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EXPERT OPINION

Optimizing COPD Care in Belgium: A Multidisciplinary Expert Consensus on Cardiopulmonary Risk Management

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Introduction: Chronic obstructive pulmonary disease (COPD) represents a major health and economic challenge in Belgium, affecting approximately 800,000 individuals, half of whom remain undiagnosed. Beyond respiratory morbidity, COPD patients face substantial cardiopulmonary (CP) risk—encompassing severe exacerbations and cardiovascular (CV) events—that is often under-recognized and insufficiently addressed due to limited clinical awareness, fragmented care, and the absence of national guidance.

Methods: A multidisciplinary Belgian taskforce (general practitioners, pulmonologists, cardiologists, pharmacists, epidemiologists) convened through structured workshops and iterative consensus-building to develop a pragmatic, evidence-informed care pathway. The recommendations focus on COPD patients with at least one moderate or severe exacerbation, who are at heightened CP risk.

Results: This consensus introduces an integrated, stepwise framework that positions CP risk as a central component of COPD management after exacerbation and operationalizes it across primary care, hospitalization, and post-exacerbation follow-up. Core elements include systematic and proactive CP risk identification in primary care, standardized diagnostic workups during hospitalization, and multidisciplinary discharge planning. Pharmacological strategies combine eosinophil-guided inhaler therapy with guideline-directed CV treatment, while non-pharmacological measures reinforce smoking cessation, vaccination, physical activity, and pulmonary rehabilitation. Clear referral thresholds between primary care, pulmonology, and cardiology are defined, supported by patient education and digital monitoring tools.

Conclusion: This Belgian consensus complements international guidelines by consolidating fragmented recommendations into coherent, actionable algorithms that bridge gaps in routine practice. Its contribution lies in translating emerging evidence into structured, real-world pathways that integrate respiratory and cardiac care. Adoption of this framework may help reduce exacerbations, improve CV outcomes, and support multidisciplinary COPD care in Belgium.

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Introduction

Cardiopulmonary (CP) risk—the combined risk of serious respiratory and cardiovascular (CV) events such as chronic obstructive pulmonary disease (COPD) exacerbations, myocardial infarction, stroke, arrhythmia, and death—represents a critical but underrecognized challenge in COPD care.[1–3] COPD patients frequently suffer from CV comorbidities, and each exacerbation markedly increases the likelihood of subsequent CV events, particularly in the days and weeks following an exacerbation.[4] This dual burden drives excess morbidity and mortality.[1,5,6]

Setting the Belgian Scene

Despite a high COPD burden in Belgium, affecting approximately 800,000 people (≈7% of the population), CP risk remains poorly addressed in clinical practice.[7] In 2022, COPD ranked as the seventh leading cause of death, accounting for 5.31% of all deaths nationwide.[8] The COPD Index, developed by the Copenhagen Institute for Futures Studies, ranked Belgium 31st out of 34 countries underscoring the disconnect between high disease burden and the lack of a coordinated national COPD strategy.[9]

Belgium has broadly accessible universal health care coverage, treatment and drug access; nonetheless, important gaps remain in the COPD care pathway, including systematic symptomatic evaluation, and early referral practice leading to a proper diagnostic approach (eg, relatively limited use of screening tools like spirometry in primary care[10]). Beyond health impact, COPD imposes a €5 billion annual economic burden (2021), including direct costs (hospitalizations, medication) and indirect costs resulting from underdiagnosis and comorbidity management.[11–13]

Impact Beyond the Lung: CP Risk

Between 28% to 70% of COPD patients are diagnosed with CVD, twice as common as individuals without COPD (odds ratio 2.46, 95% confidence interval [CI] 2.02–3.00).[1,5] Importantly, CVD is a leading cause of death in patients with COPD.[6]

Exacerbations are a major driver of CP risk.[1] They are generally classified as mild (treated with short-acting bronchodilators only), moderate (addition of oral corticosteroids ± antibiotics), or severe (hospitalization or emergency room [ER] visit).[14] CV risk spikes within 1–14 days after any exacerbation (hazard ratio [HR] 3.19, 95% CI 2.71–3.76), being highest shortly after a severe exacerbation (HR 14.5 in the first 2 weeks, 95% CI 12.2–17.3). While the risk declines over time, it remains significantly elevated up to one year after any exacerbation compared to patients without exacerbations (HR 1.84, 95% CI 1.78–1.91).[4] Mortality impact is substantial: only half of COPD patients survive beyond 3.6 years after their first severe exacerbation, and two moderate exacerbations in the previous year increase death risk by 80% compared to those without exacerbations.[15,16] Even a single outpatient exacerbation raises the risk of all-cause mortality (including COPD as well as CVD-related mortality).[17,18] Although up to 77% of COPD patients experience at least one moderate or severe exacerbation within a three-year period,[19–21] many of these COPD events go unreported, with underreporting rates as high as 78%.[22–25]

Patients with increased respiratory symptoms – such as dyspnea and chronic bronchitis – face a higher risk of CP events, including exacerbations and CV events.[26,27] Notably, even individuals without a prior history of exacerbations remain at risk, up to one in four may experience a moderate or severe exacerbation within a year.[26] This underscores the importance of proactive monitoring and early intervention strategies aimed at primary prevention.

Mechanisms Underlying the Frequent Co-Existence of COPD and CVD (Syndemic Occurrence)

The pathophysiological links between COPD and CVD are recognized and believed to be related through mechanisms such as persistent systemic inflammation, hypoxia from abnormal gas exchange, reduced cardiac output due to lung hyperinflation, and reduced physical activity from dyspnea (Figure 1). Additional contributors include long-term

