

Asthma

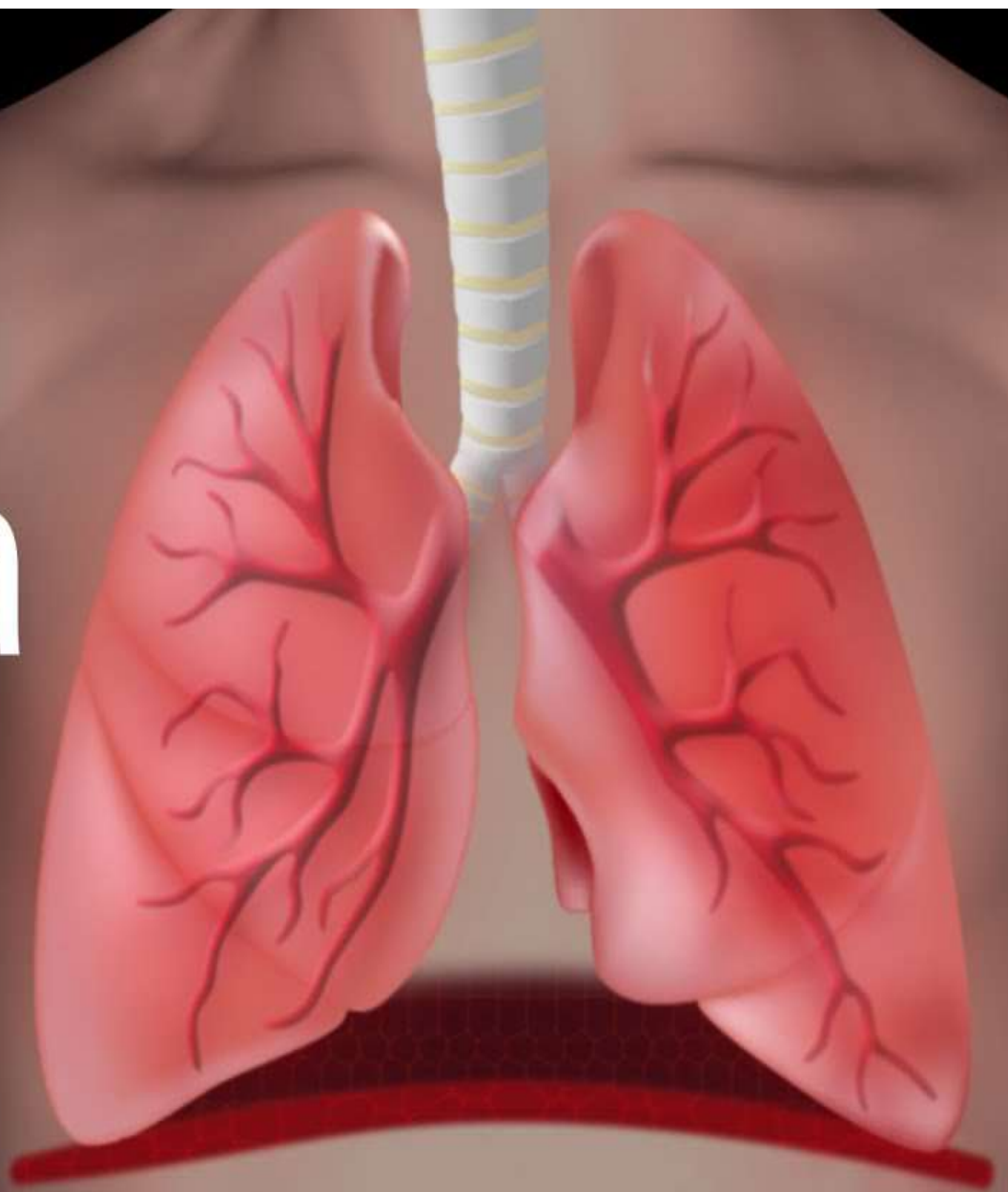


Asthma الربو

Is a **common long-term inflammatory disease** of the airways of the lungs.

Characterized by **variable** and **recurring** symptoms, **reversible** airflow obstruction, and easily triggered bronchospasms.

