

# Allergic rhinitis is not just a stuff nose

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## Introduction

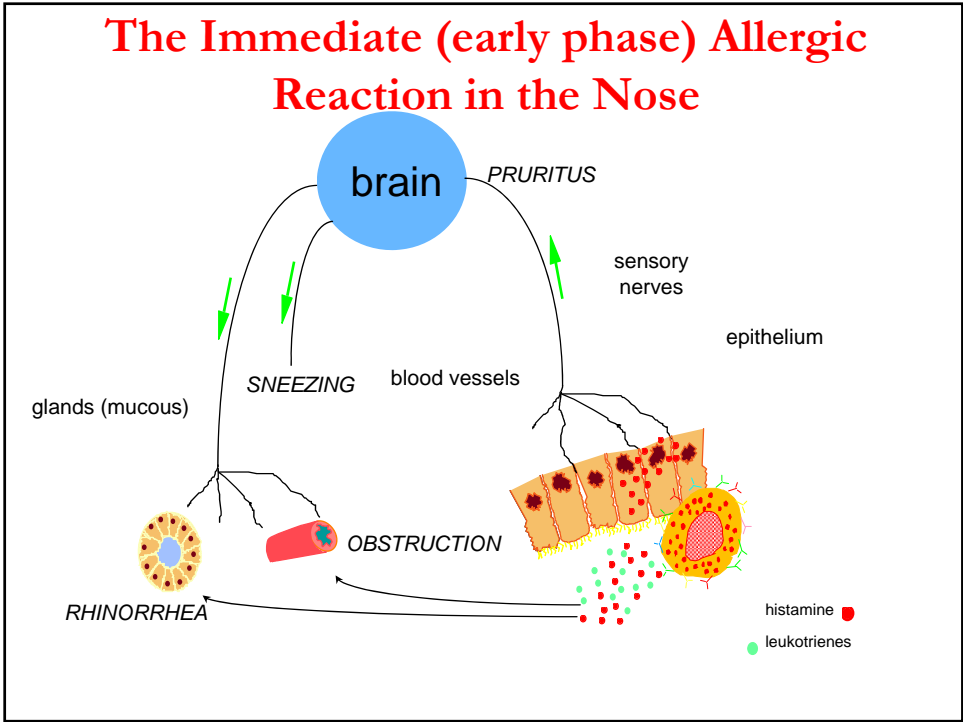
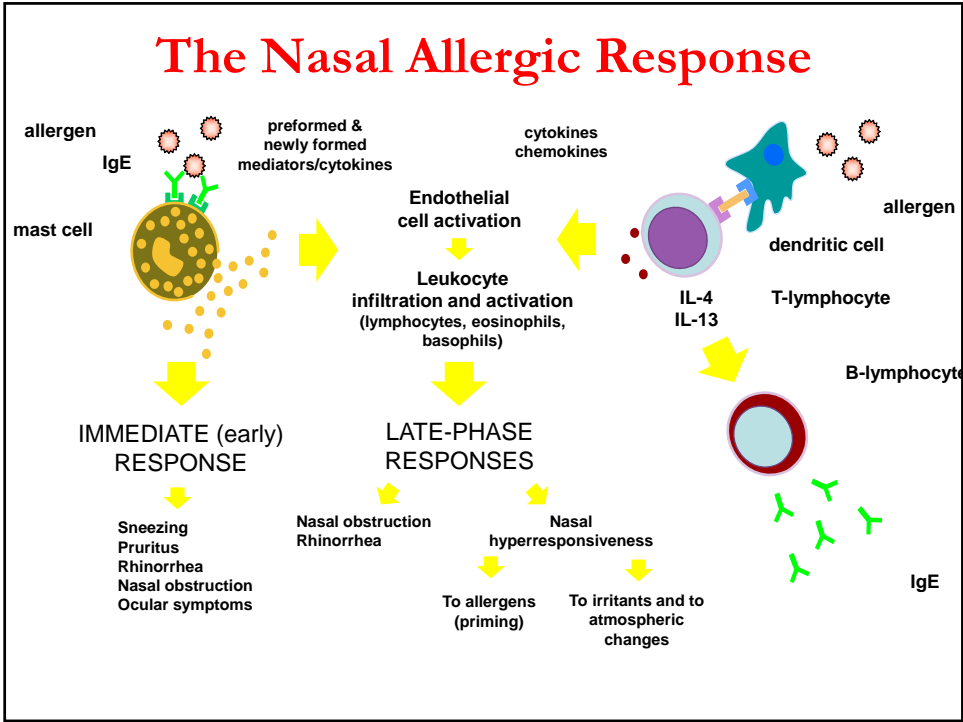
- Allergic rhinitis is an **inflammatory** disorder of the nasal mucosa which is linked to **atopy** and whose prevalence is increasing in association with a **Western lifestyle**.

