



# ALLERGIC RHINITIS

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# BACKGROUND

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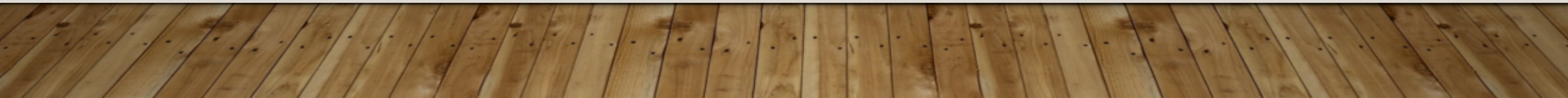
- Rhinitis is broadly defined as inflammation of the nasal mucosa.
- It is a common disorder that affects up to 40% of the population.
- Allergic rhinitis is the most common type of chronic rhinitis, affecting 10–20% of the population, and evidence suggests that the prevalence of the disorder is increasing
- Severe allergic rhinitis has been associated with significant impairments in quality of life, sleep and work performance.

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- Allergic rhinitis, or allergic rhinosinusitis, is characterized by paroxysms of sneezing, rhinorrhea, and nasal obstruction, often accompanied by itching of the eyes, nose, and palate. Postnasal drip, cough, irritability, and fatigue are other common symptoms

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- In the past, allergic rhinitis was considered to be a disorder localized to the nose and nasal passages, but current evidence indicates that it may represent a component of a systemic airway disease involving the entire respiratory tract.
  - There are a number of physiological, functional and immunological relationships between the upper (nose, nasal cavity, paranasal sinuses, Eustachian tube, pharynx and larynx) and lower (trachea, bronchial tubes, bronchioles and lungs) respiratory tracts.



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- both tracts contain a ciliated epithelium consisting of goblet cells that secrete mucous, which serves to filter the incoming air and protect structures within the airways.
  - Furthermore, the submucosa of both the upper and lower airways includes a collection of blood vessels, mucous glands, supporting cells, nerves and inflammatory cells.



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- Evidence has shown that allergen provocation of the upper airways not only leads to a local inflammatory response, but may also lead to inflammatory processes in the lower airways, and this is supported by the fact that rhinitis and asthma frequently coexist.
  - Therefore, allergic rhinitis and asthma appear to represent a combined airway inflammatory disease, and this needs to be considered to ensure the optimal assessment and management of patients with allergic rhinitis