Asthma



REMEMBER

Although asthma is a chronic obstructive condition, it is **NOT** considered as a chronic obstructive pulmonary disease, as this term refers specifically to combinations of disease that are **irreversible** such as bronchiectasis and emphysema.

However if left untreated, can lead the lungs to become irreversibly obstructed.

Epidemiology

Asthma was recognized as early as Ancient Egypt.

The word "asthma" is from the Greek word, asthma, means "panting" يلهث



Prof. Ashraf Zaghloul

Epidemiology

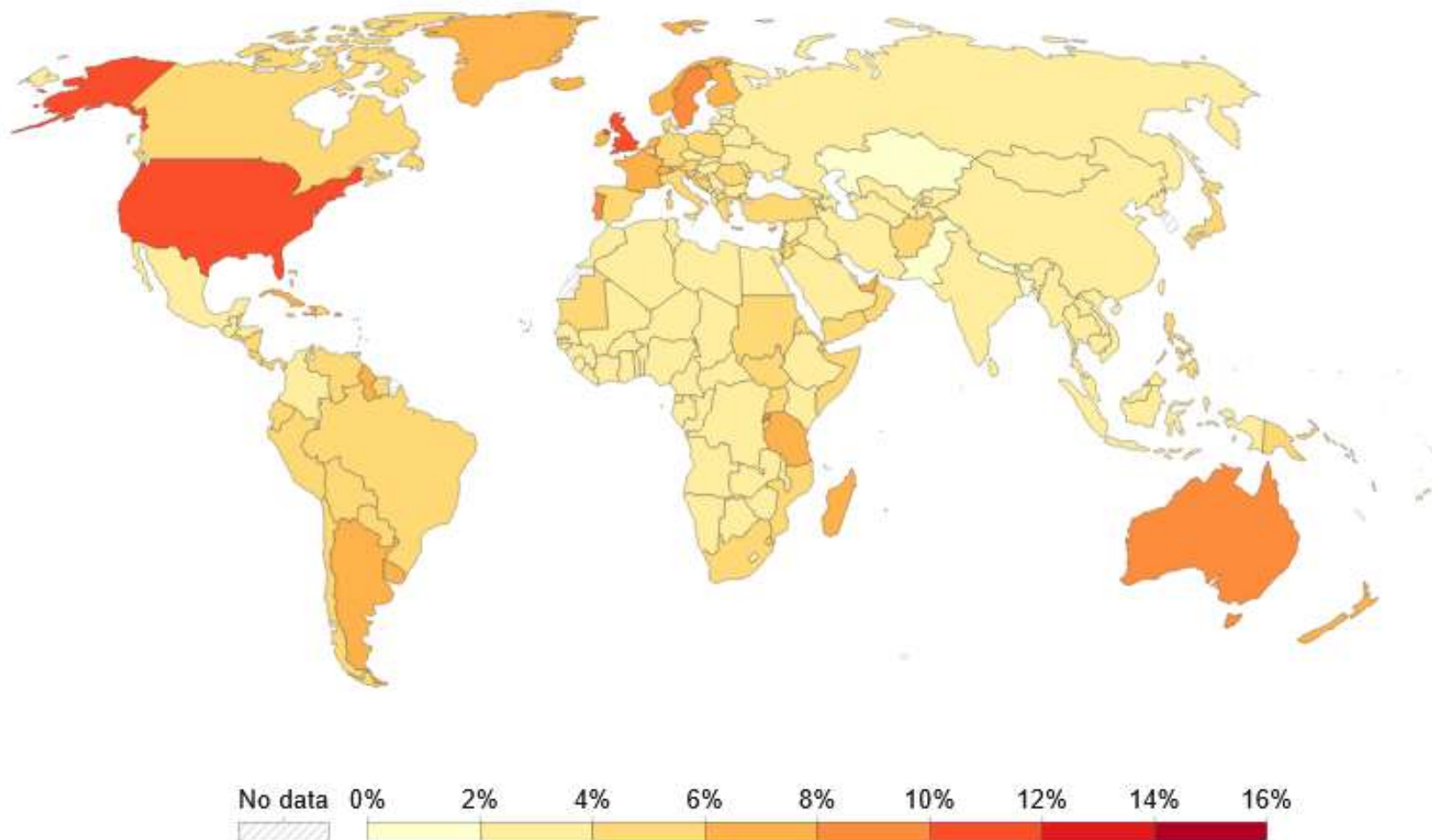
The rates of asthma have increased significantly and has been recognized as a major public health problem since the 1970s

