



# **Symptom&Signs and History Taking/Physical examination in Allergy**

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# Learning Outcomes

- To understand the symptoms and related underlying mechanism of allergy
- To understand the sign and related underlying mechanism of allergy
- To relate the symptoms and signs with specific allergies
- To understand the role of history and physical examination in the diagnosis and treatment of allergic patients.





# Diagnosis of Allergy

- History taking
- Physical examination
- Diagnostic tests



# Mechanisms underlying Allergic disease



Immune reaction	Mechanism	Clinical manifestation	Time of occurrence
Type I (IgE-mediated)	The drug binds to specific IgE on the mast cell surface, triggering the release of histamine and other inflammatory mediators	Urticaria, angioedema, bronchial smooth muscle spasm, pruritus, nausea and diarrhea, anaphylaxis	A few minutes to several hours (but mostly under 1 hour) after drug exposure,
Type II (cytotoxic)	Specific of IgG or IgM which attacks cells that bind to the drug / hapten	Hemolytic anemia, neutropenia, thrombocytopenia	Variable
Type III (immune complex)	Deposition of drug-antibody complex in the tissue, triggering activation of the complement system and inflammation	Serum sickness, drug fever, rash, arthralgia, lymphadenopathy, glomerulonephritis, vasculitis	1 to 3 weeks after exposure to the drug
Type IV (delayed, cell-mediated)	Presentation of drug molecules via MHC to T lymphocytes, triggering the release of cytokines and inflammatory mediators	Contact sensitivity, skin rashes, organ-tissue damage	2 to >20 days after exposure to the drug



# What differs in signs and symptoms based on different Mechanisms



- Symptoms
- Timing of the symptoms
- Disease specific triggers (allergens/nonspecific triggering factors)
- Signs



# Essentials of diagnosis of Allergy\*\*\*\*


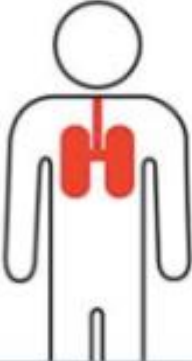
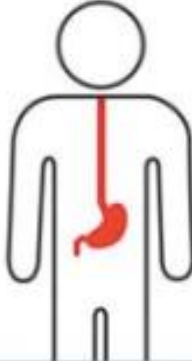


1. Symptoms compatible with allergy
2. Symptoms after exposure to sensitized allergen
3. History of Allergic diseases in childhood
4. Family history of allergy



