

Presentation

Chronic Respiratory Diseases- Asthma

Understanding Asthma and its Management

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A Chronic Respiratory Disease

A Chronic Respiratory Disease (CRD) a long-term condition affecting the air ways and other structures of the lungs.

The Types of (CRD)

- Chronic obstructive pulmonary disease
- Asthma
- Occupational lung diseases
- Pulmonary hypertension(Cao et al., 2025)

In 2021 approximately 468.3 million people worldwide affected by chronic respiratory disease

Early diagnosis helps because:

- Doctors can start treatment sooner
- It slows the disease's progress
- Patients breathe better and feel healthier
- It helps avoid flare-ups and emergencies
- The risk of death is lower
- It reduces the load on the healthcare system
- Patients get the right medicines and can make lifestyle changes that help them manage the disease better(World Health Organization, 2019)

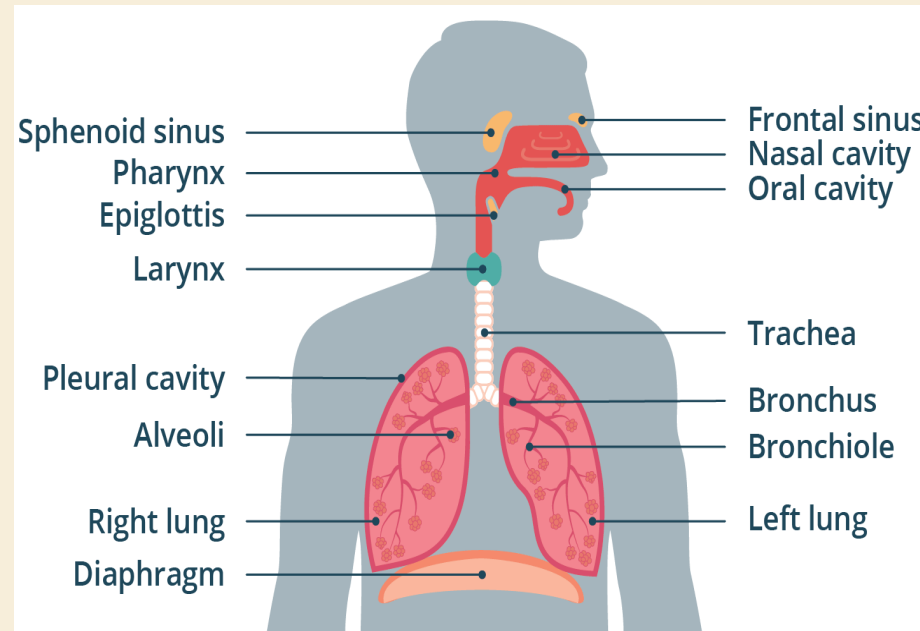


It's the system in your body that helps you breathe.

It include;(Cleveland Clinic, 2024)

- Nose, mouth
- Throat
- Larynx (voice box)
- Trachea (windpipe) connects throat to lungs
- Bronchi – two main branches from trachea into each lung
- **Bronchioles** – Smaller airways branching throughout the lungs.
- Right lungs
- Left Lungs
- Alveoli – millions of microscopic sacs where O₂ and CO₂ are exchange with blood
- Diaphragm

The Respiratory system



(figure 1)

Structure and pathway;

Air enters through mouth and nose. Then travels down to trachea. Trachea split into two parts which called right and left bronchioles. The bronchioles end in tiny air sacs called alveoli. The lungs are the main organ where gas exchange take place.

Where O₂ enters the bloodstream and CO₂ removed ,process called gas exchange(Cleveland Clinic, 2024).