### **Main symptoms**

- Itching
- nasal discharge
- sneezing
- nasal airway obstruction

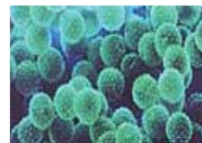
### **Natural history of allergic rhinitis**

- Onset is common in childhood, adolescence and early adulthood
- Symptoms often wane in older adults, but may develop or persist at any age
- No gender predisposition



## Summary of sensitization pattern – Queen Mary Hospital

- 90% House dust mites
- 30% Cockroach
- 20% Furry Pet
- 15% Pollen
- 3-5% Mold
- Multi-allergen 25-30%



## Prevalence of allergic rhinitis in Hong Kong

- The **second most** prevalent chronic health conditions among children

Indicator	Female	Male	Overall
Prevalence of top five chronic health conditions			
• Visual problems	28.1%	26.6%	27.3%
• Allergic rhinitis	20.6%	28.3%	24.5%
• Eczema	12.7%	12.1%	12.4%
• Food allergy	4.6%	5.5%	5.1%
• Asthma	3.6%	4.5%	4.1%

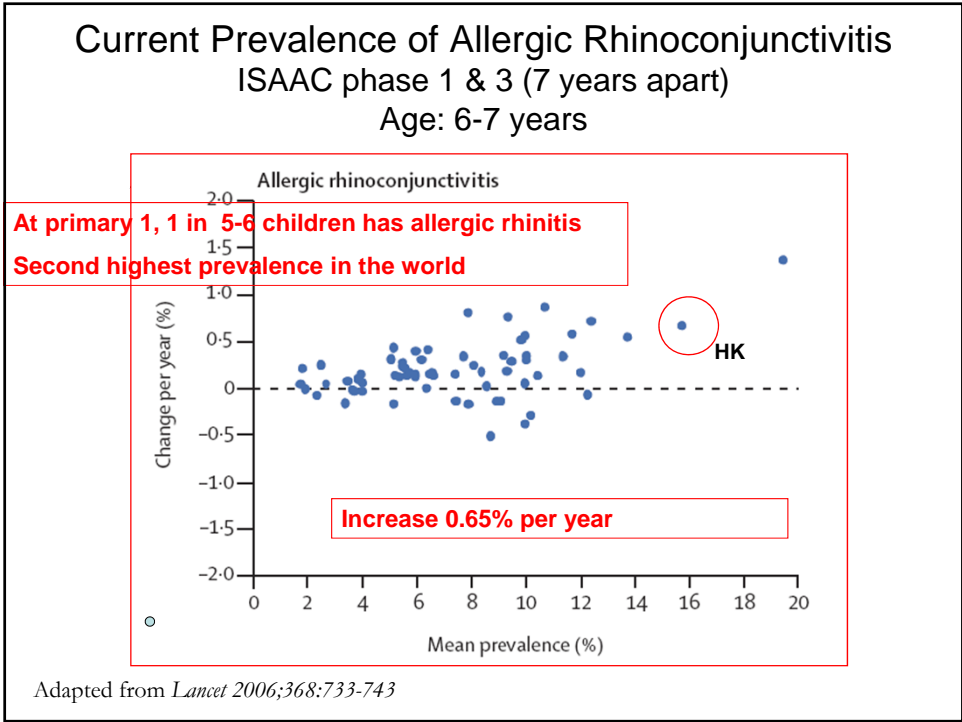
Child Health Survey 2004-2005

Table 10. Prevalence of asthma and rhinitis in the ISAAC Phase III study [from Asher et al. (853)]