# Essentials of diagnosis of Allergy\*\*\*\*

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# Symptoms based on systems

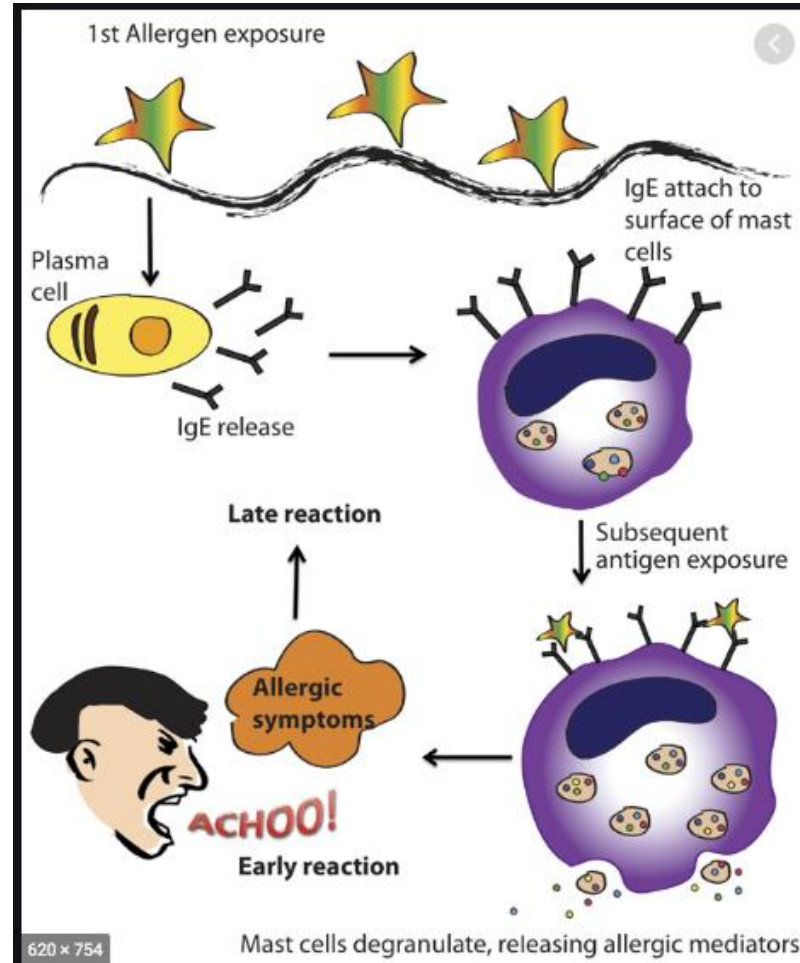
				
SKIN	RESPIRATORY	GASTROINTESTINAL	CARDIOVASCULAR	NEUROLOGICAL
<p>hives, swelling, itching, warmth, redness</p>	<p>coughing, wheezing, shortness of breath, chest pain or tightness, throat tightness, trouble swallowing, hoarse voice, nasal congestion or hay fever-like symptoms, (sneezing or runny or itchy nose; red, itchy or watery