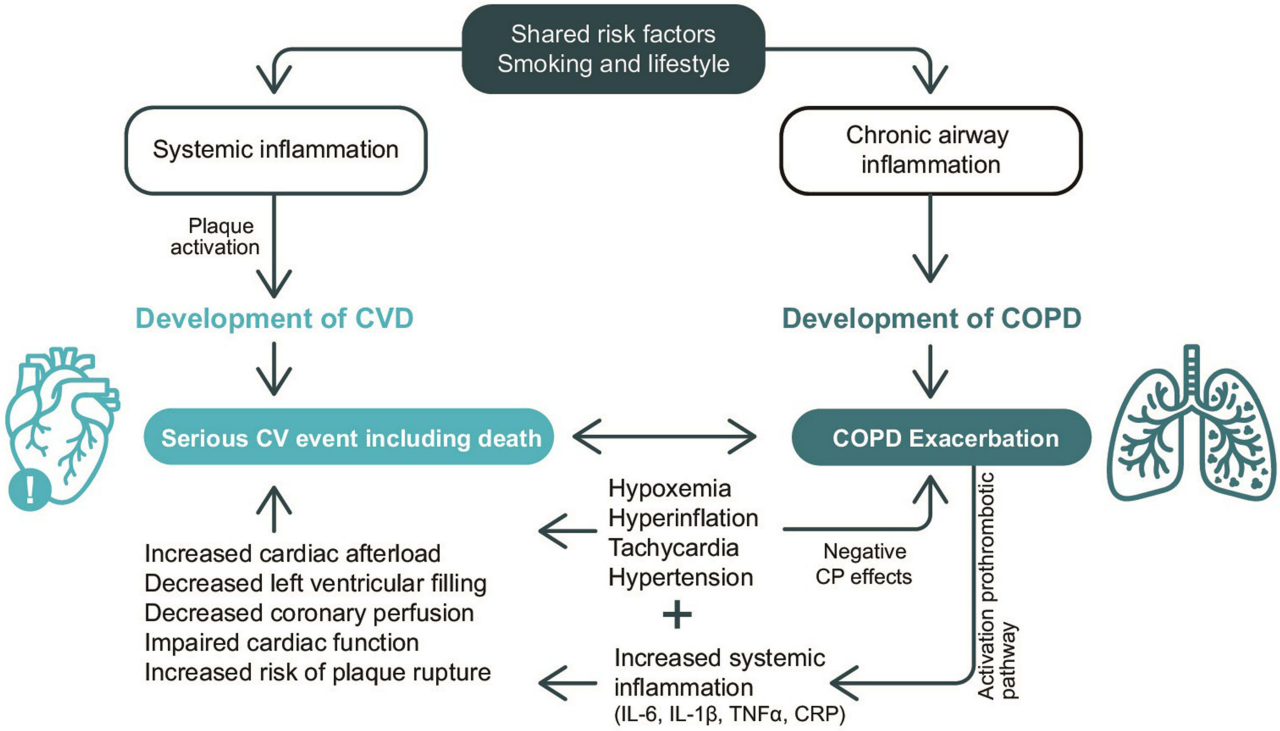

Figure 1 Mechanisms underlying the frequent co-existence of COPD and CVD (syndemic occurrence).
Abbreviations: COPD, chronic obstructive pulmonary disease; CP, cardiopulmonary; CRP, C-reactive protein; CVD, cardiovascular disease; IL-1β, Interleukin-1 beta; IL-6, interleukin 6; TNFα, tumor necrosis factor alpha.

corticosteroid use and shared risk factors such as smoking, ageing, low socio-economic status, and comorbid conditions including hypertension, dyslipidemia, depression, and anxiety.[14,28–31] During acute exacerbations, these chronic vulnerabilities are temporarily amplified by surges in systemic inflammation, heightened sympathetic activation, increased myocardial oxygen demand, and a prothrombotic state.[32] As a result, each COPD exacerbation acts as a cumulative stressor, increasing the risk of further CV events, particularly in the following days and weeks.[4]

Rationale for This Consensus Paper

The effective identification and management of CP risk in COPD patients remains suboptimal in Belgium. This is largely due to limited clinical awareness and the absence of national guidelines or recommendations to support clinicians in recognizing and addressing the risk of serious respiratory and/or CV events in this vulnerable population.[1] Yet, many COPD exacerbations and CV complications are preventable and treatable, underscoring the importance of early detection in primary care and prompt referral to specialists. This requires better coordination between primary and specialist care, improved management of CV comorbidities, along with greater emphasis on both non-pharmacological and pharmacological treatment strategies.[33] CP risk reduction should be recognized as a national priority in COPD management.[34]

Methods

To address these challenges, a multidisciplinary panel of Belgian COPD experts was convened to develop this consensus paper. The group comprised two general practitioners (GPs), one pharmacist, fifteen pulmonologists, two cardiologists, and one epidemiologist, and was chaired by the lead authors. Expert selection aimed to ensure broad representation across key stakeholders in COPD care, including principal investigators in COPD clinical trials and members of relevant Belgian healthcare societies, with attention to gender balance and representation from both academic centers and peripheral clinics.

Consensus development followed an iterative approach combining live meetings and virtual discussions. The process began with an advisory board in December 2023, which introduced the concept of CP risk and highlighted the need to

improve identification of CP risk in COPD patients. This was followed by a workshop in April 2024 focused on patient identification and care gaps including the development of an algorithm and checklist. During this workshop, experts emphasized the importance of establishing a national consensus on COPD care in Belgium to mitigate CP risk. The formal consensus paper kick-off meeting took place in March 2025, aiming to consolidate expert agreement on COPD care priorities, including CP risk management in both stable patients and acute settings. Manuscript drafting began after this meeting, and subsequent online sessions refined recommendations through a structured, stepwise process, allowing focused input from each specialty. Evidence was synthesized from current international guidelines and recent state-of-the -art literature, which was shared with all experts in advance. No formal voting system was used; instead, consensus was achieved through open discussion, including pro–con debates and iterative revisions, until all authors aligned and no major concerns remained.

This consensus paper specifically focuses on COPD patients at elevated CP risk, namely those who have experienced at least one moderate or severe exacerbation. This patient profile aligns with real-world evidence, such as the "EXAcerbations of COPD and their OutcomeS on CardioVascular disease" (EXACOS-CV) cohorts, which demonstrated that exacerbations are strong predictors of subsequent CV events.[34–36] Three clinical scenarios based on this patient profile are explored in detail.

The resulting recommendations represent multidisciplinary expert consensus, informed by the available scientific evidence, existing international guidelines, and considerations of local feasibility within the Belgian healthcare context.

Results

COPD Patients with a History of (Moderate/Severe) Exacerbation

Improving the recognition of CP risk in COPD patients is crucial, particularly when airflow limitation is still considered mild in primary care. As the first point of contact, primary care providers play a central role across the disease continuum – from early detection and treatment optimization to specialist referral and long-term follow-up. Shifting from the current reactive approach to a more proactive model of COPD care is essential to reduce exacerbation-related complications and CP events (Box 1 and Figure 2). Adopting a near zero-tolerance strategy for exacerbations not only supports better respiratory outcomes but also reduces CV burden, and is fully aligned with the updated GOLD 2026 recommendations.[14]

Improving Identification of CP Risk in Primary Care

Clinical Awareness Among Primary Care Providers

Awareness among primary care providers about the serious consequences of exacerbations, particularly their impact on CV health, could be strengthened. The ability of primary care providers to recognize COPD patients at CP risk is influenced by several practice-related factors, including clinical experience or interest in COPD, access to diagnostic tools such as spirometry, the size of their COPD patient population, and familiarity with current evidence-based guidelines.[42] Due to their low-threshold accessibility, community pharmacists often serve as the first point of contact for patients experiencing symptom worsening, offering an opportunity to support self-management and facilitate timely referral. Besides smoking cessation and vaccination advocacy, pharmacists can play a critical role in optimizing medication adherence, correcting inhaler technique, and resolving medication-related issues—all of which are key to reducing hospitalizations.[43]

Given that prior exacerbations are a strong predictor of future events, accurate reporting – even mild exacerbations – should be encouraged to reduce CP risk. In addition, frequent use of short-acting bronchodilators may signal underlying disease instability or recurrent mild exacerbations. Recognizing these patterns help primary care providers, including pharmacists, intervene earlier and manage the risk of progression.[18] Ideally, all exacerbations should be consistently registered in shared electronic health records (ICPC [International Classification of Primary Care], ICD [International Classification of Diseases], SNOMED CT [Systematized Nomenclature of Medicine – Clinical Terms]) to support continuity of care. However, improving interoperability and access to these systems remains a significant challenge.

To facilitate timely identification, clear and practical criteria for identifying and stratifying patients by CP risk are needed. Primary care providers can use a set of practical indicators – such as respiratory/cardiac symptom burden and

Box 1 COPD Patients with a History of (Moderate/Severe) Exacerbation (Primary Care Setting)

Improving identification of patients at CP risk

- Raise awareness for the link between COPD exacerbations and CVD
- Apply clear risk stratification criteria:
  - **Respiratory symptom burden**
    - Dyspnea (mMRC ≥2)
    - Frequent productive cough (cough and sputum production most or several days per week for the past 3 months, see top questions of the CAT™[37,38])
  - **Cardiac symptom burden**
    - Exertional chest pain or pressure
    - Palpitations
    - Exertional dizziness or syncope
    - Signs of fluid retention (peripheral edema, rapid weight gain, nocturnal orthopnea or paroxysmal nocturnal dyspnea)
  - **Exacerbation history**
    - At least two moderate or one severe exacerbation(s) within the past 12 months
    - Recurrent 'bronchitis'/antibiotic courses in smokers may also indicate COPD exacerbations
  - **Routine CV risk profiling** (SCORE2/SCORE2-OP[39])

