Allergic Respiratory Disease

ONE AIRWAY CONCEPT AND APPROACH

Agenda

- Etiology of UAD
- Definitions
- Link between Asthma and Allergic rhinitis
- Epidemiology of UAD
- Pathophysiology linking Asthma and Rhinitis
- Clinical evidences
- Management
- Summary

Asthma &Allergic Rhinitis

=

Allergic rhinobronchitis

=

United Airway Disease

=

One Airway Disease

=

Linked Airway Disease

Etiology of United Airway Disease

- Eosinophilic airway inflammation such as allergic rhinitis (AR) is often associated with lower airway diseases, such as asthma.
- The coexistence of both upper and lower airway disease is known as united airway disease, described as one airway, one disease
- Recent studies have estimated that 30% of AR patients and 70% of asthma patients have comorbid asthma and AR, respectively

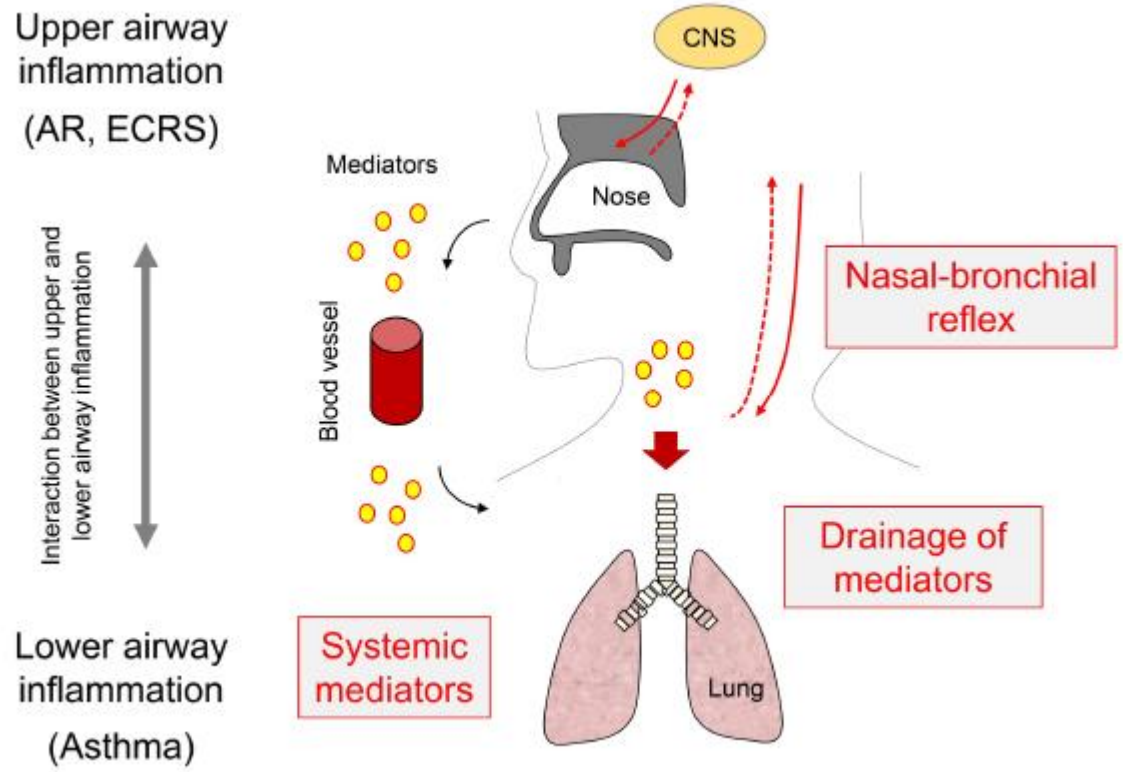
Kanda A, et al. Regulation of Interaction Between the Upper and Lower Airways in United Airway Disease. Med. Sci. 2019;7(27):1-9

Evidences of United airway disease

- SACRA study, Ohta et al. reported that asthma control was significantly impaired in AR patients and that significantly more AR patients had uncontrolled asthma than those without AR[1]
- Long-term risk of developing asthma was three times higher in AR patients[2]
- Incidence of asthma attacks was comparatively greater in asthma patients with AR[3]
- Togias et al. reported an association between degree of severity of asthma and AR[4]

1. Ohta K.et al. Prevalence and impact of rhinitis in asthma. SACRA, a cross-sectional nation-wide study in Japan. Allergy 2011, 66, 1287–1295.
2. Settipane RJ, et al. A. Long-term risk factors for developing asthma and allergic rhinitis: A 23-year follow-up study of college students. Allergy Proc. 1994, 15, 21–25.
3. Bousquet J, et al. Increased risk of asthma attacks and emergency visits among asthma patients with allergic rhinitis: A subgroup analysis of the investigation of montelukast as a partner agent for complementary therapy [corrected]. Clin. Exp. Allergy 2005, 35, 723–727.
4. Togias, A. Rhinitis and asthma: Evidence for respiratory system integration. J. Allergy Clin. Immunol. 2003, 111, 1171–1183,

Relationships Among the Upper and Lower Airways and the Middle Ear in United Airway Disease



Schema of mechanisms of interaction between upper and lower airway inflammation.

Red line and dot-line indicate parasympathetic and trigeminal nerve, respectively

Kanda A, et al. Regulation of Interaction Between the Upper and Lower Airways in United Airway Disease. Med. Sci. 2019;7(27):1-9

Definitions

Definition of allergic rhinitis

"Allergic rhinitis (AR) is an inflammatory process of the nasal mucosa, typically IgE-mediated, elicited by environmental allergens and characterized by the presence of inflammatory cells within the mucosa and submucosa"

Definition of asthma

"A chronic inflammatory disorder of the airways which manifests itself as recurrent episodes of wheezing, breathlessness, chest tightness and cough. It is characterized by bronchial hyper-responsiveness and variable airflow obstruction, that is often reversible either spontaneously or with treatment."

Emeryk A, Emeryk-Maksymiuk J, Janeczek K. New guidelines for the treatment of seasonal allergic rhinitis. Postepy Dermatol Alergol. 2019;36(3):255-260
Agarwal R, Dhooria S, Aggarwal AN, et al. Guidelines for diagnosis and management of bronchial asthma: Joint ICS/NCCP (I) recommendations. Lung India. 2015;32(Suppl 1):S3-S42

Airway hypersensitivity syndrome phenotypes

- Rhinitis
- Rhinitis with airway hyper responsiveness
- Eosinophilic bronchitis
- Asthma
- Rhinitis and asthma

Note: Rhinitis can be associated with conjunctivitis.

Giavina-Bianchi et al. United airway disease: current perspectives. Journal of Asthma and Allergy 2016:9 93–100

Link between Asthma and Rhinitis

- Allergic rhinitis (AR) and asthma affect the upper and lower respiratory tracts, respectively.
- Both are characterized by inflammation of the respiratory mucosa and involve similar inflammatory cells and mediators.
- Upper and lower airways form a continuous respiratory tract
- Many inflammatory changes of allergic rhinitis is similar to those of allergic asthma
- The anatomical and immunological link between the lung and nose means that inflammation in one organ influences symptoms in the other

Giavina-Bianchi et al. United airway disease: current perspectives. Journal of Asthma and Allergy 2016;9:93–100

Epidemiologic Links between Allergic Rhinitis and Asthma

- Up to 88% of all asthmatic patients have allergic rhinitis

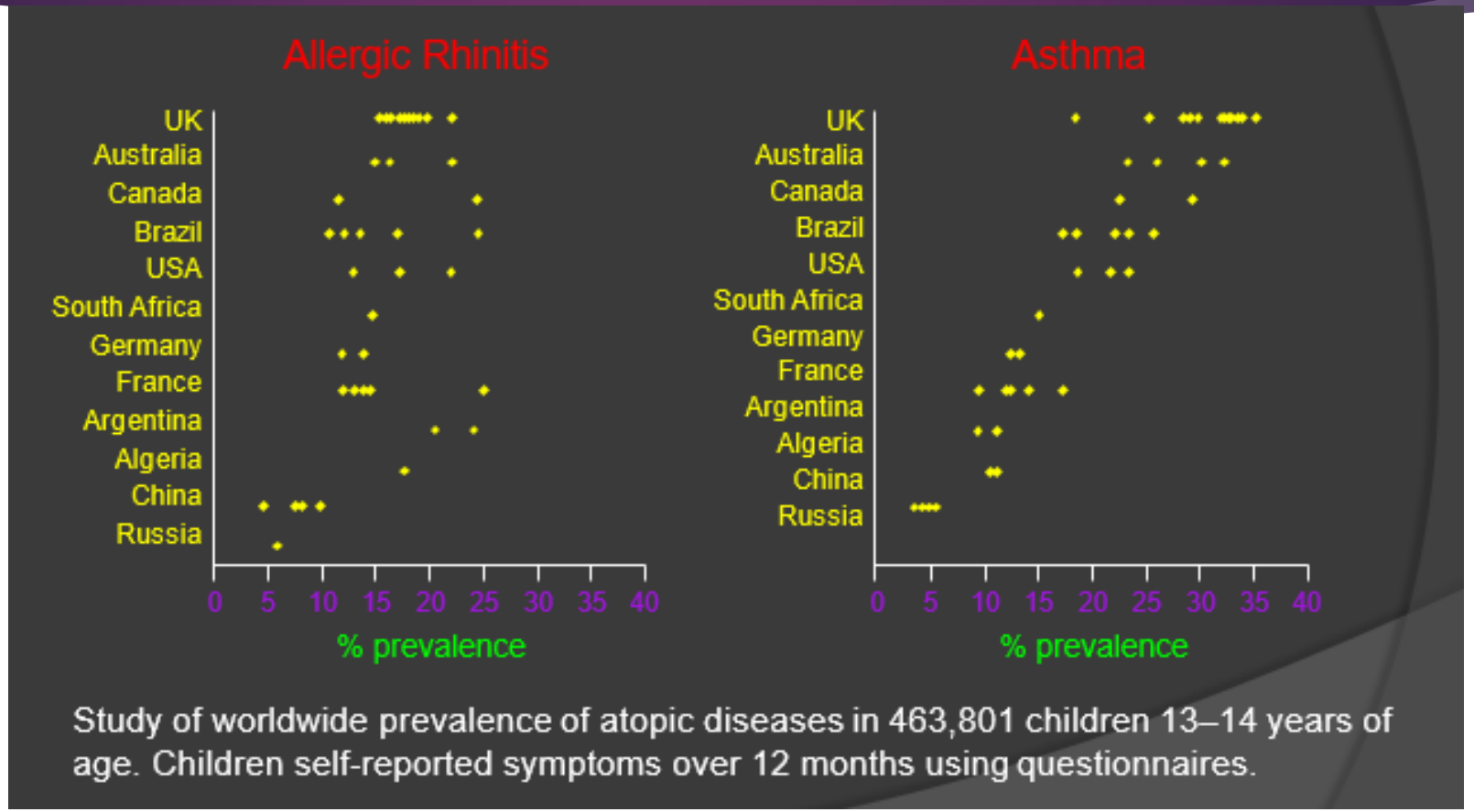
Walker S, et al. Rhinitis. BMJ 2002;324:403

Epidemiologic Links between Allergic Rhinitis and Asthma

- Up to 80% of all asthmatic patients have allergic rhinitis

Bousquet J et al J Allergy Clin Immunol 2001;108(suppl 5):S147–S334; Sibbald B, Rink E Thorax 1991;46:895–901; Leynaert B et al J Allergy Clin Immunol 1999;104:301–304; Brydon MJ Asthma J 1996:29–32.

Allergic Rhinitis and Asthma Have Similar Prevalence Patterns



Study of worldwide prevalence of atopic diseases in 463,801 children 13–14 years of age. Children self-reported symptoms over 12 months using questionnaires.

International Study of Asthma and Allergies in Childhood (ISAAC) Steering Committee Lancet 1998;351:1225–1232.

Both Asthma and Allergic Rhinitis Are Inflammatory Conditions

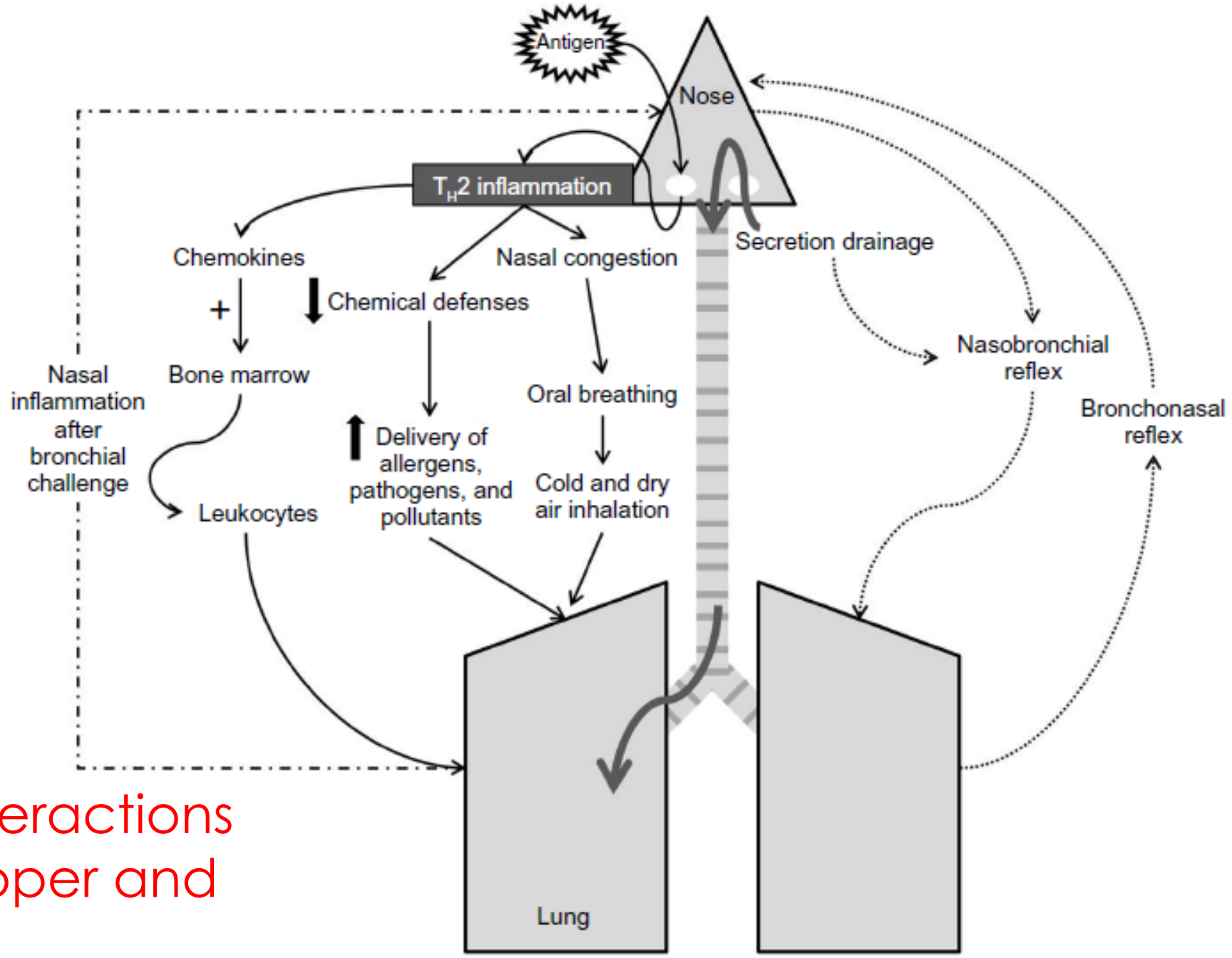
- Asthma is fundamentally a disease of inflammation
  - Inflammation of the lower airway causes bronchoconstriction and airway hyper responsiveness resulting in asthma symptoms
- Allergic rhinitis is an IgE-mediated inflammatory disorder
  - Inflammation of the nasal membranes in response to allergen exposure results in nasal symptoms

National Institutes of Health Global Initiative for Asthma: Global Strategy for Asthma Management and Prevention: A Pocket Guide for Physicians and Nurses. Publication No. 95-3659B. Bethesda, MD: National Institutes of Health, 1998; Bousquet J et al J Allergy Clin Immunol 2001;108(suppl 5):S148–S149.