eyes)</p>	<p>nausea, stomach pain or cramps, vomiting, diarrhea</p>	<p>dizziness/ lightheadedness, pale/blue colour, weak pulse, fainting, shock, loss of consciousness</p>	<p>anxiety, feeling of "impending doom" (feeling that something really bad is about to happen), headache</p> <hr/> <p><b>OTHER</b></p> <p>uterine cramps</p>



# Symptoms upon exposure to sensitized allergen



# Symptoms in IgE mediated reactions

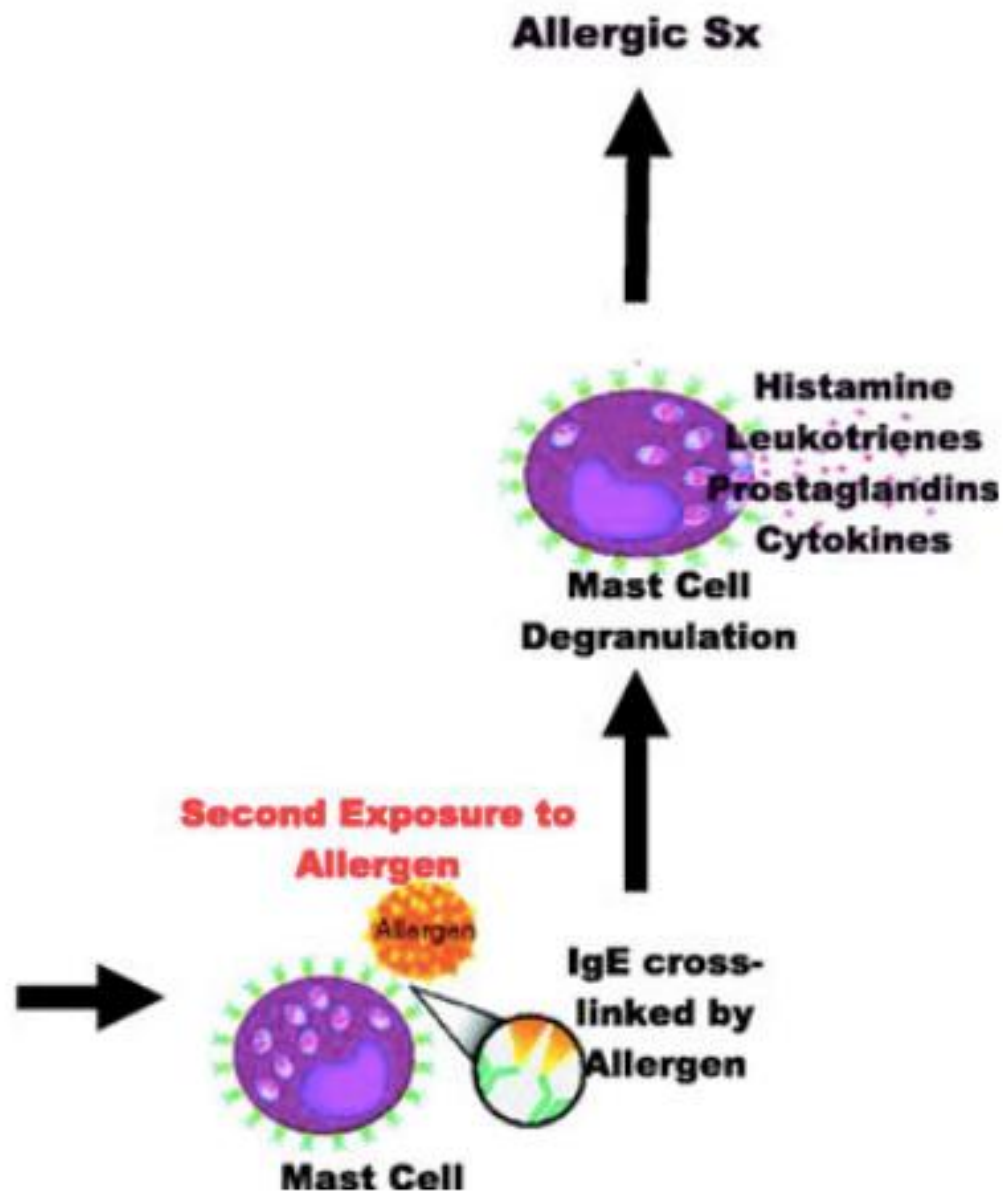
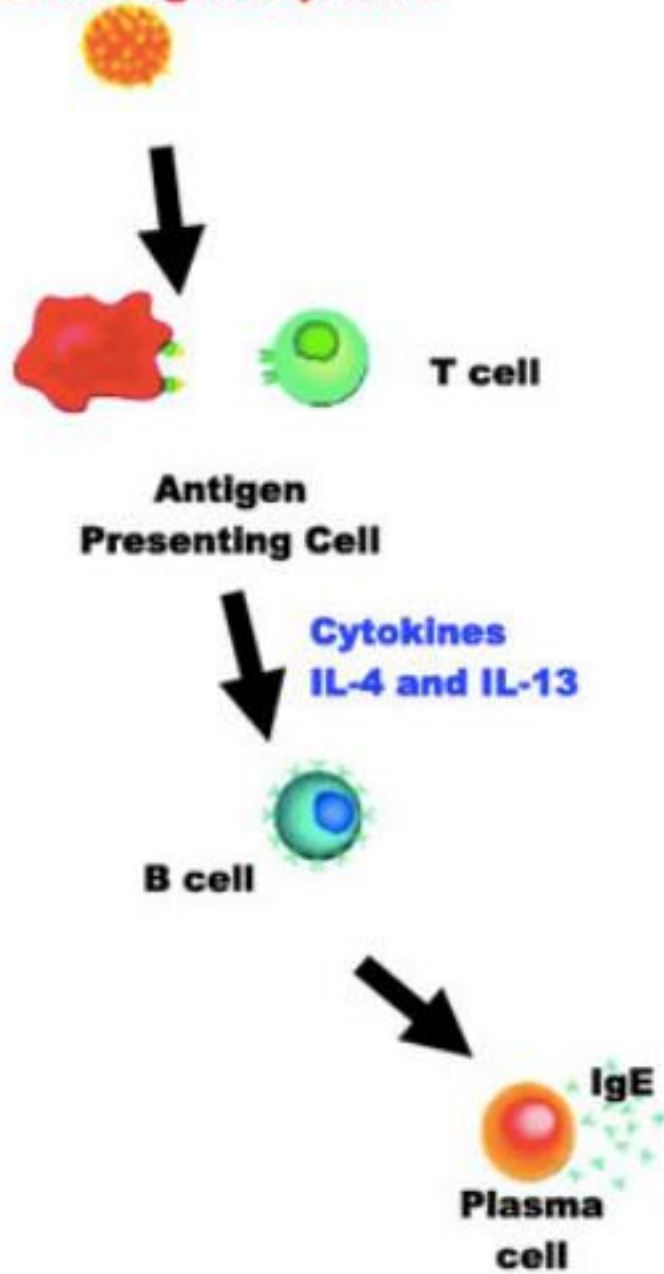


