

Allergic Rhinitis

M . Fallahpour MD

Allergist & Clinical Immunologist

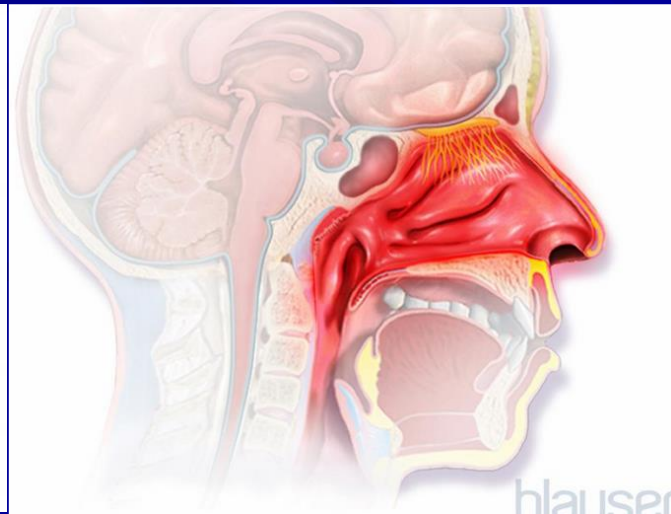
Iran University of Medical Sciences

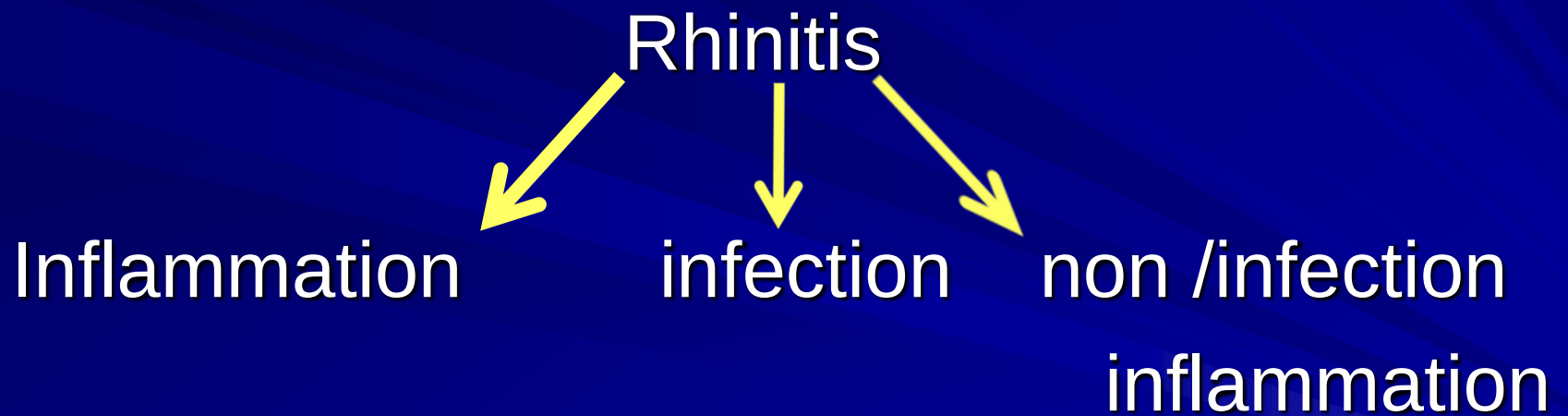
آنچه قرار است مرور شود:

- تعریف رینیت آلرژیک؟
- چرا رینیت آلرژیک مهم است؟
- رینیت آلرژیک چه علایمی دارد؟
- تشخیص های افتراقی؟
- راههای تایید تشخیص؟
- درمان؟
- چه زمانی به آلرژیست ارجاع دهیم؟

Rhinitis

- — Rhinitis refers to inflammation of the nasal passages. This inflammation can cause a variety of annoying symptoms, including sneezing, itching, nasal congestion, runny nose, and postnasal drip







Allergic rhinitis

Definition

Inflammatory condition of nasal mucosa induced by an allergen-IgE interaction in sensitized individuals.

AR is a Global Health Problem

affecting 10-25% of worldwide population with increasing prevalence

Guidelines

Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines—2016 revision



Jan L. Brożek, MD, PhD,^{a,b} Jean Bousquet, MD, PhD,^c Ioana Agache, MD, PhD,^d Arnav Agarwal, BHSc,^{a,e}

- **Allergic rhinitis (AR)** is a common chronic disease affecting 20–30% of children.
- NELSON TEXTBOOK OF PEDIATRICS, TWENTY-FIRST EDITION

Chapter 168

Allergic Rhinitis

Henry Milgrom and Scott H. Sicherer

- In Phase 1 ISAAC, the prevalence rates for rhinitis collected across all centers ranged
- from 0.8% to 14.9% (median, 6.9%) in the 6- to 7-year-olds
- from 1.4% to 39.7% (median, 13.6%) in the 13- to 14-year-olds.