Both Asthma and Allergic Rhinitis Are Inflammatory Conditions

- In AR, one distinction is heavy vascularization of the nasal passages, which may lead to severe nasal obstruction.
- In asthma, the presence of smooth muscles form trachea to bronchioles can result in characteristic bronchoconstriction

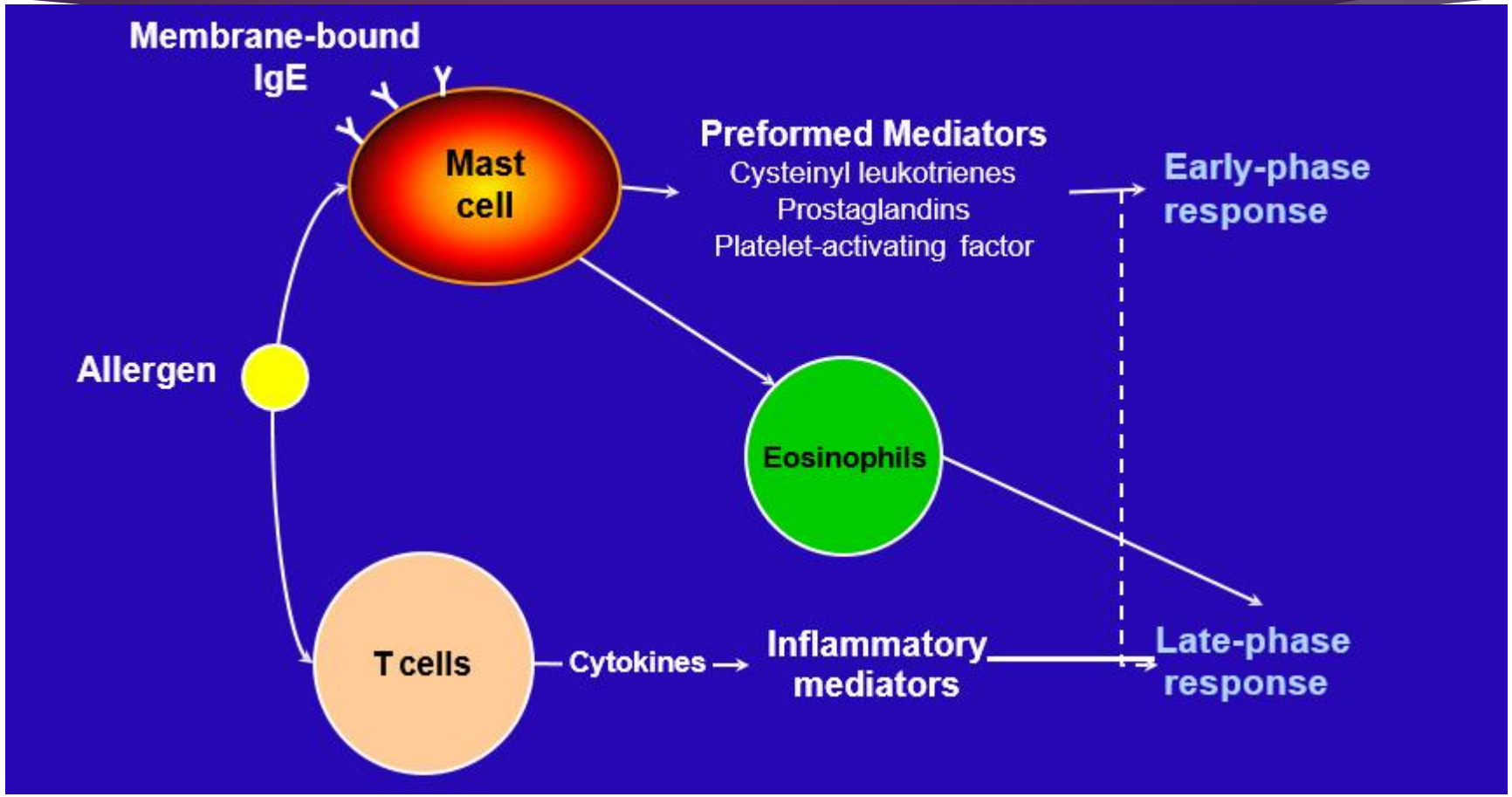
Robert A. Nathan, MD. Management of Patients with Allergic Rhinitis and Asthma: Literature Review.2009



Pathological interactions between the upper and lower airways

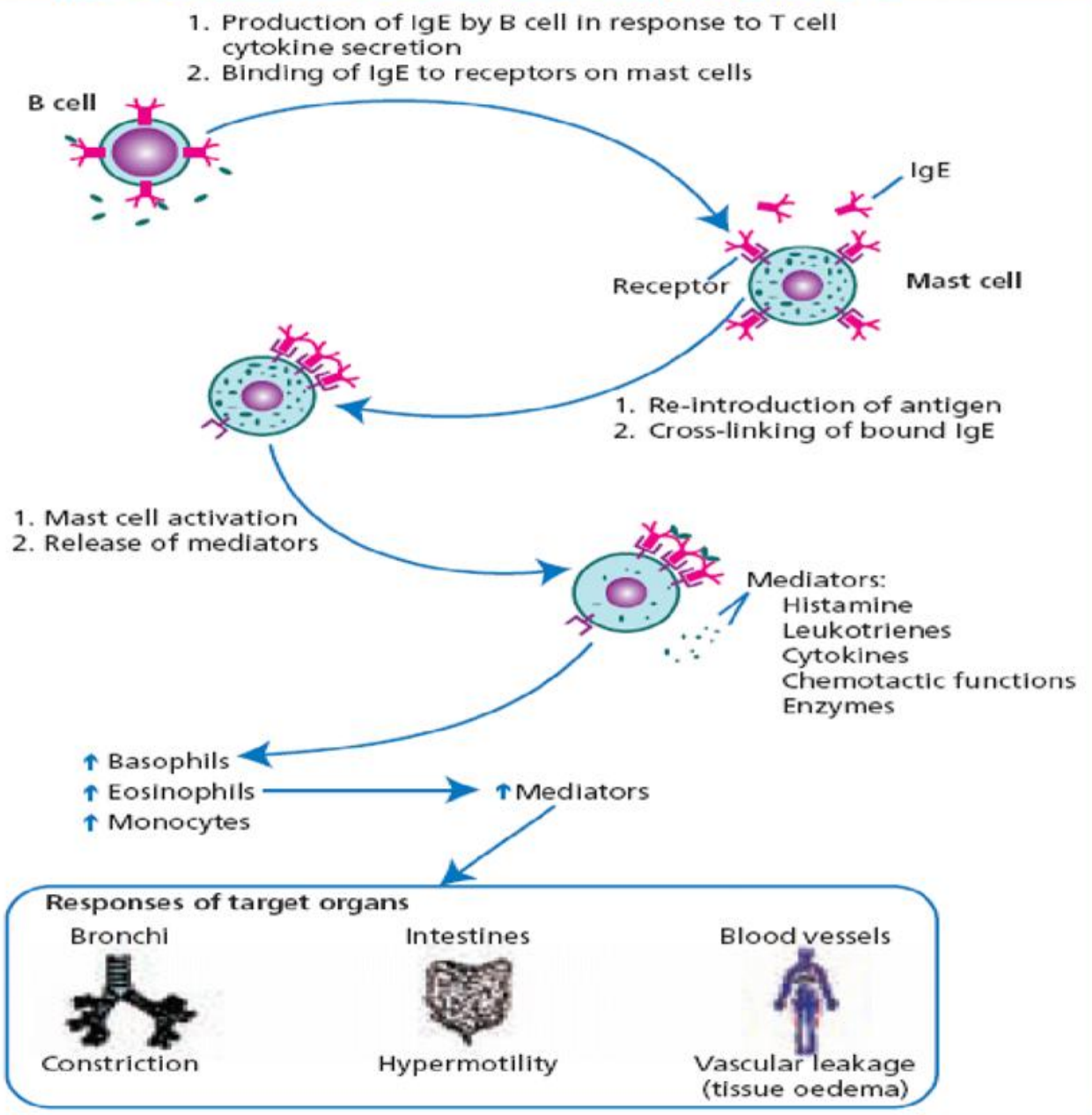
Giavina-Bianchi et al. United airway disease: current perspectives. Journal of Asthma and Allergy 2016:9 93–100

Allergic Rhinitis and Asthma Share Common Inflammatory Cells and Mediators



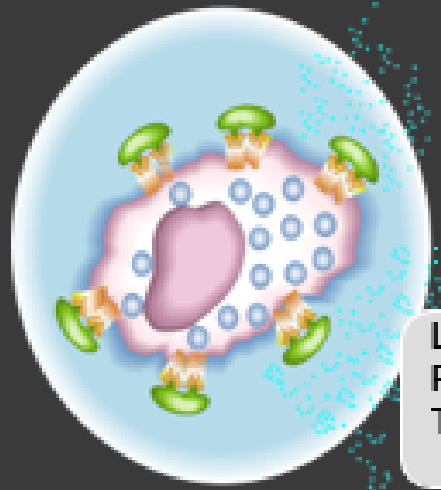
Casale TB et al Clin Rev Allergy Immunol 2001;21:27–49; Kay AB N Engl J Med 2001;344:30–37.

The early and late phase responses of the allergic cascade, including the inflammatory cells involved, mediators released and resulting symptoms



Allergic Rhinitis

Allergen



CYTOKINES
IL-1
IL-3
IL-4
IL-5
IL-6
IL-13
TNF-α

HISTAMINE

Leukotriene C_4
Prostaglandin D_2
Tryptase

CHEMOKINES
IL-8
Eotaxin
RANTES

ADHESION MOLECULES
P-selectin
ICAM

Early-Phase Inflammatory Response
(minutes-1 hour)

Histamine binds to H^1 receptors

Histaminic response

- Sneezing
- Itchy, watery eyes
- Rhinorrhoea
- Nasal congestion

Nasal mucosa

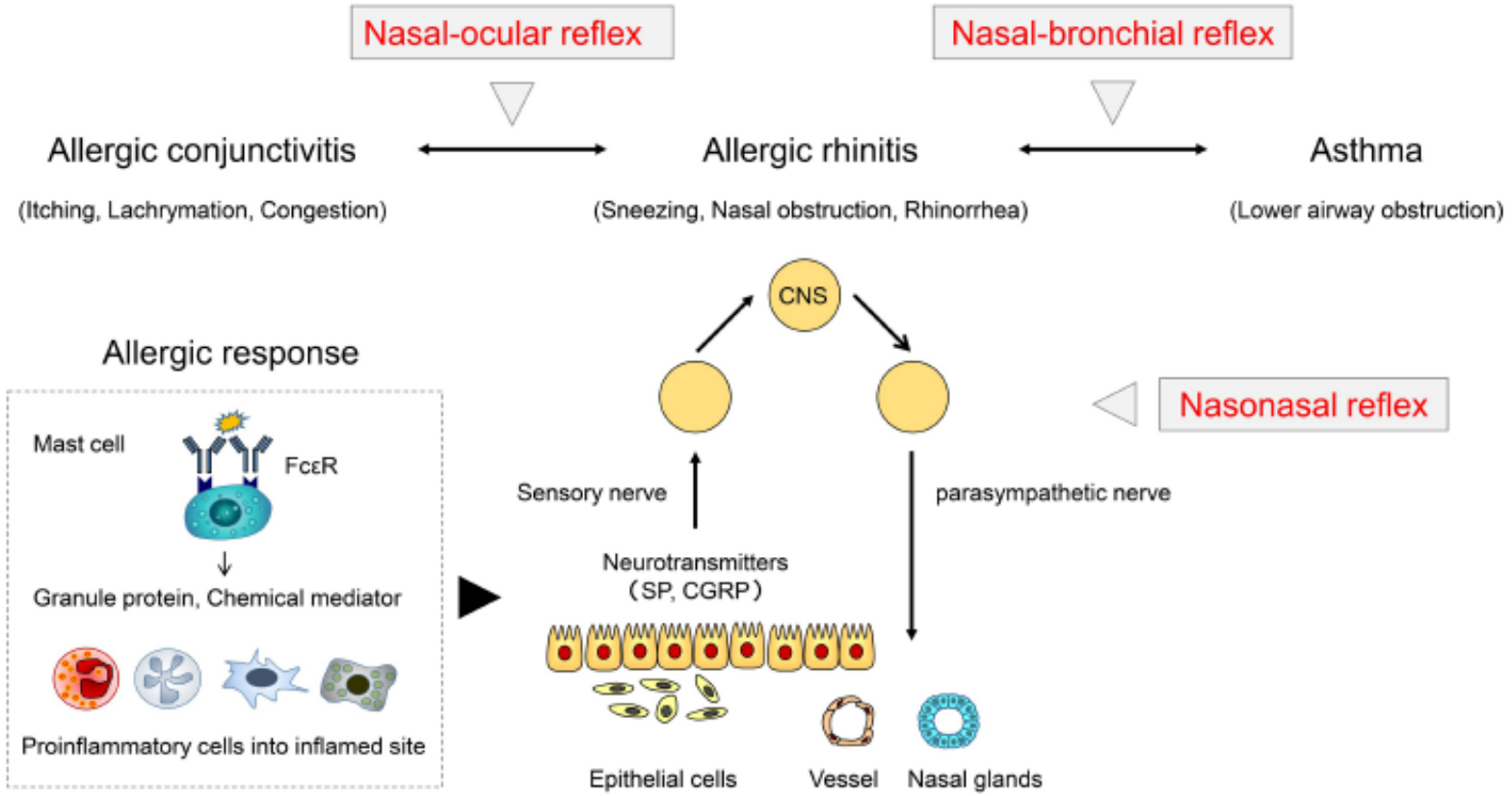
Promotes eosinophil and other cell migration and infiltration