What is Asthma;

- A **chronic respiratory condition** that affects the airways in the lungs.
- Causes **inflammation and narrowing** of the airways, making breathing difficult.
- Can be **mild to severe** and may vary over time.
- Symptoms are often **reversible** with treatment (Dr Colin Tidy, 2016)



Common Asthma Triggers

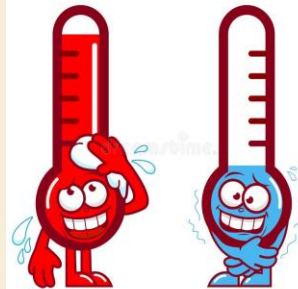
Food allergies



Pets



Weather conditions



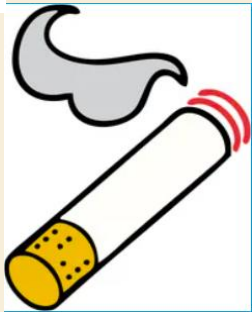
Exercise



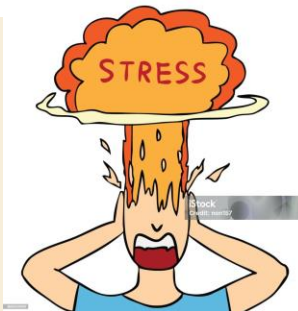
Air pollution



Smoking



Stress



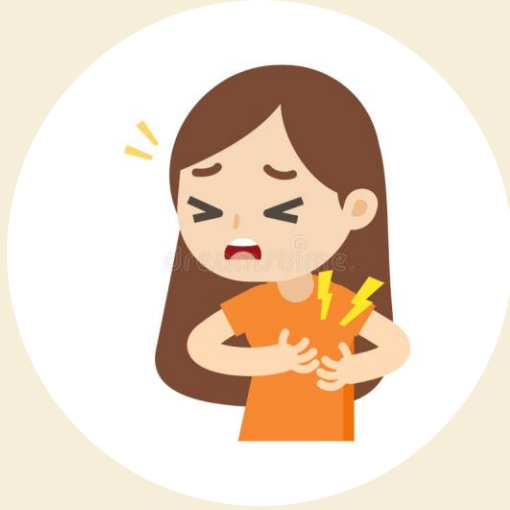
Pollen



Chemical fumes



Characteristics of asthma



- **Chest tightness**



- **Wheezing** (whistling sound when breathing)



- **Coughing**, especially at night or early morning

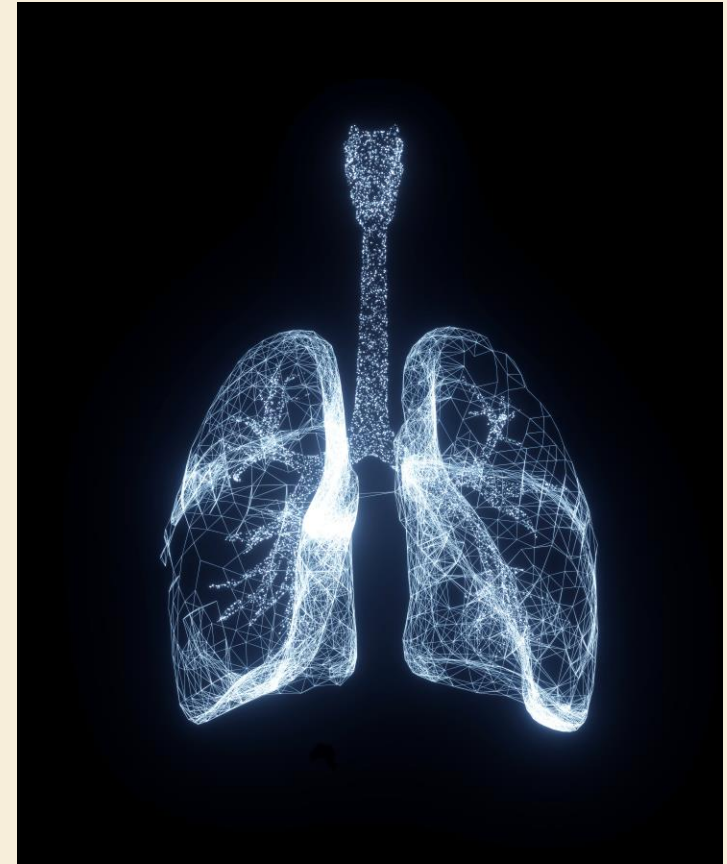


- **Shortness of breath**



The test used to diagnosed asthma

- Spirometry ; This test checks how much air you can breathe in and out, and how quickly you can blow the air out of your lungs.
- Peak flow monitor; Peak flow meter is a small device used to measure how quickly a person can blow air out of their lungs,
- FeNO test; This test helps find out if your airways are inflamed by measuring a gas in your breath.(Asthma + Lung UK, 2021)

