COPD puts patients at an elevated risk of cardiopulmonary events that may lead to an early death[1]

Cardiopulmonary risk is defined as the risk of serious respiratory and/or cardiovascular events in patients with COPD

These include, but are not limited to, COPD exacerbations, MI, stroke, heart failure decompensation, arrhythmia, and death due to any of these events[1]

Patients with increased dyspnea were at higher risk of exacerbations:[2]

~1 in 2 patients who had an MRC grade ≥3 had an exacerbation in the following 12 months[a]

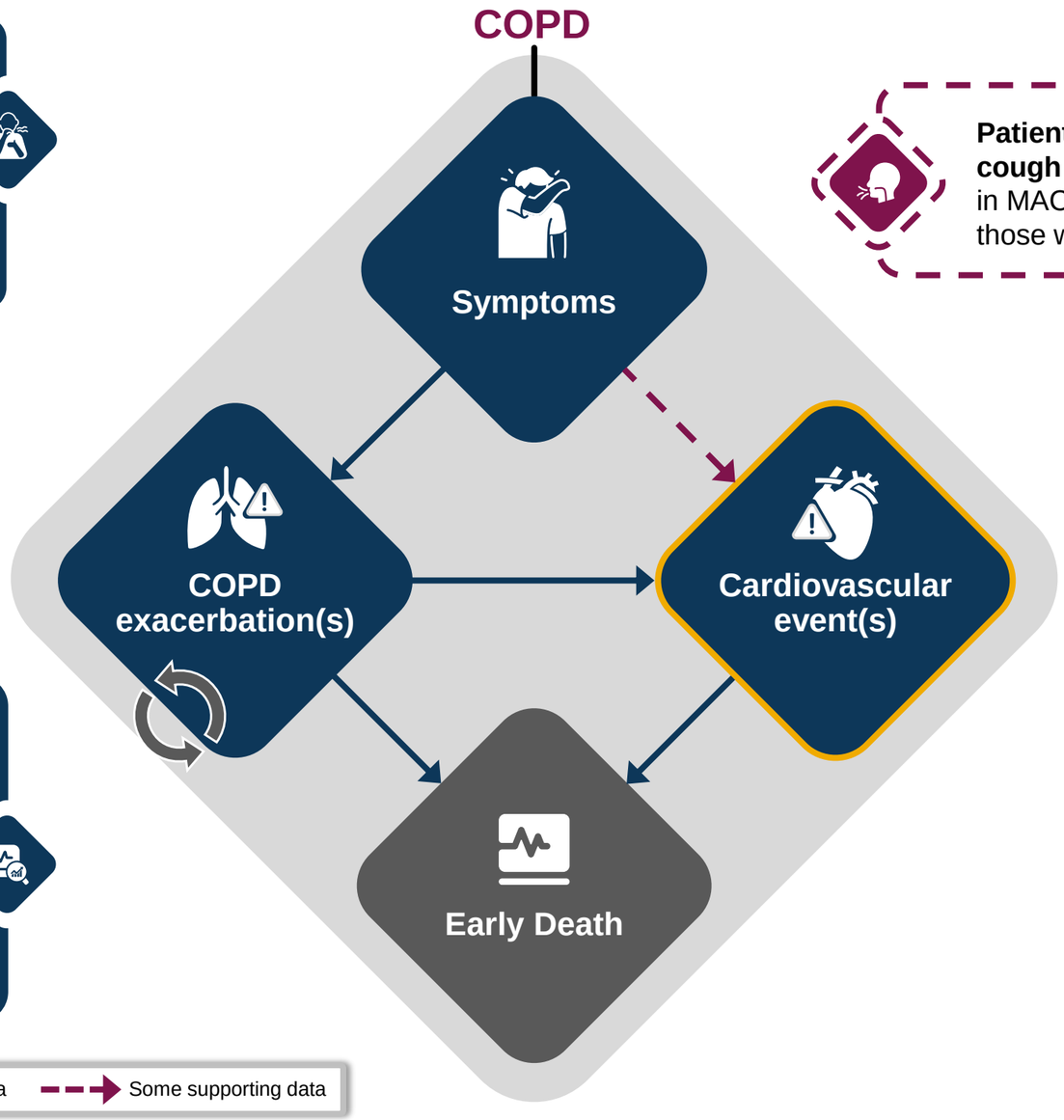
A history of exacerbation(s) predicted an increased risk of future exacerbations:[4,c]

Compared to those with no baseline exacerbation history, the risk of exacerbations increased in the following year

~1.5x following a single exacerbation and **~2.5x following multiple exacerbations**[d]

