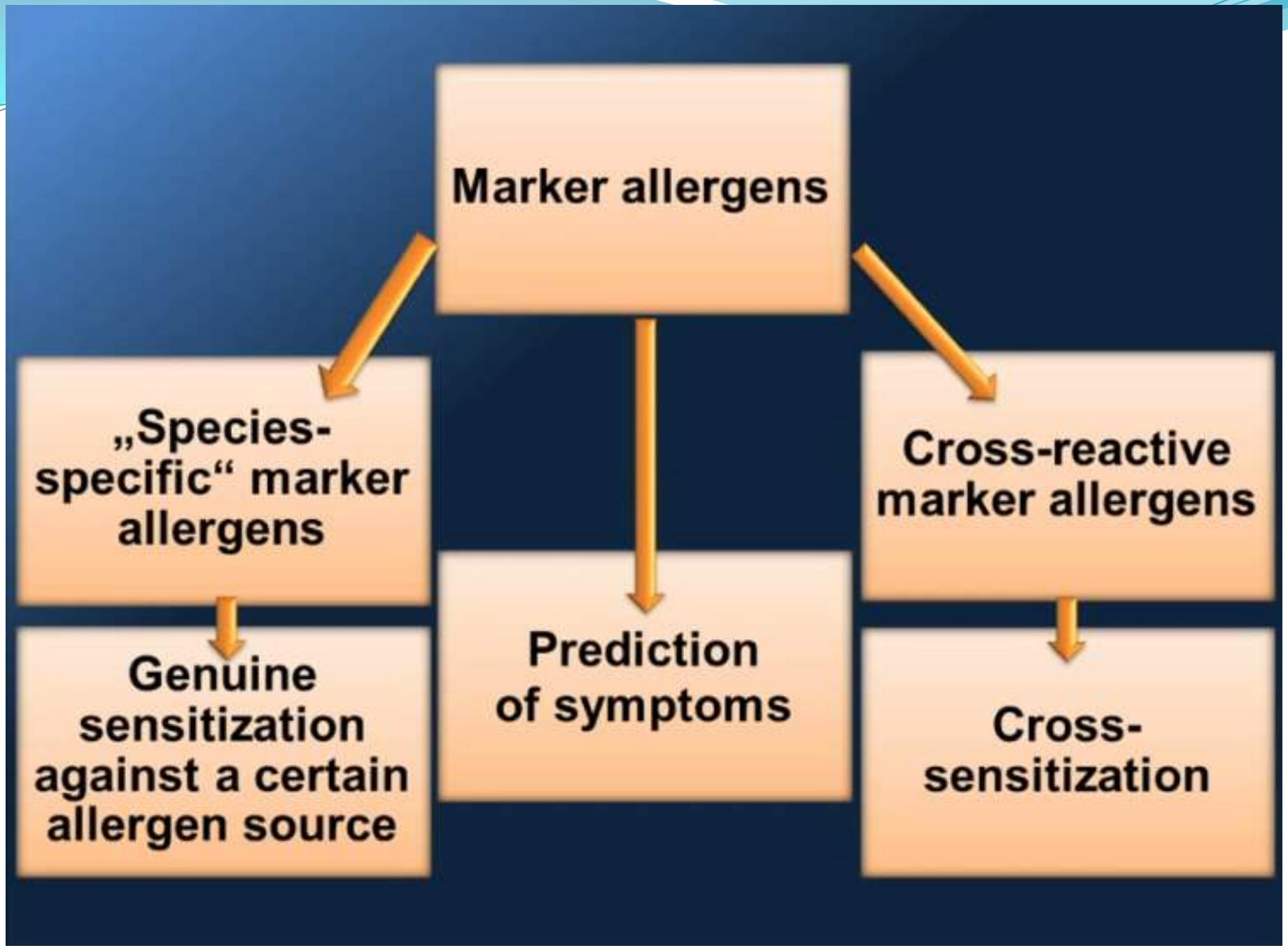
CRD (Component Resolved Diagnosis)

Polysensitization

Vs.