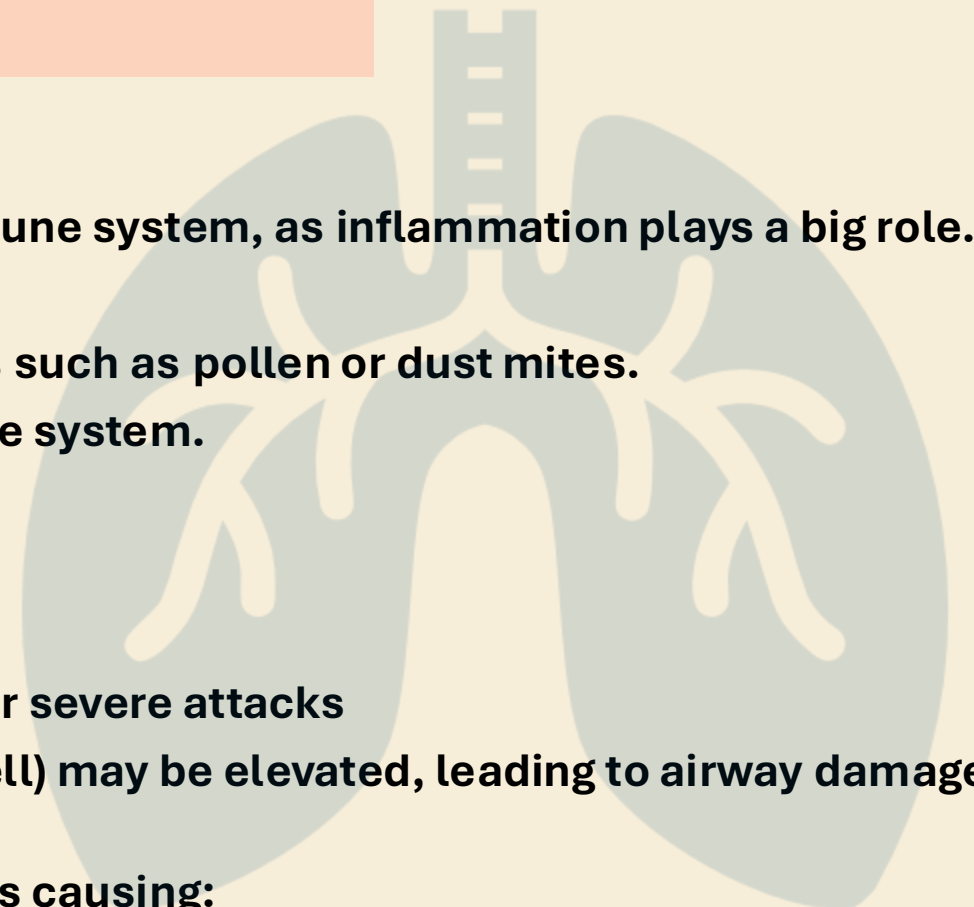


Asthma + Lung UK, 2021)



The Link Between Asthma and the Immune System

- **Asthma is a condition that involves both the lungs and the immune system, as inflammation plays a big role.**
- **In allergic asthma, the immune system overreacts to allergens such as pollen or dust mites.**
- **Triggers like viruses (cold, flu) or allergens activate the immune system.**
- **In asthma, this immune response is exaggerated, causing:**
 - **Swelling of small airways**
 - **Excess mucus production**
 - **Narrowed air passages → shortness of breath, wheezing, or severe attacks**
- **During an asthma attack, eosinophils (a type of white blood cell) may be elevated, leading to airway damage, swelling, and irritation.**
- **Asthma patients have more Th2 cells, which release chemicals causing:**
 - **Excess mucus**
 - **Swelling and airway tightening**
 - **Breathing difficulties**