Local guidance on treatment and monitoring

Optimize COPD care with a focus on exacerbation prevention

- Encourage smoking cessation
- Review medication, assess adherence and inhaler technique
- Simplify therapy (dual/triple), use blood eosinophil levels to guide ICS use (≥300 cells/μL)
- Update vaccination status
- Integrate physiotherapy and promote daily physical activity (consider referral to revalidation center)

Screen for ischemic heart disease, heart failure and atrial fibrillation[40]

- Routine ECG for ischemia, heart failure or atrial fibrillation
- Consider echocardiography if heart failure is suspected (NT-proBNP >125 ng/mL)

Primary prevention of CV risk factors with treatment goals of diabetes, hypercholesterolemia, hypertension and body weight

Red flags specialist collaboration

Referral to pneumologist in cases of:

- Recurrent moderate exacerbation
- Repeated respiratory infections
- Hypoxemia (oxygen saturation <90%,[14,41] though <92% may warrant referral in clinical practice)
- Frequent prescriptions of antibiotics and/or systemic corticosteroids
- Severe lung function impairment (FEV_1 <50%)
- Severe breathlessness (mMRC ≥2)
- COPD at age <40 years

Referral to cardiologist in cases of:

- Symptoms of angina pectoris
- Signs of heart failure (eg, edema, disproportionate dyspnea)
- Palpitations, irregular pulse, syncope
- Suspicion of pulmonary hypertension
- Prior ischemia on ECG, elevated NT-proBNP

Referral to emergency room in cases of:

- Acute desaturation with clinical deterioration.
- Acute ischemia on ECG

Abbreviations: CAT, COPD Assessment Test; COPD, chronic obstructive pulmonary disease; CP, cardiopulmonary; CV, cardiovascular; ECG, electrocardiogram; FEV_1, forced expiratory volume in 1 second; ICS, inhaled corticosteroids; mMRC, modified Medical Research Council; NT-proBNP, N-terminal pro–B-type natriuretic peptide; SCORE2(-OP), Systematic Coronary Risk Evaluation 2 (-Older Persons).

exacerbation history, as outlined in Box 1 - to classify COPD patients into distinct risk phenotypes (eg, low, increased, or high risk), reflecting overall disease severity.

In addition to these respiratory indicators, GPs are encouraged to perform routine CV risk profiling and manage accordingly, using validated tools such as the SCORE2 (Systematic Coronary Risk Evaluation 2) and SCORE2-Older Persons (SCORE2-OP, for individuals aged ≥70 years), developed by the European Society of Cardiology (ESC).[39] This tool – available via the U-Prevent platform, ESC application, or in printed charts – supports estimation and communication of CV risk. However, it is important to note that SCORE2(-OP) does not include COPD as an independent risk factor, potentially leading to an underestimation of CV risk in this population.[44]

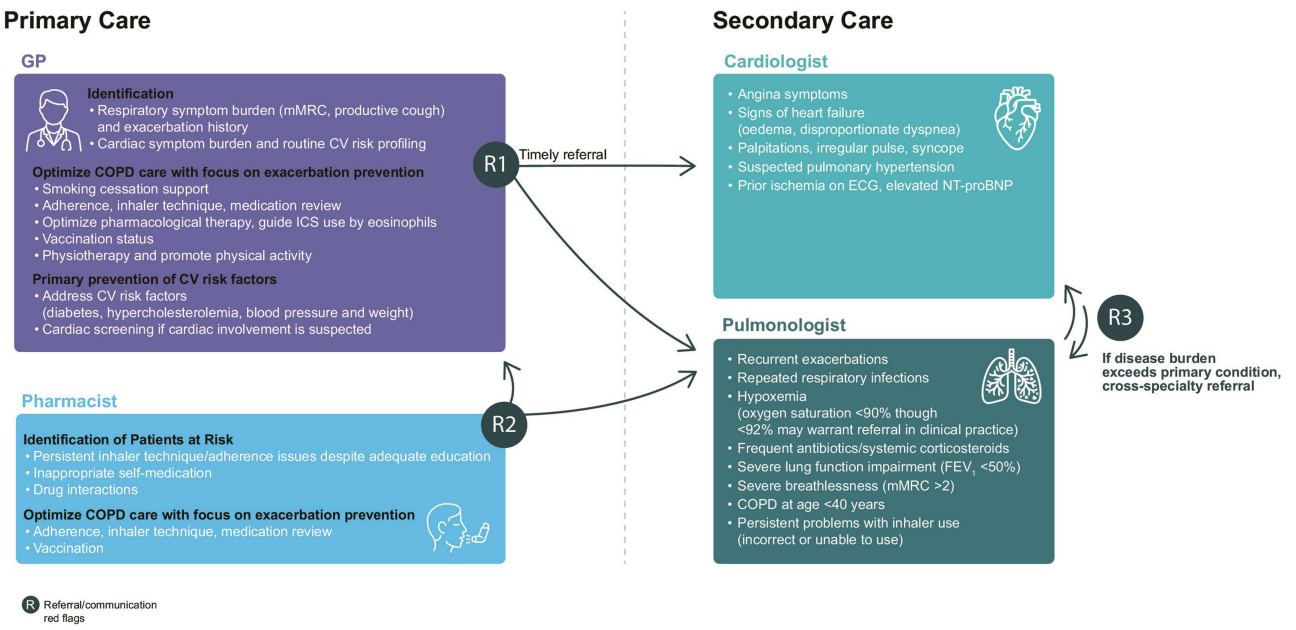

Figure 2 Referral pathways for COPD patients with a history of outpatient exacerbation.
Note: R indicates referral/communication pathways: R1 from GP to cardiologist and/or pulmonologist, R2 from pharmacist to GP and/or pulmonologist, and R3 between pulmonologist and cardiologist (bidirectional).
Abbreviations: COPD, chronic obstructive pulmonary disease; CV, cardiovascular; ECG, electrocardiogram; FEV_1, forced expiratory volume in 1 second; GP, general practitioner; ICS, inhaled corticosteroids; mMRC, modified Medical Research Council; NT-proBNP, N-terminal pro–B-type natriuretic peptide.

Promoting Patient Awareness and Self-Reporting

Many exacerbations go unreported by patients due to limited understanding of the disease and the importance of worsening symptoms.[22–25,45] Reporting exacerbations is further influenced by the patient's attitude towards health, self-medication habits, fear of hospitalization, guilt or self-blame, and reluctance to add new medications.[46] Educational interventions should support COPD patients and their relatives in recognizing and promptly reporting worsening symptoms. Primary care providers as well as pulmonologists should be consistent in the use of "exacerbation" terminology during consultations to enhance patient familiarity.[46]

Local Guidance on Treatment and Monitoring

In primary care, the diagnostic evaluation of respiratory complaints often begins with non-specific symptoms. Spirometry is the gold standard to confirm a diagnosis of COPD, in line with international guidelines.[14] Thereafter, the frequency of spirometry may depend on disease severity, symptom progression, and clinical need. Where feasible, performing spirometry directly within the general practice—potentially carried out by trained nurses or via dedicated referral pathways to lung function laboratories without requiring a pulmonologist consultation – can support timely diagnosis, and improve disease monitoring.[10,47]

Optimal COPD care requires a balanced approach that integrates both non-pharmacological and pharmacological strategies to prevent disease progression and future exacerbations.[14]

Non-Pharmacological Interventions

Non-pharmacological interventions are a cornerstone of COPD management, with smoking cessation being the most effective strategy to reduce disease progression and exacerbation risk.[14] Given its importance, tobacco use status should be routinely assessed and documented at every consultation. Community pharmacists have shown to reach a broad range of smokers and even with a brief motivational interview, may motivate them to quit and trigger to start smoking cessation aids.[48] While pharmacological support (eg, nicotine replacement therapy) can be directly helpful, referral to behavioral counselling by a certified smoking cessation professional could support long-term success.