# CLASSIFICATION

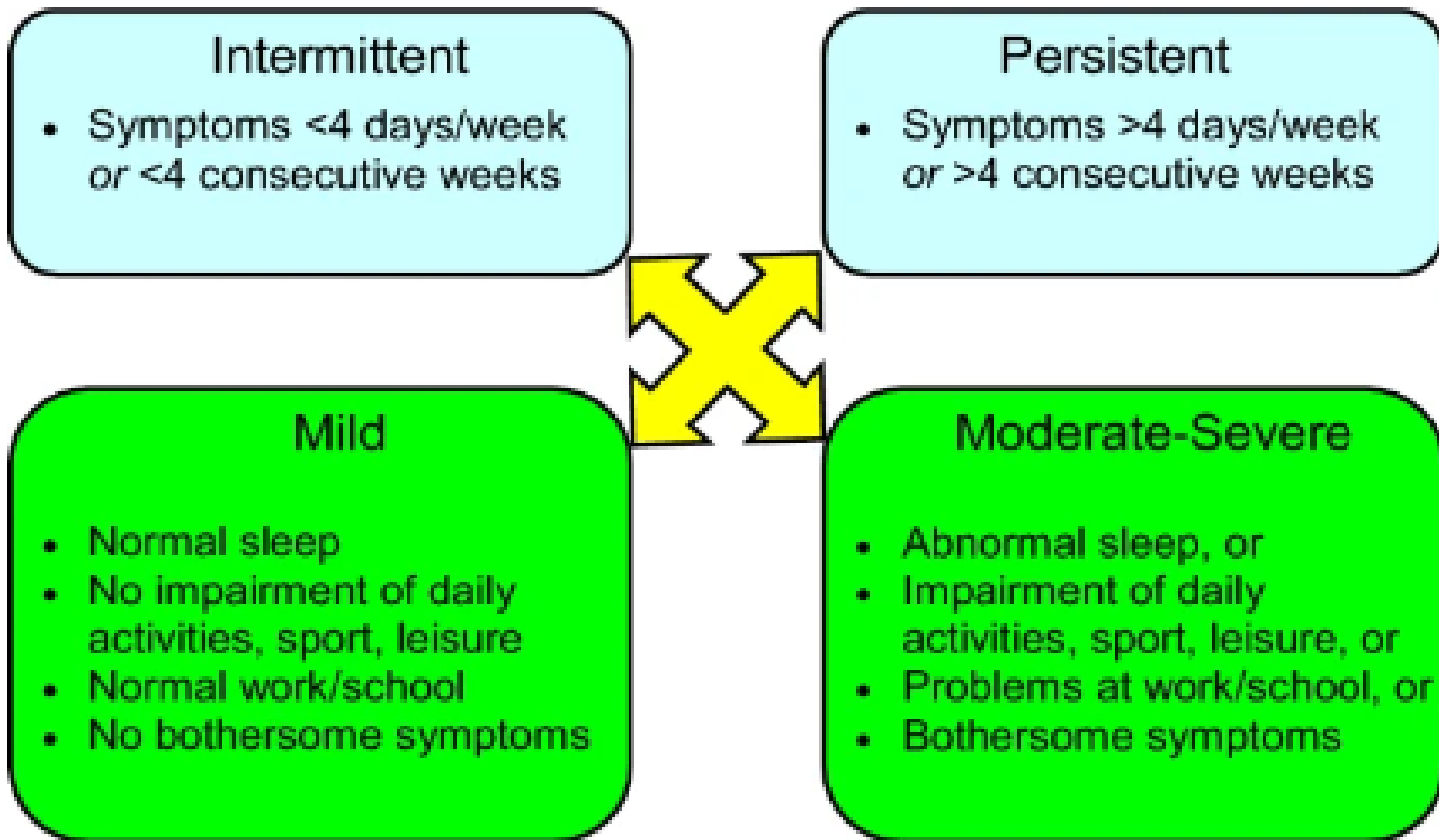
## Table 1 Etiological classification of rhinitis [1]

from: [Allergic rhinitis](#)

	Description
IgE-mediated (allergic)	<ul style="list-style-type: none"><li>▪ IgE-mediated inflammation of the nasal mucosa, resulting in eosinophilic and Th2-cell infiltration of the nasal lining</li><li>▪ Further classified as intermittent or persistent</li></ul>
Autonomic	<ul style="list-style-type: none"><li>▪ Vasomotor</li><li>▪ Drug-induced (rhinitis medicamentosa)</li><li>▪ Hypothyroidism</li><li>▪ Hormonal</li><li>▪ Non-allergic rhinitis with eosinophilia syndrome (NARES)</li></ul>
Infectious	<ul style="list-style-type: none"><li>▪ Precipitated by viral (most common), bacterial, or fungal infection</li></ul>
Idiopathic	<ul style="list-style-type: none"><li>▪ Etiology cannot be determined</li></ul>



Fig. 1



Adapted from Small et al. [1], Dousquet et al. [5]

Classification of allergic rhinitis according to symptom duration and severity.

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- Traditionally, allergic rhinitis has been categorized as seasonal (occurs during a specific season) or perennial (occurs throughout the year). However, not all patients fit into this classification scheme

# DIAGNOSIS AND INVESTIGATIONS

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- Allergic rhinitis is usually a long-standing condition that often goes undetected in the primary-care setting.
- Patients suffering from the disorder often fail to recognize the impact of the disorder on quality of life and functioning and, therefore, do not frequently seek medical attention. In addition, physicians fail to regularly question patients about the disorder during routine visits.

