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Module: BMHP5023

Lecturer: Robert Nartowski

- Introduction to Physiology

- Component two

- Presentation on chronic obstructive pulmonary disease with voiceover

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Introduction:

have chosen to present and talk about chronic obstructive pulmonary disease (COPD), which is a progressive, long term respiratory condition, that causes airflow limitations.



Contents:

- Introduction
- Normal anatomy and physiology of the respiratory system
- Pathological changes caused by COPD.
- Made up service user profile and risk factors
- Evidence based care plan aligned with UK standards
- How health data is used to plan, deliver and improve
- The effects of COPD on people in the UK
- Reference list



Normal Anatomy & Physiology of the Respiratory system

Upper respiratory tract:

- Nasal cavity – Filters, warms and humidifies incoming air which traps dust and particles in the mucus.
- Pharynx – A shared passageway for air and food which also connects the nasal cavity to the larynx.
- Larynx – Contains our vocal cords and it also protects the airway during swallowing and allows us to speak.

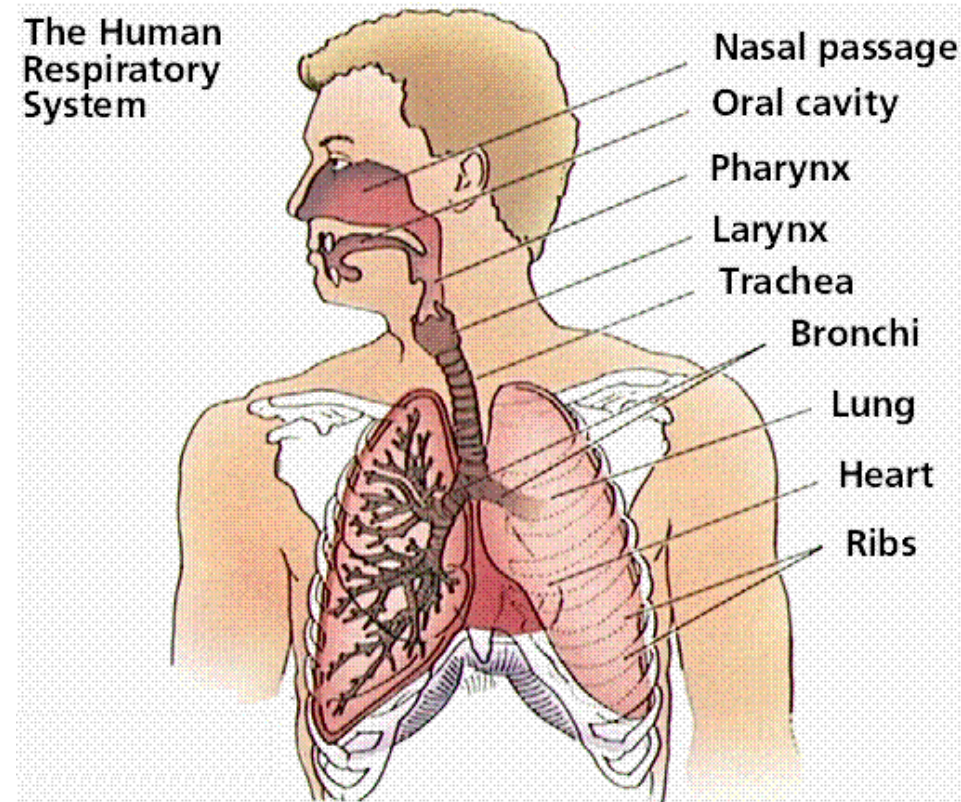
Lower respiratory tract:

- Trachea (windpipe) – Is kept open by C shaped rings of cartilage which helps carry air towards the lungs.
- Right and Left primary bronchi - Where 1 enters each lung then divides into smaller secondary and tertiary
- Bronchioles - Smallest Airways with smooth muscle walls which regulates airflow into our lung tissue.
- Alveoli – Are millions of microscopic thin-walled air sacs surrounded by the capillaries – where oxygen and

carbon dioxide exchange.

Associated structures:

- Diaphragm & intercostal muscles - Changes the volume of the chest cavity to enable breathing.
- Pleura – Thin membrane covering the lungs that reduces friction during movement.