Asthma affected an estimated 262 million people in 2019 and caused 455,000 deaths

Asthma affects 5-10% of the population most of which occur in the developing world

Asthma prevalence, 2019

The share of the population with asthma. Prevalence is age-standardized so accounts for changes in the age structure of a population over time and between countries.



Source: IHME, Global Burden of Disease (2019)

Epidemiology

Asthma kills around **1000** people every day and affects as many as **339 million** people and the prevalence is rising

Low- and middle-income countries disproportionately suffer the **most severe cases**

Epidemiology

Within developed countries it is more common in those who are economically deprived while in contrast in developing countries it is more common in the affluent

The reason for these differences is not well known

Epidemiology

AGE DISTRIBUTION:

It often begins in childhood

Asthma is the most common chronic disease among children worldwide

Rates vary between countries with prevalence between (1 -18%)

Epidemiology

SEASON:

A child is more likely to see a physician due to asthma symptoms after school starts in **September**



Prof. Ashraf Zaghloul

Prevalence of Asthma in Jordan

Prevalence of asthma in Jordan: Comparison between Bedouins and urban schoolchildren using the International Study of Asthma and Allergies in Childhood phase III protocol (2009)

Prevalence of asthma between the Amman city group and Bedouins (8.8% versus 9.5%)

Epidemiology

SEX DISTRIBUTION:

Asthma is twice as common in boys as girls, while severe asthma occurs at equal rates

2 : 1

Boys

Girl

In contrast adult women have a higher rate of asthma than men and it is more common in the young than the old

Aetiology (Cause)(s)

The strongest risk factors for developing asthma are a combination of **Genetic** predisposition with **Environmental exposure** to inhaled substances and particles that may provoke allergic reactions or irritate the airways

REMEMBER

Genetic and Environmental factors influence both asthma's severity and its responsiveness to treatment

Onset **before** age 12 is more likely due to **genetic** influence, while onset **after** age 12 is more likely due to **environmental** influence

Genetic Factors

Family history is a risk factor for asthma, with many different genes being implicated.

If one identical twin is affected, the probability of the other having the disease is approximately 25%.

Many of these genes are related to the immune system or modulating inflammation.

By the end of 2006, over 100 genes were associated with asthma.

Genetic Factors

Medical conditions

A triad of atopic eczema, allergic rhinitis and asthma is called Atopy.

The strongest risk factor for developing asthma is a history of atopic disease; with asthma occurring at a much greater rate in those who have either eczema or hay fever.

Individuals with certain types of urticaria may also experience symptoms of asthma.

Genetic Factors

There is a correlation between Obesity and the risk of asthma with both having increased in recent years.



Several factors may be at play including decreased respiratory function due to a build-up of fat and the fact that adipose tissue leads to a pro-inflammatory state.

Genetic Factors

Beta blocker medications such as propranolol can trigger asthma in those who are susceptible.

Aspirin, affects up to 9% of asthmatics

Genetic Factors

Exercise-induced;



Exercise can trigger bronchoconstriction both in people with or without asthma.

It occurs in most people with asthma and up to 20% of people without asthma

Genetic Factors

Occupational

Occupational disease; it is estimated that 5–25% of asthma cases in adults are work-related.

Forest workers, carpenters, hairdressers, dyes health care workers, pharmaceutical workers, bakers.



Genetic Factors

Non-allergic asthma

- Also known as **intrinsic or non atopic asthma**, counts between 10 and 33% of cases
- **Negative skin test** to common inhalant allergens and normal serum concentrations of **IgE**
- Often **starts later in life**, and women are more commonly affected than men
- Usual treatments may not work as well.