Allergic inflammatory response

- Nasal inflammation
- Nasal obstruction
- Difficulty breathing
- Tinnitus

Late-Phase Inflammatory Response
(4–24 hours)

Neural Modulation in United Airway Disease



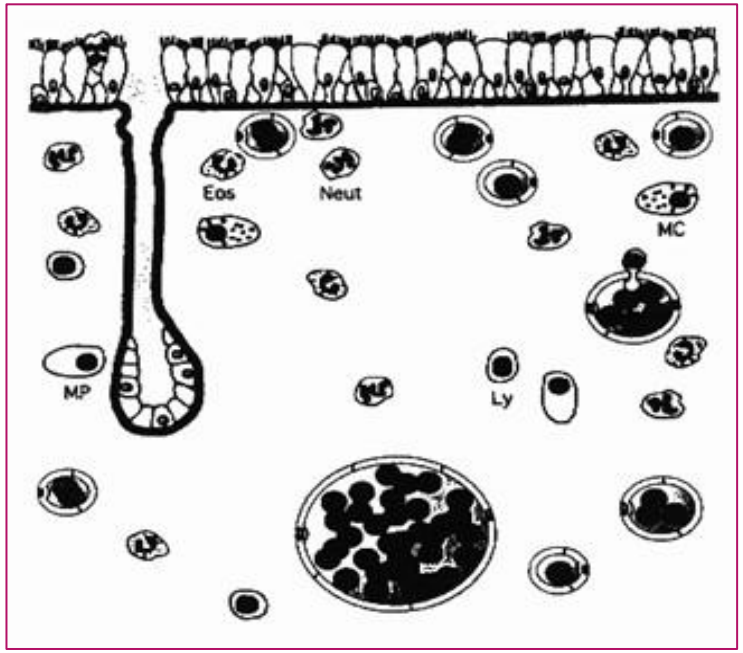
Neural pathway in allergic rhinitis; nasonasal reflex, nasal-ocular reflex, and nasal–bronchial reflex.

CGRP, calcitonin gene-related peptide; SP, substance P; Fc"R, Fc epsilon receptor

Kanda A, et al. Regulation of Interaction Between the Upper and Lower Airways in United Airway Disease. Med. Sci. 2019;7(27):1-9

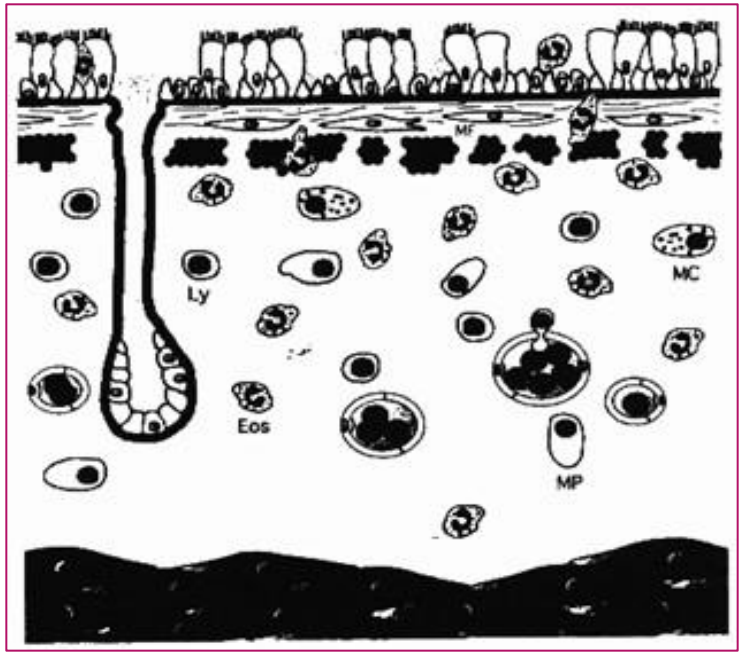
Allergic Rhinitis and Asthma Share a Similar Inflammatory Process and Occur in the Mucosa

Allergic rhinitis



Nasal mucosa

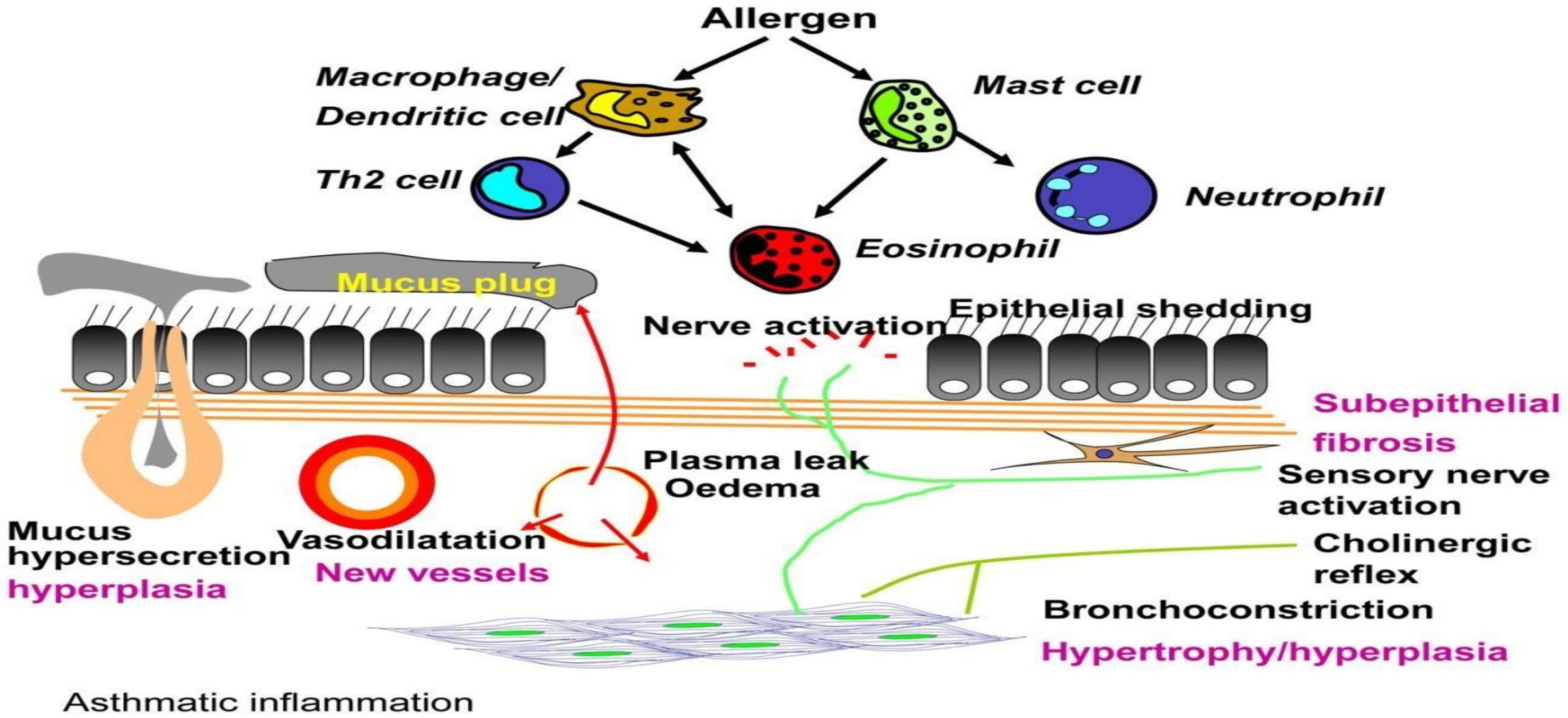
Asthma



Bronchial mucosa

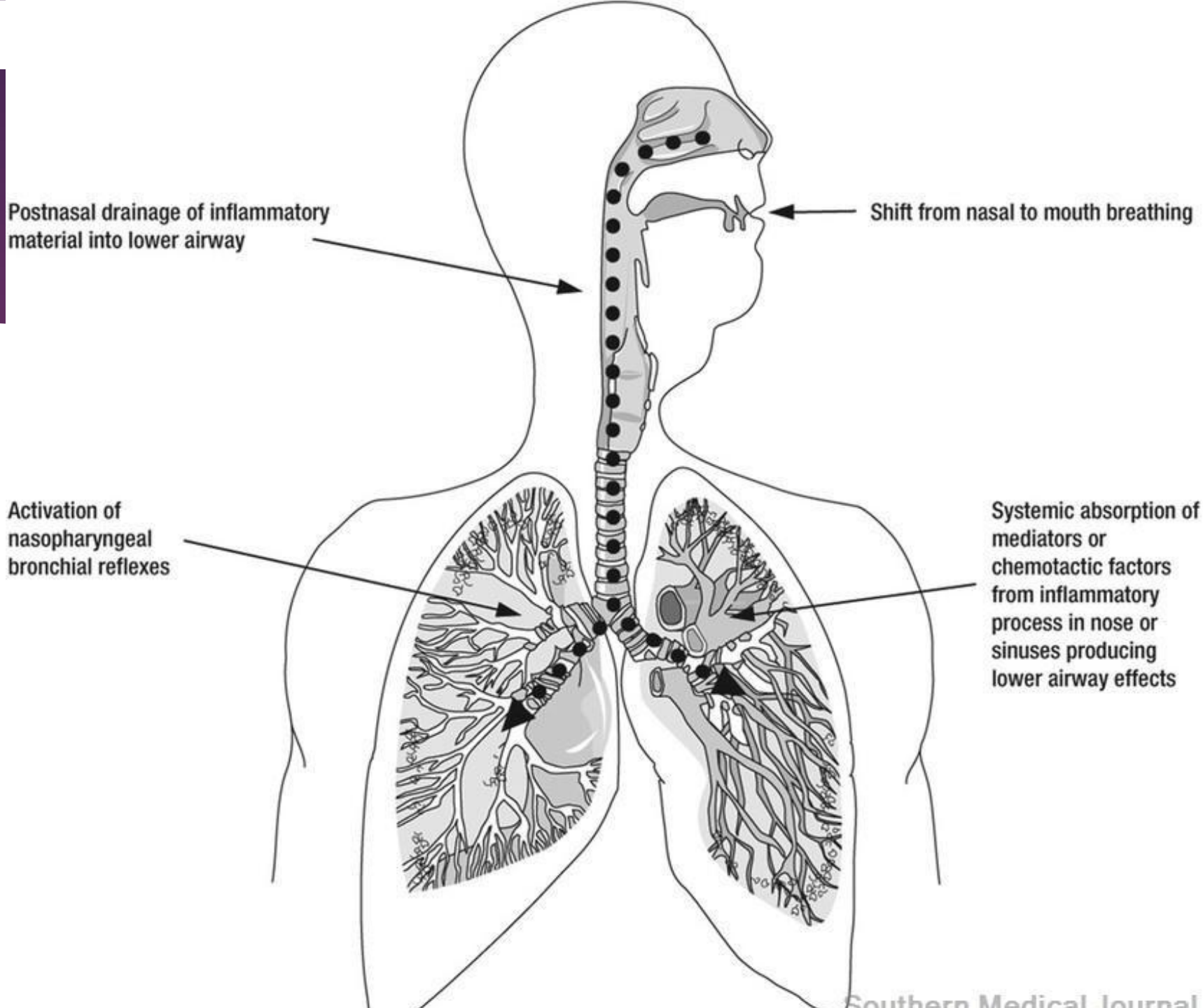
Bousquet J et al J Allergy Clin Immunol 2001;108(suppl 5):S148–S149.