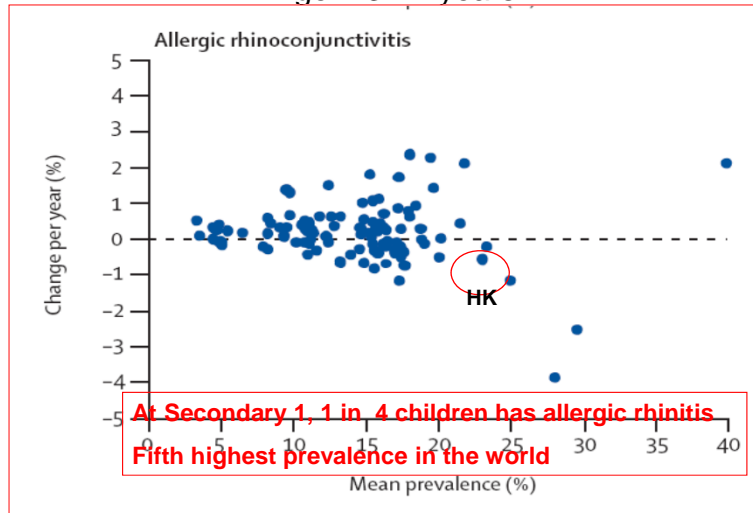
**International Study of Asthma and Allergies in Childhood**

	Asthma symptoms			Allergic rhinoconjunctivitis symptoms			Eczema symptoms			
	Years between phases	Phase 1	Phase 3	Change per year	Phase 1	Phase 3	Change per year	Phase 1	Phase 3	Change per year
<b>6- to 7-year age group</b>										
Africa (English speaking)										
Nigeria	7.0	4.8	5.6	0.10	3.7	3.6	-0.01	4.5	5.0	0.07
Asia Pacific										
Hong Kong	6.0	9.1	9.4	0.03	13.7	17.7	0.67	3.9	4.8	0.12
Indonesia	6.0	4.1	2.8	-0.21	3.8	3.6	-0.03	-	-	-
Japan	8.0	17.4	18.2	0.10	7.8	10.6	0.35	-	-	-
Malaysia (3)	6.3	6.5	5.8	-0.12	4.1	4.8	0.11	9.5	12.6	0.49
Singapore	7.0	15.7	10.2	-0.80	6.5	6.7	0.02	2.8	8.9	0.87
South Korea (2)	5.0	13.3	5.8	-1.45	9.8	8.7	-0.18	8.8	11.3	0.52
Taiwan	7.0	9.6	9.8	0.04	14.6	24.2	1.37	3.5	6.7	0.46
Thailand (2)	6.0	8.2	11.9	0.47	7.3	10.4	0.30	11.9	16.7	0.79
Eastern Mediterranean										
Iran (2)	6.0	5.4	12.0	1.14	1.5	2.2	0.12	1.1	2.0	0.13
Malta	7.0	8.8	14.9	0.86	7.2	8.9	0.24	4.2	4.0	-0.03
Sultanate of Oman	6.0	7.1	8.4	0.21	6.2	7.0	0.13	4.2	4.2	0.00
Indian subcontinent										
India (8)	7.5	6.2	6.8	0.06	3.2	3.9	0.05	3.0	2.4	0.00
Latin America										
Brazil	7.0	21.3	24.4	0.44	12.5	12.0	-0.07	6.8	6.8	0.00
Chile (3)	7.0	18.2	17.9	-0.06	8.2	12.3	0.56	10.9	12.9	0.26
Costa Rica	8.0	32.1	37.6	0.69	11.6	15.9	0.54	8.7	8.9	0.02
Mexico	8.0	8.6	8.4	-0.03	8.6	7.2	-0.17	4.9	4.0	-0.11
Panama	6.0	23.5	22.7	-0.13	7.1	11.7	0.77	7.9	14.4	1.09
North America										
Barbados	6.0	18.9	19.5	0.11	5.5	6.4	0.15	6.7	9.2	0.42
Northern and Eastern Europe										
Estonia	5.0	7.6	5.0	-0.53	4.1	3.9	-0.03	2.5	3.7	0.24
Georgia	7.0	9.3	9.6	0.05	3.5	4.2	0.11	9.8	11.5	0.24
Ukraine	7.0	9.3	6.9	-0.34	3.9	2.8	-0.16	5.1	2.4	-0.39
Russia	6.6	11.3	11.4	0.05	5.6	4.7	-0.16	9.4	6.6	-0.46
Sweden	8.0	10.3	10.2	-0.01	8.0	6.9	-0.14	19.5	22.3	0.35
Ukraine	4.0	12.2	12.5	0.07	9.7	7.7	-0.51	6.2	5.3	-0.21
Oceania										
Australia	9.0	27.2	20.0	-0.80	9.8	12.9	0.34	11.1	17.1	0.67
New Zealand (4)	9.5	23.6	22.2	-0.11	9.5	11.4	0.19	14.3	15.0	0.08
Western Europe										
Austria (2)	7.0	7.8	7.4	-0.05	5.1	6.1	0.15	5.7	6.1	0.05
Belgium	7.0	7.3	7.5	0.02	4.9	5.8	0.13	7.7	11.6	0.56
Germany	5.0	9.6	12.8	0.65	5.4	6.9	0.30	6.7	7.9	0.23
Italy (6)	8.0	7.5	7.9	0.07	5.4	6.5	0.15	5.8	10.1	0.53
Portugal (3)	7.0	13.2	12.9	-0.07	8.7	9.3	0.16	9.6	9.7	0.09
Spain (6)	7.3	6.2	9.5	0.44	5.4	7.9	0.33	3.4	5.9	0.31
UK	5.0	18.4	20.9	0.50	9.8	10.1	0.05	13.0	16.0	0.60

