

The impact of statin drug use on all-cause mortality in patients with COPD

Chronic obstructive pulmonary disease (COPD) affects 380 million people worldwide. Co-morbidities associated with COPD are an important aspect of the disease and cardiovascular disease, in particular, has been shown to be more than twofold more prevalent in patients with COPD relative to the general population.^[1] Statin drugs have been shown to be effective in reducing all-cause mortality in patients with risk factors for cardiovascular disease.^[2] In patients with COPD, observational evidence has shown that statin drug use may reduce the risk of acute exacerbations of COPD, and reduce both respiratory-related mortality and all-cause mortality.^[3] The proposed mechanism for this protective effect is a reduction of underlying systemic inflammation, which is often present in COPD patients and is associated with increased mortality. The STATCOPE (Simvastatin Therapy for Moderate and Severe COPD) study found no significant differences in exacerbation rates or time to exacerbation between statin drug users and control subjects.^[4] However, the results of this trial were controversial due to one in three patients being excluded (previous statin use and elevated glycated haemoglobin or cholesterol levels) and being underpowered to assess mortality in COPD.

Raymakers *et al.*^[5] have recently published a population-based study using administrative data from British Columbia, Canada, to evaluate the association between all-cause and lung-specific mortality and statin drug use in a cohort of patients with COPD. In this study, 39 678 patients with COPD met the inclusion criteria. Of them, 7 775 patients (19.6%) had received at least one statin drug that was dispensed during the exposure ascertainment window. The mean (standard deviation) age of the patients was 71.0 (11.6) years; 54.7% were women. There were 1 446 all-cause deaths recorded in the cohort in the 1-year period after exposure ascertainment. In a univariate analysis, the hazard ratio (HR) for statin drug use associated with all-cause mortality was 0.79 (95% confidence interval (CI) 0.69 - 0.91; $p=0.0012$), which suggests a protective effect. In a multivariate analysis, the estimated HR for statin drug exposure was

also 0.79 (95% CI 0.68- 0.92; $p=0.0016$), suggesting a 21% reduction in the risk of all-cause mortality. For lung-related mortality, there was also a considerable reduction in the risk for all-cause mortality owing to the use of statins (HR 0.55; 95% CI 0.32 - 0.93; $p=0.025$). These results were robust to different specifications of the exposure ascertainment window.

This study suggests that statin drug use is associated with a significant reduction in both all-cause and lung-related mortality in patients with COPD. The strength of this study is its generalisability owing to the use of population-based administrative data from a large Canadian province.

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1. Chen W, Thomas J, Sadatsafavi M, FitzGerald JM. Risk of cardiovascular comorbidity in patients with chronic obstructive pulmonary disease: A systematic review and meta-analysis. *Lancet Respir Med* 2015;3(8):631-639. [https://doi.org/10.1016/s2213-2600\(15\)00241-6](https://doi.org/10.1016/s2213-2600(15)00241-6)
2. Brugts JJ, Yetgin T, Hoeks SE, et al. The benefits of statins in people without established cardiovascular disease but with cardiovascular risk factors: Meta-analysis of randomised controlled trials. *BMJ* 2009;338:b2376. <https://doi.org/10.1136/bmj.b2376>
3. Lawes CM, Thornley S, Young R, et al. Statin use in COPD patients is associated with a reduction in mortality: A national cohort study. *Prim Care Respir J* 2012;21(1):35-40. <https://doi.org/10.4104/pcrj.2011.00095>
4. Criner GJ, Connett JE, Aaron SD, et al. Simvastatin for the prevention of exacerbations in moderate-to-severe COPD. *N Engl J Med* 2014;370(23):2201-2210. <https://doi.org/10.1056/nejmoa1403086>
5. Raymakers AJN, Sadatsafavi M, Sin DD, De Vera, MA, Lynd LD. The impact of statin drug use on all-cause mortality in patients with COPD. A population-based cohort study. *Chest* 2017;152(3):486-493. <https://doi.org/10.1016/j.chest.2017.02.002>