Asthma Inflammation



Asthmatic inflammation

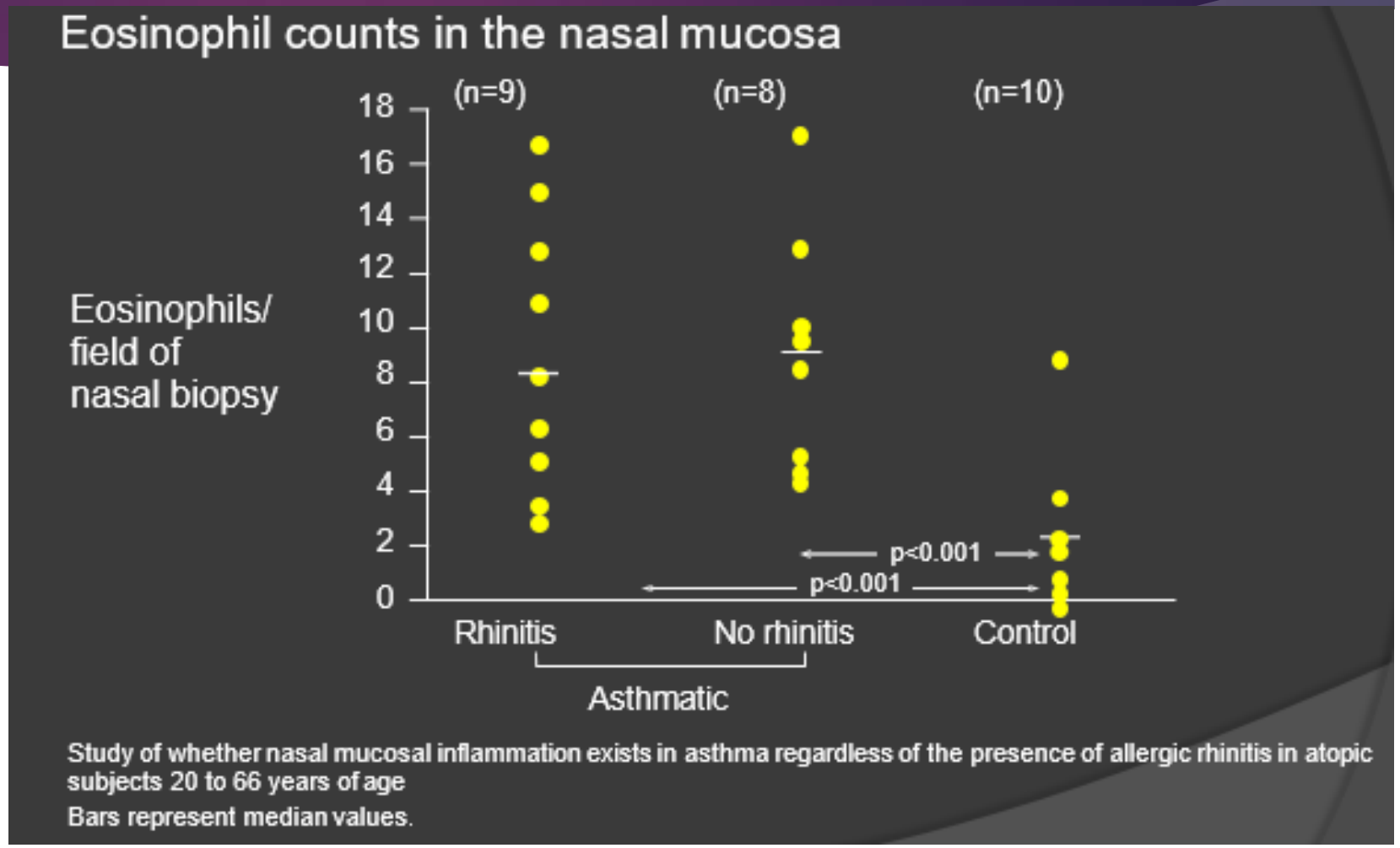
Mechanisms of pathologic relationships between upper and lower airways



Other Proposed pathophysiologic mechanisms of asthma exacerbated by sinusitis

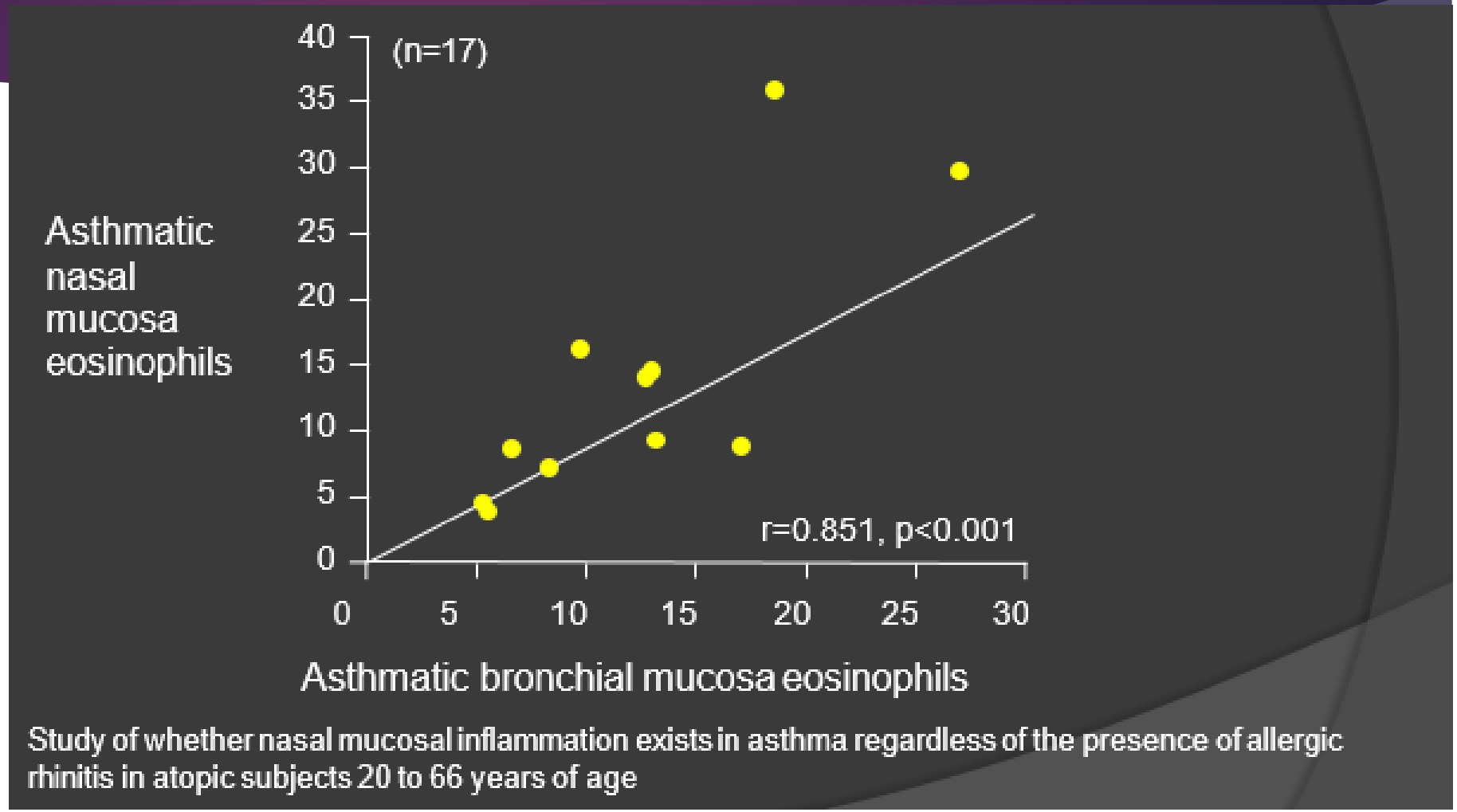
- Spread of inflammatory mediators and chemotactic factors to lower airways triggers Sino bronchial reflex mechanism.
- Stimulation of autonomic nervous system causes acute bronchial hyper responsiveness.
- Reversible partial beta-adrenergic blockade is enhanced.
- Depressed nitric oxide concentration promotes acute bronchial hyper responsiveness

Many Patients with Asthma Have Nasal Inflammation



Gaga M et al Clin Exp Allergy 2000;20:663–669.

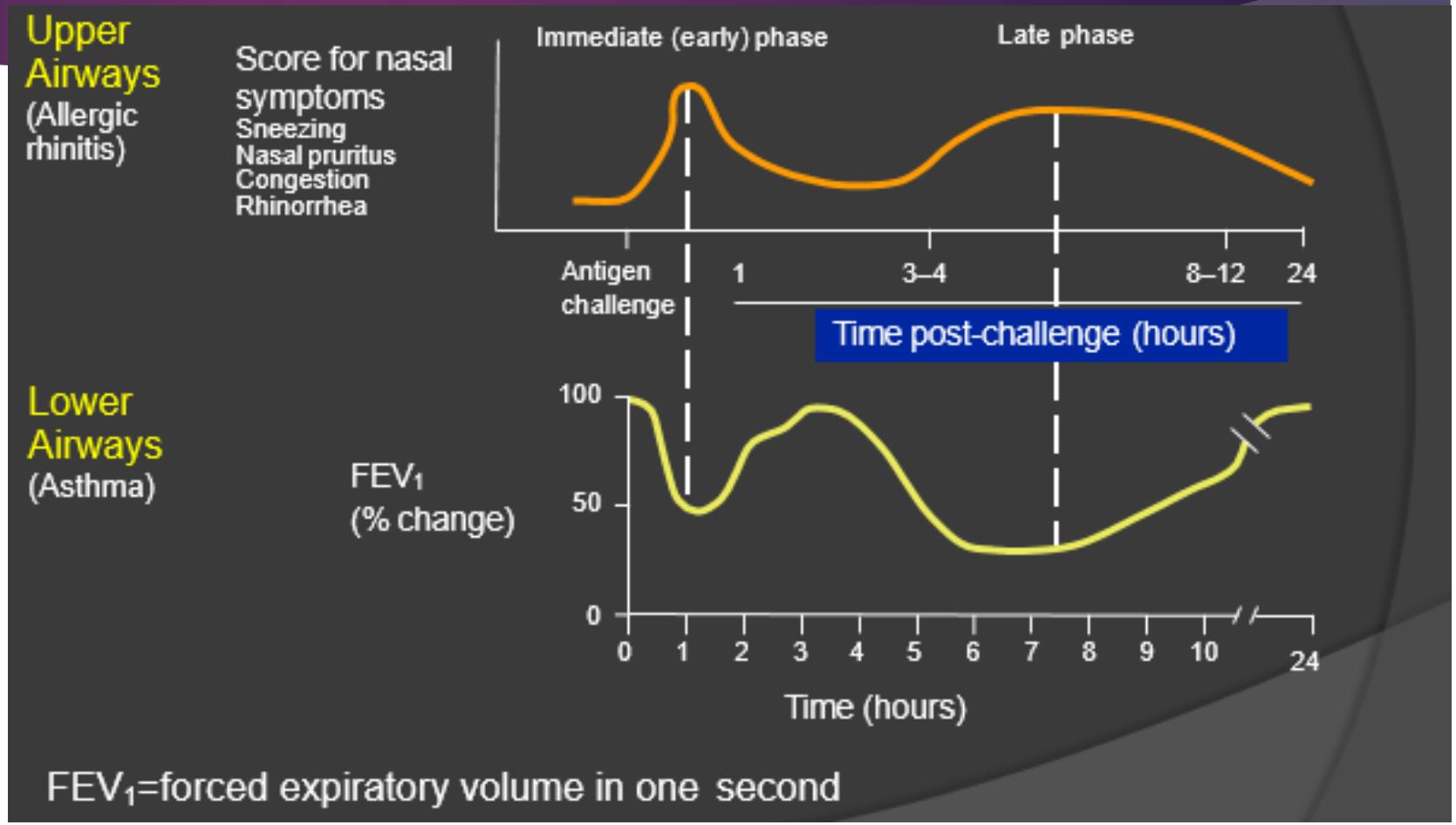
Inflammatory Changes in the Nasal and Bronchial Mucosa Are Correlated



Study of whether nasal mucosal inflammation exists in asthma regardless of the presence of allergic rhinitis in atopic subjects 20 to 66 years of age

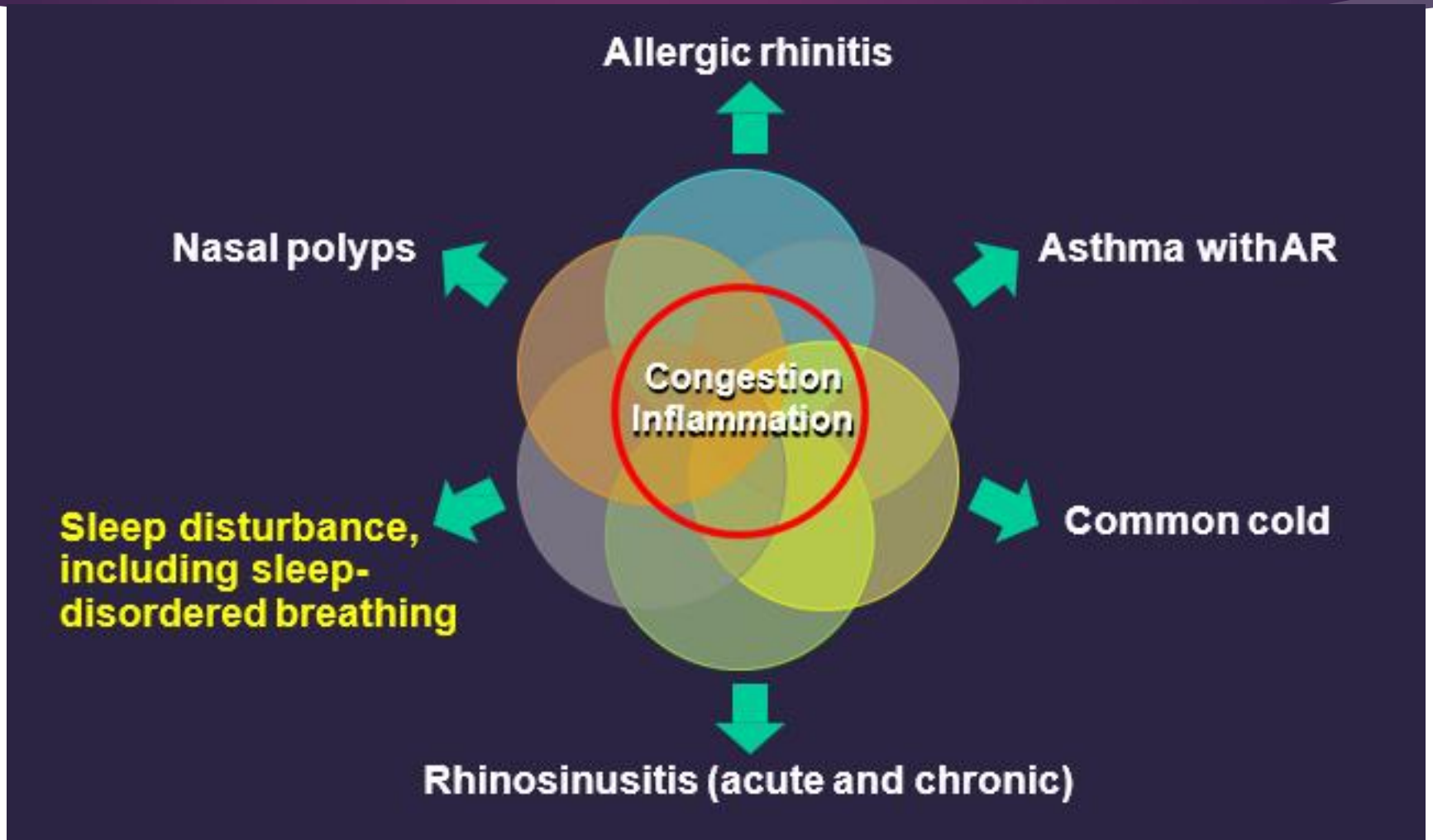
Gaga M et al Clin Exp Allergy 2000;20:663–669.

