

**Editorial**

# Healthy Life with Asthma

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**Introduction**

Asthma is a chronic lung disease affecting people of all ages. It is caused by inflammation and muscle tightening around the airways, which makes it harder to breathe.

Asthma is often under-diagnosed and under-treated, particularly in low- and middle-income countries.

People with under-treated asthma can suffer sleep disturbance, tiredness during the day, and poor concentration. Asthma sufferers and their families may miss school and work, with financial impact on the family and wider community. If symptoms are severe, people with asthma may need to receive emergency health care and they may be admitted to hospital for treatment and monitoring. In the most severe cases, asthma can lead to death.

The development of asthma, often presenting in childhood, is associated with other atopic features, such as eczema and hay fever.<sup>1,2,3</sup> Severity varies from intermittent symptoms to life-threatening airway closure. Healthcare professionals establish a definitive diagnosis through patient history, physical examination, pulmonary function testing, and appropriate laboratory testing. Spirometry with a post-bronchodilator response (BDR) is the primary diagnostic test. Treatment focuses on providing continued education, routine symptom assessment, access to fast-acting bronchodilators, and appropriate controller medications tailored to disease severity.

**Symptoms**

Symptoms of asthma can vary from person to person. Symptoms sometimes get significantly worse. This is known as an asthma attack. Symptoms are often worse at night or during exercise.

Common symptoms of asthma include:

- a persistent cough, especially at night
- wheezing when exhaling and sometimes when inhaling
- shortness of breath or difficulty breathing, sometimes even when resting
- chest tightness, making it difficult to breathe deeply.

Some people will have worse symptoms when they have a cold or during changes in the weather. Other triggers can include dust, smoke, fumes, grass and tree pollen, animal fur and feathers, strong soaps and perfume.

Symptoms can be caused by other conditions as well. People with symptoms should talk to a healthcare provider.

**Etiology****Genetics**

Asthma manifests with diverse phenotypes, likely influenced by intricate interactions between genetic and environmental factors.<sup>4,5</sup>

**Risk Factors**

Risk factors for asthma development encompass exposures throughout a patient's lifespan, including the perinatal period. The most substantial known risk factor is atopy, which is characterized by the genetic tendency to produce specific immunoglobulin E (IgE) antibodies in response to common environmental allergens. Nearly one-third of children with atopy will develop asthma later in life.

**Prenatal and Perinatal Factors**

Prematurity is the most crucial risk factor influencing asthma incidence during this period.<sup>6-9</sup> Preterm birth, occurring before 36 weeks, is associated with an elevated risk of asthma throughout childhood, adolescence, and adulthood. Researchers posit that impaired lung development in preterm infants, even in those without early respiratory complications, increases the long-term risk of asthma.<sup>10</sup>

**Childhood**

Wheezing caused by viral infections, particularly respiratory syncytial virus and human rhinovirus, may predispose infants and young children to develop asthma later in life.

**Adulthood**

The most significant risk factors for adult-onset asthma include tobacco smoke, occupational exposure, and adults with rhinitis or atopy. Studies also suggest a modest increase in asthma incidence among postmenopausal women taking hormone replacement therapy.

**Aspirin-Exacerbated Respiratory Disease**

Aspirin-exacerbated respiratory disease (AERD) is a condition characterized by a combination of asthma, chronic rhinosinusitis with nasal polyposis, and NSAID intolerance.

**Occupational-Induced Asthma**

Two types of occupational asthma,

- Occupational asthma triggered by workplace sensitizers results from an allergic or immunological process associated with a latency period induced by both low- and high-molecular-weight agents.
- Occupational asthma caused by irritants involves a nonallergic or nonimmunological process induced by gases, fumes, smoke, and aerosols

**Pathophysiology**

Asthma is a syndrome characterized by diverse underlying mechanisms and involves intricate interactions among inflammatory and resident airway cells.