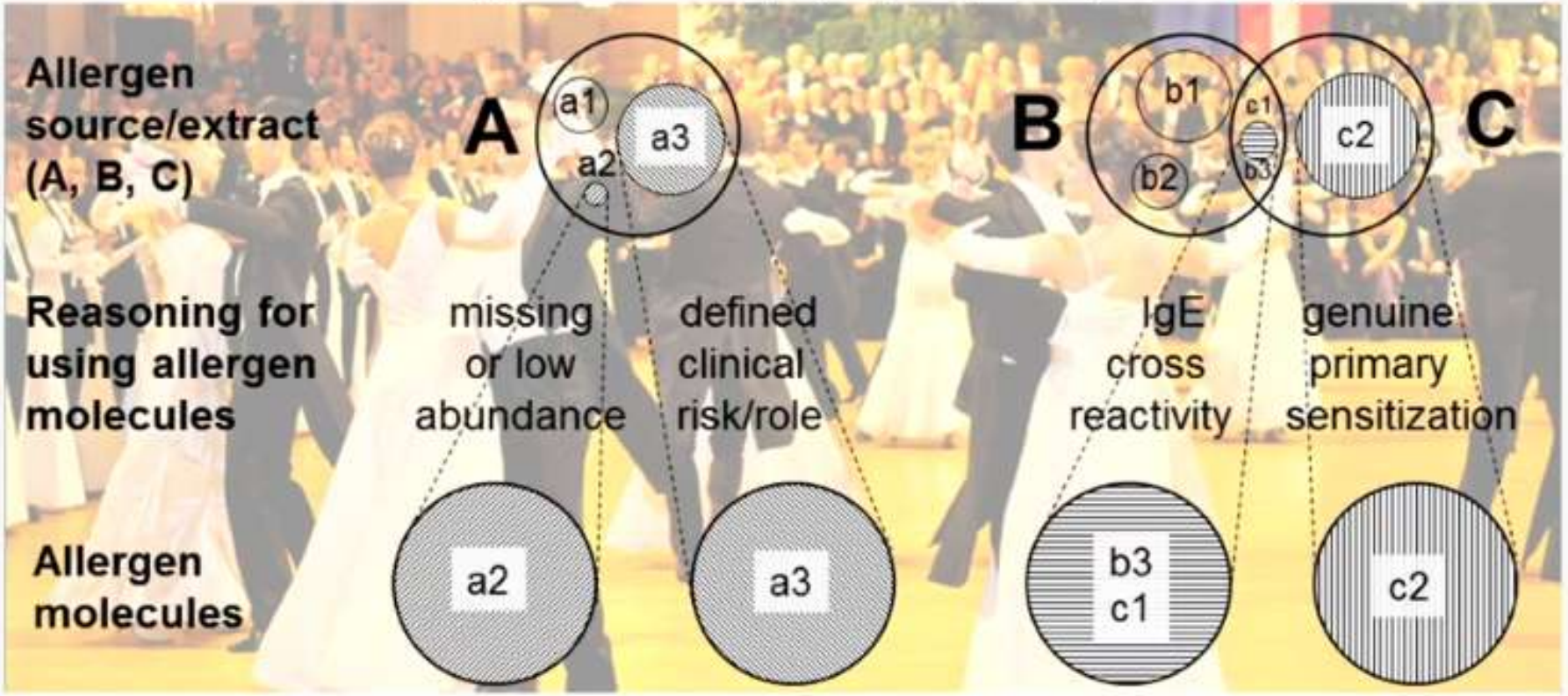
Poly allergic


Pollen
Food
Moulds
Mites
Venom
Allergen sources
Animal dander
Isolation of allergen-encoding cDNAs
Production of recombinant allergens
Recombinant allergens as diagnostic tools for the selection of patients for SIT and for the monitoring of SIT
SIT/SLIT with recombinant allergens or allergen derivatives


Marker allergens
„Species-specific“ marker allergens
Cross-reactive marker allergens
Genuine sensitization against a certain allergen source
Prediction of symptoms
Cross-sensitization

General reasons why molecular allergy (MA) is applied to diagnostic methods (IgE testing)

Matricardi PM, Kleine-Tebbe J, Hoffmann HJ, Valenta R, Hilger C, Hofmaier S, Ollert M et al. Pediatr Allergy Immunol 2016;27(Suppl.23):1-250 (free access)



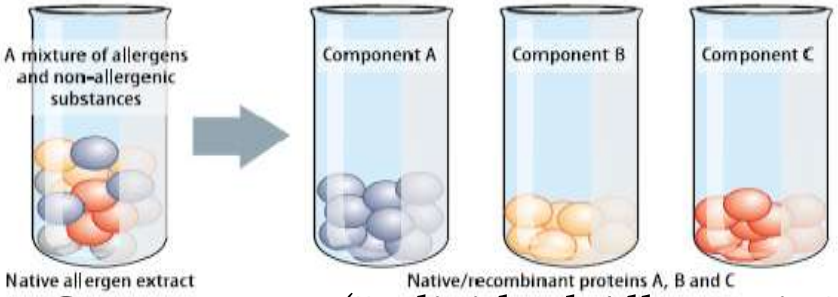
Effects on assy results:	<assay sensitivity >analytical specificity	<assay sensitivity **>analytical specificity**	indicator of **cross reactivity**	**marker** allergen

General reasons why molecular allergy (MA) is applied to diagnostic methods (IgE testing)

Role Of Component-resolved Diagnostics (CRD)

A science that make it feasible to quantify IgE antibodies to specific allergen proteins on a molecular allergologic level

]



Whole Allergen Components,(Individual Allergenic Epitopes Molecules)

CRD have been introduced in order to increase the probability of

- True Food/aero-allergens & insects Allergy diagnosis
- Identify patients at high risk of reactions
- **Identify patients more prone to persistent disease**