CASE STUDY

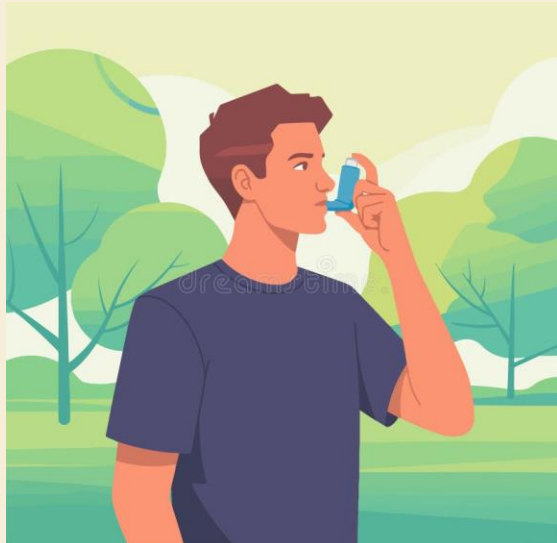
- **Fiction Patient Profile**

- Name: John Brown
Age: 35

- Occupation: Delivery Driver

- Living Situation: Lives in a flat in an urban area with high traffic

- GP Practice: Greenfield Health Centre
NHS Number:12768



<https://www.dreamstime.com/illustration/using-inhaler.html>

- **Lifestyle**

- Quit smoking 2 years ago
- Drinks alcohol occasionally
- Walks daily (no structured exercise routine)
- Eats fast food often due to job
- Feels stressed from work
- Sleeps poorly
- Exposed to air pollution while driving for work
- Lives in an older, sometimes damp building (may affect asthma)



- **Medical Background**

- Diagnosed with asthma at age 15
- Also has mild eczema
- Allergic to dust mites and pollen (triggers asthma)
- Uses steroid inhaler twice daily (preventive)
- Uses salbutamol inhaler as needed (relief)
- No hospital visits for asthma in the past 2 years
- Last asthma check-up: 6 months ago

- **Risk Factors**

- Works in heavy-traffic areas → exposed to air pollution and exhaust fumes
- High stress and poor sleep → can worsen asthma symptoms
- Sometimes forgets preventer inhaler → poor asthma control
- Frequent fast-food diet → may weaken immune system
- Damp home → possible mould growth triggering asthma



Asthma Care Plan – Evidence-Based Recommendations

• Care Routine

- Use **preventer inhaler daily** to keep lungs healthy and prevent symptoms
- Use **reliever inhaler** only when experiencing chest tightness, wheezing, or shortness of breath
- Watch for **early warning signs** (night coughing, breathlessness)
- Maintain a **healthy lifestyle** – balanced diet, regular exercise, no smoking
- **Avoid asthma triggers** (e.g., pollution, mold, allergens) (NICE, 2024),

• Monitoring

- Use a peak flow meter and keep a peak flow diary
- Complete an Asthma Control Test every 3 months
- Have regular asthma reviews (at least once a year)
- During reviews, check inhaler technique and ensure correct, consistent use (NICE, 2013)



Care planning and Ethics

- **Care Planning**
- Create a **clear asthma action plan** for daily management, worsening symptoms, and emergencies
- Develop the plan **with the patient** using simple, easy-to-understand language
- Involve **GP, asthma nurse, and pharmacist** in care planning
- Use **clear communication** – ask the person to repeat or demonstrate inhaler use
- Provide information in the **preferred format or language** (leaflets, pictures, etc.)
- **Include family or carers** if the person agrees (NHS England, 2023)

- **Ethics**
- **Respect choices, values, and beliefs**
- Keep all **personal information private and confidential**
- Ensure **fair and equal care** for everyone
- **Respect cultural or religious needs**, such as fasting or medication timing
- If the person can't make decisions, act in their **best interest** to keep them safe (Department of Health and Social Care, 2023) (NICE, 2019)



Conclusion

In summary, asthma is a long-term condition that affects the airways and requires careful, ongoing management. It is not only linked to the respiratory system but also involves the **immune system**, which can overreact to triggers like pollen, dust, or viruses, causing inflammation and tightening of the airways. Understanding each person's lifestyle, environment, and individual needs is key to providing effective support. Using clear communication, respecting the patient's choices, and involving other professionals helps ensure safe and person-centred care. By following evidence-based guidelines from the NHS and NICE, healthcare providers can help people with asthma lead healthier, more independent lives.