A critical appraisal of professional circumstances is recommended, particularly regarding occupational exposures. When indicated, mitigation strategies and referral to occupational medicine should be considered.[14]

Vaccination status should be reviewed in accordance with national guidelines. The Belgian Superior Health Council (Conseil Supérieur de la Santé, CSS or Hoge Gezondheidsraad, HGR) recommends the following vaccinations for patients with COPD: influenza, COronaVIrus Disease 2019 (COVID-19), pneumococcal (from age 50 years), and respiratory syncytial virus (RSV, from age 60 years).[49] It should be noted that reimbursement requirements for certain recommended vaccines is currently limited to individuals aged 65 years and older.

Promotion of physical activity through daily activities should be reinforced routinely, with GPs playing a key role in coaching and referrals. Pulmonary rehabilitation is highly effective in improving the patient's health status,[50] but it requires a pulmonologist prescription following spirometry and an assessment of exercise capacity. In Belgium, severe disease (typically forced expiratory volume in 1 s [FEV_1] <60%) qualifies for higher reimbursement of ambulatory rehabilitation sessions. While reimbursement criteria are strict, clinical indications for pulmonary rehabilitation extend beyond this cut-off, underscoring the need for individualized decision-making.

Pharmacological Management of COPD

Pharmacological strategies in primary care should be aligned with evidence-based guidance, such as the Global Initiative for Chronic Obstructive Lung Disease (GOLD).[14] Dual bronchodilation therapy with a long-acting β_2-agonist (LABA) and a long-acting muscarinic antagonist (LAMA) is the cornerstone of maintenance therapy for stable patients (GOLD Groups A and B). If patients on LABA/LAMA experience an exacerbation, even moderate, escalation to triple therapy (LABA + LAMA + inhaled corticosteroids [ICS]) may be warranted. Adherence to maintenance therapy and inhaler technique should be assessed before treatment escalation. A growing body of evidence supports an association between high blood eosinophil counts and exacerbations of COPD.[51] Accordingly, blood eosinophil count is a useful biomarker to guide ICS use, although levels can be affected by recent oral corticosteroid use. Blood eosinophil counts of ≥300 cells/μL suggest a likely benefit from ICS, whereas counts <100 cells/μL argue against their use.[14]

Although blood eosinophil testing is not yet widely adopted in Belgian general practice for COPD care, it is readily available through routine full blood count analysis. Reviewing historical laboratory data within shared health records can aid in tailoring therapy, avoiding unnecessary ICS exposure, and identifying patients who may benefit from initiation.

An important aspect of pharmacological management is regular medication review to assess treatment response, adherence, and inhaler techniques. These reviews should be shared between healthcare practitioners and inform timely decisions to (de)escalate therapy or to switch inhaler device or molecules, taking into account the patient's evolving clinical status, preferences, and inhaler technique.

Correct inhaler technique is essential for therapeutic efficacy and patient adherence.[14] GPs, respiratory nurses, and pharmacists should provide clear instructions and assess inhalation technique at treatment initiation and during follow-up. Since April 2024, patients with COPD can benefit from Bon Usage des Médicaments (BUM) or Goed Gebruik van Geneesmiddelen (GGG) consultations – which are reimbursed pharmacist-led sessions fully covered by the National Institute for Health and Disability Insurance (INAMI/RIZIV). This initiative builds on the longstanding asthma program and aims to improve medication use, adherence, and self-management in chronic respiratory diseases.[52] Importantly, these pharmacist interventions should be communicated back to the GP or pulmonologist, ensuring continuity of care and allowing reinforcement of key messages.

Management of CV Comorbidities

In addition to addressing respiratory symptoms, GPs can proactively manage other CV risk factors – such as diabetes, dyslipidemia, hypertension, and body weight – which are common comorbidities in this population. GPs may rely on established guidance, such as the ESC guidelines,[53] which recommend systematic screening for atherosclerotic cardiovascular disease (ASCVD) and its risk factors in all patients with COPD.

If cardiac involvement is suspected, further investigations such as routine electrocardiography (ECG) and N-terminal pro–B-type natriuretic peptide (NT-proBNP) testing can be considered. Although direct cost-effectiveness analyses of NT-proBNP thresholds in COPD are lacking, evidence from heart failure diagnostics suggests that combining rule-out and age-specific rule-in cutoffs can be cost-effective, helping to reduce unnecessary echocardiograms and hospitalizations.[54]

Red Flags for Specialist Collaboration

Timely recognition of red flags is essential to ensure appropriate referral and specialist collaboration (Figure 2). Pulmonary referral should be considered in patients with recurrent moderate exacerbations, repeated respiratory infections, frequent prescriptions of antibiotics and/or systemic corticosteroids, documented hypoxemia (typically oxygen saturation <90%,[14,41] though <92% may warrant referral in practice), severe lung function impairment (FEV_1 <50%), severe breathlessness (modified Medical Research [mMRC] Council Dyspnea Scale ≥2), or COPD onset before age 40. Cardiology referral is indicated for angina pectoris, signs of heart failure, palpitations, irregular pulse, syncope, suspected pulmonary hypertension, signs of ischemia on ECG/ abnormal Q waves, or elevated NT-proBNP.

COPD Patients Undergoing an Acute (Severe) Exacerbation (Hospitalization)

Hospitalized COPD patients experiencing an acute exacerbation (AECOPD) have, as discussed above, a markedly increased CP risk, which remains elevated for weeks and can persist for up to a year.[14,34] This prolonged vulnerability underscores the need for a multidisciplinary and a standardized approach to post-exacerbation care.[55]

Improving Identification of CP Risk During Hospitalization

Every AECOPD admission should trigger a comprehensive CP risk assessment to guide differential diagnosis and evaluate for concurrent conditions such as acute cardiac events or pulmonary embolism, emphasizing the importance of considering alternative causes of dyspnea in COPD patients, with biomarkers serving as useful diagnostic tools.[14]

The initial ER diagnostic workup should include laboratory tests (including biomarkers when appropriate), arterial blood gas (ABG) analysis to assess gas exchange and acid-base status, and a 12-lead ECG to detect cardiac abnormalities or arrhythmias (see Table 1 for details). At the very least, a chest X-ray should be obtained to screen for possible pulmonary or cardiac complication. If clinical signs and/or additional tests raise suspicion of pulmonary embolism, further imaging with a computed tomography pulmonary angiogram (CTPA) is recommended.[56]

Table 1 COPD Patients Undergoing an Acute (Severe) Exacerbation (Hospital Setting)

Diagnostic workup in the ER		

• Laboratory tests
  ○ **General**: CBC, CRP, hemoglobin, ionogram, renal and liver function tests
  ○ **Cardiac biomarkers**[a,b]: CK-MB, hs-troponins, NT-proBNP
  ○ **Thrombotic activity biomarker**[a,c]: D-dimers
• Arterial blood gas
• 12-lead ECG
• Chest X-ray (CTPA if clinical signs and/or additional tests raise suspicion of pulmonary embolism[d])		

CV risk	**Findings from initial diagnostic workup**	**Recommended Actions**
Low risk	• Normal ECG • Negative NT-proBNP (<300 ng/mL) and hs-troponins[a] • No clinical signs, symptoms, or imaging evidence of heart failure (including chest X-ray)	• No cardiology consultation or TTE required • Refer patient to the pulmonary department for management of COPD-related conditions (eg, hypoxia, inflammation) and treat exacerbations per guidelines
High risk	• Abnormal ECG (eg, repolarization abnormalities, arrhythmias such as atrial fibrillation) • Mildly elevated NT-proBNP[b] and hs-troponins[a] • Clinical signs of mild cardiac decompensation • History of CVD	• TTE during hospitalization • Refer patient to the pulmonary department for management of COPD-related conditions (eg, hypoxia, inflammation) and treat exacerbations per guidelines • Consider cardiologist consultation during admission and plan follow-up for cardiology outpatient

(*Continued*)

Table 1 (Continued).