- Airway Inflammation
- Airflow Obstruction

- Aspirin-Exacerbated Respiratory Disease
  - Occupational-Induced Asthma
- WHO describes some key facts about asthma.
- Asthma is a major noncommunicable disease (NCD), affecting both children and adults, and is the most common chronic disease among children.
  - 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<sup>11</sup> and caused 455 000 deaths.
  - 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.

### Treatment

Asthma cannot be cured but there are several treatments available. The most common treatment is to use an inhaler, which delivers medication directly to the lungs. Inhalers can help control the disease and enable people with asthma to enjoy a normal, active life.

There are two main types of inhaler:

- bronchodilators (such as salbutamol), that open the air passages and relieve symptoms; and
- steroids (such as beclometasone) that reduce inflammation in the air passages, which improves asthma symptoms and reduces the risk of severe asthma attacks and death.

People with asthma may need to use their inhaler every day. Their treatment will depend on the frequency of symptoms and the types of inhalers available.

Using an inhaler can be difficult, especially for children and during emergency situations. Using a spacer device makes it easier to use an aerosol inhaler. This helps the medicine to reach the lungs more easily. A spacer is a plastic container with a mouthpiece or mask at one end and a hole for the inhaler in the other. A homemade spacer, made from a 500ml plastic bottle, can be as effective as commercially manufactured spacers.

Access to inhalers is a problem in many countries. In 2021, bronchodilators were available in public primary health care facilities in half of low- and low-middle income countries, and steroid inhalers available in one third.

It is also important to raise community awareness to reduce the myths and stigma associated with asthma in some settings.

### Self-care

People with asthma and their families need education to understand more about their asthma. This includes their

treatment options, triggers to avoid, and how to manage their symptoms at home.

It is important for people with asthma to know how to increase their treatment when their symptoms are worsening to avoid a serious attack. Healthcare providers may give an asthma action plan to help people with asthma to take greater control of their treatment.

## REFERENCES

1. Lee J, McDonald C. Review: Immunotherapy improves some symptoms and reduces long-term medication use in mild to moderate asthma. *Ann Intern Med* 2018;169(4):JC17.
2. Tesfaye ZT, Gebreselase NT, Horsa BA. Appropriateness of chronic asthma management and medication adherence in patients visiting ambulatory clinic of Gondar University Hospital: a cross-sectional study. *World Allergy Organ J* 2018;11(1):18.
3. Salo PM, Cohn RD, Zeldin DC. Bedroom Allergen Exposure Beyond House Dust Mites. *Curr Allergy Asthma Rep* 2018;18(10):52.
4. Piloni D, Tirelli C, Domenica RD, Conio V, Grosso A, Ronzoni V, et al. Asthma-like symptoms: is it always a pulmonary issue? *Multidiscip Respir Med* 2018;13:21.
5. Aggarwal B, Mulgirigama A, Berend N. Exercise-induced bronchoconstriction: prevalence, pathophysiology, patient impact, diagnosis and management. *NPJ Prim Care Respir Med* 2018; 28(1):31.
6. Jaakkola JJ, Ahmed P, Ieromnimon A, Goepfert P, Laiou E, Quansah R, et al. Preterm delivery and asthma: a systematic review and meta-analysis. *J Allergy Clin Immunol* 2006;118(4):823-30.
7. Been JV, Lugtenberg MJ, Smets E, van Schayck CP, Kramer BW, Mommers M, et al. Preterm birth and childhood wheezing disorders: a systematic review and meta-analysis. *PLoS Med* 2014; 11(1): e1001596.
8. Leps C, Carson C, Quigley MA. Gestational age at birth and wheezing trajectories at 3-11 years. *Arch Dis Child* 2018;103(12):1138-1144.
9. Crump C, Sundquist J, Sundquist K. Preterm or early term birth and long-term risk of asthma into midadulthood: a national cohort and cosibling study. *Thorax* 2023;78(7):653-660.
10. Castro-Rodriguez JA, Forno E, Rodriguez-Martinez CE, Celedón JC. Risk and Protective Factors for Childhood Asthma: What Is the Evidence? *J Allergy Clin Immunol Pract* 2016; 4(6):1111-1122.
11. Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet* 2020;396(10258):1204-22.