Symptoms Correlate with the Early and Late-Phase Responses in Allergic Rhinitis and Asthma



Varner AE, Lemanske RF Jr. In: Asthma and Rhinitis. 2nd ed. Oxford: Blackwell Science, 2000:1172–1185;
Togias A J Allergy Clin Immunol 2000;105(6 pt 2):S599–S604

Congestion and Inflammation:
Adverse Clinical Impact in Upper Respiratory Disease



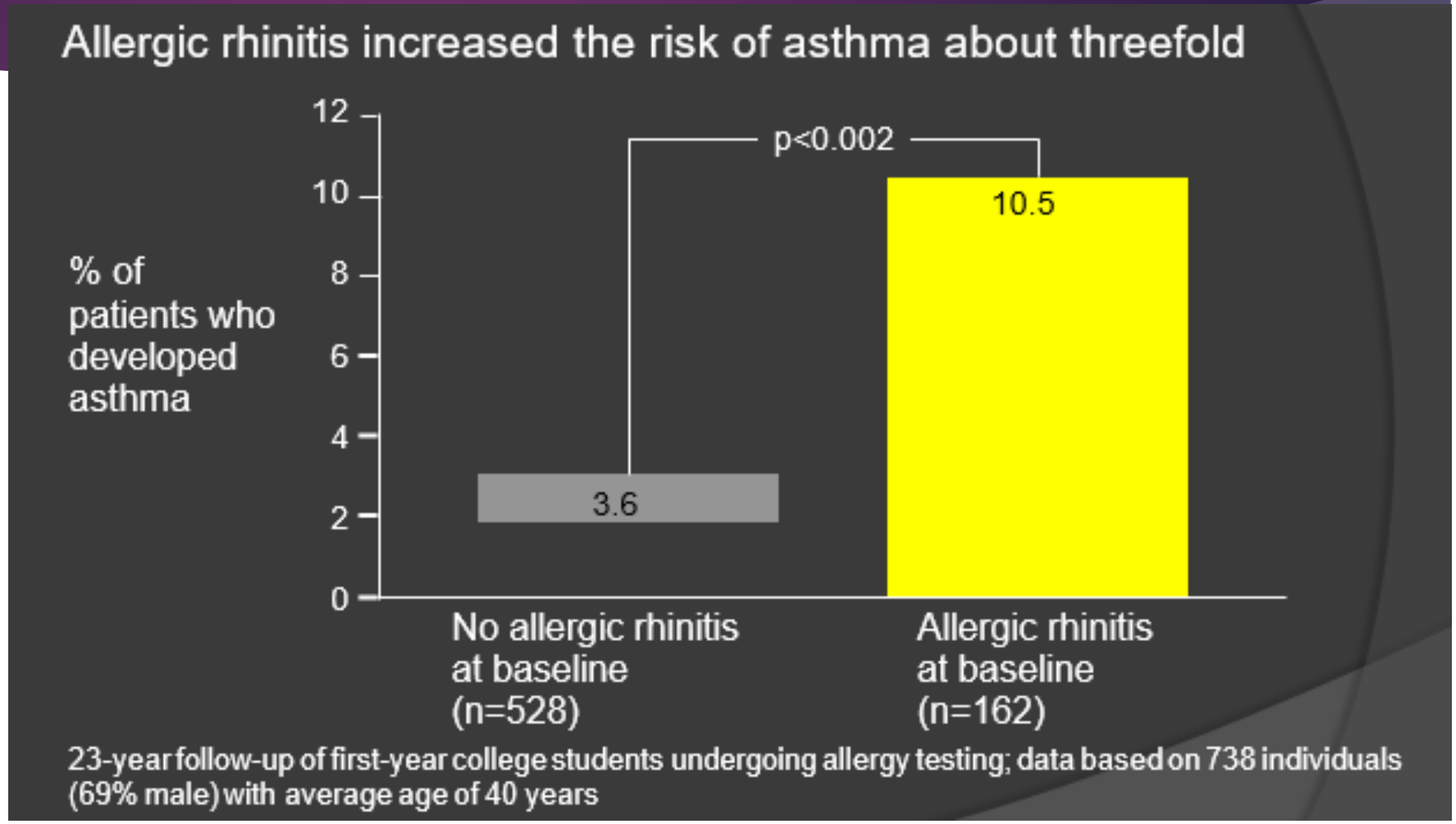
Impact of allergic rhinitis on lung function

- Both AR and asthma have airflow limitation as the main functional consequence
- The forced expiratory volume in 1 second (FEV1), a measurement of exhaled volume during the first second of a forced expiratory maneuver, may be impaired in approximately 5% of patients with AR who report only nasal symptoms.

How Allergic rhinitis affects asthma

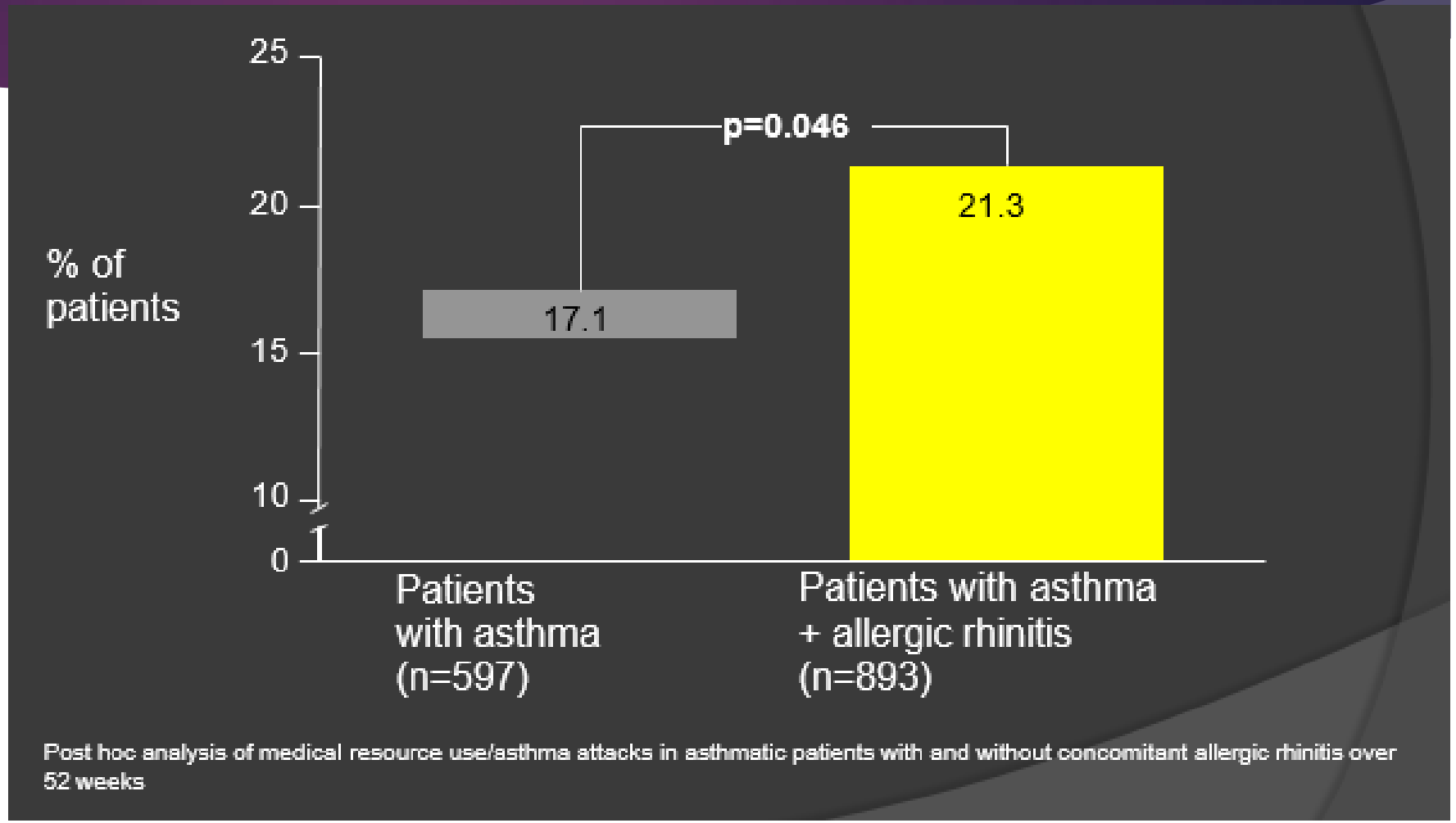
- Allergic rhinitis may promote or exacerbate asthma through several physiologic mechanisms that link the disorders.
- These include :
  - The vagal (rhinobronchial) reflex, which causes
  - nasal stimulation to induce bronchoconstriction.
  - Systemic release of mediators and cytokines. 3- Postnasal drip and resulting irritation.
  - 4- The need for oral respiration caused by nasal obstruction, which causes dry, cold air to penetrate into the bronchi and promote bronchial hyper reactivity

Allergic Rhinitis Is a Risk Factor for Asthma



Bergeron C, et al. Relationship between Asthma and Rhinitis: Epidemiologic, Pathophysiologic, and Therapeutic Aspects Allergy Asthma Clinical Immunol.2005

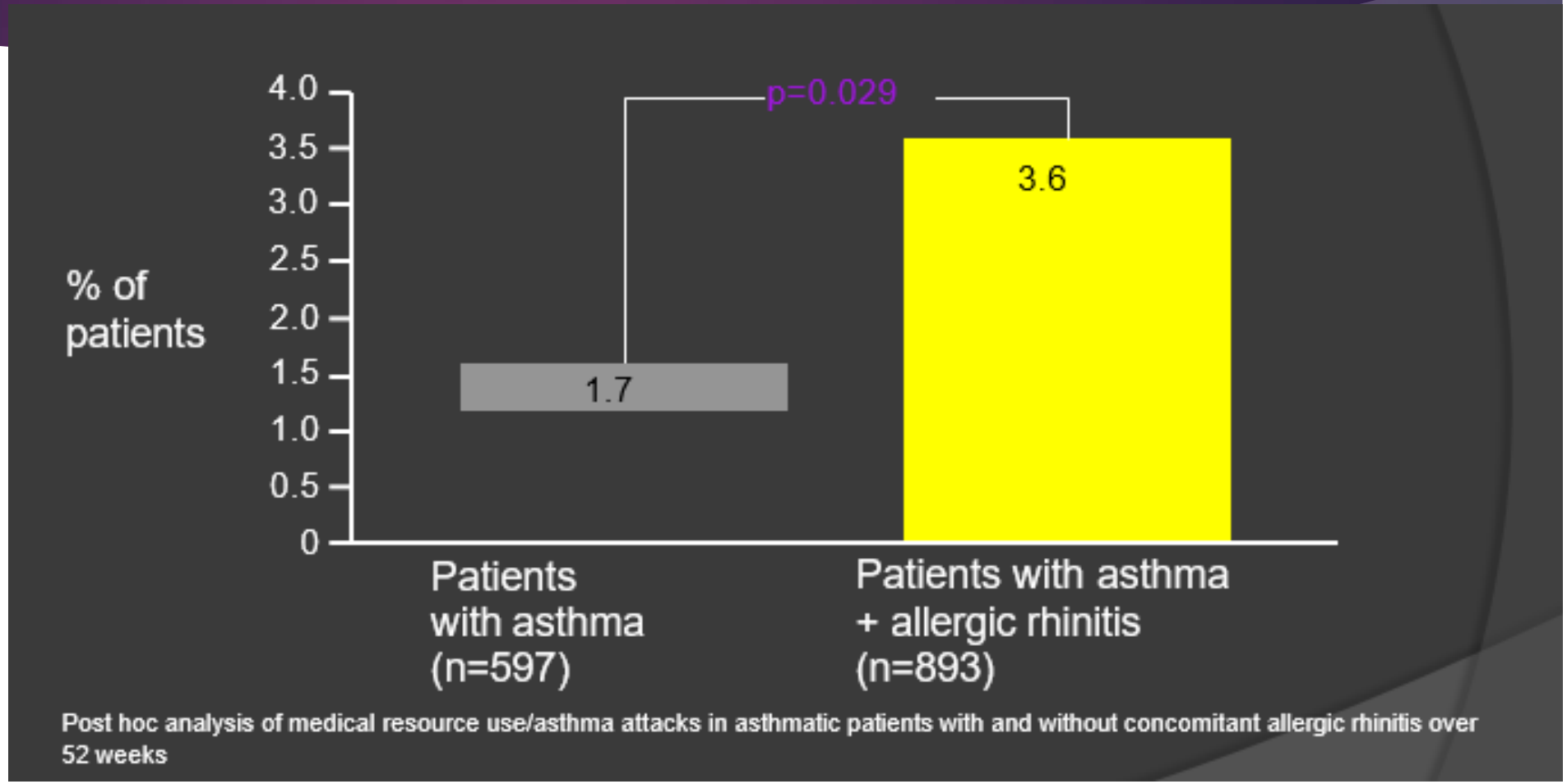
Allergic Rhinitis Increased the Risk of Asthma Attacks



Post hoc analysis of medical resource use/asthma attacks in asthmatic patients with and without concomitant allergic rhinitis over 52 weeks

Bousquet J et al Clin Exp Allergy 2005;35:723–727.