CV risk	Findings from initial diagnostic workup	Recommended Actions
Concomitant acute CV event	• Evidence of an acute CV event coexisting with COPD exacerbation • Signs of acute heart failure or ischemia identified through laboratory tests, ECG, or clinical evaluation	• Urgent cardiology consultation and assessment upon admission (in the ER) • Immediate TTE • In case of myocardial infarction, discussion and timing of coronary diagnostics • Admission to the cardiology ward or intensive care unit as appropriate • Follow treatment protocols based on established guidelines (eg, ESC or local) • Pulmonary consultation may be considered and plan pulmonary consultation via outpatient

Notes: [a]Biomarker testing should be guided by clinical suspicions rather than routine performance in all hospitalized patients, balanced by diagnostic benefit vs unnecessary investigations. [b]Among cardiac biomarkers, troponins and CK-MB have value for detecting acute myocardial infarction or myocardial injury, while NT-proBNP is a valuable marker for assessing left ventricular dysfunction. Specific thresholds for elevated values should be interpreted alongside clinical findings and established diagnostic protocols. hs-troponins vary with the assay used, "non-elevated" and "elevated" refer to levels below and above the 99th percentile.[57] NT-proBNP can be used to rule out acute heart failure with values <300 ng/mL, while age-specific rule-in thresholds are >450 ng/mL if aged <55 years, >900 ng/mL if 55–75 years, and >1800 ng/mL if >75 years.[40] [c]D-dimers are useful in ruling out pulmonary embolism, a frequent CV event in this population. D-dimers based on age-adjusted D-dimer cut-off in patients 50 years or older, younger patients 500 µg/L.[58] [d]Clinical suspicion may arise from ECG abnormalities (eg, tachycardia, right bundle branch block) or echocardiographic findings (eg, right ventricular dilation, McConnell sign). When D-dimer levels are above the appropriate cut-off and/or dyspnea or other clinical features cannot be fully explained by the COPD exacerbation, CTPA should be considered to rule out pulmonary embolism.

Abbreviations: CBC, complete blood count; CK-MB, creatine kinase-myocardial band; CRP, C-reactive protein; COPD, chronic obstructive pulmonary disease; CTPA, computed tomography pulmonary angiograph; CV, cardiovascular; ER, emergency room; ESC, European Society of Cardiology; hs-troponins; high-sensitivity troponins; NT-proBNP, N-terminal pro–B-type natriuretic peptide; TTE, transthoracic echocardiography.

Local Guidance on Treatment and Monitoring During Hospitalization

CV Risk Stratification

Following the diagnostic workup, patients hospitalized with AECOPD should be triaged by CV risk (see Table 1 and Figure 3) - those with low risk require pulmonary follow-up, high risk patients need cardiology consultation and transthoracic echocardiography (TTE) with shared management of modifiable risk factors in addition to pulmonary follow-up, while patients with concomitant acute CV events require immediate cardiology involvement, diagnostic imaging, and possible admission to the cardiology ward for monitoring.

Pulmonary Follow-Up During Hospitalization

COPD treatment should be reviewed and aligned with GOLD recommendations.[14] Blood eosinophil levels, preferably measured pre-admission, can guide treatment escalation if adherence and compliance is assessed optimal. If blood eosinophil levels are ≥100 cells/µL, triple inhaler therapy should be considered. This regimen includes an ICS, a LABA, and a LAMA. The potential addition of biologics may be evaluated depending on local/national reimbursement criteria. If there is no marker of eosinophilia (eg, eosinophils <100 cells/µL), dual bronchodilator therapy (LABA + LAMA) may be more appropriate. In selected patients with frequent exacerbations despite optimal inhaled therapy, long-term azithromycin can be considered, particularly in former smokers. Azithromycin use is however associated with QTc prolongation and ototoxicity,[59] warranting careful patient selection and monitoring. Inhaler technique should be routinely re-assessed by hospital pharmacists, nurses or physiotherapists to ensure correct use and adherence. In patients with severe airflow obstruction or lung hyperinflation, inspiratory flow should also be evaluated when using dry powder inhalers.

Smoking status must be assessed, with structured cessation support offered using the "5 A's" approach: Ask, Advise, Assess, Assist, and Arrange follow-up.[60] If possible, a tobacco cessation specialist should be involved during hospitalisation.[43] Pharmacological aids should be recommended where appropriate, ensuring compatibility with the patient's CP risk profile. If not already addressed in primary care, findings from these smoking cessation interventions should be communicated to the patient's GP.