<b>Immune reaction</b>	<b>Mechanism</b>	<b>Clinical manifestation</b>	<b>Time of occurrence</b>
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**No previous reaction! Why now???**

# First Allergen Exposure

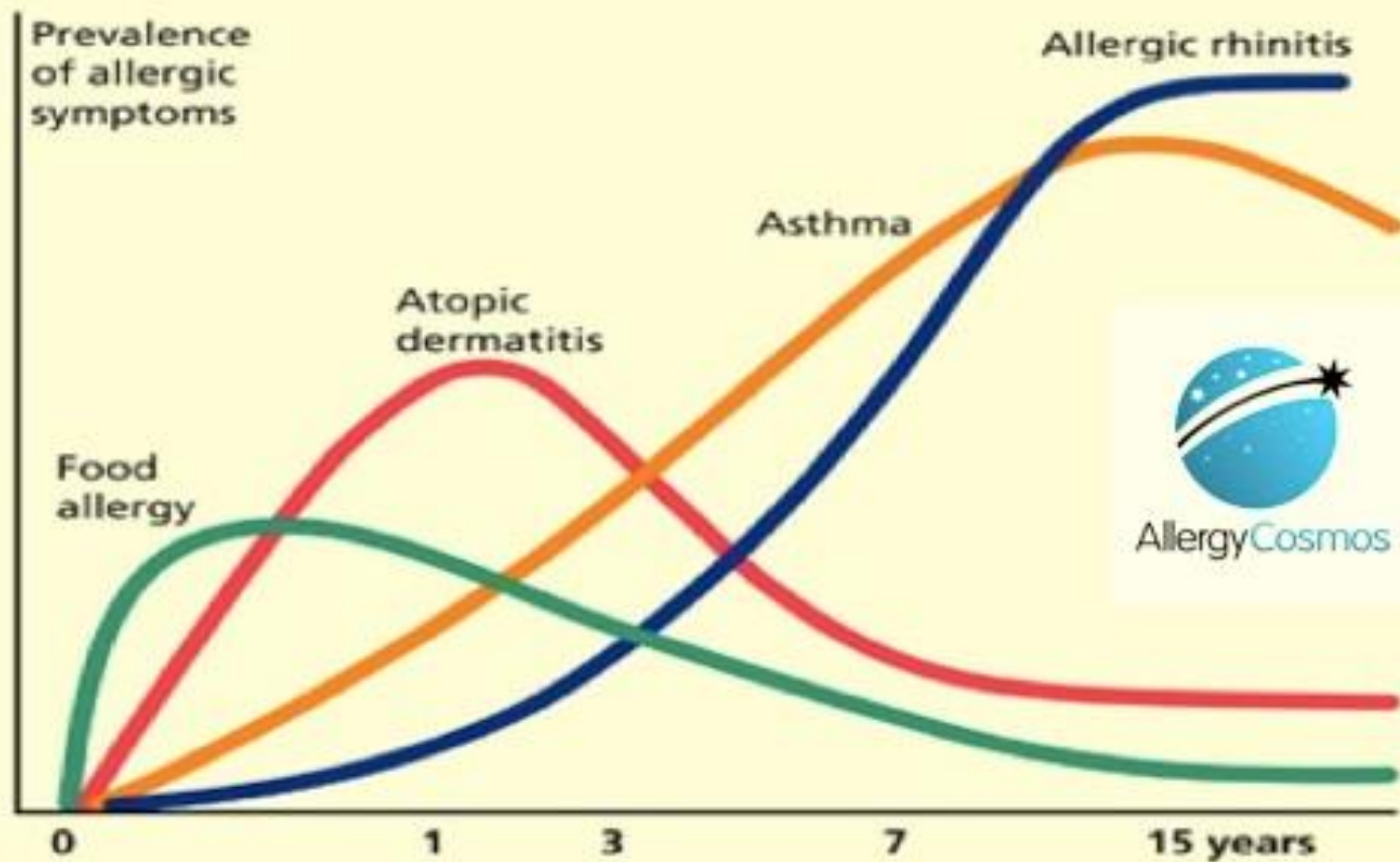




# Essentials of diagnosis of Allergy\*\*\*\*

1. Symptoms compatible with allergy
2. Symptoms after exposure to sensitized allergen
- 3. History of Allergic diseases in childhood**
- 4. Family history of allergy**

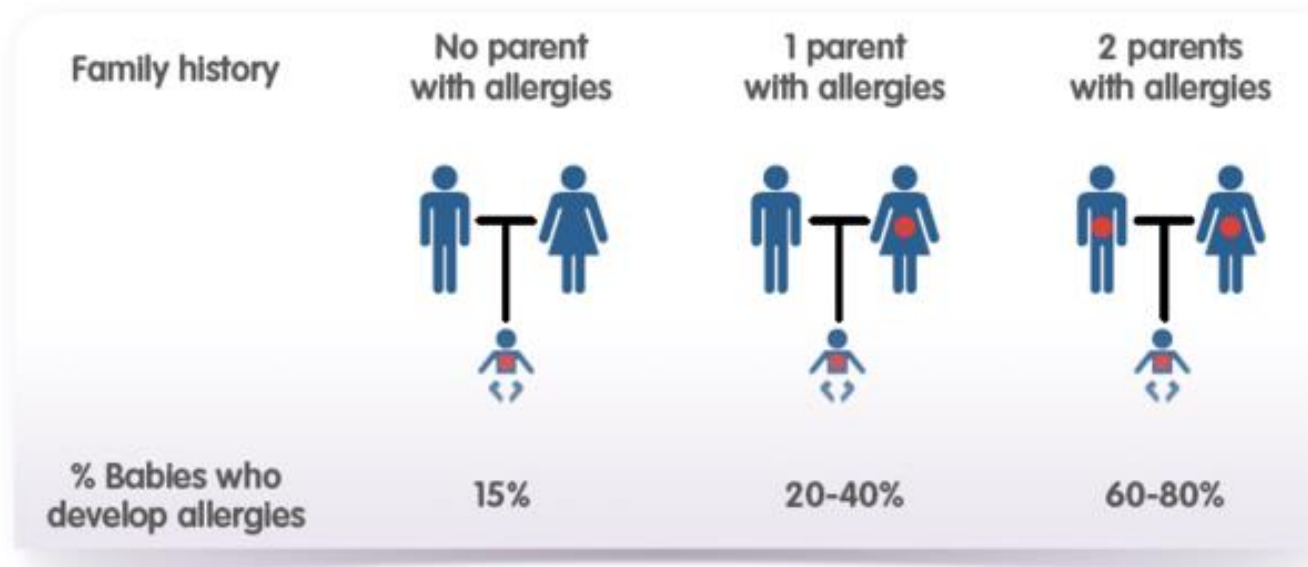
## Typical evolution of allergic diseases



# Family History of Allergy

## Check your family history

It is estimated that approximately 1 in 3 babies are born into a family with a history of allergies such as eczema, asthma or hayfever. This family history means that the new baby has an increased risk. If one family member has a history of allergy, then there is a 20-40% chance of their baby developing an allergy rising to 60-80% if both parents (or one parent and a sibling) are affected<sup>4</sup>.