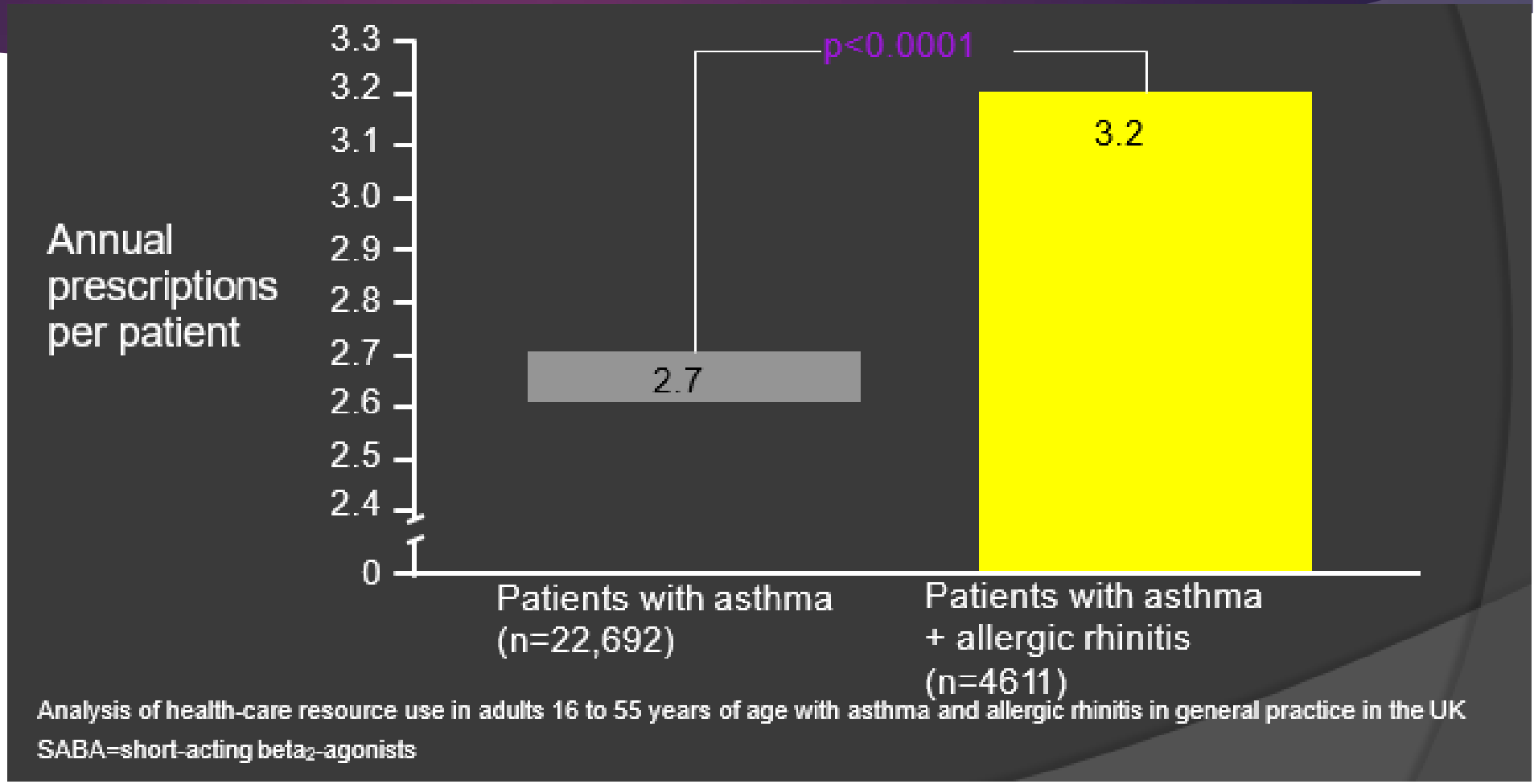
Allergic Rhinitis Doubled the Risk of Emergency room Visits in Patients with Asthma



Post hoc analysis of medical resource use/asthma attacks in asthmatic patients with and without concomitant allergic rhinitis over 52 weeks

Bousquet J et al Clin Exp Allergy 2005;35:723–727

Allergic Rhinitis Increased the Number of Prescriptions for Rescue Therapy (SABA) in Patients with Asthma



Analysis of health-care resource use in adults 16 to 55 years of age with asthma and allergic rhinitis in general practice in the UK

SABA=short-acting beta$_2$-agonists

Price D et al Clin Exp Allergy 2005;35:282–287

Treating Rhinitis May Help Asthma

- The key to successful therapy for rhinitis and asthma is the prevention or suppression of inflammation
- Treatment of rhinitis has been shown to be beneficial to the lower airways
- Treating inflammation in the upper airways indirectly improves asthma symptoms and decreases bronchial hyper reactivity

Management of UAD

- Therapy for UAD includes
  - Avoidance of relevant allergens and irritants,
  - Pharmacotherapy,
  - Allergen-specific immunotherapy (SIT).

Management of UAD

- **Allergen avoidance** has been suggested to prevent
  - UAD onset and progression
  - Reduce its burden,
  - Improving symptoms and
  - Quality of life

Triggers of Asthma and AR

Common allergens

- **House dust mites**
- **Pollen and spores**
- **Animals**
- **Work-related allergens**

  Like wood dust, flour dust or latex.

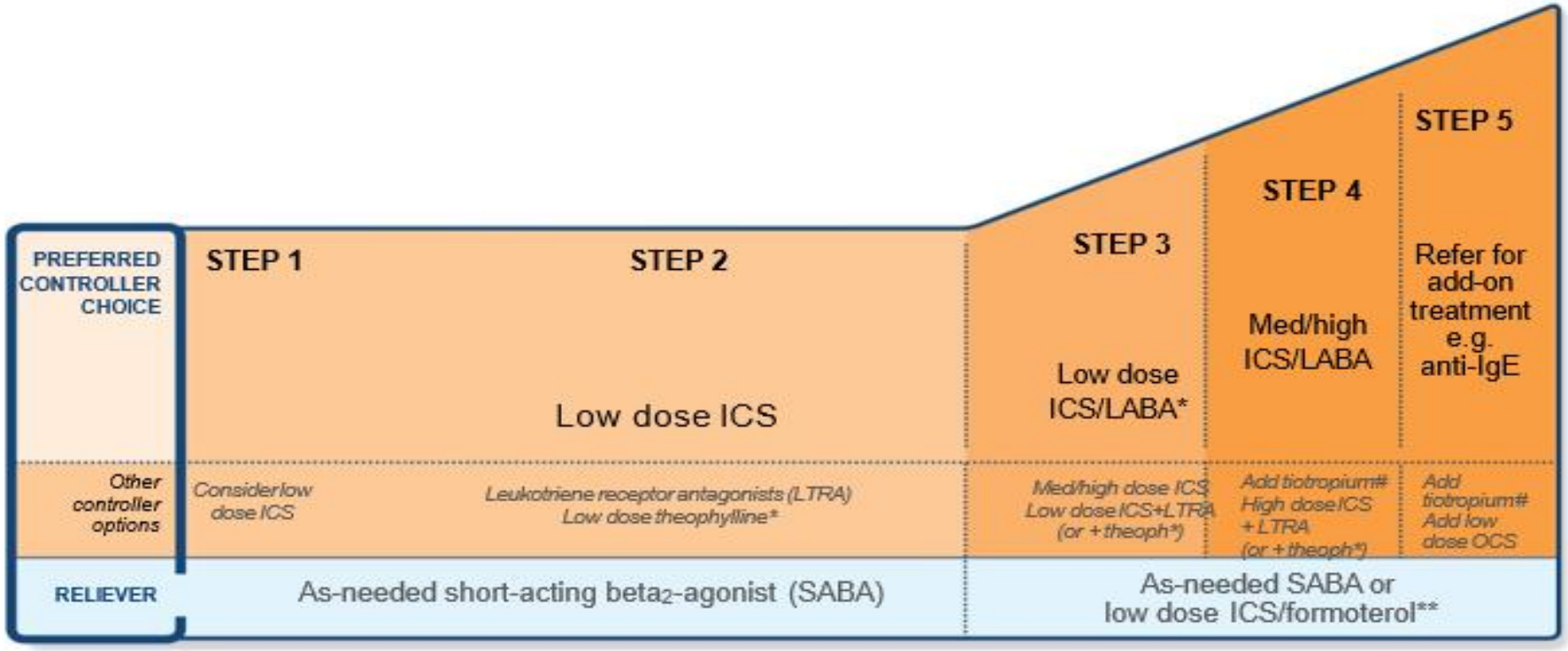
https://www.nhs.uk/conditions/allergic-rhinitis/causes/

Management of UAD

- The **pharmacologic approach** includes
  - Antihistamines,
  - Oral leukotriene antagonists, and
  - Intranasal corticosteroids (considered the most efficacious) drug[1].
    - Oral and intranasal antihistamines, as well as leukotriene antagonists, are less effective than intranasal corticosteroids[2]

1. Bousquet J, et al. Allergy. 2008 Apr; 63 Suppl 86:8-160.
2. Benninger M, et al. Ann Allergy Asthma Immunol. 2010 Jan; 104(1):13-29.

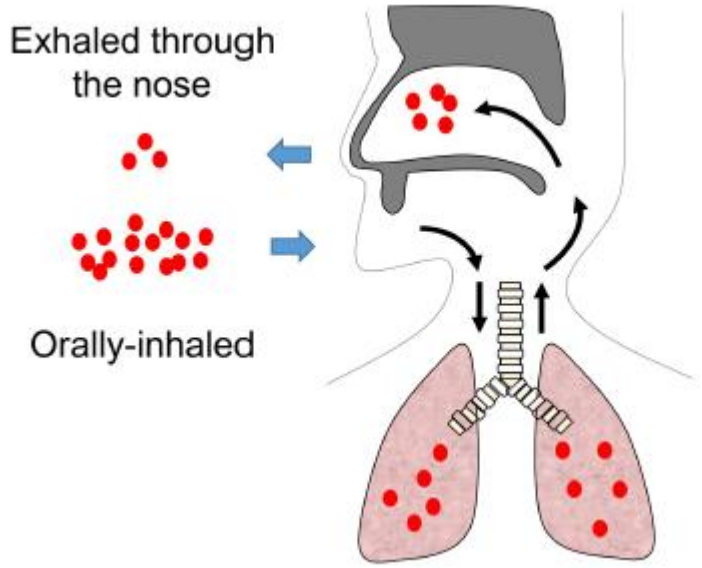
Inhaled short-acting beta2-agonist (SABA)



*For children 6-11 years, theophylline is not recommended, and preferred Step 3 is medium dose ICS

**For patients prescribed BDP/formoterol or BUD/formoterol maintenance and reliever therapy # Tiotropium by soft-mist inhaler is indicated as add-on treatment for patients with a history of exacerbations; it is not indicated in children <18 years.

A Novel Therapeutic approach to United Airway Disease



Schema of HFA-BDP ETN treatment; hydrofluoroalkane-134a-beclomethasone dipropionate (HFA-BDP) exhaled through the nose (ETN) treatment.

Red dots indicate corticosteroids.

Kanda A, et al. Regulation of Interaction Between the Upper and Lower Airways in United Airway Disease. Med. Sci. 2019;7(27):1-9

Management of UAD

- **Allergen-SIT (Speicifc immunotherapy**) is defined as

  "a procedure to administer increasing amounts of specific allergens in patients diagnosed with IgE-mediated disease, in order to induce immune tolerance".

- Subcutaneous and sublingual IT can reduce symptoms of AR and need of reliever medication, as well as improve the control of comorbid conditions

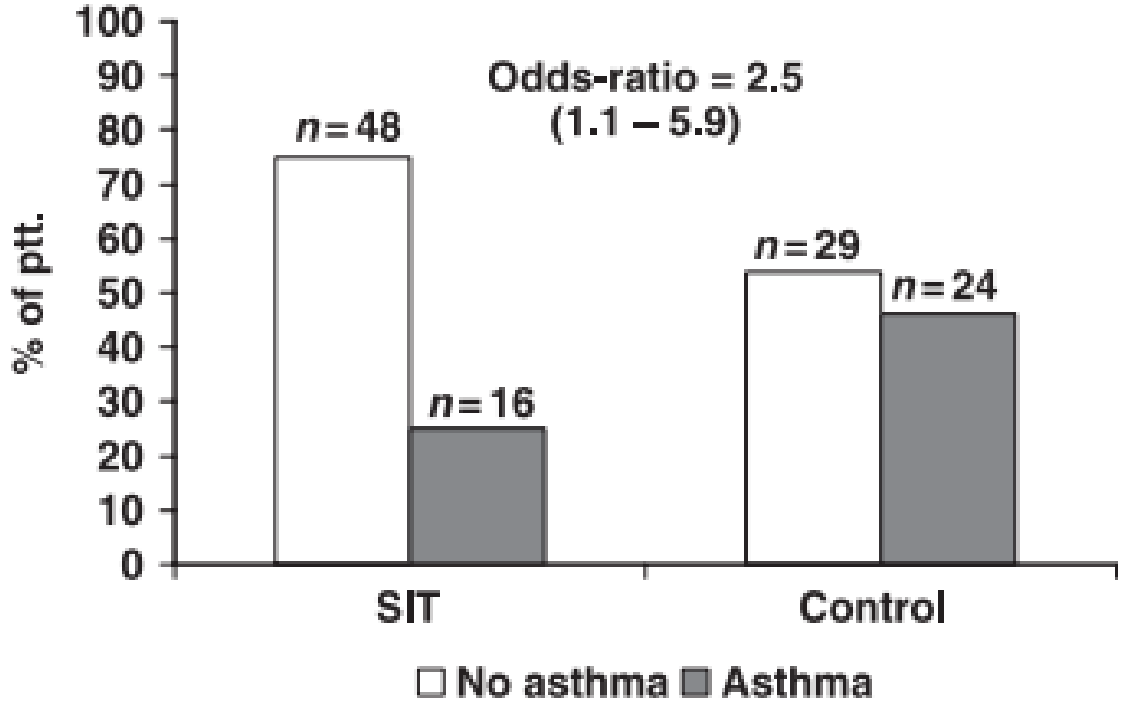
Seidman MD, Guideline Otolaryngology Development Group. AAO-HNSF. Otolaryngol Head Neck Surg. 2015 Feb; 152(1 Suppl):S1-43

Allergen-SIT

- Allergen-SIT is indicated in
  - Moderate/severe AR for which response to pharmacotherapy is inadequate.
  - Adverse effects of medications,
  - Coexisting allergic asthma,
  - Bad adherence to therapy, and
  - Patient preference for it instead of pharmacotherapy

Seidman MD, Guideline Otolaryngology Development Group. AAO-HNSF. Otolaryngol Head Neck Surg. 2015 Feb; 152(1 Suppl):S1-43

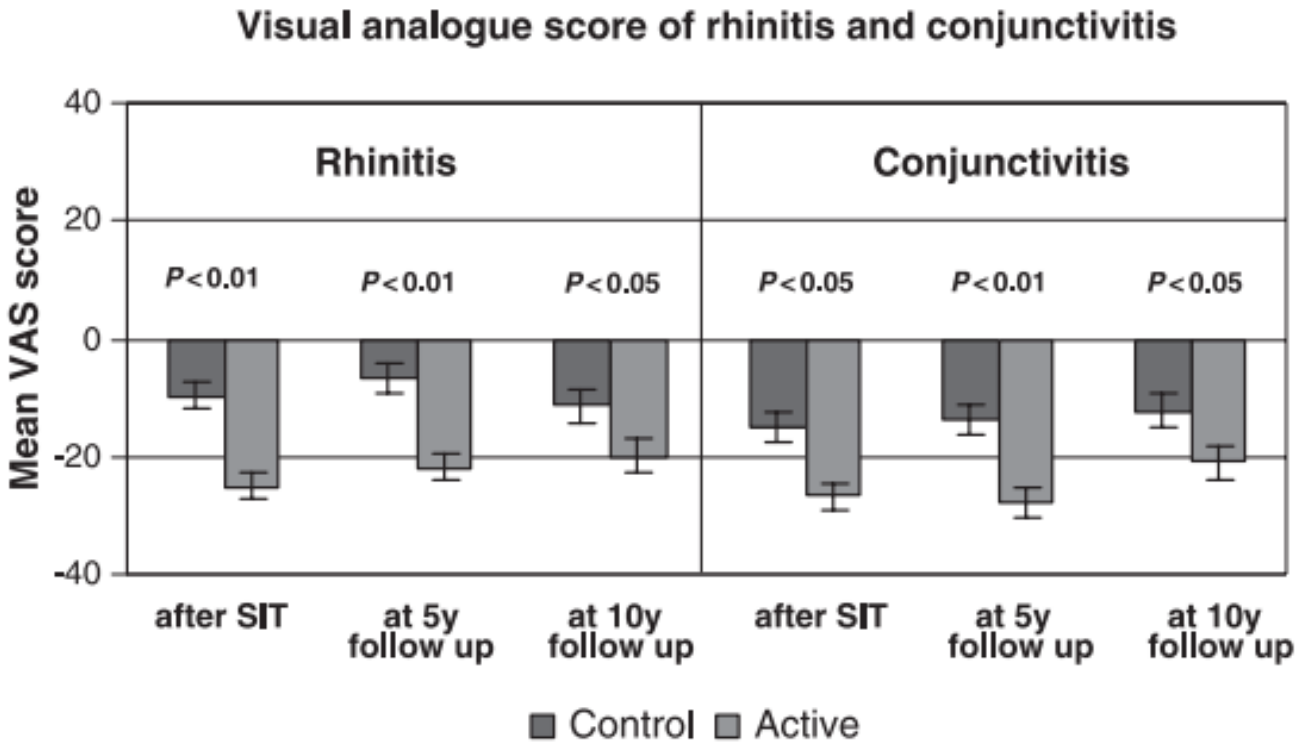
Allergen-SIT



The percentage of children with and without asthma 7 years after termination (10-year follow-up) of specific immunotherapy.