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- Therefore, screening for rhinitis is recommended, particularly in asthmatic patients since studies have shown that rhinitis is present in up to 95% of patients with asthma

# HISTORY

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## Personal

- • Congestion
- • Nasal itch
- • Rhinorrhea
- • Sneezing
- • Eye involvement
- • Seasonality
- • Triggers

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- *Family*

- Allergy
- Asthma

- Environmental*

- Pollens
- Animals
- Flooring/upholstery
- Mould
- Humidity
- Tobacco exposure



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- *Medication/drug use*

- Beta-blockers
- ASA
- NSAIDs
- ACE inhibitors
- Hormone therapy
- Recreational cocaine use

*Quality of life*

- Rhinitis-specific questionnaire

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- *Comorbidities*

- Asthma
- Mouth breathing
- Snoring  $\pm$  apnea
- Impaired smell or taste
- Sinus involvement
- Otitis media
- Nasal polyps
- Conjunctivitis

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- *Response to previous interventions*
    - Avoidance measures
    - Saline nasal rinses
    - Second-generation oral antihistamines
    - Intranasal corticosteroids

# PHYSICAL EXAMINATION

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- *Outward signs*
  - Mouth breathing
  - Rubbing the nose/transverse nasal crease
  - Frequent sniffing and/or throat clearing
  - Allergic shiners (dark circles under eyes)

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- *Nose*

- Mucosal swelling, bleeding
- Pale, thin secretions
- Polyps or other structural abnormalities

*Ears*

- Generally normal
- Pneumatic otoscopy to assess for Eustachian tube dysfunction
- Valsalva's maneuver to assess for fluid behind the ear drum

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- *Sinuses*

- Palpation of sinuses for signs of tenderness
- Maxillary tooth sensitivity

*Posterior oropharynx*

- Postnasal drip
- Lymphoid hyperplasia (“cobblestoning”)
- Tonsillar hypertrophy

*Chest and skin*

- Atopic disease
- Wheezing



# DIAGNOSTIC TESTS

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- Routine laboratories are usually normal. Neither peripheral blood eosinophil counts nor total serum immunoglobulin E (IgE) levels (elevated in only 30 to 40 percent of patients) are sensitive enough to help diagnose allergic rhinitis
- Allergy skin testing confirms that the patient is sensitized to aeroallergens, although it is not necessary for the initial diagnosis.

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- Imaging is not usually performed in the diagnosis of allergic rhinitis unless a concomitant condition such as chronic rhinosinusitis (CRS) is suspected or there is a history of facial trauma or features to suggest anatomic abnormalities (unilateral congestion or obstruction)

# TREATMENT

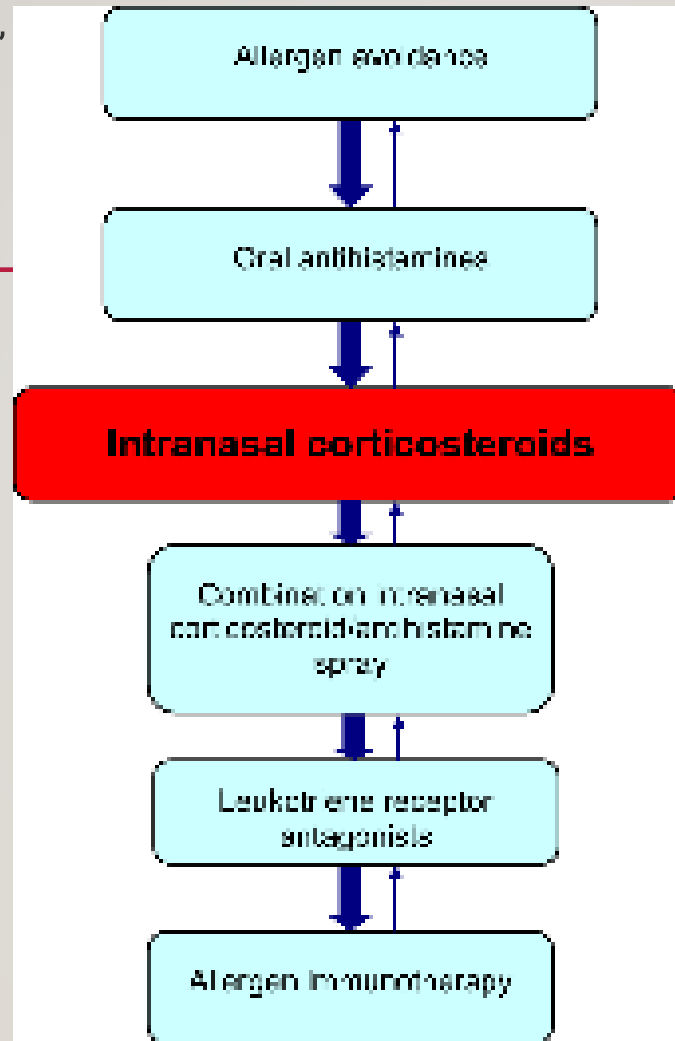
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- The treatment goal for allergic rhinitis is relief of symptoms.