# Examples of Symptoms and Signs in allergic patients



# IgE Mediated diseases

- Asthma and Allergic Rhinitis
  - Cat allergy
  - Pollen allergy
  - House dust mite allergy
- Urticaria/Angioedema
- Anaphylaxis
  - Bee allergy
  - Latex allergy
  - Drug allergy
  - Food Allergy



# Symptoms and Signs of Asthma



- Symptoms: Dyspnea, cough, wheezing
- Characteristic of the symptoms
  - Recurrent
  - Increase in symptoms in exposure to sensitized allergens and triggers
- Check for comorbidities: Rhinitis, sinusitis, nasal polyps



# Allergens in Asthma



- Inhaled allergens are responsible
  - House dust mites
  - Pollens
  - Cat
  - Mold spores



# Physical examination in Asthma

- Chest Findings may vary depending on disease activity
  - No sign in under controlled asthma
  - Wheezing, and rhonchi in uncontrolled asthma



# But also examine for comorbidities!

- Rinitis
- Nasal polyps, sinusitis
- Skin allergies



# Allergic Rhinitis

- **Symptoms:** Nasal discharge, ithciness, sneezing, nasal obstruction
- Characteristic of the symptoms
  - Recurrent
  - Increase in symptoms in exposure to sensitized allergens and triggers
- Check for comorbidities: conjunctivitis, asthma , sinusitis, nasal polyps



# Allergens in Allergic Rhinitis



- Inhaled allergens are responsible
  - Pollens
  - House dust mites
  - Cat
  - Mold spores