Environmental Factors

Many environmental factors have been associated with asthma's development and exacerbation including:

Indoor Allergens; common indoor allergens include:

dust mites *عث الغبار*, cockroaches, carpets and stuffed furniture, pet dander *وبر الحيوانات الأليفة*, pesticides



Environmental Factors

Outdoor Allergens; air pollution, and other environmental chemicals.

- Smoking during pregnancy and after delivery is associated with a greater risk of asthma-like symptoms.
- Low air quality such as traffic pollution or high ozone levels have been associated with both asthma development and increased asthma severity.



Symptoms & Signs

Symptoms and Signs

Asthma is characterized by

- Recurrent episodes of wheezing,
- Shortness of breath,
- Chest tightness, and
- Coughing.

Symptoms and Signs

Frequency of episodes

- Occur a few times/day or a few times/week differs from one person to another,
- Become worse at night or with exercise or when exposed to cold air

Symptoms and Signs

Sputum may be produced by coughing but is often hard to bring up.

During recovery from an attack, it may appear pus-like due to high levels of white blood cells

Some people with asthma rarely experience symptoms, and usually occurs in response to triggers

Symptoms and Signs

Whereas others may have associated conditions which include:

- Gastro-esophageal reflux disease,
- Rhino-sinusitis,
- Obstructive sleep apnea.
- Psychological disorders are also more common, with anxiety disorders occurring in between 15–50% and mood disorders in 15–40%.

However, it is not known whether asthma causes psychological problems or psychological problems lead to asthma.



Classification of Asthma

Asthma may be classified as according to the presence or absence of allergens into:

Allergic, atopic (extrinsic); symptoms are precipitated by allergens that's triggered by allergens like pollen, pets and dust mites.

Or

**Non-allergic
(intrinsic)**

asthma,

non-atopic

Classification of Asthma

Asthma may be classified according to frequency and severity of symptoms

N.B. Determining asthma severity helps to choose the best treatment.

N.B. Asthma severity often changes over time, requiring treatment adjustments.

Asthma is Classified into **4** General Categories

Asthma classification

Signs and symptoms

Mild Intermittent

Mild symptoms up **to two days** a **week** and up to **two nights** a **month**

Mild Persistent

Symptoms **more than twice** a **week**, **but no more than once** in a **single day**

Moderate Persistent

Symptoms once a day and more than one night a week

Severe Persistent

Symptoms throughout the day on most days and frequently at night



Asthma Exacerbation

تفاقم الربو

- An acute asthma exacerbation is commonly referred to as an asthma attack.
- Previously known as **status asthmaticus**, and does not respond to standard treatments of bronchodilators and corticosteroids.
- Half of cases are due to infections with others caused by allergen, air pollution, or insufficient or inappropriate medication
- The classic symptoms are:
 - Shortness of breath, wheezing, and chest tightness.
 - **Wheezing is most often when breathing out.**



Management

- While there is no cure for asthma, symptoms can typically be improved.
- A specific, customized plan for proactively استباقي monitoring and managing symptoms should be created.
- The plan should include the reduction of exposure to allergens, testing to assess the severity of symptoms, and the usage of medications.

Management

- The treatment plan should be written down and advise adjustments to treatment according to changes in symptoms.
- The most effective treatment for asthma is **identifying triggers**, such as cigarette smoking, pets, or aspirin, and eliminating exposure to them.
- If trigger avoidance is insufficient, the use of medication is recommended.

Prevention

الوقاية

- *The evidence for the effectiveness of measures to prevent the development of asthma is weak.*
- The **W.H.O** **recommends** decreasing risk factors such as tobacco smoke, air pollution, chemical irritants including perfumes and the number of lower respiratory infections.

Prevention

الوقاية

Other efforts that show promise include:

Limiting smoke exposure, breast feeding, and decreased exposure to day-care, but none are well supported enough to be recommended for this indication.

Early pet exposure may be useful.

Results from exposure to pets at other times are inconclusive, and it is only recommended that pets be removed from the home if a person has allergic symptoms to pet.

Prevention

الوقاية

Reducing or eliminating compounds known to sensitive people from the work place may be effective.

It is not clear if annual influenza vaccinations affects the risk of exacerbations.

Immunization, however, is recommended by the World Health Organization.

Smoking bans المنع are effective in decreasing exacerbations of asthma