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- In most patients, allergic rhinitis is a persistent condition that requires ongoing therapy over a period of years.
  - Management combines allergen avoidance and pharmacologic therapy, with allergen immunotherapy added for refractory or severe cases

A simplified,

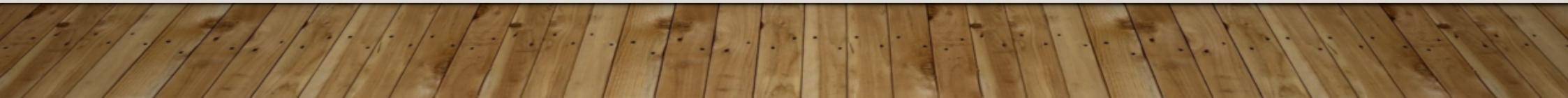
itis. Treatments can be used individually or in any combination



# ALLERGEN AVOIDANCE

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- The first-line treatment of allergic rhinitis involves the avoidance of relevant allergens (e.g., house dust mites, moulds, pets, pollens) and irritants (e.g., tobacco smoke)
- compliance with this recommendation is poor





# GLUCOCORTICOID NASAL SPRAYS

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- Glucocorticoid nasal sprays are the most effective single-agent maintenance therapy for allergic rhinitis and cause few side effects at the recommended doses.
- They are particularly effective in relieving nasal congestion. Specific agents include beclomethasone, flunisolide, budesonide, fluticasone propionate, mometasone furoate, fluticasone furoate.

# ANTIHISTAMINES

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- First-generation sedating antihistamines are familiar to patients and available without a prescription, but they have several significant adverse effects, including sedation and impairment of cognitive function, paradoxical agitation in young children, and anticholinergic side effects in older adults.
- Second-generation agents, such as **cetirizine**, **levocetirizine**, **loratadine**, **desloratadine**, and **fexofenadine** have few of these problems and are preferred when antihistamine therapy is desired.

## MILD OR INTERMITTENT SYMPTOMS

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- For patients with **mild or intermittent** symptoms, we suggest a glucocorticoid nasal spray (**Grade 2A**).
- We start at the maximal recommended dose for age and then taper to the lowest effective dose once symptoms are controlled

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- Some patients with mild symptoms may prefer other agents because of oral administration or desire to avoid glucocorticoids. Thus, the following are appropriate choices as well:
  - An antihistamine nasal spray, such as **azelastine** or **olopatadine**, administered regularly or as needed.
  - A second-generation oral antihistamine, administered regularly or as needed.
  - **Cromolyn** nasal spray, administered regularly or as needed. This is often preferred by parents of young children because of its excellent safety profile, although it is less effective than other agents

# PERSISTENT OR MODERATE-TO-SEVERE SYMPTOMS

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- For patients with persistent or moderate-to-severe symptoms, we recommend glucocorticoid nasal sprays as first-line therapy (**Grade 1A**).
- Several agents, such as fluticasone propionate, mometasone furoate, and fluticasone furoate, have minimal systemic bioavailability and are conveniently dosed once or twice daily.
- We start at the maximal recommended dose for age and then taper to the lowest effective dose once symptoms are controlled

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- If glucocorticoid nasal sprays alone are not sufficient to control symptoms, we suggest adding an antihistamine nasal spray (such as **azelastine** or **olopatadine**) in preference to other agents (**Grade 2B**).
  - Other options include an oral antihistamine/decongestant combination or **montelukast**.