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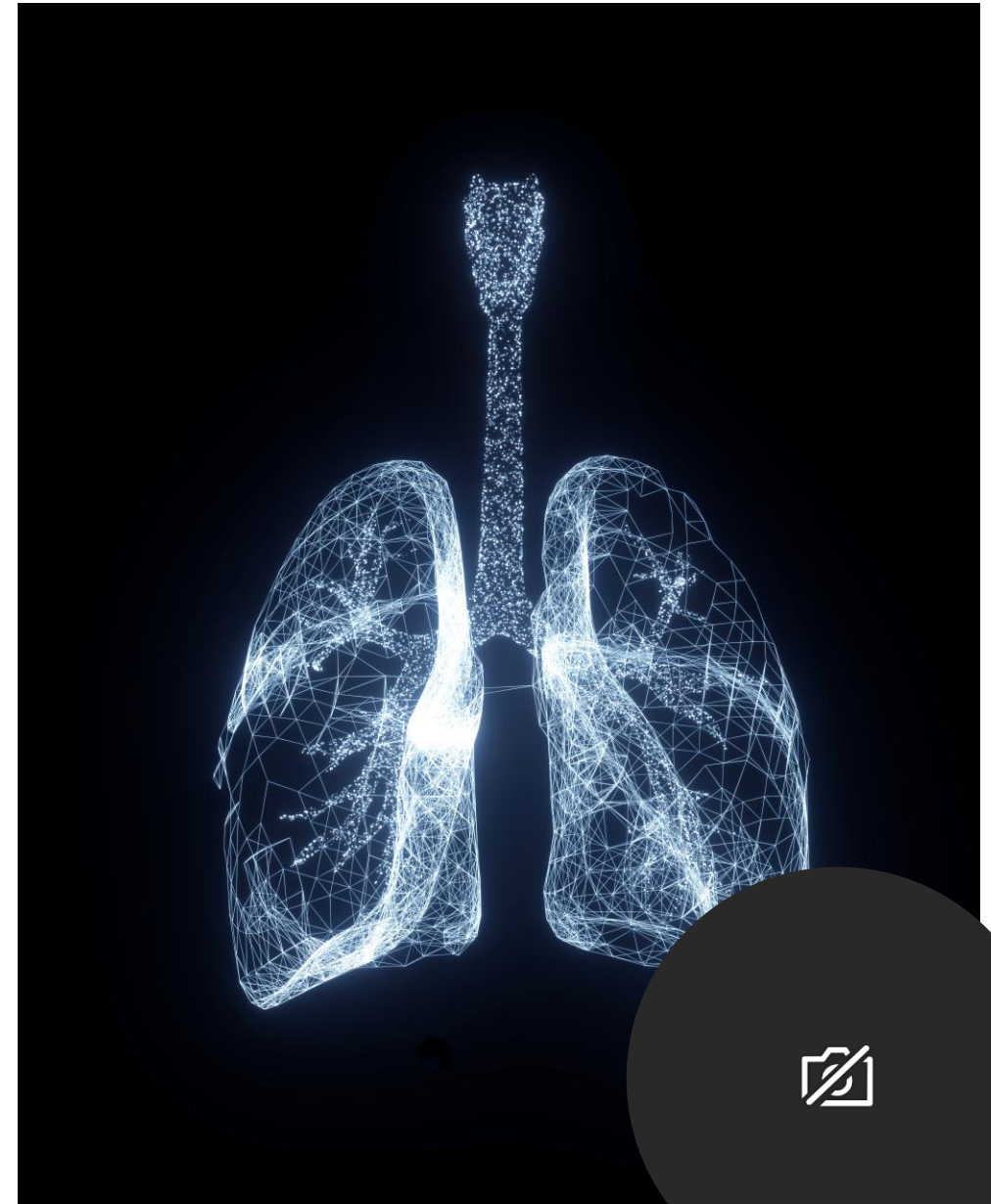
What is COPD ??

COPD is a progressive and largely irreversible condition characterized by persistent restriction of airflow from the lungs related to bronchitis and emphysema.

key changes to respiratory structure and function with COPD.

- Chronic inflammation of Airways causing thickening of walls, excess mucus production, narrowed passages.
- Loss of elastic tissue in lung walls - air becomes trapped in the lungs after breathing out.
- Destruction and merging of alveoli reducing surface area available for gas exchange.
- Increased resistance to airflow - more effort required to breathe.

(British thoracic society, 2023, p. 9, 21, 23; Turner, J., Black, R. and Thompson, A., 2023, p. 142)



Fictional service user profile



Name: Arthur Higgins.

Age: 67.

Location: Sandwell W Midlands.

Background: Retired metal fabrication worker with long term exposure to welding fumes without respiratory protection.

Lives with: Wife and has two adult children and three grandchildren.

Lifestyle history: Smoked 15 cigarettes per day for 46 years with very little exercise.

Diet: Low in fresh fruit and vegetables.

Medical history: Recurrent respiratory tract infections throughout primary hypertension and overweight.

Current symptoms: Persistent productive cough, breathlessness walking 50 meters, persistent fatigue and disturbed sleep due to difficulty.