"Rule of thumb": How to use MA

Matricardi PM, Kleine-Tebbe J, Hoffmann HJ, Valenta R, Hilger C, Hofmaier S, Ollert M et al. Pediatr Allergy Immunol 2016;27(Suppl.23):1-250 (free access)

- Suspected allergen from family with **broad cross-reactivity?** i.e.
  - PR-10,
  - nsLTP
  - profilin
  - polcalcin
  - albumin
  - parvalbumin
  - tropomyosin

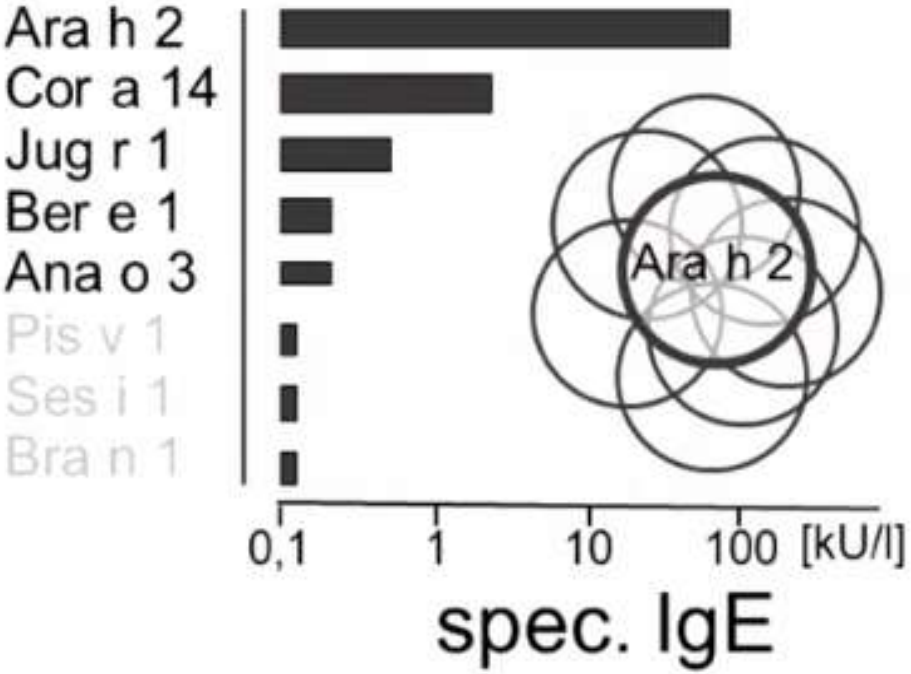
- Test specific IgE only to **one representative** member, i.e.
  - i.e. Bet v 1
  - Pru p 3
  - Phl p 12 or Bet v 2
  - Phl p 7 or Bet v 4
  - Fel d 2
  - Gad c 1
  - Pen a 1

"Rule of thumb": How to use IgE tests in MA

Matricardi PM, Kleine-Tebbe J, Hoffmann HJ, Valenta R, Hilger C, Hofmaier S, Ollert M et al. Pediatr Allergy Immunol 2016;27(Suppl.23):1-250 (free access)

- Allergen from family with **limited cross-reactivity?** (seed storage proteins, lipocalins)

2S albumins



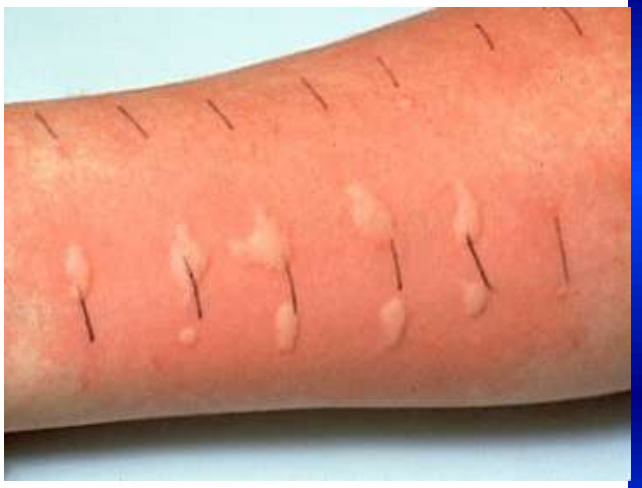
- test suspicious member(s) and related ones*
- hierarchy indicates primary sensitizer
- *if negative, cross-reactivity is unlikely

Screening for allergen-specific IgE sensitizations with pollen extracts

trees

grasses

weeds



General reasons why molecular allergy (MA) is applied to diagnostic methods (IgE testing)

Multiple sensitizations due to crossreactivity?