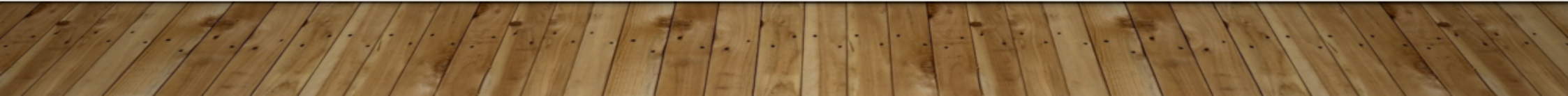


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- For patients with rhinitis symptoms that are refractory to glucocorticoid nasal sprays and concomitant asthma or nasal polyposis, the addition of **montelukast** may be helpful

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- Chronic rhinosinusitis or mixed rhinitis should be suspected if a patient with presumed allergic rhinitis fails to improve significantly as a result of pharmacologic therapy and appropriate allergen avoidance

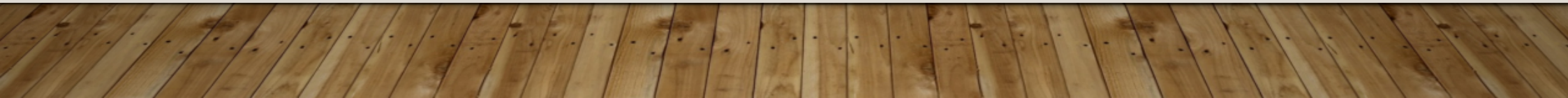
# ASTHMA

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- Asthma is a syndrome characterized by airflow obstruction that varies markedly, both spontaneously and with treatment.

Asthmatics harbor a special type of inflammation in the airways that makes them more responsive than non asthmatics to a wide range of triggers, leading to excessive narrowing with consequent reduced airflow and symptomatic wheezing and dyspnea.



# PREVALENCE

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- 10–12% of adults and 15% of children
- In developing countries where the prevalence of asthma had been much lower, there is a rising prevalence, which is associated with increased urbanization.

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- Asthma can present at any age, with a peak age of 3 years.
  - In childhood, twice as many males as females are asthmatic, but by adulthood the sex ratio has equalized.
  - Many with asthma become asymptomatic during adolescence but that asthma returns in some during adult life, particularly in those with persistent symptoms and severe asthma.



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Adults with asthma, including those with onset during adulthood, rarely become permanently asymptomatic.

The severity of asthma does not vary significantly within a given patient.

# CLINICAL FEATURES AND DIAGNOSIS

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- The characteristic symptoms of asthma are wheezing, dyspnea, and coughing, which are variable, both spontaneously and with therapy.
- Symptoms may be worse at night, and patients typically awake in the early morning hours.
- Patients may report difficulty in filling their lungs with air.
- There is increased mucus production in some patients, with typically tenacious mucus that is difficult to expectorate.
- There may be increased ventilation and use of accessory muscles of ventilation.

# DIAGNOSIS

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- The diagnosis of asthma is usually apparent from the symptoms of variable and intermittent airways obstruction, but must be confirmed by objective measurements of lung function