The risk of all-cause mortality was greatest in the first month following an exacerbation & remained elevated for up to 2 years[5,e]

~1 in 4 patients died within 1 year after a COPD hospitalization[6,f]



Patients with COPD and frequent productive cough at baseline had a 39% increased risk in MACRE event(s) over 3 years compared with those without[3,b]

COPD exacerbations were associated with increased risk of acute CV events[5,e]

In patients with COPD and existing or risk factors for CVD,

the risk of a CV event increased **~4x within 30 days following onset of moderate or severe exacerbation** compared with pre-exacerbation baseline period[7,g]

Strength of Association → Substantial supporting data; - - → Some supporting data

Scan QR code for Singh D et al publication
https://qr.short.az/r/SinghDAdvTher

See page 2 for footnotes, study information and references.

Figure adapted from Singh D et al. *Adv Ther*. 2024;41(6):2151-2167.

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Footnotes & Study Information:

[a]Retrospective observational cohort study that evaluated risk factors associated with exacerbation frequency in 58,589 patients with COPD identified from primary care in the UK Clinical Practice Research Datalink.

[b]Analysis of 2,295 patients with COPD from the prospective, observational study, NOVELTY (NCT02760329), to describe the relationship between frequent productive cough with major CV and respiratory outcomes. Frequent productive cough was defined at baseline using SGRQ scores ≥3 for both cough and sputum. Major CV outcomes (MACE) were new diagnosis of nonfatal AMI, heart failure, coronary artery disease, and CV death; MACRE also included the respiratory outcome (R) of hospitalized COPD exacerbations.

[c]Retrospective cohort study of Medicare FFS claims data in ~1.5 M patients with COPD that quantified the type and frequency of COPD exacerbations over three years by prior exacerbation history. Patients included in the study were ≥40 years of age with at least one inpatient visit, or one ED visit, or two outpatient medical visits at least 30 days apart between January 1, 2015 and December 31, 2015 with a diagnosis code for COPD in any position on the claim. [d]Generalized linear model with logit link function used to adjust for baseline patient, comorbidity, and treatment covariates.

[e]Retrospective cohort study of just over 395,000 patients with newly diagnosed COPD between January 1, 2012 and December 31, 2019 using the US HIRD to estimate the incidence of acute CV events and all-cause mortality following an exacerbation compared to the incidence in the absence of an exacerbation. Patients were excluded if they had an acute CV event within 6 months of their index date. Acute CV events were defined as a primary inpatient diagnosis for MI, unstable angina, ischemic stroke, acute heart failure, PE and DVT, cardiac arrhythmia, cardiac arrest, or CV death due to one of these causes. All-cause mortality results adjusted for baseline demographics, comorbidities, and medications.

[f]Based on Medicare standard analytical and denominator files (reporting period: 2008-2014) from ~1.3 M patients (US) ≥65 years who were admitted to acute care hospitals with a principal diagnosis of COPD or a principal diagnosis of acute respiratory failure combined with a secondary diagnosis of COPD with acute exacerbation. Patients with in-hospital death, less than 1 year of enrollment in Medicare FFS in the absence of death, or those transferred to another acute care facility or discharged against medical advice were excluded.

[g]A post hoc analysis of the SUMMIT trial (N = 16,485) was performed to determine whether the risk for CV events increases after a moderate/severe COPD exacerbation. Compared with pre-exacerbation baseline periods, the risk for CV events (composite outcome of CV death, MI, stroke, unstable angina, and transient ischemic attack) after an exacerbation was increased in this cohort, remaining elevated for up to 1 year after exacerbation. The risk was greatest during the first 30 days after exacerbation (Hazard Ratio, 3.8). The risk of CV events for the 31- to 90-day and the 91- to 365-day time frames had an Hazard Ratio of 1.9.

References:

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7. Kunisaki KM, Dransfield MT, Anderson JA, et al; SUMMIT Investigators. Exacerbations of chronic obstructive pulmonary disease and cardiac events. A post hoc cohort analysis from the SUMMIT randomized clinical trial. *Am J Respir Crit Care Med*. 2018;198:51-57.

Abbreviations:

COPD = chronic obstructive pulmonary disease; CPRD = Clinical Practice Research Datalink; CV = cardiovascular; DVT = deep vein thrombosis; FFS = fee-for-service; HIRD = Healthcare Integrated Research Database; MACRE = major CV outcome or respiratory event of hospitalized COPD exacerbations; MI = myocardial infarction; MRC = Medical Research Council; PE = pulmonary embolism; SGRQ = St. George's Respiratory Questionnaire.