Chronic Obstructive Pulmonary Disease: How Can We Optimise Management of Cardiopulmonary Risk in the UK?

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Introduction

- Chronic obstructive pulmonary disease (COPD) is a leading cause of premature death in the UK[1]
- Patients with COPD face a 2- to 4-fold increased risk of mortality related to cardiovascular disease (CVD) compared with those without CVD. CVD is also a leading cause of hospitalisation among patients with COPD[2]
- Acute exacerbations of COPD (AECOPDs) are associated with increased cardiopulmonary (CP) risk, defined as "the risk of serious respiratory and/or cardiovascular events in patients with COPD"[3,4]
- Preventing AECOPDs and reducing CP risk is therefore essential to improving outcomes and preventing premature mortality in patients with COPD
- Despite this, there are currently no UK guidelines or recommendations on best practice for managing this risk

Aim

- To evaluate current evidence on CP risk in patients with COPD, provide expert-led consensus statements to inform best practice, and develop a clinical pathway framework for its identification and management

Approach

- In November 2023, a UK-based multidisciplinary taskforce of 11 respiratory and cardiology specialists, from both primary and secondary care, was formed with the aim of establishing the scope and focus of a consensus programme to address the unmet need
- The taskforce undertook a systematic literature review and modified Delphi consensus study to help establish a clinical pathway for managing CP risk in patients with COPD[5]
- Key clinical questions were developed using the Patient, Intervention, Comparator and Outcome (PICO) framework[3]
- Following two rounds of voting on preliminary statements by the taskforce, a third round of assessment was conducted by the taskforce along with a wider group of 77 UK healthcare professionals (HCPs)
- Consensus was achieved on 18 statements, including nine statements on recommended actions ***(Table 1)***
- The consensus programme underscored the need for multidisciplinary, integrated care models involving all HCPs managing patients with concomitant COPD and CP risk

Table 1. Consensus statements

Consensus statements	Mean level of agreement among 77 UK experts (from 1 [low] to 9 [high])	% of 77 UK experts with level of agreement ≥7
Healthcare burden of AECOPDs in the UK		
Approximately half of patients with known COPD experience acute exacerbations of COPD (AECOPDs) in the UK. AECOPDs are associated with increased cardiopulmonary risk, further AECOPDs and mortality.	8.4	95%
ACTION: Proactive detection of risk factors and intervention is required to prevent AECOPDs and reduce the risk of cardiopulmonary events.	8.4	95%
Patients who experience AECOPDs have higher healthcare resource utilisation than patients who do not experience AECOPDs, including high hospitalisation and readmission rates.	8.7	99%
Multiple factors contribute to the direct and indirect costs of managing AECOPDs including, but not limited to, COPD disease severity, long-term conditions, AECOPD frequency, general health, medications use and healthcare resource utilisation.	8.6	100%
ACTION: Optimising COPD management through preventing AECOPDs may help address the overall cost of managing COPD.	8.4	96%
The link between AECOPDs and cardiopulmonary events		
Patients experiencing AECOPDs are at increased risk of cardiopulmonary events, including MI, stroke, HF, arrhythmia and respiratory or cardiovascular death.	8.5	98%
ACTION: Preventing AECOPDs is important for improving cardiopulmonary outcomes and helping prevent premature mortality.	8.4	95%
The relationship between cardiopulmonary events and AECOPDs may be bidirectional, with cardiac events such as HF and MI potentially increasing the risk of future AECOPDs, hospitalisation and readmission, and vice versa.	7.8	86%
ACTION: Improving management of cardiovascular disease in patients with COPD is likely to improve clinical outcomes.	8.4	96%
An AECOPD may initiate functional decline in patients with COPD.	8.6	98%
ACTION: Preventing AECOPDs is important in limiting functional decline.	8.6	97%
Cardiopulmonary risk management in the UK		
Cardiopulmonary risk is under-recognised and sub-optimally managed in patients with COPD.	8.4	97%
In patients with concomitant COPD and cardiovascular disease, current management strategies are typically not integrated between specialties and/or between primary and secondary care.	8.4	100%
ACTION: An integrated clinical approach for patients with concomitant COPD and cardiovascular disease could provide personalised treatment to improve outcomes.	8.3	95%
Guidelines and interventions for management in the UK		
Incorporation of patient-centred cardiopulmonary risk management into routine care in patients with COPD is currently limited in the UK.	8.0	95%
ACTION: Addressing cardiopulmonary risk has the potential to improve care and outcomes in patients with COPD.	8.4	95%
ACTION: Decision-support tools and protocols may help estimate cardiopulmonary risk in patients with COPD, supporting optimal management.	8.2	92%
ACTION: Policy, research and clinical approaches should be designed to reduce cardiopulmonary events in patients with COPD.	8.4	94%

AECOPD, acute exacerbation of COPD; COPD, chronic obstructive pulmonary disease; HF, heart failure; MI, myocardial infarction.