grasses

trees

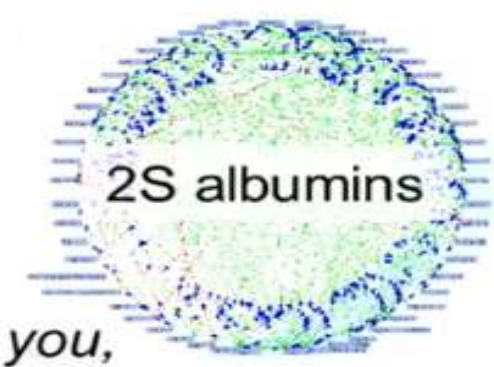
Pollen-

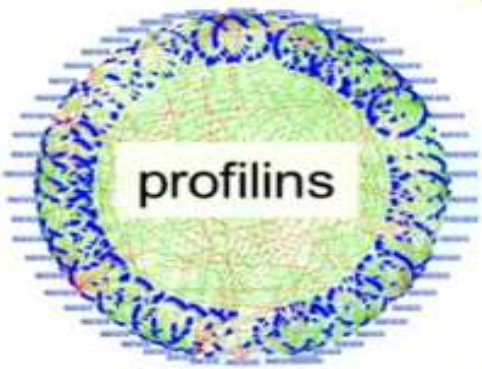
weeds

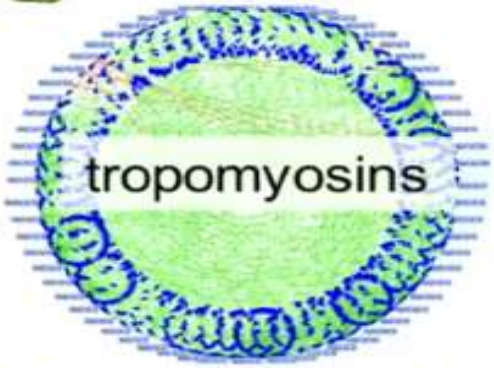
General reasons why molecular allergy (MA) is applied to diagnostic methods (IgE testing)

Protein families & cross-reactivity (Part C)

www.allergome.org www.allergen.org







Thank you,
for updating AllFam: www.meduniwien.ac.at/allergens/allfam/

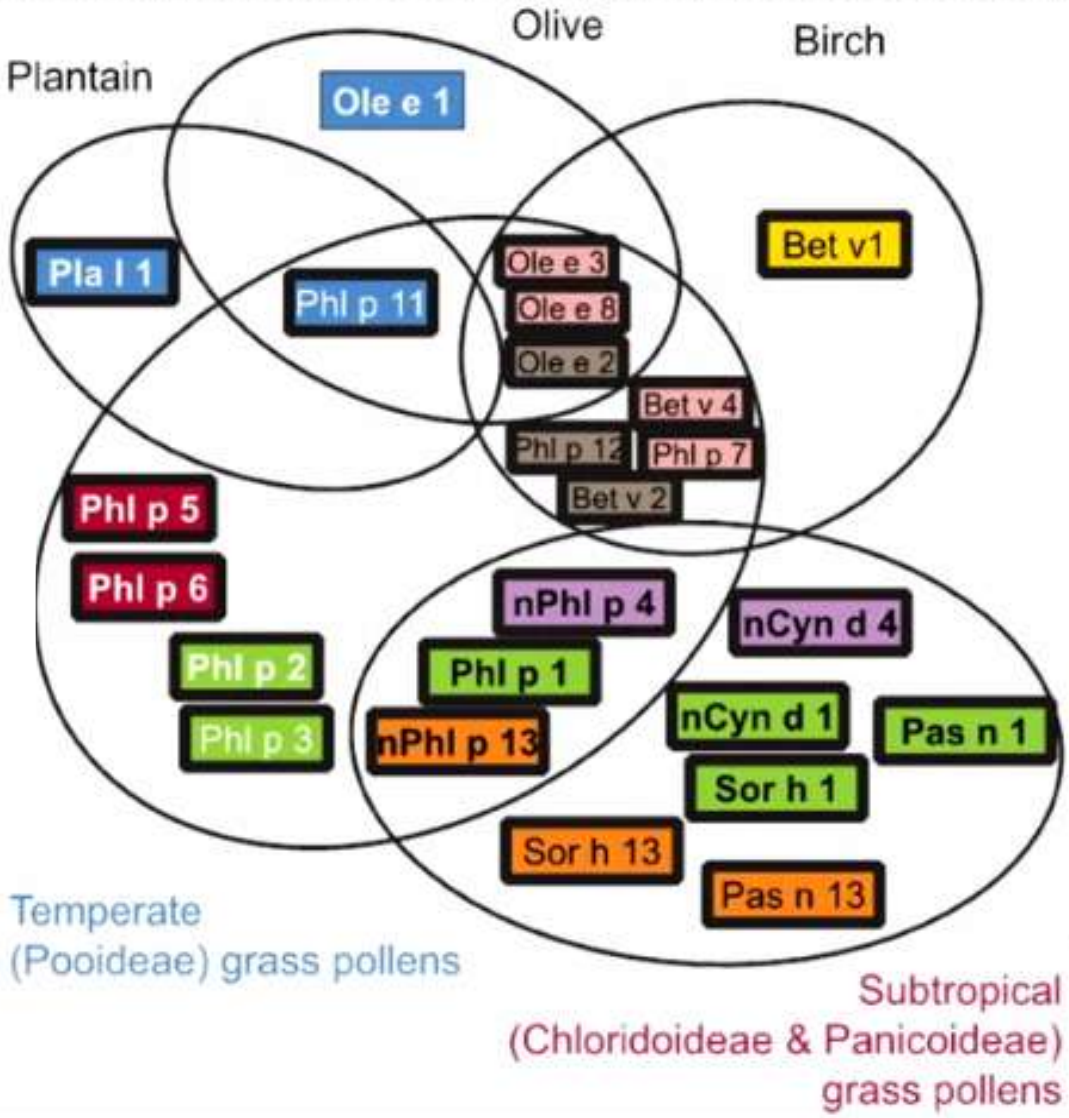
General reasons why molecular allergy (MA) is applied to diagnostic methods (IgE testing)