Risk factors for COPD



Non modifiable risk factors:

- Increase in age most cases diagnosed over the age of 40.
- Family history of chronic or disease or asthma.
- Poor lung development or serious respiratory illness in childhood.

Modifiable and environmental risk factors:

- Smoking is responsible for approximately 85% of all COPD cases in the UK.
- Occupational exposure to dust fumes or chemicals and gases.
- Indoor and outdoor air pollution.
- Low levels of physical activity.
- Poor diet low in nutrients that support lung health.

(Adesoye, G., Watson, A., Patel, N., Khan, S. and Miller, J.,



Impact of COPD on health and well-being.



Immediate physical effects:

- Reduced oxygen supply to body tissues - persistent fatigue and weakness.
- Increased work of breathing - breathlessness on exertion or at rest.
- Mucus accumulation - higher risk of chest infections and blocked Airways.

Long term and wider impacts:

- Increased pressure in lung blood vessels - pulmonary hypertension and extra strain on the heart.
- Gradual reduction in physical ability - loss of independence.
- Difficulty leaving home or taking part in usual activities - social isolation.
- Significantly higher risk of anxiety and depression.
- In advanced cases respiratory failure and increased risk of premature death



Arthers Care plan: Core principles and assessment.



Guidance basis: Care follows NICE guidelines NG 115 - Diagnosis and management of COPD (National Institute for Health and Care Excellence, 2024, p. 29).

Initial assessments required:

1. Spirometry test - The diagnosis and measure severity of airflow restriction.
2. Pulse Oximetry - To measure oxygen levels in the blood full review of symptoms medical history and current medication and lifestyle.
3. Discussion - To identify personal priorities and goals.

Arthur's agreed care priorities:

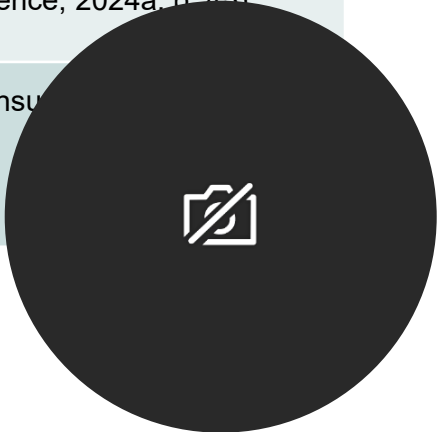
1. Stop smoking - To slow the rate of lung damage.
2. Improve exercise tolerance - Ability to carry out daily tasks.
3. Reduce - Number of chest infections.
4. Maintain independence - To stay connected with family.



Care interventions and monitoring.



Area of care	Planned intervention	Evidence based rationale
Medication	- Long - acting bronchodilator inhalers - Corticosteroids short-acting reliever inhaler	Relaxes airway muscles and reduces ongoing inflammation. (National Institute for Health and Care Excellence, 2024a, p. 37).
Lifestyle support	- Referral to NHS stop smoking service - Offer of nicotine replacement therapy - Ongoing check-ins	Stopping smoking is the single most effective way to slow disease progression and improve outcomes. (Adesoye, G. Watson, A., Patel, N., Khan, S. and Miller, J., 2026, p.6).
Rehabilitation	Referral to a six-week community pulmonary Rehabilitation program.	Combines supervised exercise and education - To improve fitness confidence and symptom control. (British Theoretic Society, 2023, p. 33).
Prevention	Annual influenza COVID-19 and pneumococcal Vaccinations	Reduces risk of serious illness and hospital admission. (National Institute for Health and Care Excellence, 2024a, p. 45).
Monitoring	- Routine clinical review every six months - Annual lung function testing - Personalized exacerbation action plan	Allows early identification of deterioration - Ensure adjusted appropriately. (NHS Digital, 2025, p. 34).



Communication, Consent and Ethical practice



Communication practice:

- Use plain language - avoid unexplained medical terms
- Check understanding regularly - provide easy to read written information.
- Involve all family members or carers - only with Arthurs permission.

