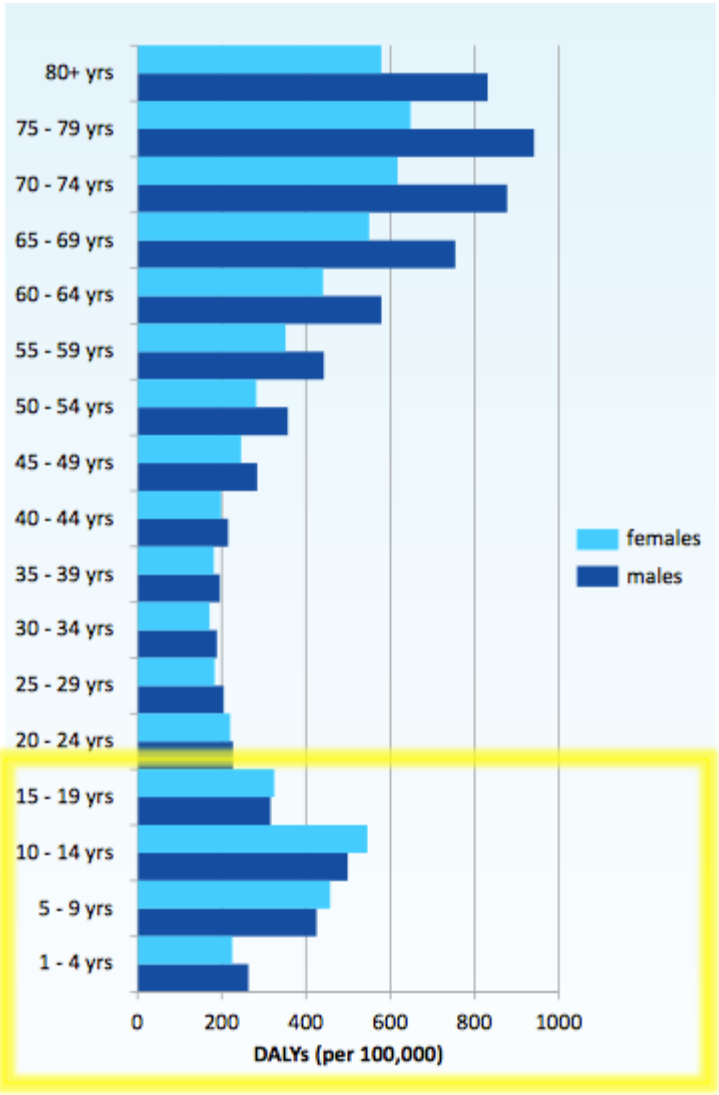
ΒΡΟΓΧΙΚΟ ΑΣΘΜΑ

ΚΑΤΕΡΙΝΑ ΒΛΑΜΗ
ΠΝΕΥΜΟΝΟΛΟΓΟΣ

ΠΑΡΑΓΟΝΤΕΣ ΚΙΝΔΥΝΟΥ ΒΡΟΓΧΙΚΟΥ ΑΣΘΜΑΤΟΣ

334 million people that suffer from asthma worldwide



Burden of disease, measured by disability adjusted life years (DALYs) per 100,000 population attributed to asthma by age group and sex