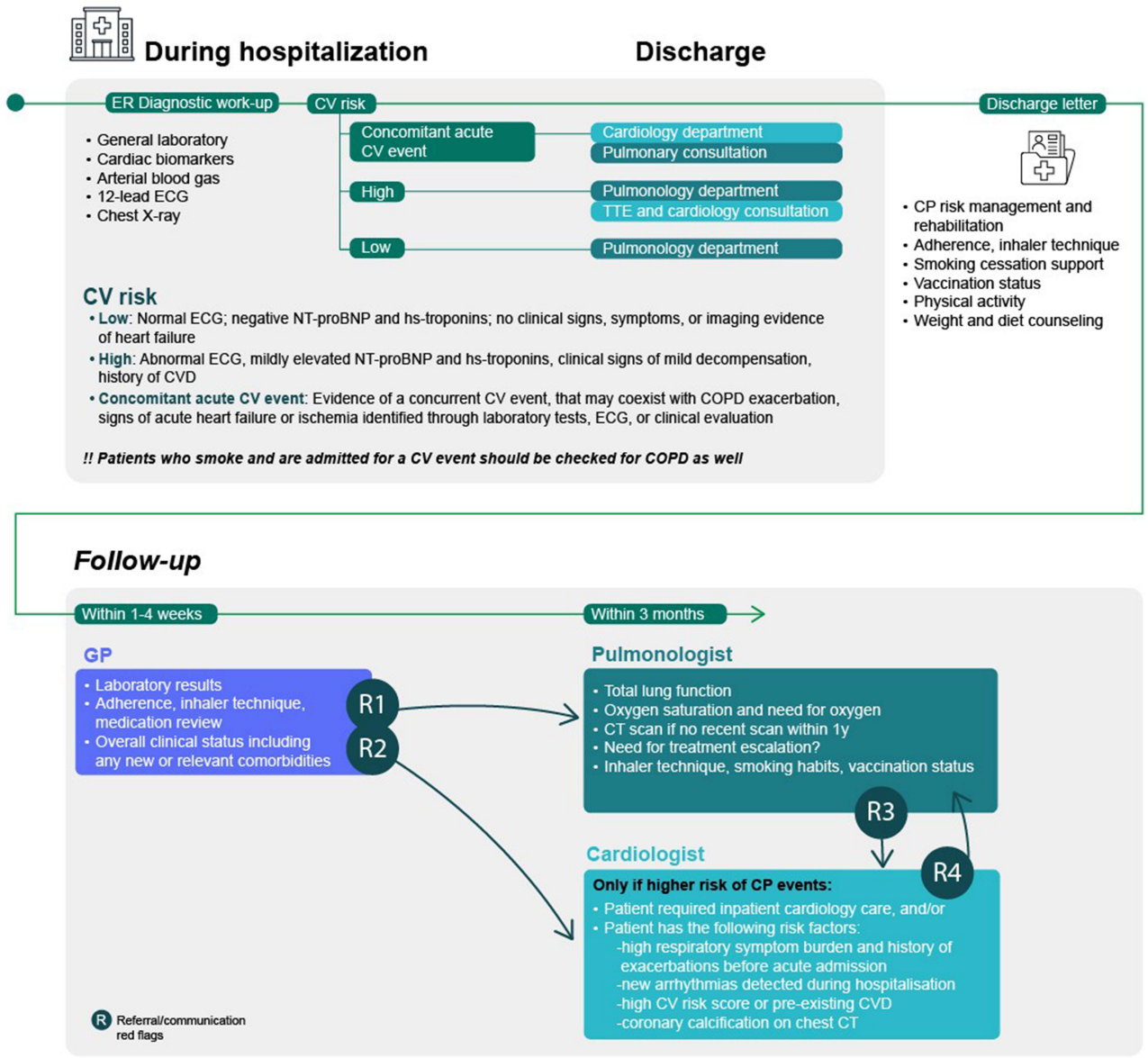

Figure 3 Referral pathways for COPD patients with acute severe exacerbation.
Note: R indicates referral/communication pathways: R1 from GP to pulmonologist (uncontrolled symptoms, self-medication, poor inhaler technique); R2 from GP to cardiologist (inadequate control of CV risk factors); R3 from pulmonologist to cardiologist (angina pectoris of clinical signs of cardiac decompensation, repeated exacerbations, disproportionate dyspnea symptoms); R4 from cardiologist to pulmonologist (unexplained/persistent dyspnea despite optimal cardiac treatment, frequent COPD exacerbations [previously unidentified SpO_2 below 90%]).
Abbreviations: COPD, chronic obstructive pulmonary disease; CP, cardiopulmonary; CT, computed tomography; CV, cardiovascular; CVD, cardiovascular disease; ECG, electrocardiogram; GP, general practitioner; hs-troponins, high-sensitivity troponins; NT-proBNP, N-terminal pro–B-type natriuretic peptide; SpO_2, peripheral oxygen saturation; TTE, transthoracic echocardiography.

Radiological (re-)evaluation during hospitalization should be considered if there is suspicion of complications or clinical deterioration despite adequate treatment (eg, infection, pulmonary embolism, pneumothorax). When a thorax computed tomography (CT) is performed, radiologists are encouraged to use a standardized checklist covering emphysema, mucus plugging, bronchial wall thickening, bronchiectasis, (cardiac) vascular calcifications, pleural effusion, cardiomegaly, right/left ventricular enlargement, pulmonary nodules, and costal/vertebral fractures. Ideally, this checklist should be developed in collaboration with pulmonologists to ensure assessments are comprehensive, consistent, and, where possible, quantitative.

Additional care may include physiotherapy with tailored exercise programs to preserve physical function, nutritional assessment and intervention, and prophylactic low molecular weight heparin (LMWH) in (relatively) immobilized patients to prevent venous thromboembolism.

Pharmacological Management of CVD

CVD is an extrapulmonary "treatable trait" in COPD patients. Key management includes blood pressure control, lipid-lowering therapy, appropriate diabetes and nutritional management, appropriate use of oral anticoagulation in patients with atrial fibrillation for stroke prevention, and guideline-directed medical therapy (GDMT) in patients with heart failure.[53] Importantly, there are no contraindications to GDMT for CVD in COPD patients.[2]

Monitoring of CP Risk

Before discharge, monitoring of CP risk factors (low-density lipoprotein [LDL],[61] hemoglobin A1C [HbA1c]) should begin with checking the patient's shared electronic health records (including data from the GP) for any existing results. If recent values are unavailable, these assessments should be performed during hospitalization and prior to discharge. Key markers to watch include signs, symptoms, or biomarkers suggestive of acute coronary syndrome or heart failure, worsening symptoms despite treatment (necessitating repeat ECG and monitoring of cardiac markers), and new-onset arrhythmia during hospitalization.

Post-Exacerbation Care

Effective post-exacerbation care is essential to support recovery, prevent future exacerbations and CP events in COPD patients. A structured, multidisciplinary approach with coordinated discharge protocols comprising discharge planning, education, and follow-up ensures appropriate care tailored to the complex interplay between pulmonary and CV health.

Discharge Planning and Coordination

According to GOLD, all clinical and laboratory data should be systematically reviewed, including the need for pulmonary rehabilitation or long-term oxygen therapy (LTOT), adherence to maintenance therapy, and inhaler technique. When blood eosinophil levels are ≥100 cells/μL, escalation to triple inhaler therapy may be considered. Ongoing smoking cessation support remains an essential component of risk reduction.[14] In some cases, LMWH may be indicated until full mobility is regained. Vaccination status should be reviewed in line with national recommendations. Finally, a comorbidity management and follow-up plan is advised, with scheduled appointments with the GP, pulmonologist, cardiologist, and pharmacist as appropriate.

To support continuity of care, a discharge letter should be shared with the GP, highlighting CP risk management and rehabilitation, and a checklist of follow-up actions covering smoking cessation, CVD targets (eg, ASCVD risk factors[53]), medication adherence, inhaler technique, physical activity, weight and diet counselling, rehabilitation needs, and vaccination status.

Patient education is a critical component of care at discharge. Patients should be informed of red flags and encouraged to promptly report any worsening respiratory symptoms. Lifestyle counselling should reinforce the priorities outlined in the follow-up plan, including smoking cessation, a heart-healthy diet, regular physical activity, and weight management, while also addressing potential barriers to medication adherence. Digital tools and apps may help reduce practical barriers for unintentional non-adherence and foster communication and recovery post-discharge in the future, although no validated or widely adopted tools are currently in use in Belgium.

Structured Follow-Up After Discharge

Post-discharge care should follow defined timelines to optimize recovery and manage CP risk (see Table 2 and Figure 3). Within 1–4 weeks, the GP should review laboratory results, not only to monitor recovery from the exacerbation but also to assess acute CV risk (eg, lipid profile, HbA1c, renal function, and, if clinically indicated, natriuretic peptides or troponin). The GP should also evaluate current maintenance therapy, overall clinical status (eg, dyspnea, fever, appetite), and any new or relevant comorbidities. A pharmacist-led medication review can improve adherence and inhaler technique and identify potential drug-related issues, including pharmacological interactions with recently initiated medications.

Table 2 COPD Patients After an Acute (Severe) Exacerbation (Follow-Up)

Pulmonologist	Cardiologist	Primary Care
Key follow-up timings and assessments		
Within 3 months after discharge • Total lung function: spirometry and static lung volumes and/or diffusion (DLCO) if indicated • Oxygen saturation (consider ABG measurement and LTOT if low) and need for oxygen • CT scan[a] (if no recent CT within 1 year) • Re-evaluate need for treatment escalation • Reassess smoking habits, inhaler technique, and vaccination status	**Within 3 months** for those at higher CV risk (see Table 1) and/or with following risk factors: • High symptom burden prior to AECOPD (reflected by mMRC/CAT™) and history of exacerbations before acute admission • Newly detected arrhythmias detected during hospitalization • High CV risk score (SCORE2[39]) or pre-existing CVD • Coronary calcification on chest CT	**Within 1–4 weeks** • Check laboratory results • Medication review including assessing adherence, inhaler technique and identifying medication problems with recently initiated medication • Review patient's overall clinical status (eg, dyspnea, fever, appetite) and any new or relevant comorbidities (eg, diabetes, heart failure, arrhythmia)
Red flags requiring collaborative action		
From **GP**: • Uncontrolled symptoms (persistent or worsening dyspnea, productive cough, new exacerbations, or restricted mobility due to respiratory symptoms) • Self-medication • Inadequate inhalation technique From **cardiologist** • Unexplained or persistent dyspnea despite optimal cardiac treatment • Frequent COPD exacerbations (previously unidentified SpO_2 below 90%)	From **GP**: • Inadequate control of CV risk factors (eg, hypertension, dyslipidemia) From **pulmonologist**: • Angina pectoris or clinical signs of cardiac decompensation • Repeated exacerbations • Disproportionate symptoms of dyspnea	From **pharmacist**: • Medication problems including interactions, poor adherence, poor inhaler technique, failure to purchase prescribed medications • Inappropriate self-medication

Notes: [a]With a specific request to evaluate for bronchiectasis, mucus plugging, emphysema, coronary calcifications, pulmonary hypertension, vertebral fractures, and suspected lesions.