At primary 1, One in every 5-6 children has allergic rhinitis  
Second highest prevalence in the world



Current Prevalence of Allergic Rhinoconjunctivitis  
ISAAC phase 1 & 3 (7 years apart)  
Age: 13-14 years



Adapted from Lancet 2006;368:733-743

## Allergic rhinitis can cause heavy economic burden

- Direct cost
  - Drug cost
- Indirect cost
  - Quality of life
- Under-estimation of costs
  - Difficulties in diagnosing AR
  - Exclusion of patients who do not seek healthcare
  - Absence of data on over-the-counter medication
  - Difficult to assess productivity loss

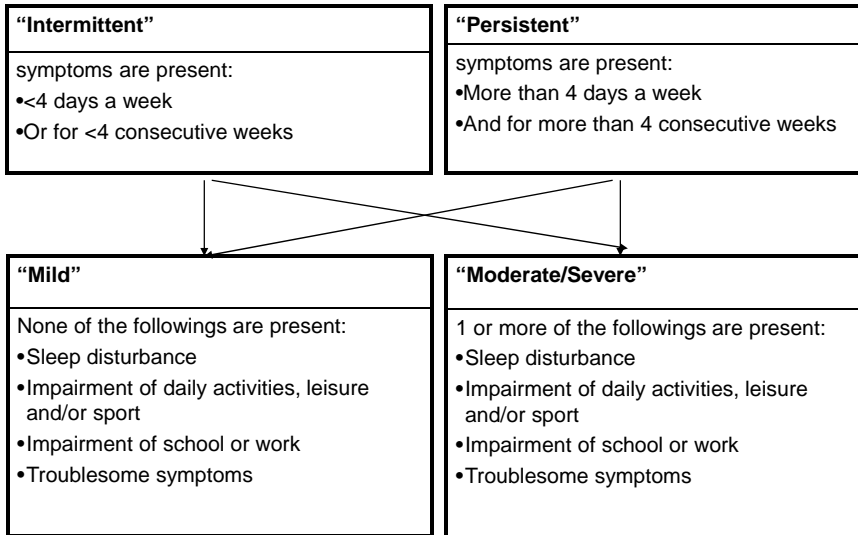
### Symptoms of our children with Allergic rhinitis