ΣΥΧΝΟΤΗΤΑ ΒΡΟΓΧΙΚΟΥ ΑΣΘΜΑΤΟΣ

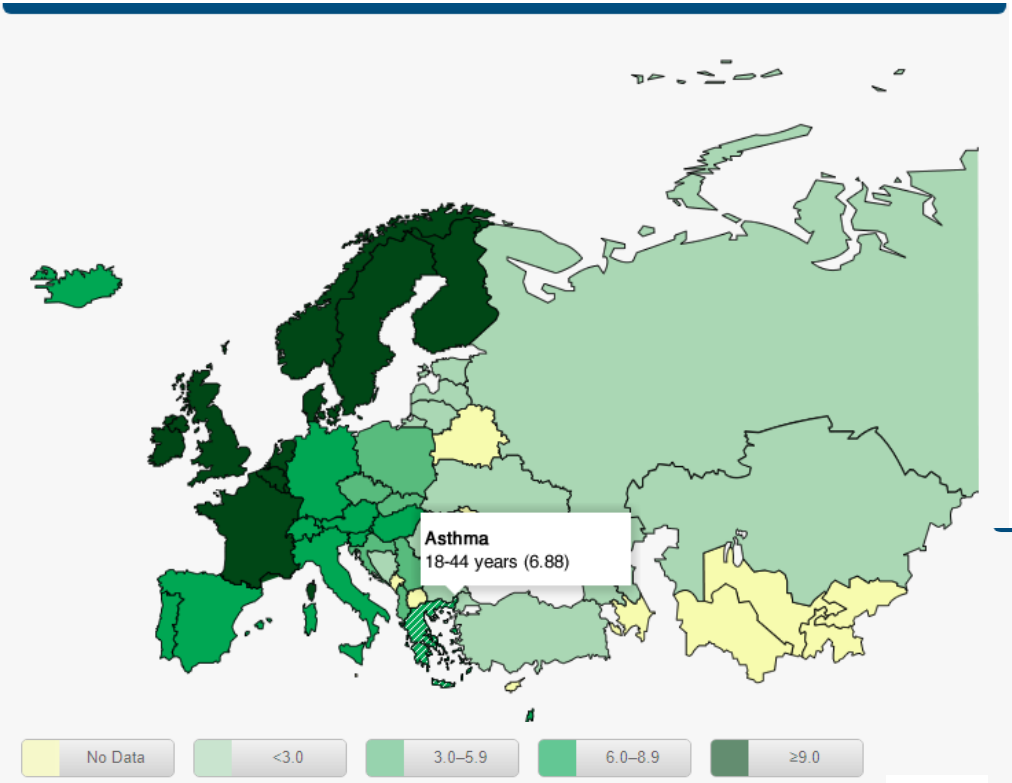


Figure 1- Prevalance of asthma ever in adults aged 18-44 years (% of population). Data from World Health Organization World Health Survey, 2002–2004. Sigurkarlsson *et al.*, 2011; Polish Multicentre Study of Epidemiology of Allergic Diseases; European Federation of Allergy and Airways Diseases Patients Associations; Serbian Health Insurance Fund; the Swiss Study on Air Pollution and Lung Disease in Adults; Pl'riftanj *et al.*, 1999; Organisation for Economic Co-operation and Development. Download Raw Data

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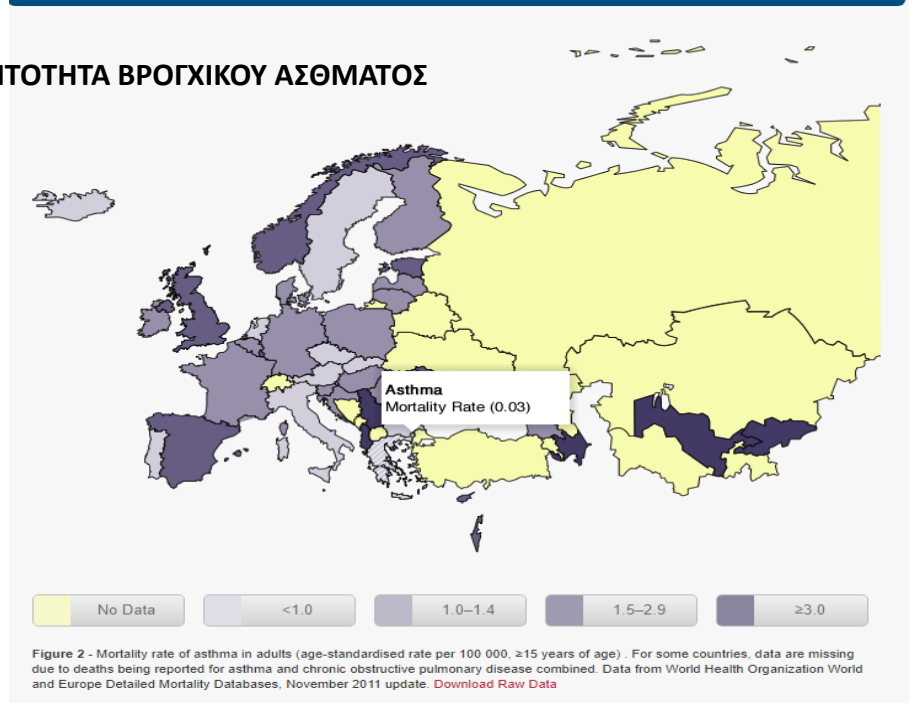