■ Middleton's Allergy, Principles and Practice NINTH EDITION

Frequency of Allergic Rhinitis in School-age Children (7-18 Years) in Tehran

- Bahram Mirsaid Ghazi et al **2003** **23.5%** **AR**
- Dr. Gharagozlu study **2007** **35.3%**
- Dr fazlolahi adult **2017** **26.7%**

Is the most common
respiratory disease
and is increasing!

AR is an atopic disease



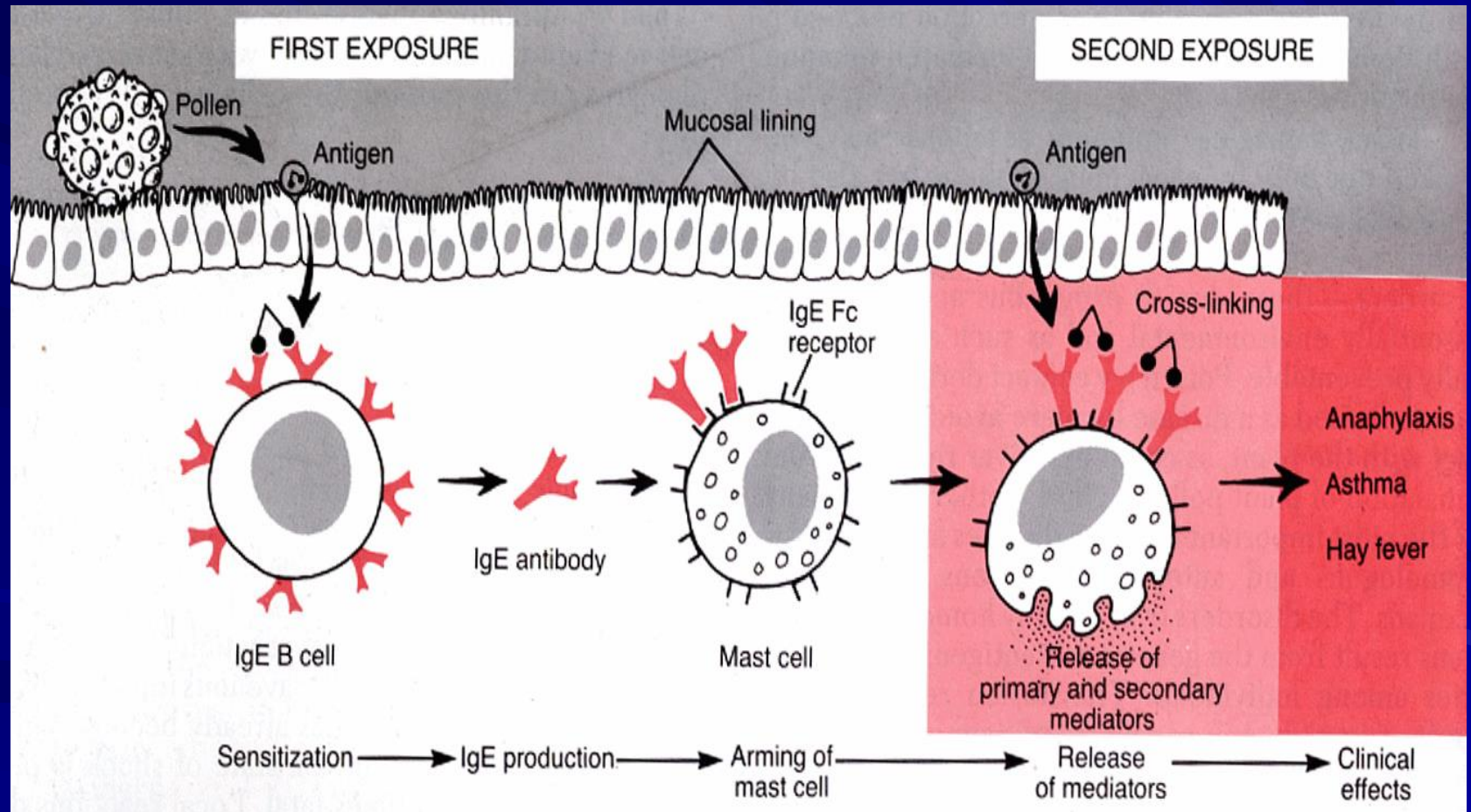
Global Nomenclature for Allergy

Definition of Atopy

Atopy is the personal or familial tendency to produce IgE antibodies in response to low doses of allergens, usually proteins, and to develop typical symptoms such as asthma, rhinoconjunctivitis, and eczema

Allergic Rhinitis is
the most common
allergic disease

The Allergic Reaction



Etiology

new findings of Nelson

- Heritability of allergic conditions attests to genetic factors, but **environment, diet, and the microbiome**
- The symptoms may appear **in infancy**; with the diagnosis generally established by the time the child reaches age 6 yr.
- **The prevalence peaks late in childhood**

Chapter 168

Allergic Rhinitis

Henry Milgrom and Scott H. Sicherer

Etiology

new findings of Nelson

- ❖ Children between **2** and **3** yr old who have elevated anti **cockroach and anti mouse** IgE are at increased risk of wheezing, AR, and atopic dermatitis.
- ❖ The occurrence of **3 or more episodes** of rhinorrhea in the 1st yr of life is associated with AR at age 7 yr.
- ❖ Favorably, the exposure to dogs, cats, and endotoxin early in childhood protects against the development of atopy.