# LUNG FUNCTION TESTS

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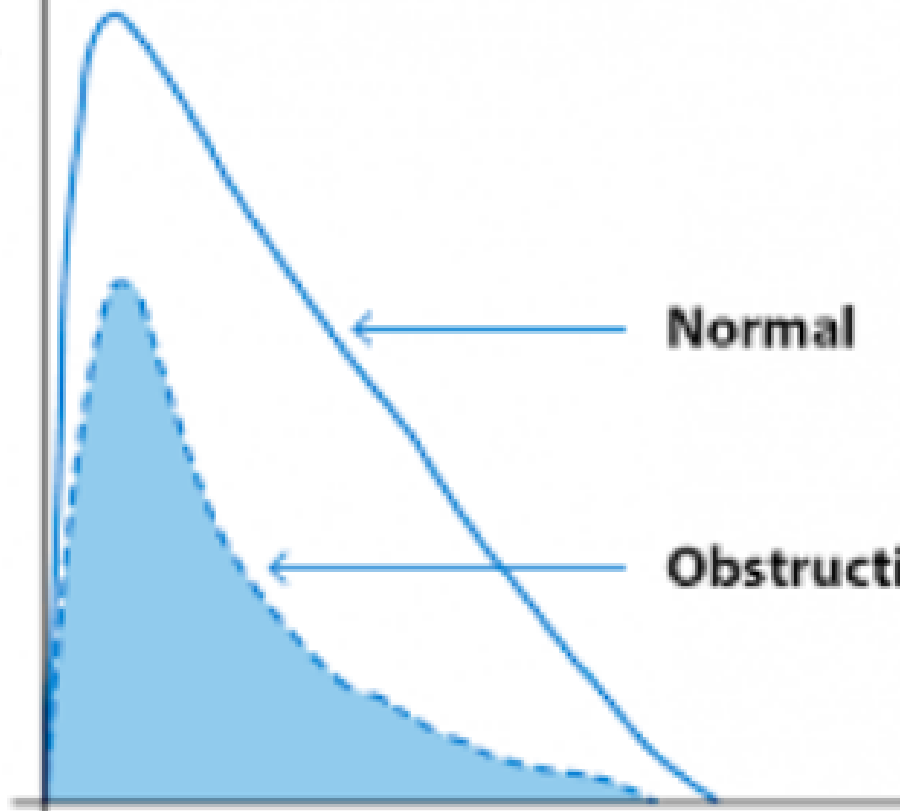
- Simple spirometry confirms airflow limitation with a reduced FEV1, FEV1/FVC ratio, and PEF .
- Reversibility is demonstrated by a >12% and 200-mL increase in FEV1 15 min after an inhaled short-acting  $\beta$ 2-agonist or in some patients by a 2- to 4-week trial of oral corticosteroids (OCS) (prednisone or prednisolone 30–40 mg daily).
- Measurements of PEF twice daily may confirm the diurnal variations in airflow obstruction.
- Flow-volume loops show reduced peak flow and reduced maximum expiratory flow

Expiratory  
flow rate (l/s)

Normal

Obstructive

Volume (litres)



# TREATMENT

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- **Aims of Asthma Therapy**
- Minimal (ideally no) chronic symptoms, including nocturnal
- Minimal (infrequent) exacerbations
- No emergency visits
- Minimal (ideally no) use of a required  $\beta$ 2-agonist
- No limitations on activities, including exercise
- Peak expiratory flow circadian variation <20%
- (Near) normal peak expiratory flow
- Minimal (or no) adverse effects from medicine



# DRUGS

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- 1-bronchodilators, which give rapid relief of symptoms mainly through relaxation of airway smooth muscle,
- 2-controllers, which inhibit the underlying inflammatory process.

# BRONCHODILATOR THERAPIES

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- 1-B2 Agonists
- 2-Anticholinergic
- 3-Theophyllin

# CONTROLLER THERAPY

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- 1-Inhaled corticosteroid
- 2-Systemic corticosteroid
- 3-Antileukotrienes
- 4-Cromones
- 5-Anti IgE

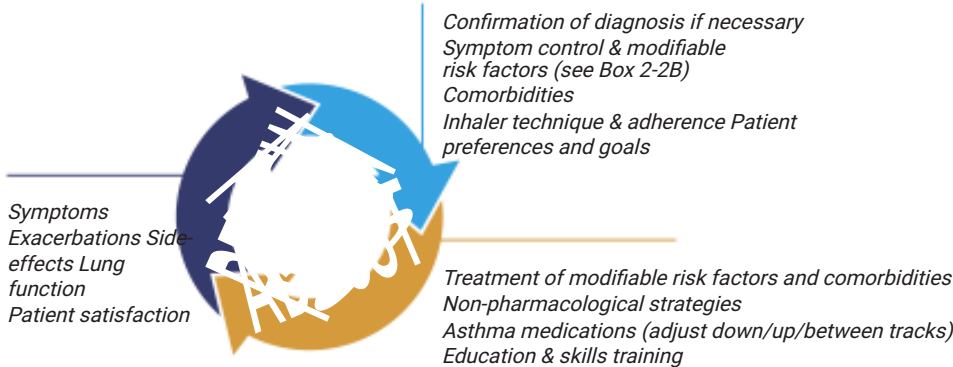
# MANAGEMENT OF CHRONIC ASTHMA

Short-acting $\beta_2$ -agonist as required for symptom relief				
	ICS Low dose	ICS Low dose	LABA ICS High dose	LABA ICS High dose
		LABA		OCS
Mild intermittent	Mild persistent	Moderate persistent	Severe persistent	Very severe persistent