Figure 2 - Mortality rate of asthma in adults (age-standardised rate per 100 000, ≥15 years of age) . For some countries, data are missing due to deaths being reported for asthma and chronic obstructive pulmonary disease combined. Data from World Health Organization World and Europe Detailed Mortality Databases, November 2011 update. Download Raw Data

ΝΟΣΟΚΟΜΕΙΑΚΕΣ ΝΟΣΗΛΕΙΕΣ ΒΡΟΓΧΙΚΟΥ ΑΣΘΜΑΤΟΣ

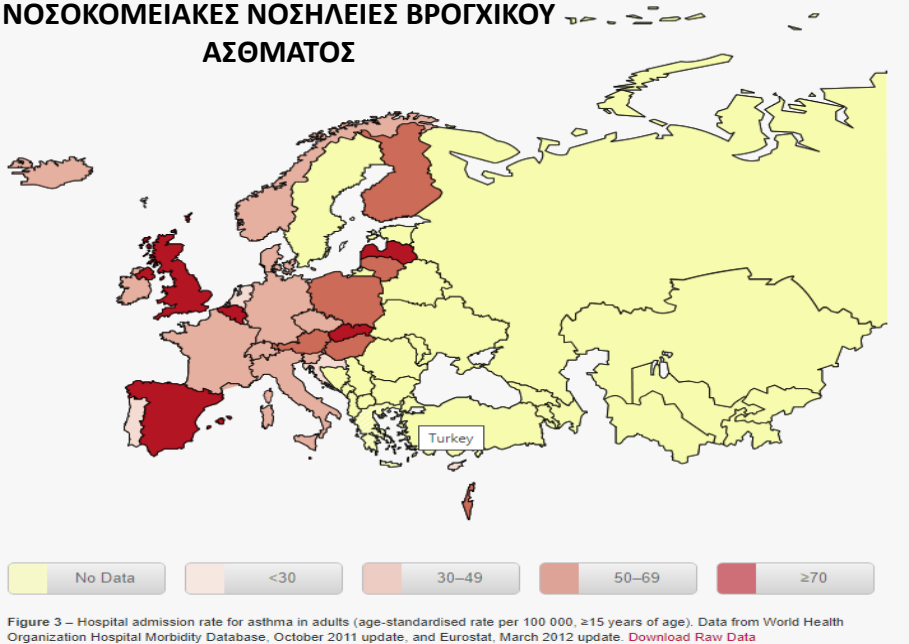
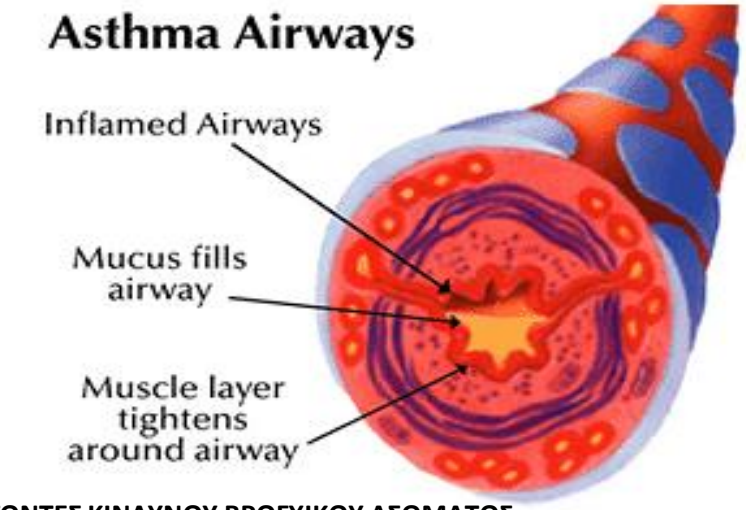