- Itching of the nose, ears, palate, or throat
- Dry, irritated, or sore throat
- Sneezing episodes triggered by nonspecific stimuli, such as dust and other irritants
- Chronic postnasal drip
- Thin, clear rhinorrhoea, which may be profuse and continuous
- Snoring
- Irritation of the skin of the lower external nose and upper lip
- Continual throat clearing
- Nasal congestion
- Chronic or nonproductive cough
- Blockage of the paranasal sinuses or Eustachian tube, causing sinus headache or earache
- Frontal headaches
- Altered hearing, smell, and/or taste
- Eustachian tube dysfunction
- Worsening of symptoms on arising in the morning
- Sleep disturbance, with or without daytime fatigue
- Mouth breathing
- Worsening of asthma symptoms

### Classification of Allergic rhinitis

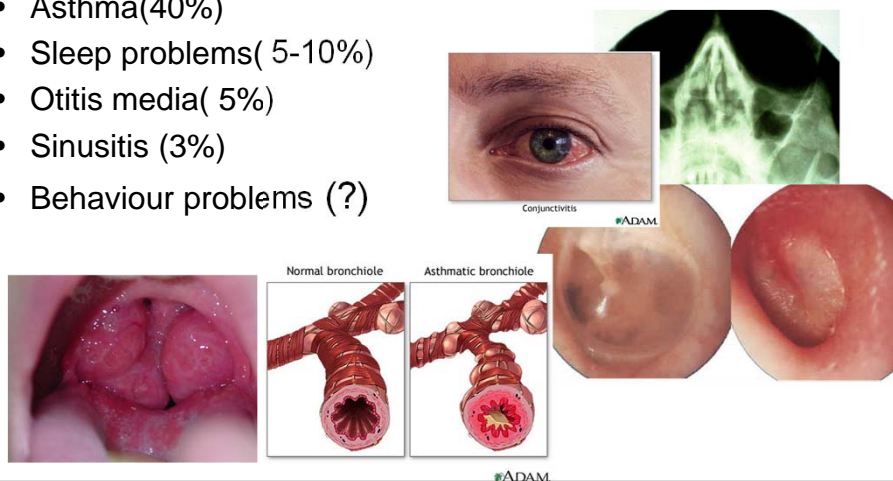
- Perennial – symptoms persist for longer than 9 months each year ( Hong Kong Type)
- Seasonal – varies according to geographic location, symptoms appear during a defined season (pollinating season of major trees, grasses and weeds; some will include molds) in which these aeroallergens are abundant in outdoor air

## Allergic Rhinitis and its Impact on Asthma (ARIA) guideline



## Allergic rhinitis may be associated with the development of other diseases due to common passage

- Allergic conjunctivitis (60%)
- Asthma(40%)
- Sleep problems( 5-10%)
- Otitis media( 5%)
- Sinusitis (3%)
- Behaviour problems (?)





## Sleep disturbance is a significant problem for patients with rhinitis

### Mechanism

- 1- Mechanical obstruction due to nasal congestion
- 2- Additional symptoms of rhinitis such as sneezing, rhinorrhea, and nasal pruritus, may contribute to reduced sleep quality and sleep disturbance
- 3- Inflammatory mediators involved in AR lead to disturbances in sleep wake cycle, sleep disruption and fatigue → may lead to obstructive sleep apnea
- 4 – Side effects from medications

## Allergic rhinitis often coexists with other allergic disorders

- Allergic rhinitis and asthma often coexist
- Rhinitis and asthma involve a common respiratory mucosa
- Inflammation is involved in the pathogenesis of both allergic rhinitis and asthma
  - Allergic reaction in the nasal mucosa can potentially worsen asthmatic inflammatory process in the lower airways