Etiology

new findings of Nelson

- **Prolonged breastfeeding**, not necessarily exclusive, is beneficial.
- There is also a decreased risk of asthma, AR, and atopic sensitization with **early introduction** to wheat, rye, oats, barley, fish and eggs.

Chapter 168

Allergic Rhinitis

Henry Milgrom and Scott H. Sicherer

AR classification

- AR classification as **seasonal or perennial** is giving way to the designations **intermittent and persistent**.
- AR may also be categorized as mild-intermittent, moderate-severe intermittent, mild-persistent, and moderate-severe persistent

Chapter 168

Allergic Rhinitis

Henry Milgrom and Scott H. Sicherer

Classification based on severity

- troublesome symptoms
 - sleep
 - daily activities, and hobby
 - work or school.
-
- If all of them were normal: mild AR

Chapter 168

Allergic Rhinitis

Henry Milgrom and Scott H. Sicherer

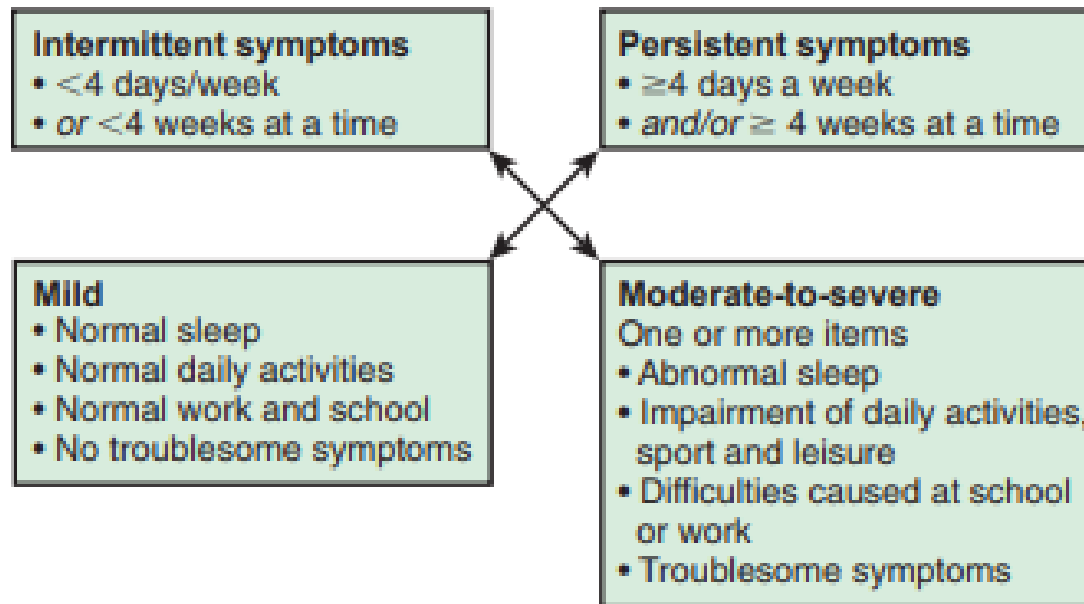


Fig. 168.1 ARIA classification of allergic rhinitis. Every box can be subclassified further into seasonal or perennial on the basis of timing of symptoms or when causative and allergen therapeutic factors are considered. For example, a UK patient with grass pollen allergy might have moderate-severe persistent seasonal rhinitis in June and July and may be suitable for specific allergen immunotherapy. ARIA, Global Allergic Rhinitis and its Impact on Asthma. (From Scadding GK, Durham SR, Mirakian R, et al: *BASCI guidelines for the management of allergic and non-allergic rhinitis*, Clin Exp Allergy 38:19–42, 2008.)

Rhinitis phenotypes AND Differential diagnosis

Rhinitis phenotypes

most common forms

- Allergic
- Infectious: Viral (acute), bacterial, fungal
- Non-Allergic, Non-Infectious, Rhinitis
- Non-Allergic Rhinitis with Eosinophilia Syndrome
(NARES)
- Chronic Rhinosinusitis with or without Polyps:

Hypertrophic, inflammatory disorder that can affect allergic or non-allergic individuals

Rhinitis phenotypes

less common forms

- **Occupational:** May be allergic or non-allergic
- **Drug-induced:** Aspirin, some vasodilators
- **Hormonal:** Pregnancy, menstruation, hormonal contraceptives, thyroid disorders
- **Food-induced** (gustatory)
- **Cold air-induced** (skier's nose)
- **Atrophic** (rhinitis of the elderly)

Conditions that mimic rhinitis

- Cystic fibrosis
- Mucociliary defects
- Cerebrospinal rhinorrhoea
- Anatomic abnormalities
- Foreign bodies
- Tumors
- Granulomas: Sarcoid, Wegener's, Midline Granuloma

Unfortunately Rhinitis is
consider a trivial disease

■ Symptoms of AR may be ignored or mistakenly attributed to a respiratory infection.