Figure 3 – Hospital admission rate for asthma in adults (age-standardised rate per 100 000, ≥15 years of age). Data from World Health Organization Hospital Morbidity Database, October 2011 update, and Eurostat, March 2012 update. Download Raw Data



ΠΑΡΑΓΟΝΤΕΣ ΚΙΝΔΥΝΟΥ ΒΡΟΓΧΙΚΟΥ ΑΣΘΜΑΤΟΣ

1. Animals and pets
2. Colds and flu
3. Emotions
4. Food
5. House dust mites
6. Indoor environment
7. Mould and fungi
8. Pollen
9. Pollution
10. Smoking and second-hand smoke
11. Stress and anxiety
12. Weather
13. Female hormones

The most common signs of asthma are:

Coughing, especially at night, during exercise or when laughing

Difficulty breathing

Chest tightness

Shortness of breath

Wheezing (a whistling or squeaky sound in your chest when breathing, especially when exhaling)

Classification of asthma severity based on clinical findings before treatment (adults).

Severity[†]		Mild intermittent	Mild persistent	Moderate persistent	Severe persistent
Features of asthma symptoms	Frequency	Less than once a week	Once or more a week, not every day	Every day	Every day
	Intensity	Mild and brief	Disturbs daily life or sleep at least once a month	Disturbs daily life or sleep at least once a week	Restricts daily life
				Worsens frequently	Worsens frequently
	Symptoms at night	Less than twice a month	Twice or more a month	Once or more a week	Frequently
PEF FEV_1[‡]	$\%FEV_1$, %PEF	≥80%	≥80%	≥60%, <80%	<60%
	Diurnal variation of PEF	<20%	20–30%	>30%	>30%

[†] Determine the severity based on the presence of any one of the features or measured percentages.

[‡] In patients with severe or long-standing symptoms, severity may be underestimated when determined based on symptoms. Respiratory function indicates the objective severity of airway obstruction. Its variation is associated with airway hyperresponsiveness. $\%FEV_1$, (FEV_1 measured value/FEV_1 predicted value) × 100; %PEF, (PEF measured value/PEF predicted value or the best value) × 100.

Classification of asthma symptoms and exacerbation severity (adults).

Exacerbation severity†	Dyspnea	Exertion	Measured values§			
			%PEF	SpO_2	PaO_2	$PaCO_2$
Wheezing/chest tightness	Dyspnea on exertion	Almost normal	≥80%	≥96%	Normal	<45 mmHg
Mild (mild attack)	Dyspnea, but no trouble with lying down	Slight dyspnea				
Moderate (moderate attack)	Dyspnea, with trouble with lying down	Difficulty in moving Difficulty in walking	60–80%	91–95%	>60 mmHg	<45 mmHg
Severe (severe attack)	Dyspnea, cannot move	Abasia difficulty in speaking	<60%	≤90%	≤60 mmHg	≥45 mmHg
Serious‡	Respiratory insufficiency Cyanosis respiratory arrest	Anepia, Akinesia Confusion, Impaired consciousness, Incontinence	Immeasurable	≤90%	≤60 mmHg	≥45 mmHg

† Determine exacerbation severity based on the extent of dyspnea, referring to other items. If symptoms of different exacerbation intensities coexist, choose the most severe one.

‡ Serious conditions, such as respiratory attenuation or arrest, anepia, impaired consciousness, and incontinence are regarded as emergency.