## Allergic rhinitis /Asthma – united airway

- Inflammation in the nose may increase lower airway hyperresponsiveness.
- Possible mechanism:
  - Through naso-bronchial reflex
  - Mouth breathing resulting in bronchospasm due to cool, dry air
  - Pulmonary aspiration of nasal contents

## Inflammatory components common to allergic rhinitis and asthma

- |                      |                             |
|----------------------|-----------------------------|
| • Inflammatory cells | • Inflammatory Mediators    |
| – Mast cells         | – Histamine                 |
| – Eosinophils        | – Leukotriene               |
| – TH2 lymphocytes    | – Proinflammatory cytokines |

## Allergic rhinitis and rhinosinusitis frequently coexist and are definitely linked

- Sinusitis is rarely seen in the absence of rhinitis
- Chronic rhinosinusitis may be associated with a similar inflammatory process to that observed in allergic rhinitis
- Nasal polyp is associated with chronic rhinosinusitis

## Management and Treatment

### Role of Professionals

- Correct Diagnosis & Education
- Allergen Avoidance
- Appropriate Pharmacotherapy
- Allergen Immunotherapy

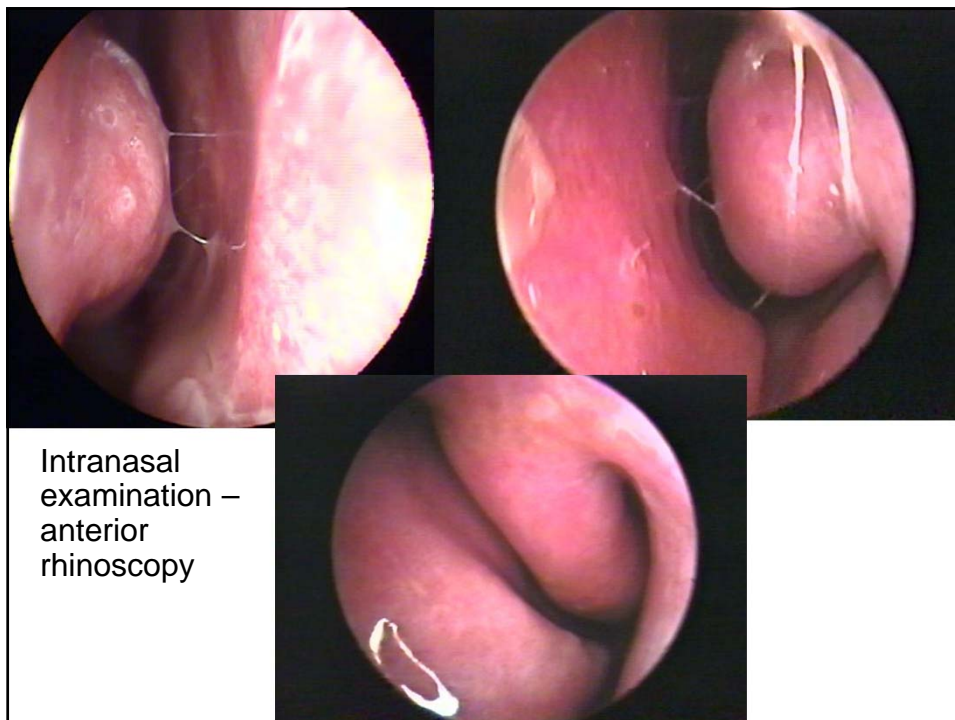
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### Family, Community and Government's Support

- Reduce environmental tobacco smoke exposure
- Maintain Healthy Diet and Exercise
- Improve Air Quality

## Diagnosis of Allergic Rhinitis

- Detailed personal and family allergic history
- Intranasal examination – anterior rhinoscopy
- Symptoms of other allergic diseases
- Allergy skin tests and/or
- *In vitro* specific IgE tests