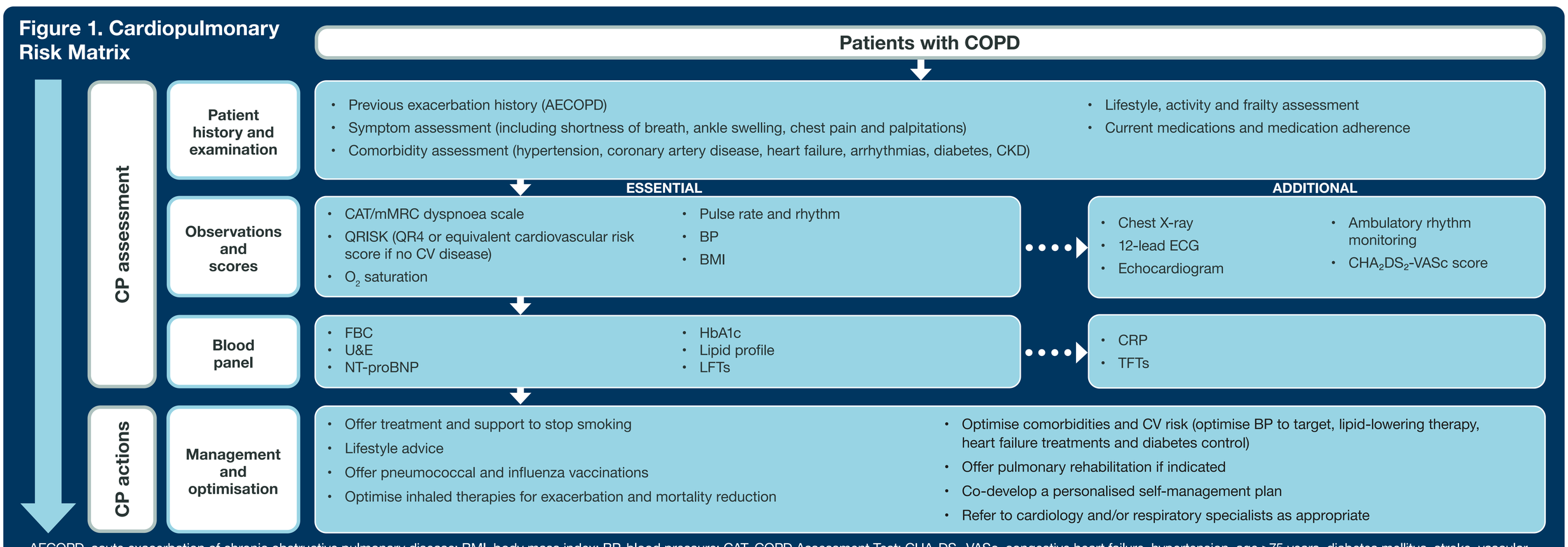
Clinical pathway framework

- Following consensus, the taskforce convened to discuss how to best support HCPs in integrating CP risk assessments into COPD management
- A structured clinical pathway framework—the Cardiopulmonary Risk Matrix—was subsequently created to support the recognition and management of CP risk in patients with COPD ***(Figure 1)***

Lessons and next steps

- Despite growing awareness of CP risk in the UK, there remains a clear need for new policies and clinical guidance to establish standardised practice and integrated care for patients with COPD
- Our aim is to embed the Cardiopulmonary Risk Matrix into routine clinical practice across the UK, providing HCPs in primary and secondary care with a systematic approach to the management of CP risk in patients with COPD

Figure 1. Cardiopulmonary Risk Matrix



AECOPD, acute exacerbation of chronic obstructive pulmonary disease; BMI, body mass index; BP, blood pressure; CAT, COPD Assessment Test; CHA_2DS_2-VASc, congestive heart failure, hypertension, age ≥75 years, diabetes mellitus, stroke, vascular disease, age 65–74 years, sex category (stroke risk score); CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease; CP, cardiopulmonary; CRP, C-reactive protein; CV, cardiovascular; ECG, electrocardiogram; FBC, full blood count; HbA1c, haemoglobin A1c; LFT, liver function test; mMRC, modified Medical Research Council; NT-proBNP, N-terminal pro b-type natriuretic peptide; QRISK, cardiovascular risk score; TFT, thyroid function test; U&E, urea and electrolytes.

References

1. Office for National Statistics. Death registration summary statistics, England, and Wales: 2022. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/deathregistrationsummarystatisticsenglandandwales/2022. Accessed 1 August 2025.
2. Sin DD, et al. *Eur Respir J.* 2006;28(6):1245–1257.
3. Shrikrishna D, et al. *Int J Chron Obstruct Pulmon Dis.* 2025;20:2073–2090.
4. Singh D, et al. *Adv Ther.* 2024;41(6):2151–2167.
5. Savic LC and Smith AF. *Anaesthesia*. 2023;78(2):247–250.

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