Jacobsen L, (The PAT investigator group), et al. Allergy. 2007 Aug; 62(8):943-8.

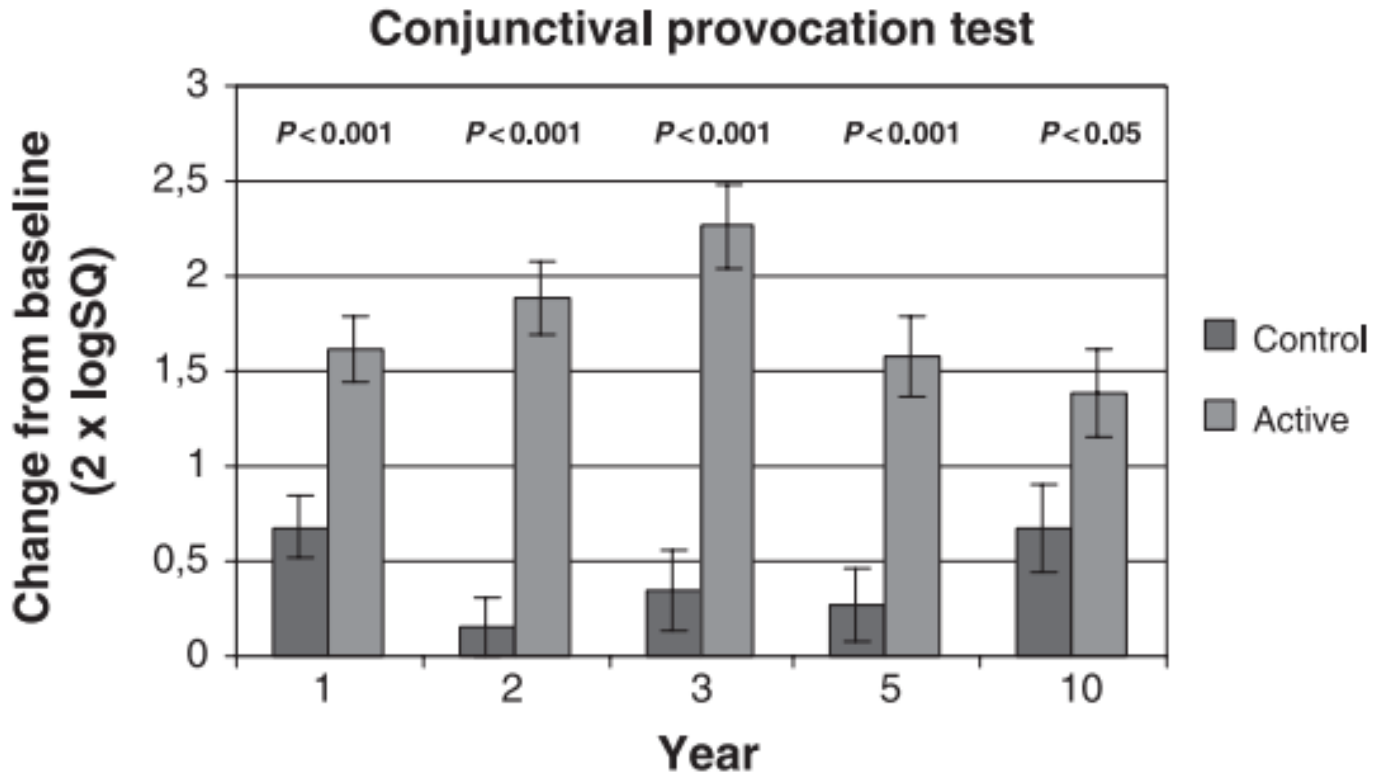
Allergen-SIT



Change from baseline for rhinitis and conjunctivitis visual analogue scores at the end of specific immunotherapy, 2 and 7 years after termination.

Jacobsen L, (The PAT investigator group), et al. Allergy. 2007 Aug; 62(8):943-8.

Allergen-SIT

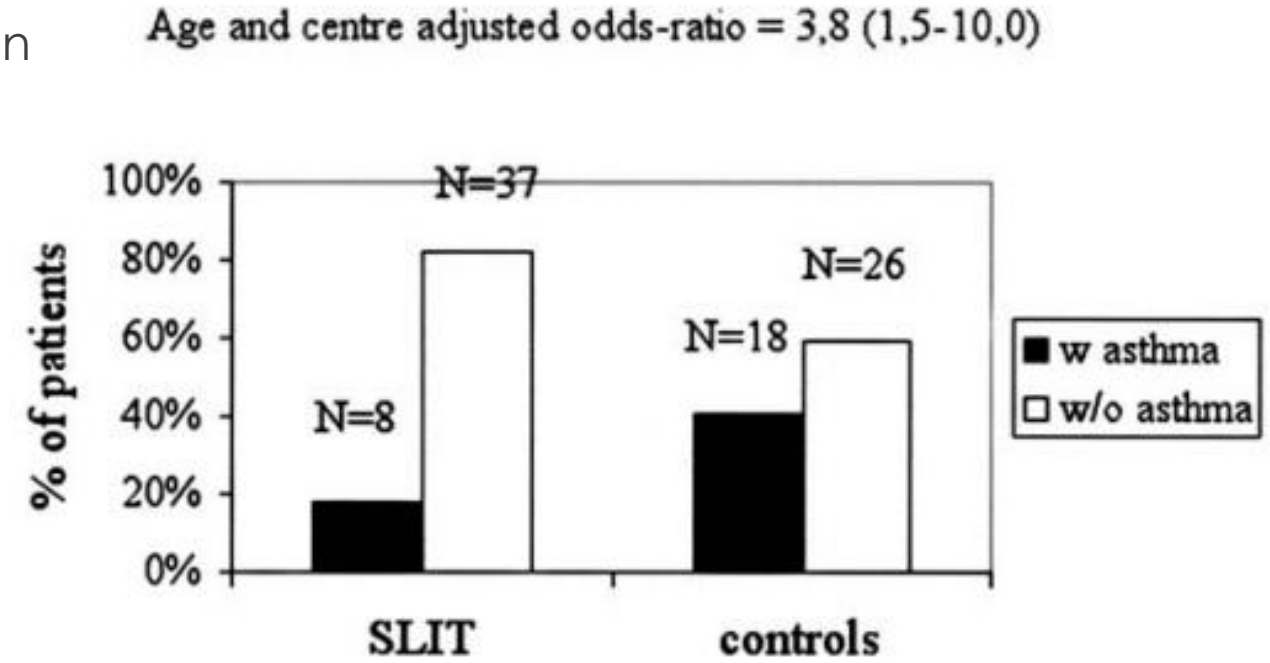


Change from baseline for the conjunctival provocation test. For children allergic to both grass and birch, the challenge with both allergens is included.

Jacobsen L, (The PAT investigator group), et al. Allergy. 2007 Aug; 62(8):943-8.

Allergen-SIT

- After 3 years of **sublingual grass-pollen IT** in children with AR, 3.8-fold more frequent development of asthma in the untreated patients



The percentages of children with and without asthma after 3 years of immunotherapy

Novembre E, et al. J Allergy Clin Immunol. 2004 Oct; 114(4):851-7.

Novel targeted therapeutic approaches using biological agents

- **Omalizumab**, a humanized monoclonal antibody that binds circulating IgE and prevents its attachment to high-affinity IgE receptors
- Omalizumab improves both upper and lower airway diseases, reducing nasal and asthma symptoms, decreasing exacerbations, and improving quality of life

Gevaert P, et al. J Allergy Clin Immunol. 2013 Jan; 131(1):110-6.e1.

Novel targeted therapeutic approaches using biological agents

- **Mepolizumab**, a monoclonal antibody that blocks the binding of IL-5 to eosinophils,
- It has shown a beneficial effect on severe eosinophilic airway diseases, such as asthma and nasal polyposis in adults

Robinson DS. Expert Rev Respir Med. 2013 Feb; 7(1):13-7.

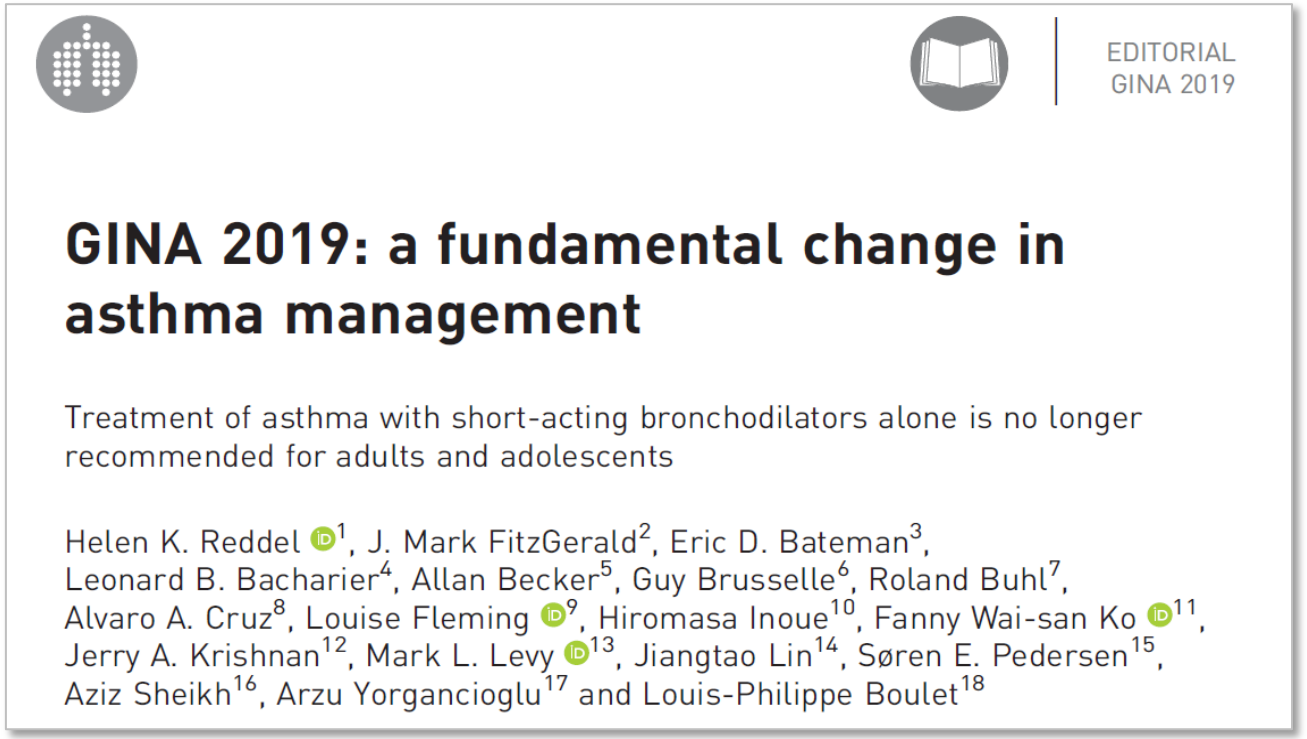
ARIA and **IPAG** Guidelines Recommend a Combined Approach to Managing Asthma and Allergic Rhinitis

- Patients with allergic rhinitis should be evaluated for asthma
- Patients with asthma should be evaluated for allergic rhinitis
- A strategy should combine the treatment of upper and lower airways in terms of efficacy and tolerability

ARIA=Allergic Rhinitis and its Impact on Asthma; IPAG=International Primary Care Airways Groups

Bousquet J et al J Allergy Clin Immunol 2001;108(suppl 5):S147–S334
International Primary Care Airways Group, Los Angeles, California, USA, MCR Vision, 2005.

A reminder – the key change in GINA 2019



EDITORIAL
GINA 2019

GINA 2019: a fundamental change in asthma management

Treatment of asthma with short-acting bronchodilators alone is no longer recommended for adults and adolescents

Helen K. Reddel[1], J. Mark FitzGerald[2], Eric D. Bateman[3], Leonard B. Bacharier[4], Allan Becker[5], Guy Brusselle[6], Roland Buhl[7], Alvaro A. Cruz[8], Louise Fleming[9], Hiromasa Inoue[10], Fanny Wai-san Ko[11], Jerry A. Krishnan[12], Mark L. Levy[13], Jiangtao Lin[14], Søren E. Pedersen[15], Aziz Sheikh[16], Arzu Yorgancioglu[17] and Louis-Philippe Boulet[18]

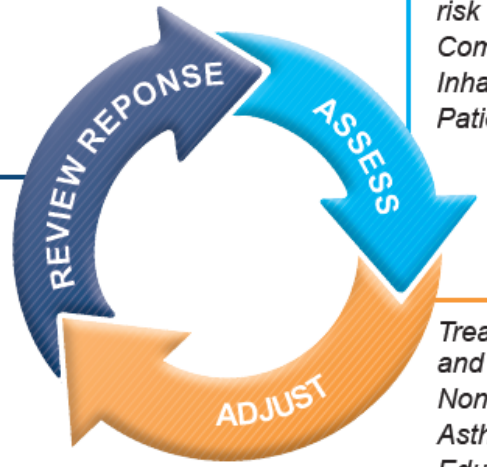
@ERSpublications
GINA no longer recommends treating adults/adolescents with asthma with short-acting bronchodilators alone. Instead, they should receive symptom-driven (in mild asthma) or a daily corticosteroid-containing inhaler, to reduce risk of severe exacerbations. http://bit.ly/310LLzE

Cite this article as: Reddel HK, FitzGerald JM, Bateman ED, *et al.* GINA 2019: a fundamental change in asthma management. *Eur Respir J* 2019; 53: 1901046 [https://doi.org/10.1183/13993003.01046-2019].