Sorting our clinical cross-reactivity with history/oral challenges (if needed)

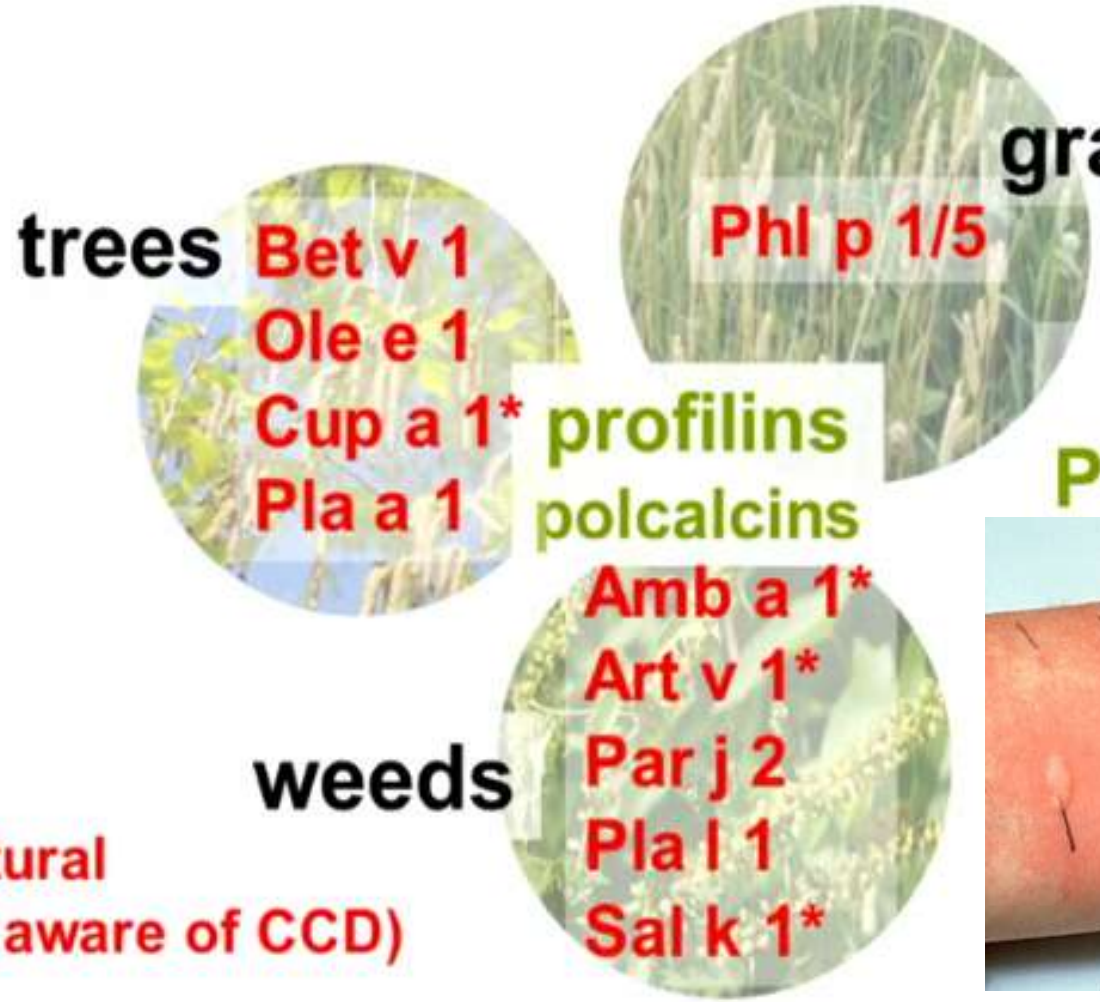
Matricardi PM, Kleine-Tebbe J, Hoffmann HJ, Valenta R, Hilger C, Hofmaier S, Ollert M et al. Pediatr Allergy Immunol 2016;27(Suppl.23):1-250 (free access)

Cross-reactivity between pollen allergens?