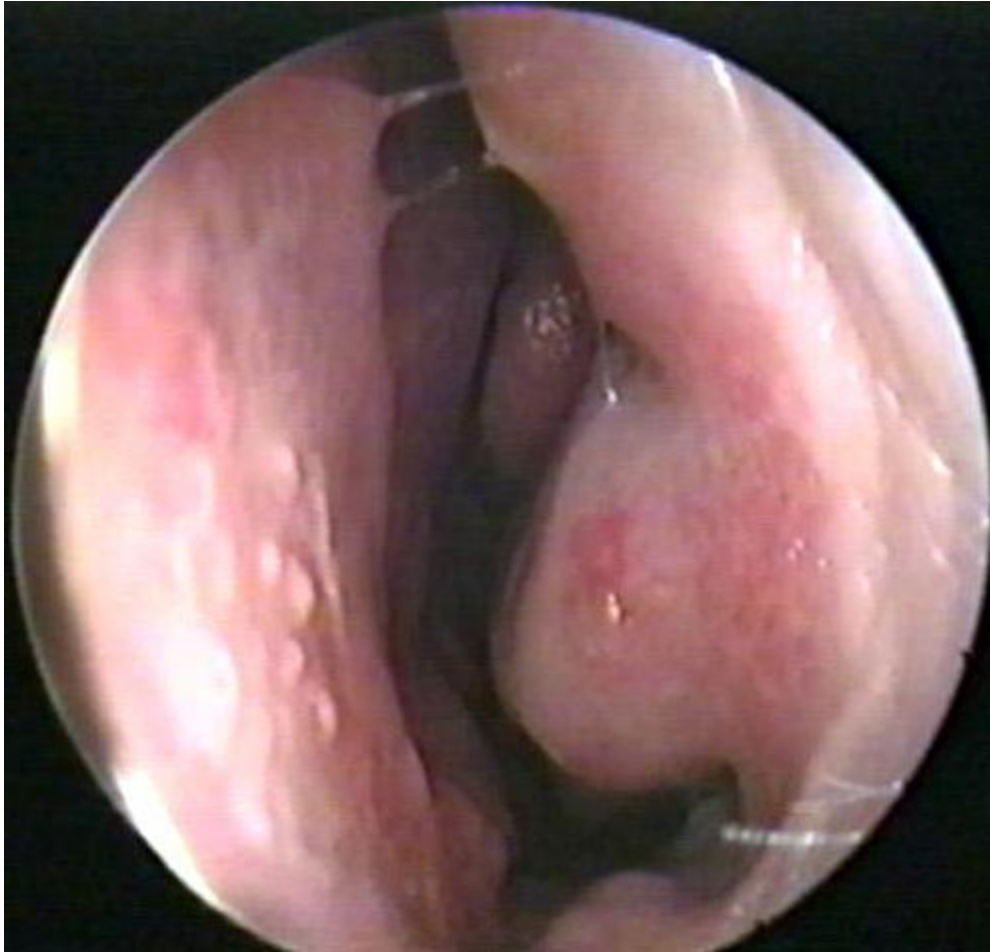




# Physical examination in Allergic Rhinitis



# Nasal Examination



**Edematose swollen  
mucosa in pale blue  
colour**

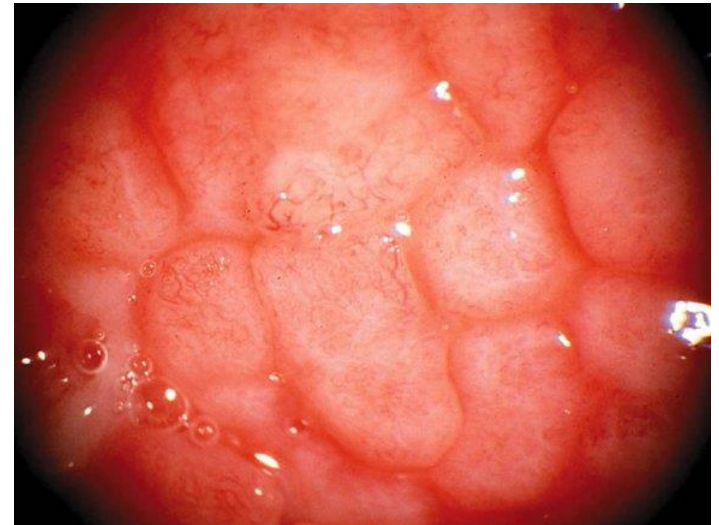


# But also examine for comorbidities!

- Asthma
- Nasal polyps, sinusitis
- Conjunctivitis
- Skin allergies



# Comorbidities: Allergic Conjunctivitis



# Comorbidities: Nasal polyps



# Urticaria



- Hives can be rounded or flat-topped but are always elevated above the surrounding skin. They reflect circumscribed
- dermal edema (local swelling of the skin). The hives are usually well circumscribed
- but may be coalescent and will blanch with pressure

# Angioedema



- Angioedema is an area of swelling of the lower layer of skin and tissue just under the skin or mucous membranes.
- The swelling may occur in the face, tongue, larynx, abdomen, or arms and legs.
- Often it is associated with hives, which are swelling within the upper skin.