Abbreviations: ABG, arterial blood gas; AECOPD, acute exacerbation of chronic obstructive pulmonary disease; CAT, COPD Assessment Test; COPD, chronic obstructive pulmonary disease; CT, computed tomography; CV, cardiovascular; CVD, cardiovascular disease; DLCO, diffusing capacity of the lungs for carbon monoxide; GP, general practitioner; LTOT, long-term oxygen therapy; mMRC, modified Medical Research Council; SCORE2, Systematic Coronary Risk Evaluation 2; SpO_2, peripheral oxygen saturation.

Pulmonology follow-up is recommended within 3 months and should include a comprehensive full pulmonary assessment. If imaging results within the past year are lacking, a CT scan should be organized with a specific request to evaluate bronchiectasis, mucus plugging, emphysema, coronary calcifications, pulmonary hypertension, vertebral fractures, and suspected lesions. Smoking habits, inhaler technique, and vaccination status should be reassessed. Treatment should be escalated particularly in cases of recurrent exacerbations or high blood eosinophil counts (≥100 cells/μL) despite optimal treatment adherence, with consideration for ICS, azithromycin, or biologics (if available) in line with GOLD guidelines.[14]

Cardiology follow-up is equally important. Patients with a low CV risk profile (as outlined in Table 1) and no acute complications should undergo standard risk assessment and management. Those at higher risk—such as individuals who required inpatient cardiology care or present with risk factors listed in Table 1 —should be preferably seen within 3 months.

Post-Discharge Red Flags and Referral Triggers

It is crucial to recognize specific red flags that indicate the need for urgent specialist referral beyond routine post-discharge care.

COPD in general is linked to frailty, increasing the risk of exacerbation and poor outcomes post-discharge. When symptoms such as persistent or worsening dyspnea, productive cough, new exacerbations, or reduced mobility due to

respiratory issues remain uncontrolled, GPs should consider involving a pulmonologist.[41] Self-medication, potential drug interactions, or problems with inhaler technique warrant pharmacist and specialist evaluation. Pulmonologists, in turn, may need to refer to cardiologists if patients present with angina pectoris, clinical signs of cardiac decompensation, repeated exacerbations, or dyspnea that seems disproportionate to lung findings. Similarly, GPs should be attentive to cardiac symptoms or poorly controlled CV risk factors despite treatment adherence, prompting cardiology referral (see Table 2). On the other hand, cardiologists should stay vigilant for underlying pulmonary disease. Referral to a pulmonologist is recommended when unexplained or persistent dyspnea continues despite optimal cardiac treatment, or in the presence of frequent COPD exacerbations (≥2 moderate or ≥1 severe per year).

Since ergometry may include spirometry, cardiologists may also screen for COPD and refer patients based on the findings. In practice, cardiologists can directly refer patients to the pulmonary function lab, review the report, and only pursue further COPD work-up if obstructive abnormalities are present. Conversely, pulmonologists may order cardiac ultrasounds directly when indicated, without prior cardiology consultation. These workflows highlight the importance of local collaboration between pulmonologists and cardiologists, facilitating early detection while minimizing unnecessary specialist visits.

Discussion

The most immediately actionable priority is to increase awareness and recognition of CP risk among healthcare professionals across care settings. In this regard, the figures, algorithms, and checklists presented in this consensus paper are intended to function as practical, ready-to-use tools to support risk recognition, communication, and timely referral, rather than isolated recommendations. For patients hospitalized with a COPD exacerbation, these materials may additionally serve as the core elements of a pragmatic "Belgian National Discharge Bundle", facilitating structured discharge communication, harmonized follow-up, and coordination between hospital teams, GPs, pharmacists, and specialists.

Dissemination of these tools as educational leaflets or digital resources through existing national organizations—including the Belgian Respiratory Society (BeRS) and its COPD working group, the Belgian Lung Foundation (BLF), and the Société Scientifique de Médecine Générale (SSMG)/Domus Medica—could enable broad uptake. By doing so, this strategy may also help embed the concept of CP risk into routine clinical practice, where it is currently underrecognized despite its major prognostic relevance. The active involvement of several co-authors in these societies provides a realistic pathway for dissemination, endorsement, and advocacy.

If implemented, this integrated approach is expected to support earlier identification of high-risk patients, reduce preventable exacerbations and post-exacerbation CV events, and improve coordination of care, with potential downstream benefits in healthcare utilization.

Overall, while several recommendations are directly supported by robust epidemiological evidence and international guidelines, others primarily reflect multidisciplinary expert consensus or considerations of local feasibility within the Belgian healthcare system.

Foster Interdisciplinary Collaboration Across Care Settings

To improve COPD care and reduce waiting times, stronger collaboration between primary and secondary care is essential. Shared electronic health records linking GPs, pharmacists, specialist and hospital records would ensure continuity of care, particularly after exacerbations, and support data-driven decision-making. Electronic medical files could be further developed into practical follow-up tools. Standardized templates can guide systematic follow-up, including structured anamnesis, key clinical parameters, recommended frequency of investigations, and links to validated questionnaires. Telemedicine offers a promising adjunct to traditional COPD management. Interventions, including but not limited to telerehabilitation, health and lifestyle education, telemonitoring, early exacerbation detection, psychosocial support, and smoking cessation support, have shown heterogenous evidence for improving quality of life or clinical outcomes.[62] When adopted, these services should be integrated into structured care pathways with clear task allocation among providers. Further research is needed to identify which patients benefit most and how to optimize its cost-effectiveness and clinical impact.

Building on successful regional initiatives could help scaling up integrated COPD care at the national level. For example, early introduction of physiotherapy and broader implementation of physical activity programs like "Bewegen op Verwijzing" (Flanders) or "Sport Sur Ordonnance" (Wallonia) can enhance disease management.[63,64] Structured, patient-centered care models—such as Belgium's *zorgtraject/trajet de soins* for diabetes and kidney disease—offer a coordinated approach for COPD through personalized care plans, regular follow-ups, and reimbursed services including education and paramedical consultations involving both primary care and specialists.[65] Quality control of these initiatives, along with regular further training for healthcare providers, is recommended to ensure high standards of care. Finally, harmonizing reimbursement for smoking cessation counselling across regions in Belgium, along with coverage for nicotine replacement therapy and other substitution medicines, would further improve equity of access nationwide.

Proactive communication between healthcare providers is essential to ensure timely, coordinated responses to COPD exacerbations. Pharmacists, for example, can identify and report exacerbation patterns such as self-medication with short-acting bronchodilators, corticosteroids or changes in inhaler medication/technique and alert the patient's GP. Similarly, respiratory physiotherapists, who interact frequently with patients, can monitor patient's health status and flag signs of deterioration/unusual physical activity.