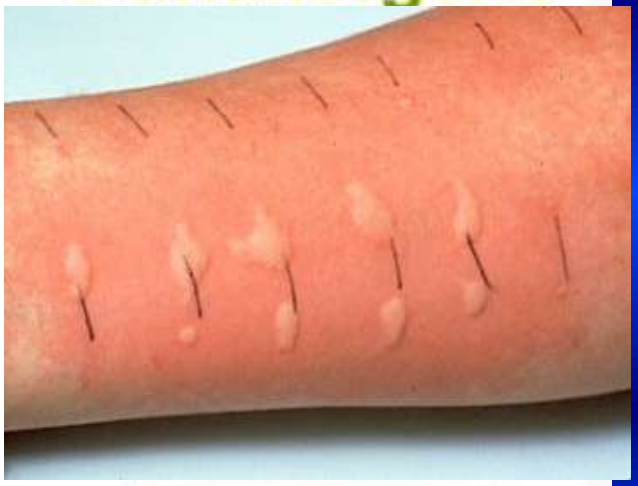
Matricardi PM, Kleine-Tebbe J, Hoffmann HJ, Valenta R, Hilger C, Hofmaier S, Ollert M et al. Pediatr Allergy Immunol 2016;27(Suppl.23):1-250 (free access)



Multiple sensitizations due to crossreactivity or true co-sensitization?



Pollen-Panallergens



History : positive Perennial allergic Rhinitis

Seasonal *Exacerbations In Allergic Asthma*

In vivo:

SPT (wheal/flare in mm):

All pollen positive

i. e. pollen, mites, animal dander, molds

In vitro:

Total IgE 150 kU/l

Spec. IgE

Phl p 12 (profilin) 3 kU_A/l

Phl p 7 (polcalcin) 15 kU_A/l

Bet v 1

Ole e 1, Cup a 1, Pla a 1

Phl p 1, Phl p 5

Art v 1

Amb a 1

CRD (Component Resolved Diagnosis)

Grass, trees, weeds, mites

polysensitization

History : positive Perennial allergic **Rhinitis**

Seasonal *Exacerbations In Allergic Asthma*

In vivo:

SPT (wheal/flare in mm):

All pollen positive

i. e. pollen, mites, animal dander, molds

In vitro:

Total IgE 150 kU/l

Spec. IgE

Phl p 12 (profilin) 3 kU_A/l

Phl p 7 (polcalcin) 15 kU_A/l

Bet v 1 0.6 kU/l (0.4%)

Ole e 1, Cup a 1 <0.35kU/l

Phl p 1 30 kU_A/l (20%)

Phl p 5 15 kU_A/l (10%)

Art v 1 and Amb a 1 neg.

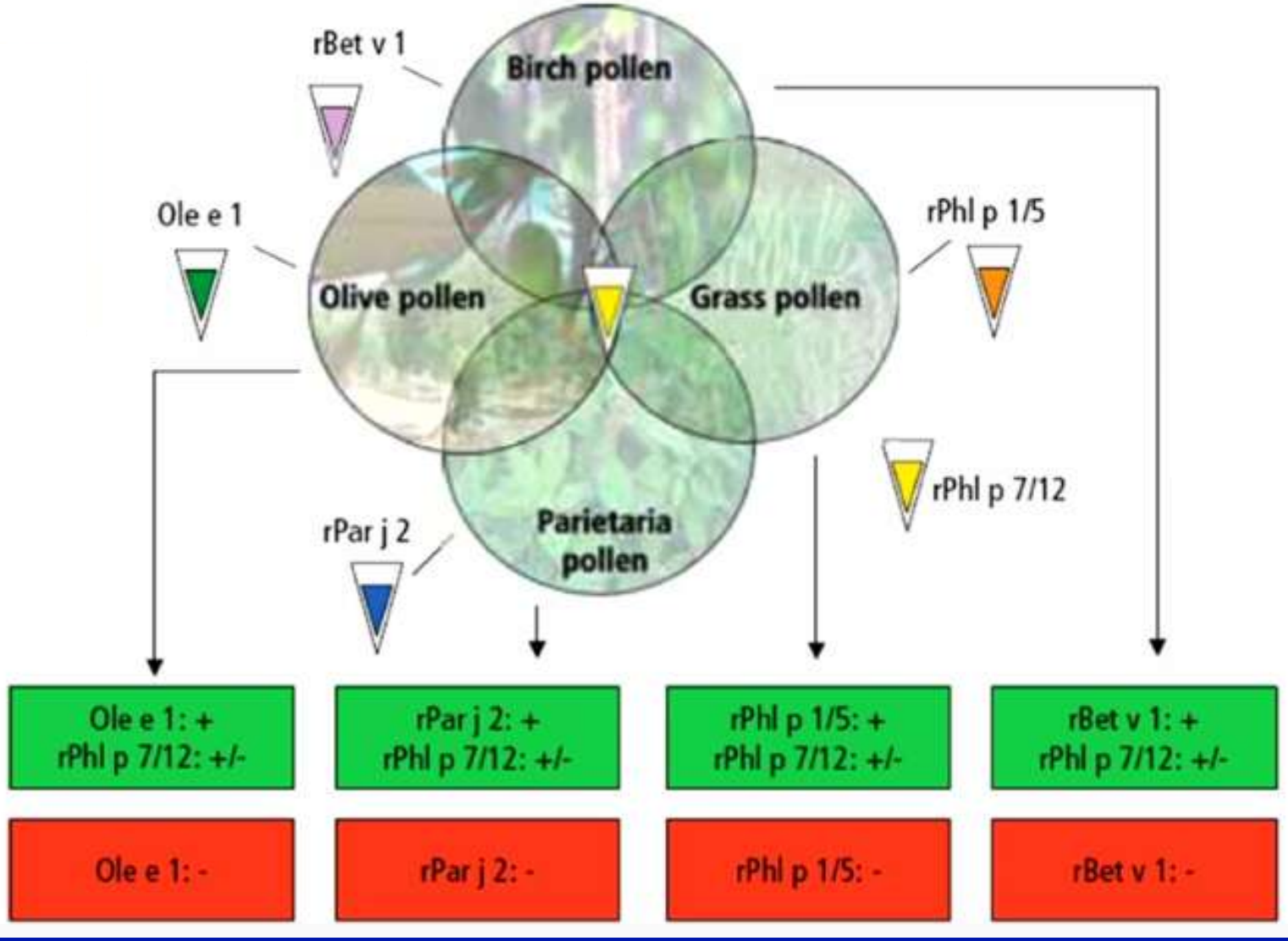
Allergen Immunotherapy Of Grass & Mites Only