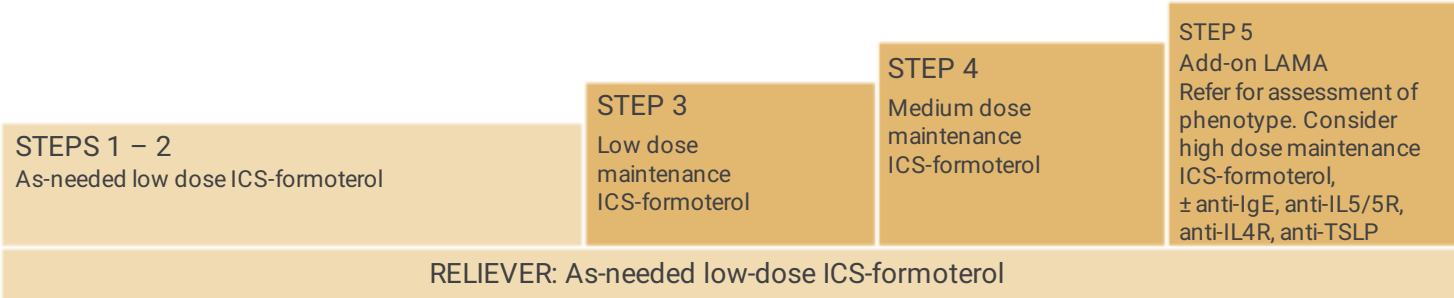
**FIGURE 309-8** Stepwise approach to asthma therapy according to the severity of asthma and ability to control symptoms. ICS, inhaled corticosteroids; LABA, long-acting  $\beta_2$ -agonist; OCS, oral corticosteroid.

# Adults & adolescents 12+ years

Personalized asthma management  
Assess, Adjust, Review  
for individual patient needs

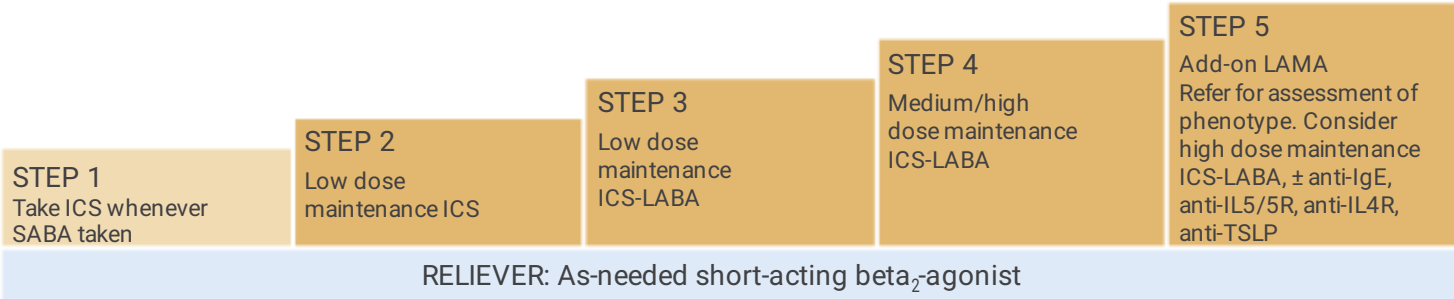


**CONTROLLER** and **PREFERRED RELIEVER**  
(Track 1). Using ICS-formoterol as reliever reduces the risk of exacerbations compared with using a SABA reliever



See GINA severe asthma guide

**CONTROLLER** and **ALTERNATIVE RELIEVER**  
(Track 2). Before considering a regimen with SABA reliever, check if the patient is likely to be adherent with daily controller



Other controller options for either track (limited indications, or less evidence for efficacy or safety)

	Low dose ICS whenever SABA taken, or daily LTRA, or add HDM SLIT	Medium dose ICS, or add LTRA, or add HDM SLIT	Add LAMA or LTRA or HDM SLIT, or switch to high dose ICS	Add azithromycin (adults) or LTRA. As last resort consider adding low dose OCS but consider side-effects
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Thanks for your attention