§ Refer to measured values after bronchodilator administration.

Physician's instructions for patients with asthma.

- Diagnosis
- Differences between reliever agents and controller agents
- How to use an inhaler
- Instructions for prophylaxis
- Signs of asthma exacerbation
- PEF monitoring
- How and when to visit clinics
- Self-management plan based on instructions

High-risk asthma exacerbation group.

The high-risk group meets any one of the following criteria:

1. Receiving systemic steroid administration, or systemic steroid administration has recently been discontinued
2. History of hospitalization due to asthma attack in the past 1 year
3. Emergency visit due to asthma attack in the past 1 year
4. Tracheal intubation due to asthma attack in the past
5. Coexisting mental disorder
6. Noncompliance with asthma treatment plan
7. Not using an inhaled corticosteroid
8. Excessive use of short-acting β_2 agonist

Treatment steps for asthma.

		Treatment step 1	Treatment step 2	Treatment step 3	Treatment step 4
Long-term management agents	Basic treatment	Inhaled corticosteroid (low dose)	Inhaled corticosteroid (low to medium doses)	Inhaled corticosteroid (medium to high doses)	Inhaled corticosteroid (high dose)
		If the above agent cannot be used, use one of the following agents. • LTRA • Theophylline sustained-release preparation (unnecessary for rare symptoms)	If the above agent is ineffective, concomitantly use one of the following agents. • LABA (a compounding agent can be used)‖ • LTRA • Theophylline sustained-release preparation	Concomitantly use one or more of the agents below. • LABA (a compounding agent can be used)‖ • LTRA • Theophylline sustained-release preparation • LAMA #	Concomitantly use multiple agents of those below. • LABA (a compounding agent can be used) • LTRA • Theophylline sustained-release preparation • LAMA# • Anti-IgE antibody‡,†† • Oral corticosteroid§,††
	Additional treatment	Anti-allergics other than LTRA†	Anti-allergics other than LTRA†	Anti-allergics other than LTRA†	Anti-allergics other than LTRA†
Exacerbation treatment¶		Inhaled SABA	Inhaled SABA	Inhaled SABA	Inhaled SABA

LTRA, leukotriene receptor antagonists; LABA, long-acting β_2 agonist; SABA, short-acting β_2 agonist; LAMA, long-acting muscarinic antagonist.

† Antiallergics refer to mediator antireleasers, histamine H1 antagonists, thromboxane A2 inhibitors, and Th2 cytokine inhibitors.

‡ Anti-IgE antibody is indicated for patients who are positive for perennial inhaled allergen with serum total IgE value within 30−1500 IU/ml.

§ Oral corticosteroids are intermittently administered for a short period. Maintain the minimum maintenance dose if a patient cannot be controlled by enhanced treatment with other agents and short intermittent administration.

¶ Management against mild exacerbations is shown. For other exacerbations, refer to Table 19, 21.

‖ In patients treated with a combination of budesonide/formoterol as a controller, if used as a rescue, the agent should not be used beyond the maximum number of uses per time and per day. The maximum number of uses is generally up to 8 inhalations/day; however, temporarily, it can be used up to 12 inhalations/day (for 3 days: budesonide, 1920 μg/day; formoterol 54 μg/day). When more than 8 inhalations/day of budesonide/formoterol are needed, a physician should be consulted.

Soft mist inhaler of tiotropium.