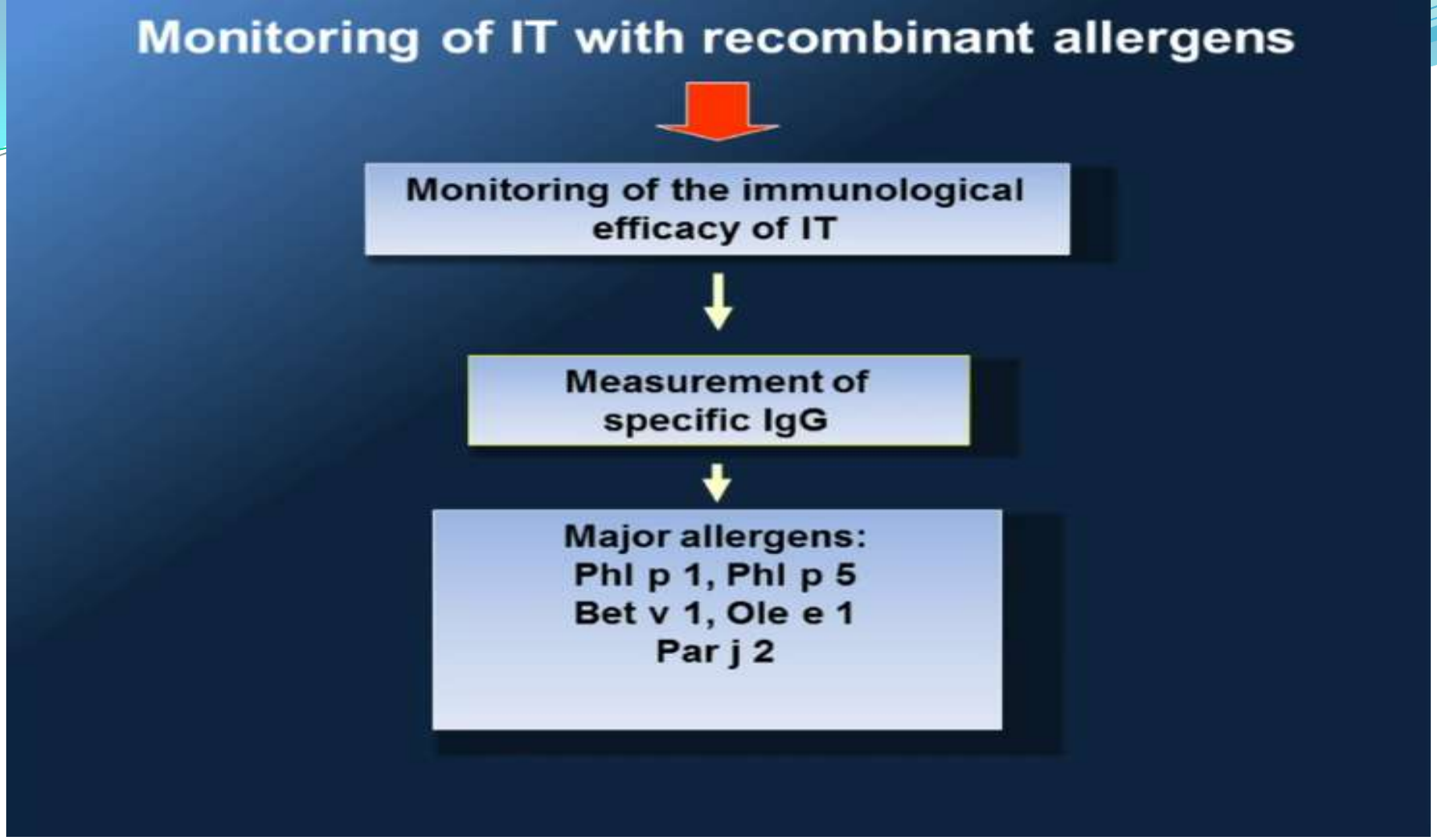
Der p1 – 15 kU/L Der f1 -10kU/L

polysensitization

Diagnosing components before AIT?