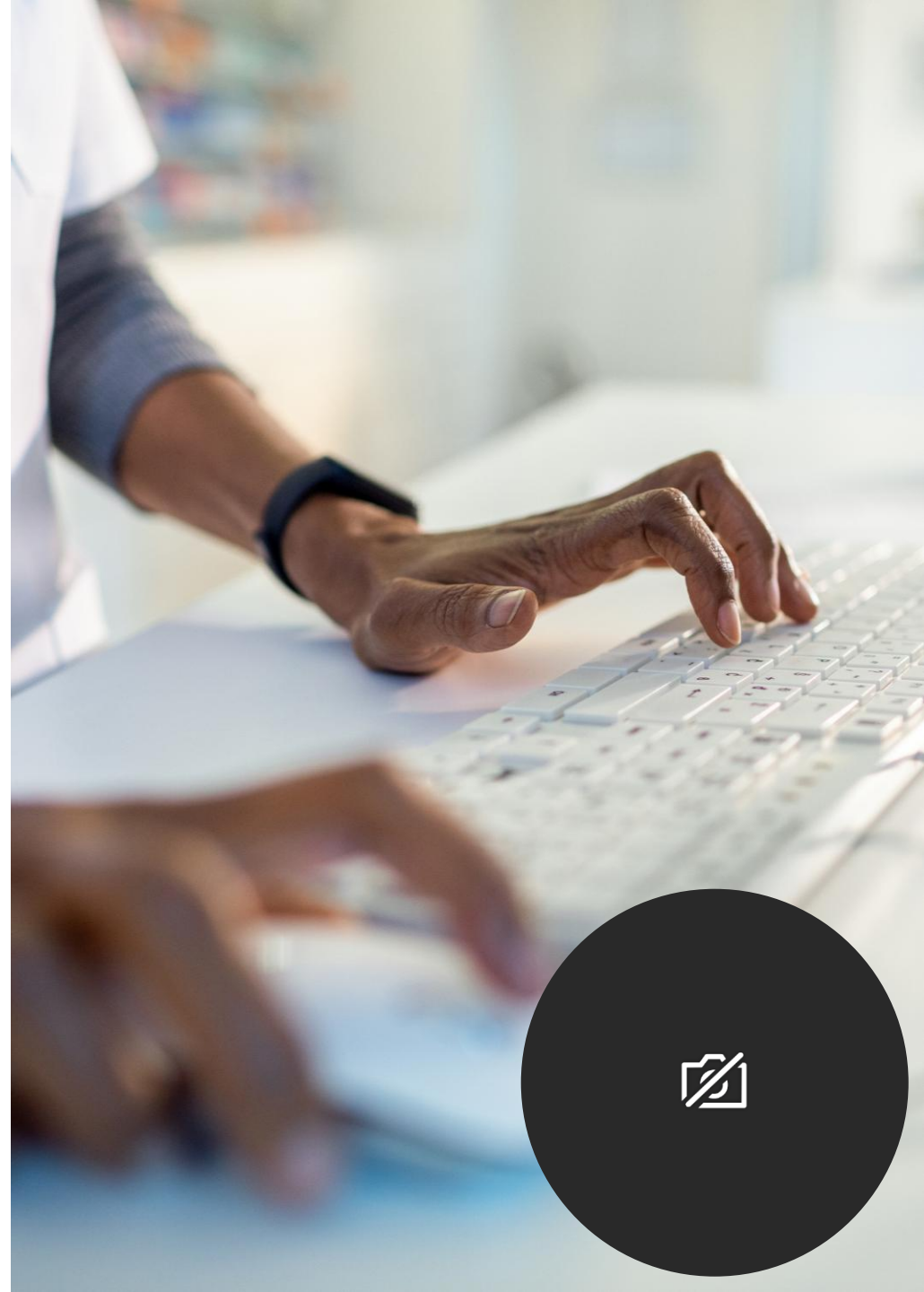
Ethical principles applied:

- Consent - All care and treatment are fully explained fully explained with Arthurs informed agreement. (NHS England, 2023, p. 18).
- Confidentiality - Personal and clinical information Is only shared with professionals who are involved directly in he's care.
- Capacity - Arthur has full mental capacity to make de his own health.
- Equity - ensure equal access to services regard background.



Use of Health Data.

- Individual clinical data - Arthur's test results, symptom records and care plan show how well treatment is working and highlight any changes needed. (NHS Digital, 2025, p. 33).
- National Audit data - Programmes such as the UK national COPD audit collect information to compare care standards across hospitals that GP practices.
- Anonymised data – Aggregated data helps plan local services and allocate funding and design public health campaigns. (Adesoye, G., Watson, A., Patel, N., Khan, S. and Miller, J., 2026, p. 7).
- All data collection, storage and sharing follows the UK GDPR and data protection act 2018 to protect privacy.



Reference list:

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5. NHS Digital (2025) Quality and Outcomes Framework 2024/25: Respiratory Indicators. Leeds: NHS Digital. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/quality-and-outcomes-framework/2024-25/respiratory> (Used pages: 33, 34)
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7. Turner, J., Black, R. and Thompson, A. (2023) Anatomy and Physiology for Health Professionals. 4th edn. Oxford: Oxford University Press. (Used pages: 139, 142, 145)
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