References

Asthma + Lung UK (2021). Diagnosing Asthma | Asthma + Lung UK. [online] www.asthmaandlung.org.uk. Available at: <https://www.asthmaandlung.org.uk/conditions/asthma/diagnosing-asthma>.

Cao, Z., He, L., Luo, Y., Tong, X., Zhao, J., Huang, K., Chen, Q., Jiao, L., Liu, Y., Geldsetzer, P., Yang, T., Wang, C., Bärnighausen, T.W. and Chen, S. (2025). Burden of chronic respiratory diseases and their attributable risk factors in 204 countries and territories, 1990–2021: Results from the global burden of disease study 2021. Chinese Medical Journal Pulmonary and Critical Care Medicine, [online] 3(2), pp.100–110. doi:<https://doi.org/10.1016/j.pccm.2025.05.005>.

Cleveland Clinic (2024). Respiratory System: Functions, Facts, Organs & Anatomy. [online] Cleveland Clinic. Available at: <https://my.clevelandclinic.org/health/body/21205-respiratory-system>.

Cleveland Clinic (2024). Respiratory System: Functions, Facts, Organs & Anatomy. [online] Cleveland Clinic. Available at: <https://my.clevelandclinic.org/health/body/21205-respiratory-system>.

Department of Health and Social Care (2023). The NHS Constitution for England. [online] GOV.UK. Available at: <https://www.gov.uk/government/publications/the-nhs-constitution-for-england/the-nhs-constitution-for-england>.

Dr Colin Tidy (2016). Asthma. [online] Patient.info. Available at: <https://patient.info/chest-lungs/asthma-leaflet>.

World Health Organization (2019). Chronic respiratory diseases. [online] Who.int. Available at: https://www.who.int/health-topics/chronic-respiratory-diseases#tab=tab_1.

<https://www.healthdirect.gov.au/respiratory-system> (figure 1)

Miles, C., Arden-Close, E., Thomas, M., Bruton, A., Yardley, L., Hankins, M. and Kirby, S.E. (2017). Barriers and facilitators of effective self-management in asthma: systematic review and thematic synthesis of patient and healthcare professional views. npj Primary Care Respiratory Medicine, [online] 27(1). doi:<https://doi.org/10.1038/s41533-017-0056-4>.

https://www.123rf.com/photo_140591987_pollen-allergy-sneezing-girl-in-spring-nature-vector-illustration-simple-trees-and-flowers-woman.html

NHS England (2023). NHS England» RightCare asthma scenario. [online] www.england.nhs.uk. Available at: <https://www.england.nhs.uk/long-read/rightcare-asthma-scenario/>.

National Heart, Lung, and Blood Institute (2024). What Is Asthma? [online] www.nhlbi.nih.gov. Available at: <https://www.nhlbi.nih.gov/health/asthma>.

NHS England (2023). Health equalities and digital inclusion. [online] www.england.nhs.uk. Available at: <https://www.england.nhs.uk/long-read/health-equalities-and-digital-inclusion/>.

NICE (2019). Quality statement 1: Empathy, dignity and respect | Patient experience in adult NHS services | Quality standards | NICE. [online] Nice.org.uk. Available at: <https://www.nice.org.uk/guidance/qs15/chapter/Quality-statement-1-Empathy-dignity-and-respect>.

<https://www.healthdirect.gov.au/respiratory-system> (figure 1)NHS (2021). Asthma. [online] NHS. Available at: <https://www.nhs.uk/conditions/asthma/>.

National Institute for Health and Care Excellence (2024). Overview | Asthma: diagnosis, monitoring and chronic asthma management (BTS, NICE, SIGN) | Guidance | NICE. [online] Nice.org.uk. Available at: <https://www.nice.org.uk/guidance/NG245>.

NHS England (2022). RightCare Asthma Toolkit. [online] Available at: <https://www.england.nhs.uk/rightcare/wp-content/uploads/sites/40/2022/09/RightCare-Asthma-Toolkit.pdf>.

NICE (2013). Quality statement 2: Documented personalised action plan | Asthma | Quality standards | NICE. [online] Nice.org.uk. Available at: <https://www.nice.org.uk/guidance/QS25/chapter/quality-statement-2-documented-personalised-action-plan>.