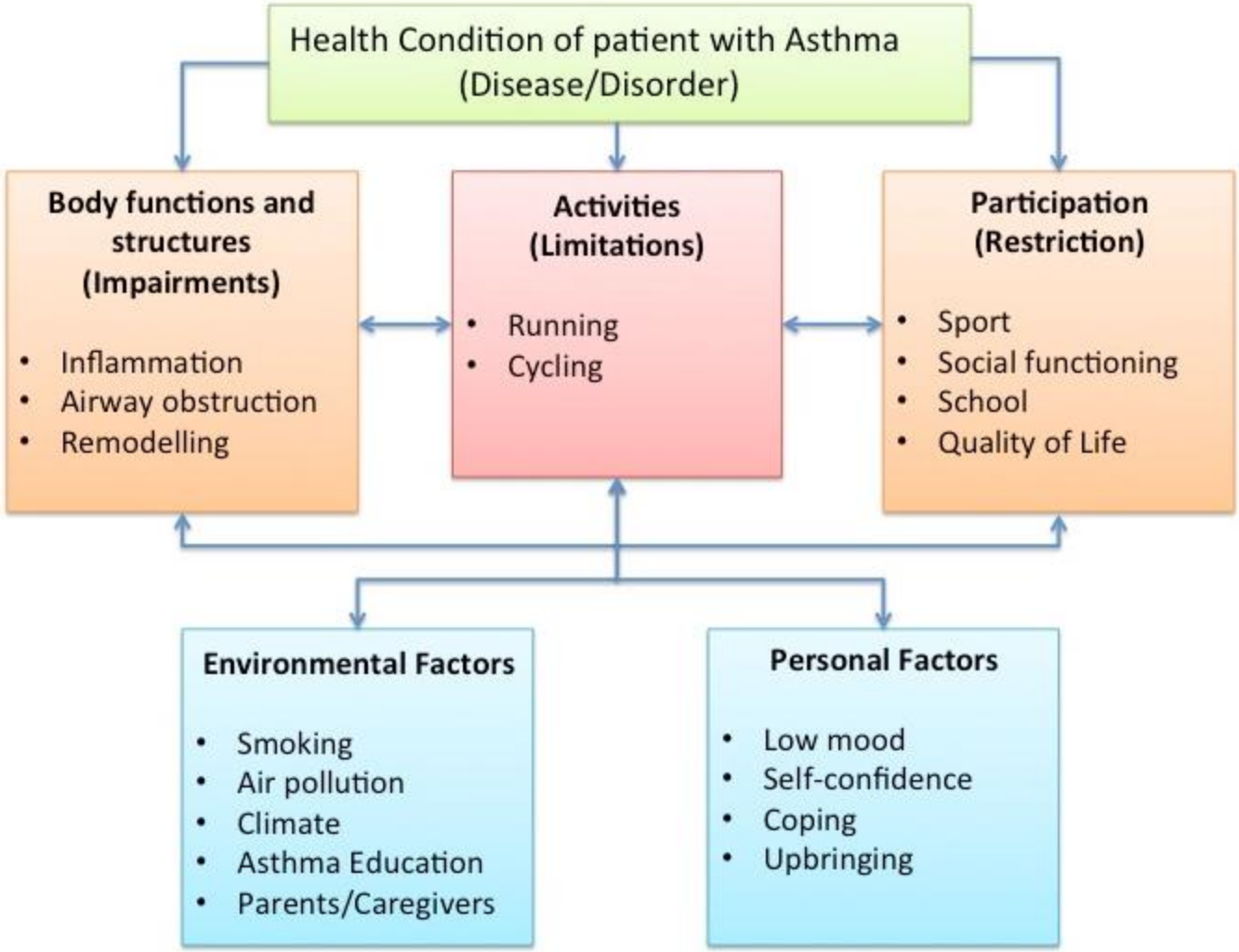
†† Anti-IgE antibody and oral corticosteroid are considered when asthma control cannot be achieved with inhaled corticosteroid plus LABA and LTRA, etc.

Classification of asthma severity based on the present treatment (adults).