■ NELSON TEXTBOOK OF PEDIATRICS,
TWENTY-FIRST EDITION

Chapter 168

Allergic Rhinitis

Henry Milgrom and Scott H. Sicherer

Clinical Manifestations

	Others
■ Repetitive sneezing	■ Eye symptoms
■ Watery rhinorrhea	■ Ear symptoms
■ Nasal pruritus	■ Postnasal drainage
■ Nasal congestion	

CLINICAL MANIFESTATIONS

- ✿ Mistakenly attributed to a respiratory infection.
- ✿ **Itching** (grimacing, twitching, and nasal picking, epistaxis)
- ✿ **Allergic salute**
- ✿ Nasal crease,
- ✿ Other symptoms



- headache
- wheezing & cough
- lose of smell and taste
- epistaxis
- snoring
- sleep disturbance
- irritability
- cognitive impairment
- learning disability



PHYSICAL EXAMINATION

- Allergic shiner
- Dennie Morgan line
- Allergic crease
- Allergic salute
- Nasal mucosa may appear normal or pale bluish, swollen with watery secretions but only if patient is symptomatic
- Exclude structural problems (polyps, deflected nasal septum)

Others:

nasal voice, constant mouth breathing, frequent snoring, coughing, repetitive sneezing, chronic open gape of the mouth, weakness, malaise, irritability





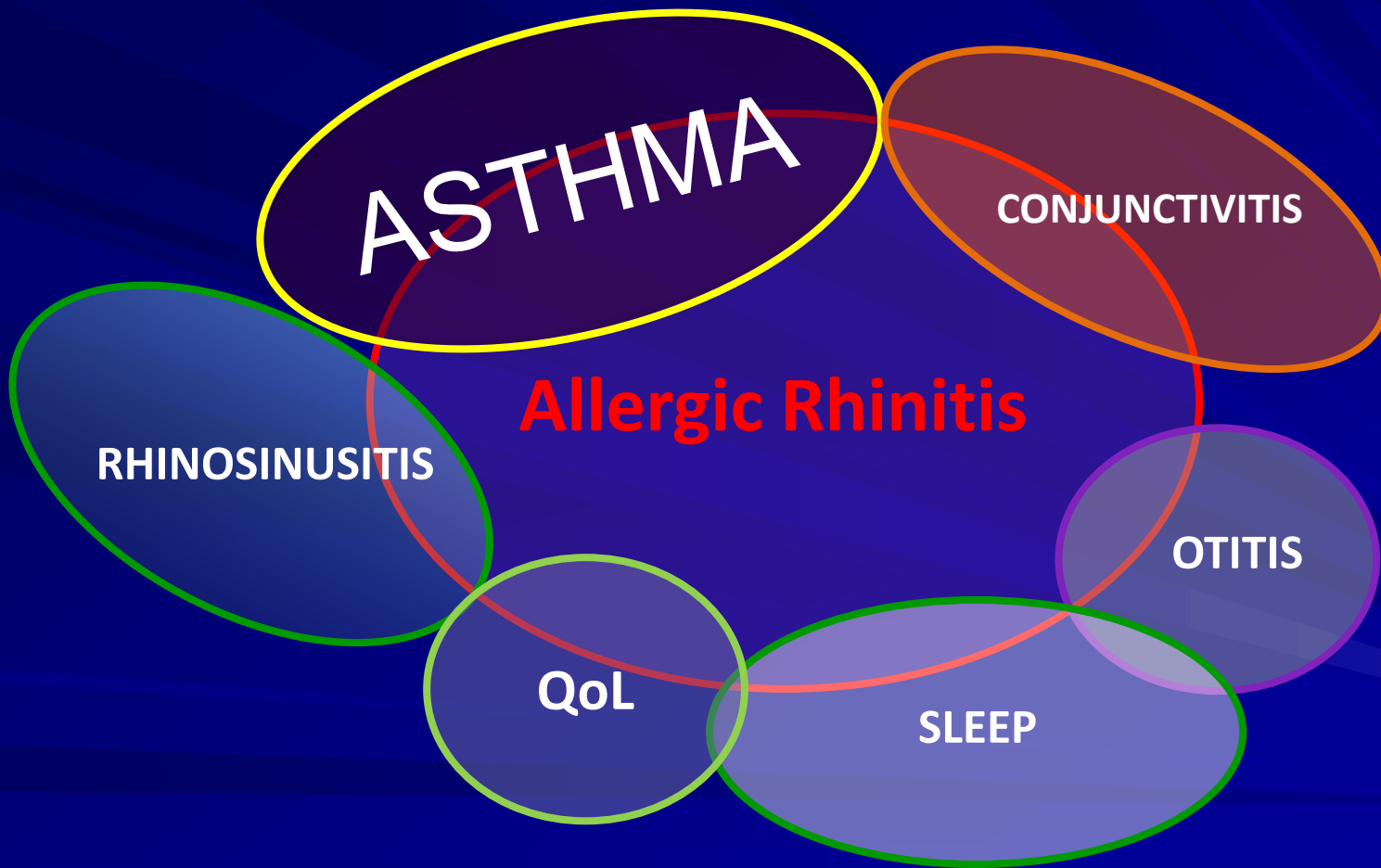
Impact of rhinitis

- Quality of life
- Emotional well-being
- Productivity
- Cognitive functioning
- Sleep disturbance
- Socio-economical impact