Box 3-5A

Adults & adolescents 12+ years

Personalized asthma management:
Assess, Adjust, Review response



Confirmation of diagnosis if necessary
Symptom control & modifiable risk factors (including lung function)
Comorbidities
Inhaler technique & adherence
Patient preferences and goals

Symptoms
Exacerbations
Side-effects
Lung function
Patient satisfaction

Treatment of modifiable risk factors and comorbidities
Non-pharmacological strategies
Asthma medications (adjust down or up)
Education & skills training

Asthma medication options:
Adjust treatment up and down for individual patient needs

	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
PREFERRED CONTROLLER to prevent exacerbations and control symptoms	As-needed low dose ICS-formoterol *	Daily low dose inhaled corticosteroid (ICS), or as-needed low dose ICS-formoterol *	Low dose ICS-LABA	Medium dose ICS-LABA	High dose ICS-LABA Refer for phenotypic assessment ± add-on therapy, e.g.tiotropium, anti-IgE, anti-IL5/5R, anti-IL4R
Other controller options	*Low dose ICS taken whenever SABA is taken †*	*Daily leukotriene receptor antagonist (LTRA), or low dose ICS taken whenever SABA taken †*	*Medium dose ICS, or low dose ICS+LTRA #*	*High dose ICS, add-on tiotropium, or add-on LTRA #*	*Add low dose OCS, but consider side-effects*
PREFERRED RELIEVER	As-needed low dose ICS-formoterol *		As-needed low dose ICS-formoterol for patients prescribed maintenance and reliever therapy‡		
Other reliever option	*As-needed short-acting β_2-agonist (SABA)*				

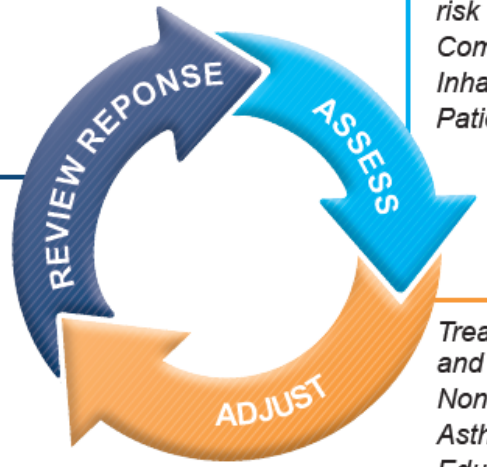
* *Data only with budesonide-formoterol (bud-form)*
† *Separate or combination ICS and SABA inhalers*

‡ *Low-dose ICS-form is the reliever only for patients prescribed bud-form or BDP-form maintenance and reliever therapy*
\# *Consider adding HDM SLIT for sensitized patients with allergic rhinitis and FEV1 >70% predicted*

Box 3-5A

Adults & adolescents 12+ years

Personalized asthma management:
Assess, Adjust, Review response



Symptoms
Exacerbations
Side-effects
Lung function
Patient satisfaction

Confirmation of diagnosis if necessary
Symptom control & modifiable risk factors (including lung function)
Comorbidities
Inhaler technique & adherence
Patient preferences and goals

Treatment of modifiable ris and comorbidities
Non-pharmacological strat
Asthma medications (adju
Education & skills training

ICS-formoterol is the preferred reliever for patients prescribed maintenance and reliever therapy. For other ICS-LABAs, the reliever is SABA

Asthma medication options:
Adjust treatment up and down for individual patient needs

	STEP 1	STEP 2	STEP 3		
PREFERRED CONTROLLER to prevent exacerbations and control symptoms	As-needed low dose ICS-formoterol *	Daily low dose inhaled corticosteroid (ICS), or as-needed low dose ICS-formoterol *	Low dose ICS-LABA		e.g.tiotropium, anti-IgE, anti-IL5/5R, anti-IL4R
Other controller options	*Low dose ICS taken whenever SABA is taken †*	*Daily leukotriene receptor antagonist (LTRA), or low dose ICS taken whenever SABA taken †*	*Medium dose ICS, or low dose ICS+LTRA #*	*High dose ICS, add-on tiotropium, or add-on LTRA #*	*Add low dose OCS, but consider side-effects*
PREFERRED RELIEVER	As-needed low dose ICS-formoterol *		As-needed low dose ICS-formoterol for patients prescribed maintenance and reliever therapy‡		
Other reliever option	*As-needed short-acting β_2-agonist (SABA)*				

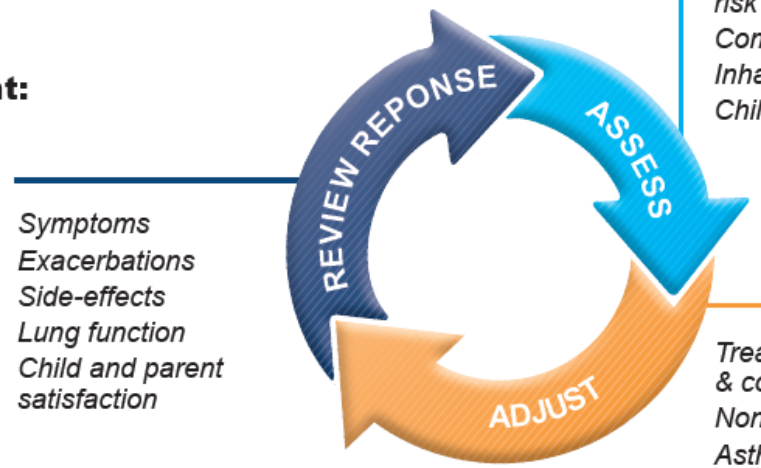
* *Data only with budesonide-formoterol (bud-form)*
† *Separate or combination ICS and SABA inhalers*

‡ *Low-dose ICS-form is the reliever only for patients prescribed bud-form or BDP-form maintenance and reliever therapy*
\# *Consider adding HDM SLIT for sensitized patients with allergic rhinitis and FEV1 >70% predicted*

Box 3-5B

Children 6-11 years

Personalized asthma management:
Assess, Adjust, Review response



Confirmation of diagnosis if necessary
Symptom control & modifiable risk factors (including lung function)
Comorbidities
Inhaler technique & adherence
Child and parent preferences and goals

Symptoms
Exacerbations
Side-effects
Lung function
Child and parent satisfaction

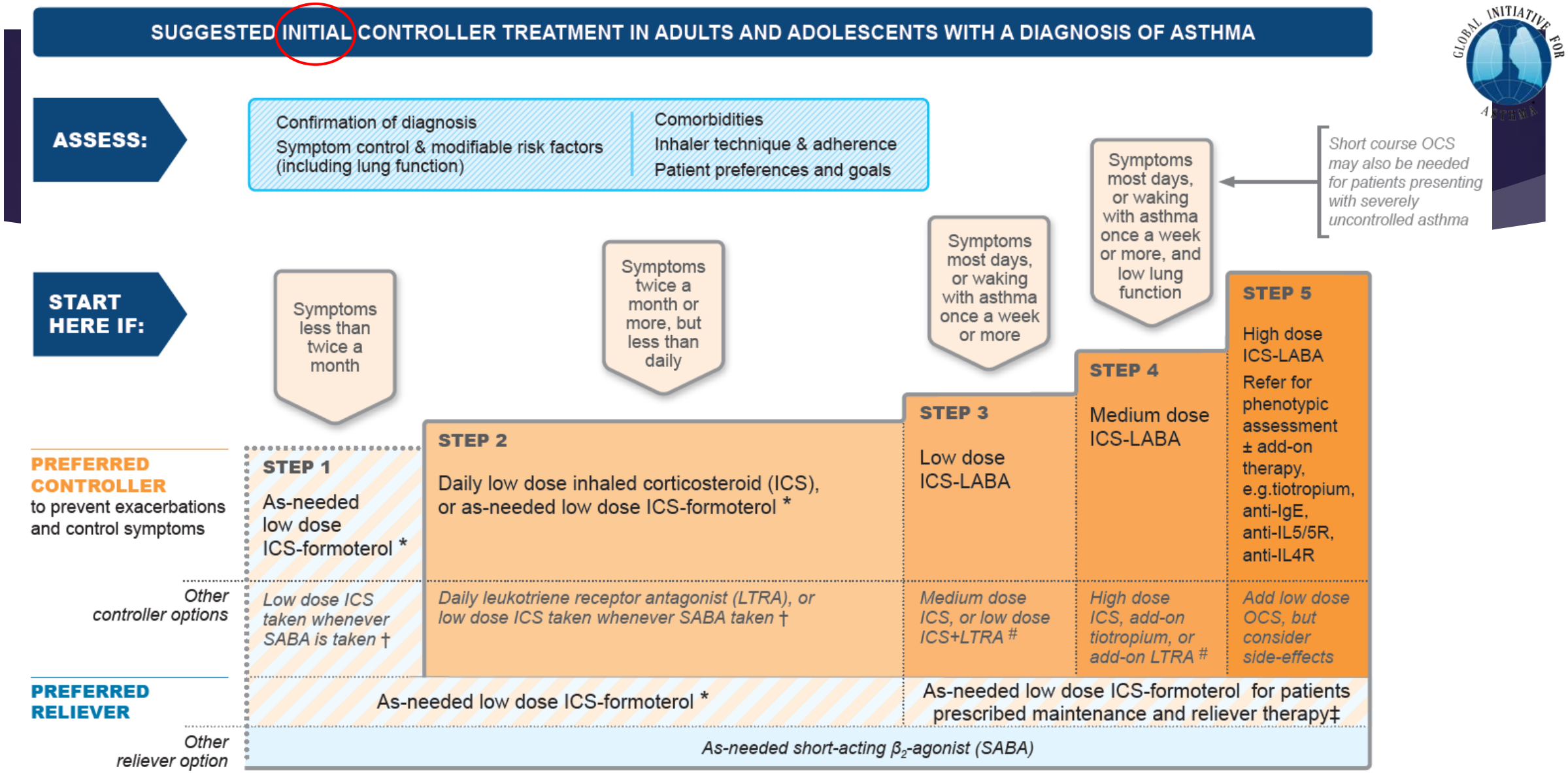
Treatment of modifiable risk factors & comorbidities
Non-pharmacological strategies
Asthma medications (adjust down or up)
Education & skills training

Asthma medication options:
Adjust treatment up and down for individual child's needs

	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
PREFERRED CONTROLLER to prevent exacerbations and control symptoms		Daily low dose inhaled corticosteroid (ICS) (see table of ICS dose ranges for children)	Low dose ICS-LABA or medium dose ICS	Medium dose ICS-LABA Refer for expert advice	Refer for phenotypic assessment ± add-on therapy, e.g. anti-IgE
Other controller options	*Low dose ICS taken whenever SABA taken*; or daily low dose ICS*	*Daily leukotriene receptor antagonist (LTRA), or low dose ICS taken whenever SABA taken**	*Low dose ICS + LTRA*	*High dose ICS-LABA, or add-on tiotropium, or add-on LTRA*	*Add-on anti-IL5, or add-on low dose OCS, but consider side-effects*
RELIEVER	*As-needed short-acting β_2-agonist (SABA)*				

* *Separate ICS and SABA inhalers*

SUGGESTED INITIAL CONTROLLER TREATMENT IN ADULTS AND ADOLESCENTS WITH A DIAGNOSIS OF ASTHMA



* Data only with budesonide-formoterol (bud-form)

† Separate or combination ICS and SABA inhalers

‡ Low-dose ICS-form is the reliever only for patients prescribed bud-form or BDP-form maintenance and reliever therapy

Consider adding HDM SLIT for sensitized patients with allergic rhinitis and FEV1 >70% predicted

SUGGESTED INITIAL CONTROLLER TREATMENT IN ADULTS AND ADOLESCENTS WITH A DIAGNOSIS OF ASTHMA

FIRST ASSESS:

- Confirmation of diagnosis
- Symptom control & modifiable risk factors (including lung function)
- Comorbidities
- Inhaler technique & adherence
- Patient preferences & goals

IF: / **START WITH:**

- Symptoms most days, waking at night ≥ once a week and low lung function? — YES → Medium dose ICS-LABA (MART or maintenance-only) — **STEP 4**
  - *Short course OCS may also be needed for patients presenting with severely uncontrolled asthma*
- NO → Symptoms most days,or waking at night ≥ once a week? — YES → Low dose ICS-LABA (MART or maintenance-only) — **STEP 3**
- NO → Symptoms twice a month or more? — YES → Daily low dose ICS or as-needed low dose ICS-formoterol — **STEP 2**
- NO → As-needed low dose ICS-formoterol — **STEP 1**

Summary

- Several epidemiological findings suggests the link between asthma and allergic rhinitis as well as the worsening effect of allergic rhinitis on asthma:
  - AR coexists in the majority of asthma patients
  - Asthma patients with concomitant AR experience more asthma attacks and use more resources to control their asthma than patients with asthma alone.
  - Asthma patients with concomitant AR experience worse quality of life (physical functioning) than patients with AR alone during the pollen season.
  - Allergen avoidance, pharmacotherapy and allergen specific immunotherapy should be used to treat AR and asthma in a combined manner


symptom
management
management
peanuts
runny nose
immune system
eczema
skin testing
dust
immune system
hypersensitivity
food allergy
anaphylaxis
hives
itchiness
bee sting
pollen
immunology
peanuts
pollen
allergen
milk
hives
environmental factor
immune system
asthma
milk
disorder
reaction
milk
eggs
eczema
red eyes
anaphylaxis
skin testing
hypersensitivity
runny nose
immunology
medication
food allergy
symptom
allergen
reaction
medication
steroids
management
disorder
eggs
eggs
sneezing
hypersensitivity
disorder
anaphylaxis
red eyes
allergen
bee sting
antihistamines
antihistamines
dust
environmental factor
pollen
steroids
peanuts
dust
eczema
red eyes
itchiness
intolerance
food allergy
environmental factor
intolerance
sneezing
ALLERGY
antihistamines
runny nose
immunology
allergy
reaction
bee sting
skin testing
medication
steroids
asthma
allergy
asthma
Thank you