# The most common causes for Urticaria/Angioedema

- Drugs
- Foods
- Latex
- Bee sting





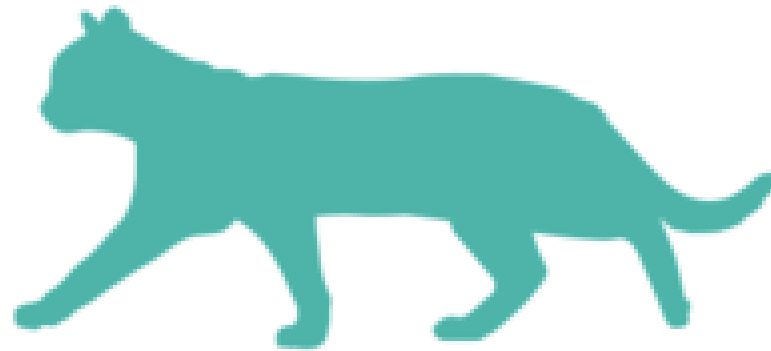
# Allergen specific histories



# Cat Allergy



## SYMPTOMS OF ALLERGIES TO CATS



**RED,  
ITCHY EYES**



**RUNNY, ITCHY,  
STUFFY NOSE;  
SNEEZING**



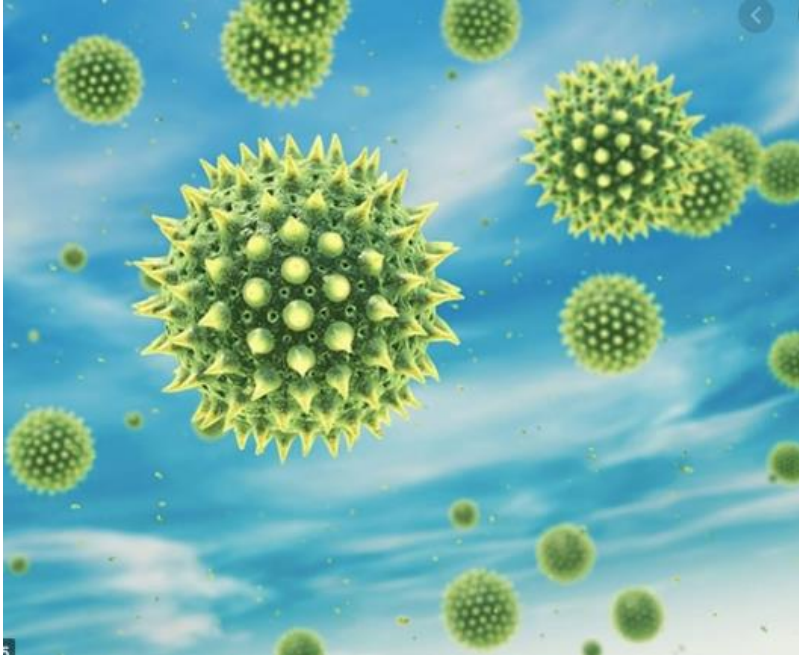
**COUGHING  
AND WHEEZING**



**HIVES,  
REDNESS OR  
RASH ON SKIN**

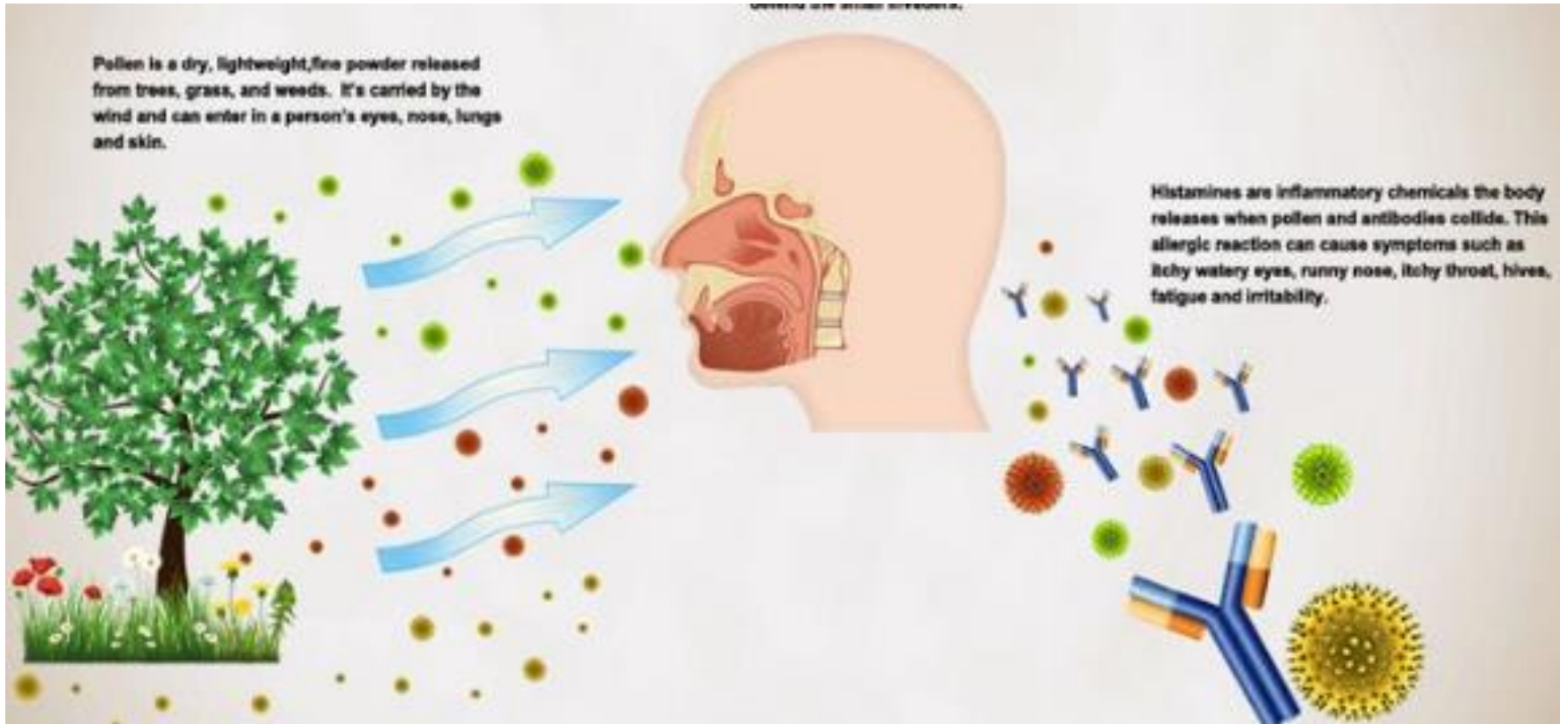
Symptoms within minutes upon exposure

# Pollen Allergy



**IgE mediated reactions**







# Bee Allergy



**IgE mediated reactions**



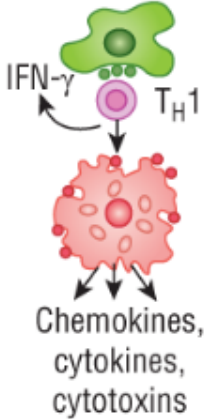
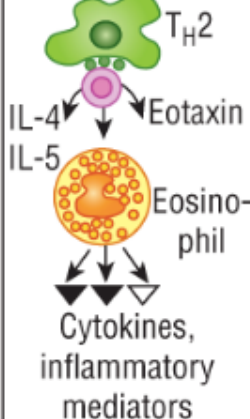
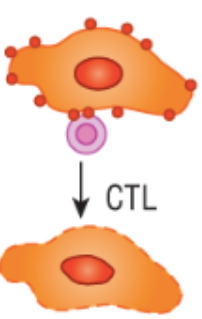
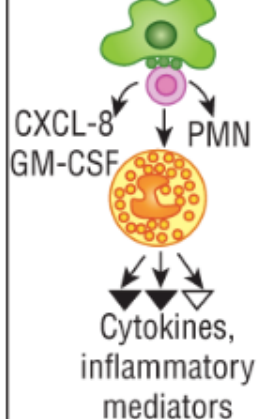
# Latex Allergy

- Symptoms: Type 1 and Type 4
  - Skin and respiratory symptoms
- Health workers are at most risk