Valenta R et al. J Investig Allergol Clin Immunol 2007;17:88-92

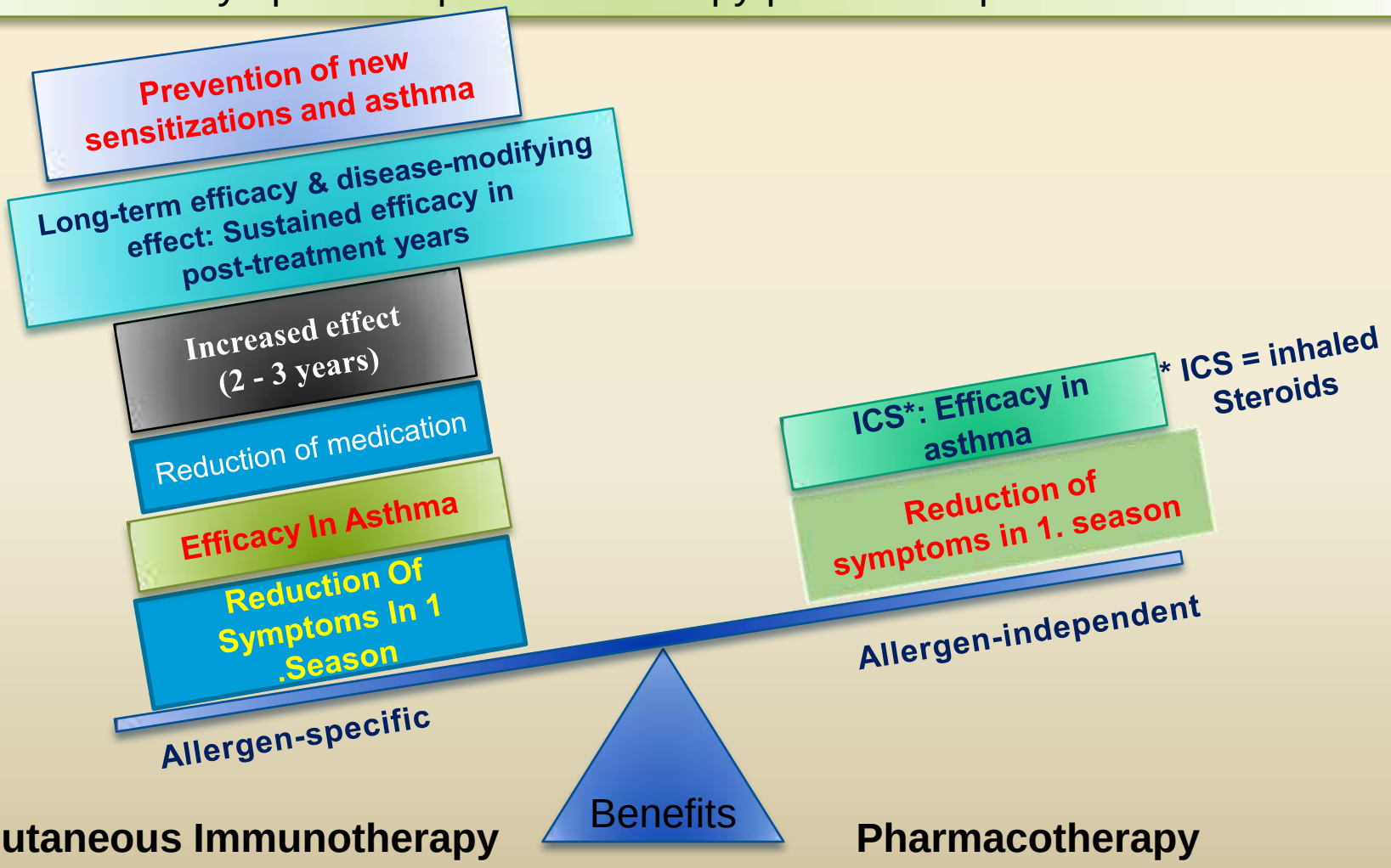




Allergen molecule-based tests for accurate prescription of immunotherapy

Subcutaneous Immunotherapy vs. Pharmacotherapy

Subcutaneous Immunotherapy has demonstrated numerous benefits over and above the symptomatic pharmacotherapy provided to patients



Thanks

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