Enhancing Patient Engagement

Patient empowerment is critical for effective COPD management.[66] One way to support this is by introducing an individual care plan, which can include treatment goals, agreements on the frequency of check-ups, lifestyle changes, medication (self) management, and coordination with different healthcare providers.[41] Specifically, the plan should incorporate a written exacerbation action plan that outlines how to respond to worsening symptoms. This can help patients to recognize and respond to exacerbation symptoms promptly, thereby enhancing their health-related quality of life.[67–69]

E-health strategies – such as daily symptom tracking with wearables, home monitoring of vital signs, and e-consultations - offer a promising approach to support patient self-management and early detection of exacerbations.[70–72] Although several international tools exist, such as the COPD Exacerbation Recognition Tool (CERT) - a brief, five-item questionnaire designed to help patients recognize early signs of exacerbation[46] - no validated digital monitoring tools are widely used in Belgium. A Belgian pilot app for chronic pulmonary disease, integrating symptom tracking, medication adherence, and personalized action plans with wearable integration, has shown encouraging uptake and potential to improve patient engagement and disease control.[73] In the Netherlands, the "Ziektelastmeter", included in NHG (Nederlands Huisartsen Genootschap) guidelines,[41] visualizes patient's health across eleven physiological, psychological, and functional domains, supporting collaborative treatment planning and self-management. There is an urgent need to develop and implement user-friendly, evidence-based e-tools tailored to the Belgian healthcare context, with attention to language, accessibility, and potential reimbursement.

A critical gap remains at the transition from hospital to home following severe AECOPD, yet Belgium lacks specific data on this, as it is rarely documented.[74] A recent Canadian hospital-based analysis reports suboptimal adherence to guideline-recommended pharmacotherapy at discharge, highlighting a missed opportunity for optimizing long-term outcomes.[75] Poor adherence is consistently associated with increased risk of future exacerbations and mortality.[76] Belgian real-world studies have explored adherence in community pharmacies and interventions to improve inhaler technique (eg, via the MyPuff app), but not specifically post-hospitalization.[77,78] In this context, discharge bundles—structured protocols combining medication optimization, inhaler technique education, smoking cessation support, and follow-up planning—have demonstrated benefits in reducing readmissions and improving adherence.[79] Implementing a standardized Belgian discharge bundle could represent one of the most immediately actionable steps to improve CP risk management after severe exacerbations.

Improve COPD Diagnosis in Primary Care

Expanding access to spirometry in primary care— through delegation to trained nurses in GP practices (eg, "*New Deal voor huisartsen*"[80]), pharmacists for preliminary case finding, or dedicated open lung function laboratories (for technical, potential AI-aided spirometry without requiring pulmonologist consultation)—could greatly enhance early case finding

and risk assessment. However, persistent barriers, including equipment costs and the need for specialized expertise, must be tackled through targeted investments and dedicated training initiatives.[81]

In parallel, improved CV risk assessment tools in primary care is essential for patients with COPD. SCORE2, commonly used and validated for the general population, does not account for COPD, which can lead to an underestimation of CV risk in this group.[39] The ESC suggests a risk adjustment (x2–x3) for patients with COPD.[53] The more recent QRISK4 model includes COPD as a risk factor and may offer a more accurate prediction for this population; however, it has not yet been validated for use in Belgium.[44] Similarly, the COPDCoRi score was specifically developed to estimate the risk of coronary artery disease in patients with COPD, but this tool also lacks validation.[82] In addition, a modified version of the *Reviving the Early Diagnosis of Cardiovascular Disease* (RED-CVD) questionnaire can aid in early case finding, particularly when used alongside existing risk prediction models in the primary care setting.[83]

Furthermore, measurement of natriuretic peptides (eg, NT-proBNP) could substantially improve early detection of heart failure in patients with COPD, yet this test is currently not reimbursed in Belgian primary care. Introducing reimbursement pathways would be an important step to facilitate its wider use in general practice.

The Expanding Role of Chest CT in COPD Care

Although multiple COPD case-finding tools have been developed over the past two decades, their limited adoption underscores the need for alternative strategies to improve early recognition and risk assessment. Chest CT, already widely used for lung cancer screening and other indications,[84] offers an underutilized opportunity in this regard. A significant proportion of individuals eligible for lung cancer screening meet criteria for COPD, with many remaining undiagnosed. Beyond cancer detection, CT frequently reveals pulmonary, CV, and musculoskeletal abnormalities that contribute to the multimorbidity burden in COPD and worsen clinical outcomes. Coronary artery calcium is among the most common incidental findings, and both visual scoring and quantitative measures provide prognostic information for CV events.[85] Additional cardiovascular CT-derived markers – including the pulmonary artery–to–aorta ratio[86] and thoracic aortic diameter – further refine risk stratification, with established associations to mortality, exacerbations, and other clinical outcomes. Leveraging these insights systematically could transform case-finding for COPD and its comorbidities, improving timely diagnosis, individualized risk assessment, and overall patient management, particularly if supported by AI tools that can automate detection and streamline workflows.

Address Knowledge Gaps Through Research

Accurate, up-to-date epidemiological data are crucial to guide both clinical practice and policy. In Belgium, there is a need for representative data on the incidence and burden of CVD among patients with COPD, as well as on circulating respiratory pathogens. Coordinated surveillance efforts with public health authorities could help and inform national priorities. Furthermore, real-world studies are needed to evaluate the impact of combined efforts by cardiologists, pulmonologists, and primary care on reducing disease burden and CV events in COPD patients.

Further research should focus on the underlying pathophysiological mechanisms that contribute to the increased CP risk in COPD, to better understand disease overlap and identify actionable targets for intervention.

The development of practical, validated risk stratification tools specifically for COPD patients is another unmet need. As discussed earlier, existing CV risk scores, such as SCORE2, do not fully capture COPD-related risk. Incorporating respiratory parameters – such as FEV_1 and forced vital capacity, as suggested by GOLD[14] – may enhance predictive accuracy and should be validated in this context.

With regard to pharmacological interventions, randomized controlled trials (RCTs) are needed to evaluate the role of sodium-glucose cotransporter-2 (SGLT2) inhibitors or glucagon-like peptide-1 (GLP-1) receptor agonists in reducing CV events and exacerbations among COPD patients, given their glucose-lowering effects and anti-inflammatory actions.[87,88] Similarly, RCTs investigating the use of aspirin or other antiaggregant agents to reduce CP risk following exacerbations could provide useful insights, building on mitigated results from observational data that suggest potential benefit.[89] Moreover, the impact of novel or recently introduced COPD therapies—such as biologics[90]—on CP risk remains largely unexplored. Finally, large-scale RCTs specifically designed to evaluate the identification and management of CVD in COPD patients are essential to advance integrated, multidisciplinary care and reduce the burden of CP in this high-risk population.

Secondary prevention strategies warrant further exploration. Within a proactive care model, early initiation of triple therapy may offer benefits in reducing CP events even in clinically stable patients, mirroring the preventative strategies commonly used in cardiology. Although promising, this approach requires confirmation through future studies (ongoing THARROS study).[91,92] In addition, oral therapies such as prophylactic azithromycin also benefit selected patients with frequent moderate exacerbations. Evidence from the Belgian BACE trial showed that starting azithromycin during hospitalization for an acute exacerbation improved secondary outcomes, including reduced early readmissions.[93] Post-hoc findings suggest that azithromycin could be considered in carefully selected patients—such as those with high C-reactive protein and non-eosinophilic phenotypes.[94]

Conclusion

CP risk is a major yet underrecognized determinant of outcomes in COPD, particularly following exacerbations. This multidisciplinary consensus provides pragmatic, ready-to-use tools to support timely recognition, risk stratification, communication, and referral across care settings. For patients admitted with AECOPD, these components may form the basis of a standardized discharge bundle to improve continuity of care and post-exacerbation follow-up between hospital teams, primary care clinicians, pharmacists, and specialists.

Taken together, these recommendations offer clinicians practical guidance to implement an integrated cardiopulmonary care approach beyond existing international guidelines that links risk recognition, multidisciplinary management, and coordinated post-exacerbation follow-up in routine clinical practice.

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