In collaboration with the World Health Organization

Rhinitis and its co-morbidities



Management of AR

- Allergen Avoidance
- Pharmacotherapy
- Immunotherapy





***allergen
avoidance
indicated
when possible***

pharmacotherapy
*safety
effectiveness
easy to be
administered*

costs

immunotherapy
*effectiveness
specialist prescription
may alter the natural
course of the disease*

***patient's
education
always indicated***

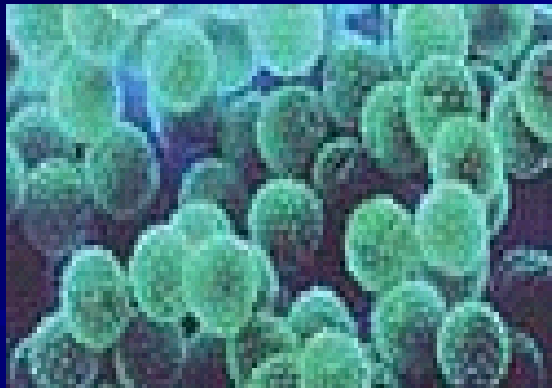
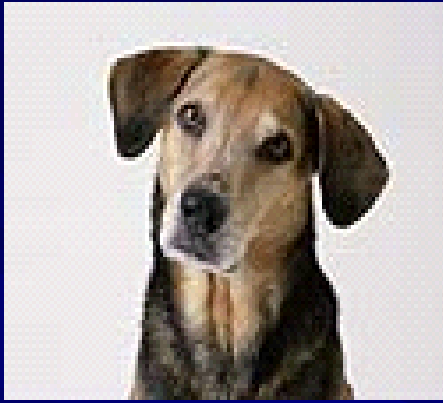
MANAGEMENT OF ALLERGIC RHINITIS

Stepwise management of allergic rhinitis

Copyright permission for reproduction pending

GLORIA Global Resources
In Allergy™

Globally important sources of allergens



■ 1. Allergens

- House dust mites
- Grass, tree and weed pollen
- Pets
- Cockroaches
- Molds
- Pollutants and Irritants

Aeroallergen vs food allergens



Allergen Avoidance

- *Specific measures to limit indoor allergen exposure may reduce the risk of sensitization and symptoms of allergic respiratory disease.*
- Sealing the patient's mattress, pillow, and covers in allergen-proof encasings
- washed every week in hot water ($>54.4^{\circ}\text{C}$ [130°F]).
- NELSON TEXTBOOK OF PEDIATRICS, TWENTY-FIRST EDITION

Allergen Avoidance

- The only effective measure for avoiding animal: removal of the pet.
- Air conditioning allows for keeping windows and doors closed, reducing the pollen exposure.
- High-efficiency particulate air (HEPA) filters lower the counts of airborne mold spores.
- NELSON TEXTBOOK OF PEDIATRICS, TWENTY-FIRST EDITION

PHARMACOTHERAPY OF ALLERGIC RHINITIS

TREATMENT

Guideline-directed management has been shown to improve disease control. **Global Allergic Rhinitis and its Impact on Asthma (ARIA)** provides an evidence-based approach to treatment and includes quality-of-life measures useful for the evaluation of symptoms and the assessment

Chapter 168

Allergic Rhinitis

Henry Milgrom and Scott H. Sicherer

Agents and actions

	Oral antihistam ines	Nasal antihistam ines	Cys-LT1 receptor antagonists	Nasal steroids	Nasal decongest ants	Oral decongest ants	Nasal ipratropium	Nasal cromones
Rhinorrhea	++	++	++	+++	0	0	+++	+
Congestion	+	+	+	+++	++++	++	0	+
Sneezing	++	++	++	+++	0	0	0	+
Pruritus	++	++	+	+++	0	0	0	+
Ocular symptoms	++	0	++	++	0	0	0	0
Onset of action	1 hr	15 min	48 hr	12 hr	5-15 min	1 hr	15-30 min	-
Duration	12-24 hr	6-12 hr	24 hr	12-48 hr	3-6 hr	12-24 hr	4-12 hr	2-6 hr

Modified from van Caunvenberge P Allergy 2000;55:116-134

Evolution of Oral Antihistamines: Timeline

First-generation

Second-generation

Newer agents

< 1970

Hydroxyzine
Diphenhydramine
Chlorpheniramine

1980s

Terfenadine
Astemizol

1990s

Loratadine
Cetirizine

Fexofenadine

2000+

Desloratadine
Bilastine

Nasal antihistamines

■ Azelastine

■ Levocabastine

■ Olopatadine

Drug Treatment Evidence

According to GRADE

TAKE HOME MESSAGE!