# Type IV reactions

Type IVa	Type IVb	Type IVc	Type IVd
IFN $\gamma$ , TNF $\alpha$ T <sub>H</sub> 1 cells	IL-5, IL-4/IL-13 (T <sub>H</sub> 2 cells)	Perforin/ granzyme B (CTL)	CXCL-8, IL-17 GM-CSF (T-cells)
Antigen presented by cells or direct T-cell stimulation	Antigen presented by cells or direct T-cell stimulation	Cell-associated antigen or direct T-cell stimulation	Soluble antigen presented by cells or direct T-cell stimulation
Macrophage activation	Eosinophils	T-cells	Neutrophils
 <p>IFN-<math>\gamma</math> T<sub>H</sub>1 Chemokines, cytokines, cytotoxins</p>	 <p>T<sub>H</sub>2 IL-4 IL-5 Eotaxin Eosinophil Cytokines, inflammatory mediators</p>	 <p>CTL</p>	 <p>CXCL-8 GM-CSF PMN Cytokines, inflammatory mediators</p>
Tuberculin reaction, contact dermatitis (with IVc)	Chronic asthma, chronic allergic rhinitis Maculopapular exanthema with eosinophilia	Contact dermatitis Maculopapular and bullous exanthema hepatitis	AGEP Behcet's disease

# Allergic Contact Dermatitis



**The most common causes for CD:**

Nickel

Solvents.

Rubbing alcohol.

Bleach and detergents.

Shampoos, permanent wave solutions.



# Drug Hypersensitivities



# The most common drugs causing hypersensitivity reaction



- NSAIDs
- Antimicrobials
- Anesthetic drugs
- Anti-cancer drugs



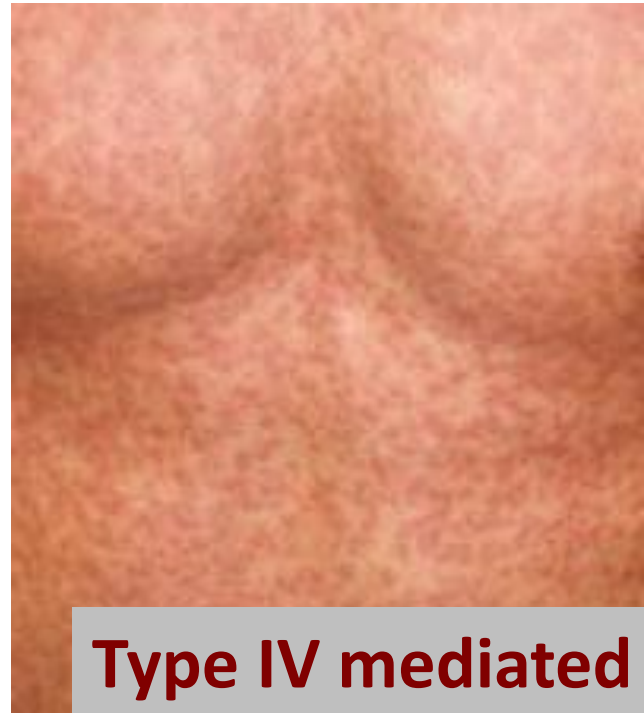
# **Drugs causes four types of hypersensitivity reactions and non immune reactions**

# Urticaria/Angioedema



**IgE mediated  
reactions  
Nonimmunologic  
reactions**

# Maculopapular Eruption



**Type IV mediated  
allergy**

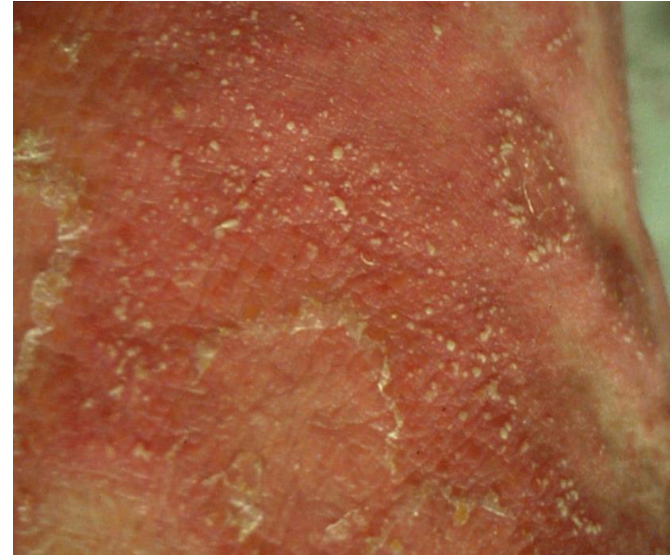
Type IV mediated  
allergy

## Fixed Drug Eruption





# SJS/ AGEP



**Type IV mediated  
allergy**



**In summary;**  
**History and physical examination**  
**are essential of diagnosis of allergy!!**



# Why history and physical examination are important in allergy?-I



If you understand correctly the symptoms and signs

- You are very close to the diagnosis, as the history and physical examination are in the heart of the diagnosis.

# Why history and physical examination are important in allergy?-II

- For diagnosis;
  - You are aware of the the underlying mechanisms
  - You know which diagnostic tests to be select for confirmation of the allergy
- For treatment issues
  - You know the patient specific allergens/triggers, so recommend avoidance
  - You know the personal and family risks so, you apply necessary preventive measures