	Present treatment step			
Patient's symptoms in the present treatment	Treatment step 1	Treatment step 2	Treatment step 3	Treatment step 4
Controlled† • No symptoms • No symptoms at night	Mild intermittent	Mild persistent	Moderate persistent	Severe persistent
Mild intermittent‡ • Less than once a week • Mild and brief • Less than twice a month at night	Mild intermittent	Mild persistent	Moderate persistent	Severe persistent
Mild persistent§ • Once or more a week, not every day • Once or more a month, disturbs everyday life and sleep • Twice or more a month at night	Mild persistent	Moderate persistent	Severe persistent	Severe persistent
Moderate persistent§ • Every day • Requires short-acting inhaled β_2 agonist almost every day • Once or more a week, disturbs everyday life and sleep • Once or more a week at night	Moderate persistent	Severe persistent	Severe persistent	Most severe persistent
Severe persistent§ • Frequently exacerbated even under treatment • Every day • Restricts everyday life • Frequently occurs at night	Severe persistent	Severe persistent	Severe persistent	Most severe persistent

Controllers (agents for long-term management).

1. Corticosteroids
   1) Inhaled corticosteroids
      i) Beclomethasone dipropionate
      ii) Fluticasone propionate
      iii) Budesonide
      iv) Ciclesonide
      v) Mometasone furoate
   2) Oral corticosteroids
2. Long-acting β_2 agonists
   1) Inhalants
      Salmeterol xinafoate
   2) Patch
      Tulobuterol
   3) Oral medicines
      Procaterol hydrochloride
      Clenbuterol hydrochloride
      Formoterol fumarate
      Tulobuterol hydrochloride
      Mabuterol hydrochloride
3. Combination inhaler of corticosteroid/long-acting β_2 agonist
   1) Combination inhaler of fluticasone propionate/salmeterol xinafoate
   2) Combination inhaler of budesonide/formoterol fumarate
   3) Combination inhaler of fluticasone propionate/formoterol fumarate
   4) Combination inhaler of fluticazone furate/vilanterol trifenatate
4. Leukotriene receptor antagonists
   1) Pranlukast hydrate
   2) Montelukast sodium
5. Theophylline sustained-release preparation
6. Long-acting muscarinic receptor antagonist
   Tiotropium bromide hydrate
7. Anti-IgE
   Antibody
   Omalizumab
8. Anti-allergics other than leukotriene receptor antagonists
   1) Mediator antireleasers
      Sodium cromoglicate, tranilast, amlexanox, repirinast, ibudilast, tazanolast, and pemirolast potassium
   2) Histamine H_1 receptor antagonists
      Ketotifen fumarate, azelastine hydrochloride, oxatomide, mequitazine, and epinastine hydrochloride
   3) Thromboxane inhibitors
      i) Thromboxane-A_2 synthesis inhibitor
         Ozagrel hydrochloride
      ii) Thromboxane-A_2 receptor antagonist
         Seratrodast
   4) Th2 cytokine inhibitor
      Suplatast tosilate
9. Other agents and therapies (Chinese medicines, specilic immunotherapy, and non-specific immunotherapy)


Health Condition of patient with Asthma (Disease/Disorder)
Body functions and structures (Impairments)
• Inflammation
• Airway obstruction
• Remodelling
Activities (Limitations)
• Running
• Cycling
Participation (Restriction)
• Sport
• Social functioning
• School
• Quality of Life
Environmental Factors
• Smoking
• Air pollution
• Climate
• Asthma Education
• Parents/Caregivers
Personal Factors
• Low mood
• Self-confidence
• Coping
• Upbringing

Key facts

- Asthma is a major noncommunicable disease (NCD), affecting both children and adults.
- Inflammation and narrowing of the small airways in the lungs cause asthma symptoms, which can be any combination of cough, wheeze, shortness of breath and chest tightness.
- Asthma affected an estimated 262 million people in 2019 and caused 461000 deaths (1).
- Asthma is the most common chronic disease among children.
- Inhaled medication can control asthma symptoms and allow people with asthma to lead a normal, active life.
- Avoiding asthma triggers can also help to reduce asthma symptoms.
- Most asthma-related deaths occur in low- and lower-middle income countries, where under-diagnosis and under-treatment is a challenge.
- WHO is committed to improving the diagnosis, treatment, and monitoring of asthma, to reduce the global burden of NCDs and make progress towards universal health coverage.

World Health Organization