Drugs for Treating Allergic Rhinitis (AR) can be administered intranasally (IN) or orally (for some)

Drugs for AR are safe and effective

STRONG

2nd generation (G) oral or IN H1-antihistamines are recommended for the treatment of AR and allergic conjunctivitis (AC) in children and adults

STRONG

1st G oral H1-antihistamines are not recommended when 2nd G ones are available due to safety concerns

STRONG

~~Intraocular (IO) H1-antihistamines are recommended for the treatment of AC in adults~~

STRONG

Intraocular (IO) H1-antihistamines are recommended for the treatment of AC in children

WEAK

Agents and actions

	Oral antihistamines	Nasal antihistamines	Cys-LT1 receptor antagonists	Nasal steroids	Nasal decongestants	Oral decongestants	Nasal ipratropium	Nasal cromones
Rhinorrhea	++	++	++	+++	0	0	+++	+
Congestion	+	+	+	+++	++++	++	0	+
Sneezing	++	++	++	+++	0	0	0	+
Pruritus	++	++	+	+++	0	0	0	+
Ocular symptoms	++	0	++	++	0	0	0	0
Onset of action	1 hr	15 min	48 hr	12 hr	5-15 min	1 hr	15-30 min	-
Duration	12-24 hr	6-12 hr	24 hr	12-48 hr	3-6 hr	12-24 hr	4-12 hr	2-6 hr

Modified from van Caunvenberge P Allergy 2000;55:116-134

Nasal Corticosteroids

Beclomethasone dipropionate

Budesonide

Ciclesonide*

Flunisolide

Fluticasone propionate

Mometasone furoate

Triamcinolone acetonide

* Currently only approved for asthma

Nasal corticosteroids

- **Most potent** anti-inflammatory agents
- Effective in treatment of **all nasal symptoms** including obstruction
- **Superior to** anti-histamines and anti-leukotienes
- **First line** pharmacotherapy **for persistent allergic rhinitis**

Nasal corticosteroids

- Overall safe to use
- Adverse Effects
 - Nasal irritation
 - Epistaxis
 - Septal perforation (extremely rare)
 - HPA axis suppression (inconsistent and not clinically significant)
 - Suppressed growth (only in one study with beclomethasone)

18. Should INCS be used for treatment of AR?

Recommendation.

We recommend INCS for the treatment of AR in adults (strong recommendation / high-quality evidence) and suggest INCS in children with AR (conditional recommendation / moderate-quality evidence)

Underlying values and preferences.

This recommendation places a relatively high value on the efficacy of INCS and a relatively low value on avoiding their possible adverse effects.

Agents and actions

	Oral antihistamines	Nasal antihistamines	Cys-LT1 receptor antagonists	Nasal steroids	Nasal decongestants	Oral decongestants	Nasal ipratropium	Nasal cromones
Rhinorrhea	++	++	++	+++	0	0	+++	+
Congestion	+	+	+	+++	++++	++	0	+
Sneezing	++	++	++	+++	0	0	0	+
Pruritus	++	++	+	+++	0	0	0	+
Ocular symptoms	++	0	++	++	0	0	0	0
Onset of action	1 hr	15 min	48 hr	12 hr	5-15 min	1 hr	15-30 min	-
Duration	12-24 hr	6-12 hr	24 hr	12-48 hr	3-6 hr	12-24 hr	4-12 hr	2-6 hr

Modified from van Caunvenberge P Allergy 2000;55:116-134

Anti-leukotriene agents

CysLT1 Receptor

Antagonists

Montelukast *

Pranlukast *

Zafirlukast

5-Lipoxygenase

Inhibitors

Zileuton

* Approved for allergic rhinitis

Agents and actions

	Oral antihistamines	Nasal antihistamines	Cys-LT1 receptor antagonists	Nasal steroids	Nasal decongestants	Oral decongestants	Nasal ipratropium	Nasal cromones
Rhinorrhea	++	++	++	+++	0	0	+++	+
Congestion	+	+	+	+++	++++	++	0	+
Sneezing	++	++	++	+++	0	0	0	+
Pruritus	++	++	+	+++	0	0	0	+
Ocular symptoms	++	0	++	++	0	0	0	0
Onset of action	1 hr	15 min	48 hr	12 hr	5-15 min	1 hr	15-30 min	-
Duration	12-24 hr	6-12 hr	24 hr	12-48 hr	3-6 hr	12-24 hr	4-12 hr	2-6 hr

Decongestants: alpha-2 adrenergic agonists

■ Oral

Pseudoephedrine

• Nasal

Phenylephrine

Oxymetazoline

Xylometazoline

Decongestants

EFFICACY:

- Oral decongestants: moderate
- Nasal decongestants: high

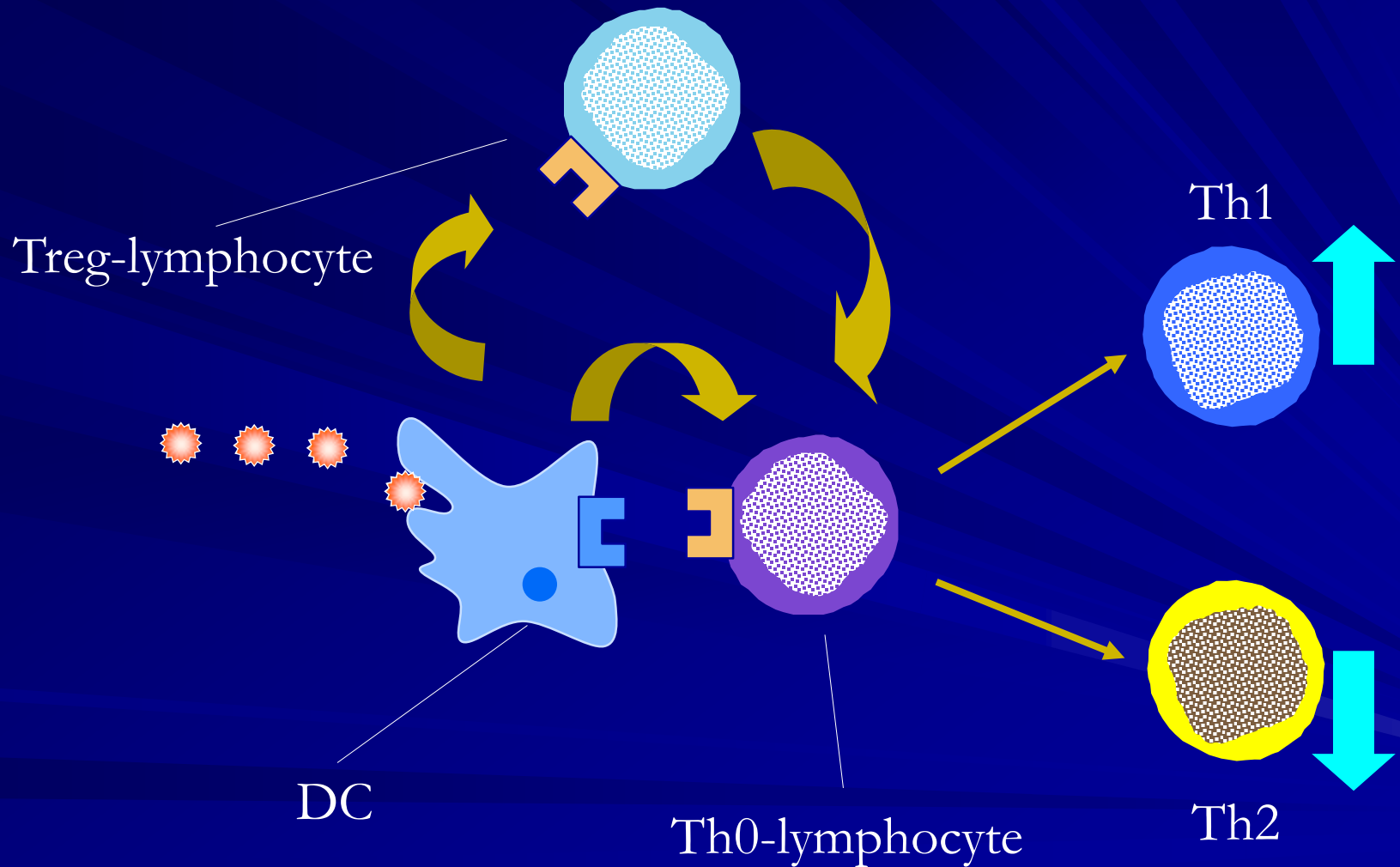
ADVERSE EFFECTS:

- Oral decongestants: insomnia, tachycardia, hyperkinesia
tremor, increased blood pressure, stroke (?)
- Nasal decongestants: tachyphylaxis, rebound congestion, nasal
hyperresponsiveness, rhinitis medicamentosa

Allergen immunotherapy (vaccines)