# Allergy Skin Prick Testing

Skin prick test / positive result

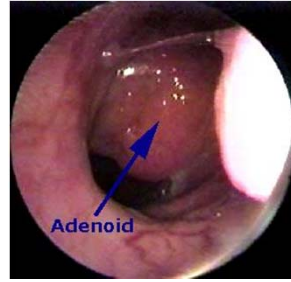


# Specific IgE Blood test (RAST)

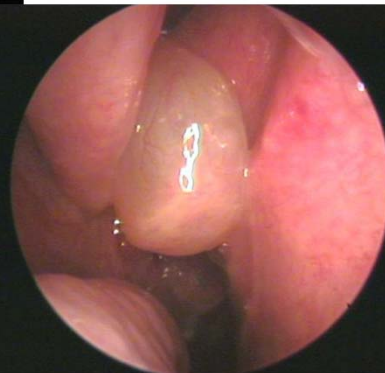
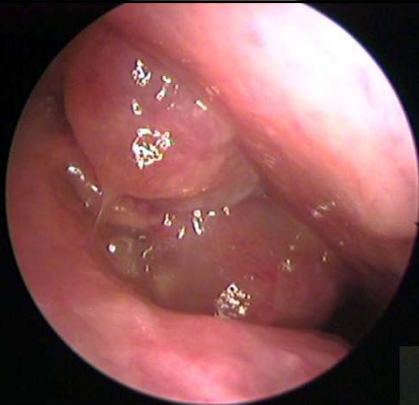
Interchangeable to a skin prick test

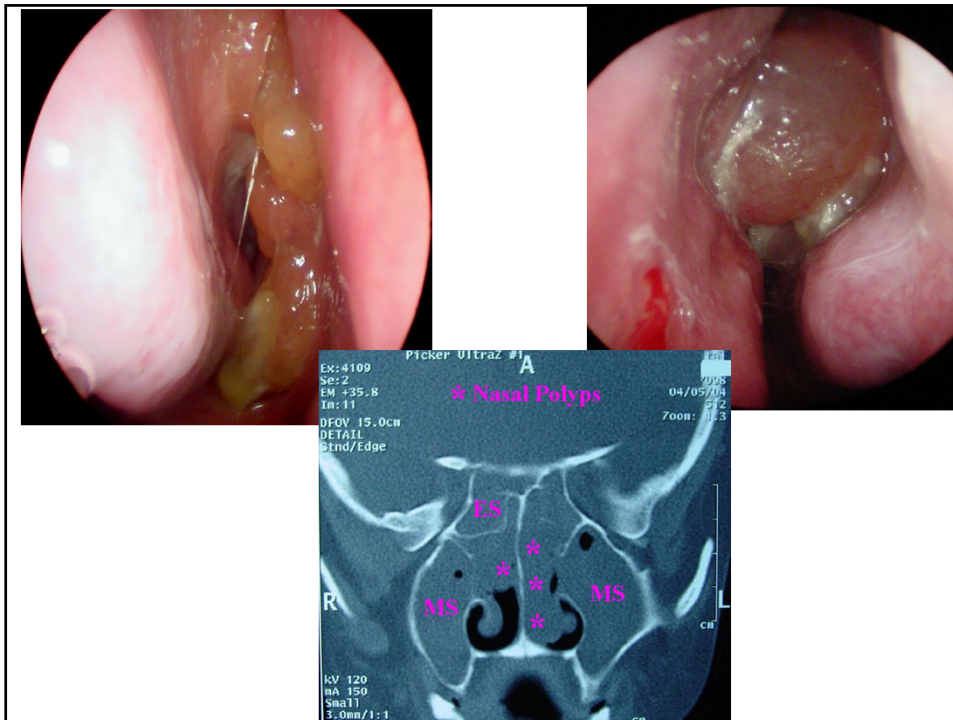


**Kissing tonsil**



**Nasal Polyp**





## Allergen avoidance --Does it Work?

**Start with the Bed-Clean your home-Control the air you breathe**

### Start with bed

- Encasings. Pillows & comforters. Covers. Blankets. Mattress. Pads. Bed Skirts. Sheets/ Comfort cushions. Teddy bear.....