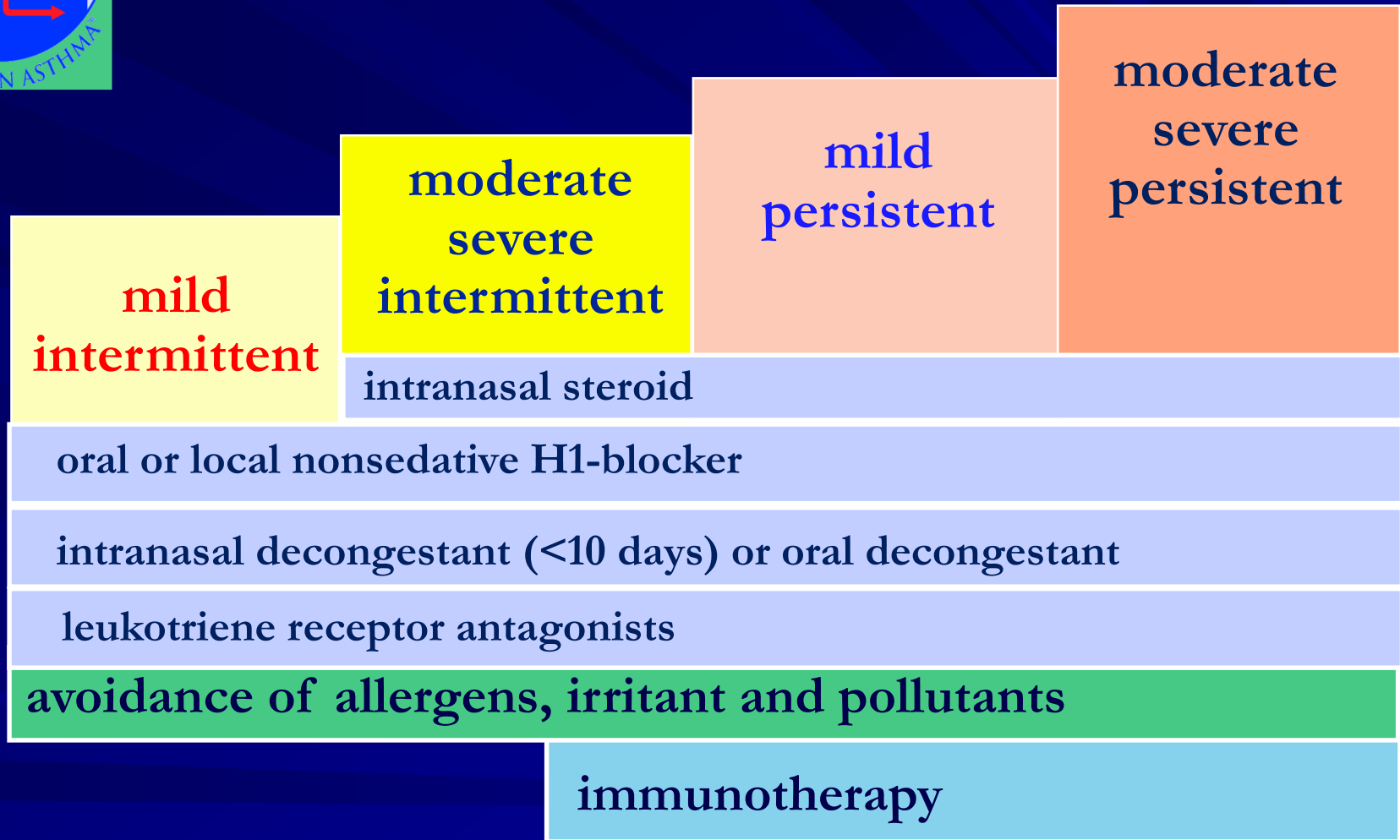
- Subcutaneous
- Sublingual
- Nasal

Possible mechanisms of immune response regulation by allergen immunotherapy





Management of Allergic Rhinitis: ARIA Guidelines



AR & Asthma

- AR is also frequently associated with asthma, which is found in
- 15% to 38% of patients with AR,
- and nasal symptoms are present in 6% to 85% patients with asthma
- In addition, AR is a risk factor for asthma,
- and uncontrolled moderate-to-severe AR affects asthma control

Chapter 168

Allergic Rhinitis

Henry Milgrom and Scott H. Sicherer

In patients with rhinitis:

- Routinely query for **symptoms** suggestive of asthma
- Perform chest **examination**
- Consider **lung function testing**
- Consider tests for **bronchial hyperresponsiveness** in
selected cases

■ When refer to an allergist



AMERICAN ACADEMY OF ALLERGY
ASTHMA & IMMUNOLOGY

How the Allergist/Immunologist Can Help: Consultation and Referral Guidelines Citing the Evidence

Who to refer to an allergist/immunologist:

- Patients with **prolonged** or **severe** manifestations of rhinitis with **co-morbid conditions** (e.g. asthma, recurrent sinusitis, nasal polyps); with symptoms interfering with quality of life and/or ability to function; or **who have found medications** to be ineffective or **have had adverse reactions** to medications.



How the Allergist/Immunologist Can Help: Consultation and Referral Guidelines Citing the Evidence

Why an allergist/immunologist:

- Allergist/immunologist care for rhinitis is associated with improved quality of life, compliance and satisfaction with care.
- Allergist/immunologists have familiarity with the wide variety of both indoor and outdoor aeroallergen exposures that have been shown to impact on the upper respiratory tree and have the expertise to provide avoidance education and immunotherapy when indicated.
- Allergist/immunologists are specifically trained and experienced in the medical management of nasal polyps, including intranasal steroids, oral steroids and treatment of complication sinusitis.

Thank you