### Clean Your Home

- Vacuums. Cleaning Products. Protection. Curtains. Animal Dander/washing your pet. Mold. Laundry . Chemical Carpet treatment .....

### Control the air you breathe

- Smoke. Air Cleaners. Air Conditioners. Dehumidifiers. Filters. Air chambers.....

In studies: it works nicely as secondary and tertiary preventions.

### In real world:

Lapses are everywhere,

It is tedious and 'energy' consuming.

It is a costly.

such multi-faceted intervention is doomed of failure in a majority due to inevitable compliances issues.

We see anxious, angry, suspicious and frustrated parents everyday (overworked helpers).

## Appropriate Pharmacotherapy

<b><u>Non-sedating oral antihistamines</u></b>	Relieve nasal symptoms such as rhinorrhea, sneezing, and pruritus.	
Azelastine	Higher potency and longer duration of action, less sedation than 1 <sup>st</sup> generation antihistamine	
Cetirizine		
Desloratadine		little effect on nasal congestion
Fexofenadine		
Levocetirizine		
Loratadine		
<b>Sedating antihistamines</b>	contraindicated in those experiencing daytime sedation, fatigue, and functional impairment.	



<b><u>Intranasal corticosteroids</u></b>	<ul style="list-style-type: none"> <li>• Considered first-line therapy when nasal congestion is a major symptom.</li> <li>• Relieve the nasal symptoms, esp nasal congestion</li> <li>• Also decrease inflammatory mediators</li> <li>• Randomised controlled studies have shown that in patients with allergic or nonallergic rhinitis and sleep disturbance, 6 week nasal steroids could improve the subjective quality of sleep and reduce daytime sleepiness</li> </ul>

<b>Leukotriene receptor antagonists</b> montelukast	reduction of congestion or a reduction of inflammatory mediators or a combination of both.

<b>Oral decongestants</b>	have systemic side effects, such as tachycardia and urinary retention.
<b>Topical decongestants</b>	because of the risk of rhinitis medicamentosa ("rebound" congestion), they should Not be used for long periods.
<b>Topical anticholinergic agent</b> ipratropium bromide	Has antisecretory properties, mainly target rhinorrhoea Is not considered effective in relieving nasal congestion



## **Immunotherapy** in children with Allergic rhinitis and sensitization to dust mite

- An "old" treatment but relative new to Hong Kong
- recommended treatment by most of the authorities

## Who are the candidates and when to start?

- Children more than 5 years old
- Allergic rhinitis
- Monosensitization to house dust mite (+ve SPT or allergen specific IgE)
- Severity of symptoms and response to conventional treatment
- Parents and patients has perception on immunotherapy, patient education and communication

Administration of Immunotherapy



## Safety

- Millions of subcutaneous immunotherapy injections are administered annually. The risk of a fatal or near-fatal systemic reaction is extremely small, but not completely absent.
- Physicians prescribing or administering subcutaneous immunotherapy should be aware of these risks and institute appropriate procedures to minimize them.

## Dosage Schedules Monitoring

- Treatment lasts for about 3 years in total:
  - Initial stage 15 weeks, injection given weekly
  - Maintenance stage, injection given every 4 to 8 weeks

## **Conclusion:**

**Allergic rhinitis is not just a stuff nose  
but can lead to severe Impacts**

- High prevalence
- Impaired quality of life
- Work and school absence
- Impaired learning
- Impaired sleeping
- Associated asthma, sinusitis, otitis...

## **Conclusion: AR management**

- **The goal of management is to achieve optimal symptom control.**
  - allergen avoidance, pharmacotherapy and immunotherapy.
- **Antihistamines and intranasal corticosteroids (INCS) still the cornerstones of therapy.**
- **The efficacy of various preparations of intranasal corticosteroid is similar if used correctly.**
- **Immunotherapy can be a new hope for patients with allergic rhinitis.**

