



An attack of asthma is not an attack of the heart: clarifying causal links between asthma and incident coronary heart disease

Caitlin Morgan^{1,2} and Daniel Higbee^{1,2}

¹Academic Respiratory Unit, Southmead Hospital, Bristol, UK. ²MRC Integrative Epidemiology Unit, University of Bristol, Bristol, UK.

Corresponding author: Daniel Higbee (mk19726@bristol.ac.uk)



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Use of robust epidemiological methods to explore the fundamental causal relationship between asthma and incident coronary heart disease has found no association <https://bit.ly/3un6zES>

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The burden of asthma on patients and health systems continues to rise, leading to increasing interest in how to reduce the impact of comorbidity on disease progression, symptoms and mortality [1]. If causal aetiological links between common comorbid conditions are established, possible interventional targets can be investigated and preventative measures to reduce the impact of multiple diseases can be trialled. The link between cardiovascular disease (CVD) and airway disease has long been investigated, with much variation in findings. Positive observational studies have observed a 3.5-fold increased risk of CVD in the asthma population [2], with risk of acute coronary syndrome increased in asthma cohorts (hazard ratio (HR) 1.66) when compared to non-asthma populations after adjusting for sex, age and comorbidities [3]. However, community cohort studies reported by ENRIGHT *et al.* [4] and SCHANEN *et al.* [5] found no association between asthma and incident and concurrent cardiovascular disease. Proposed mechanisms include shared risk factors such as smoking, low socioeconomic status and obesity, alongside co-existing risk factors for CVD such as hypertension, arrhythmias and diabetes [3, 6]. The impact of pro-thrombotic pathways associated with chronic airways inflammation is thought to contribute to cardiac remodelling and atherosclerotic processes [3, 5, 7–9]. Some genetic loci for asthma discovered in Mendelian randomisation (MR) studies have been associated with heart failure (HF), for instance GSDMB-mediated cell pyroptosis [10, 11]. However, while co-existing CVD and incident coronary heart disease (CHD) is increasingly established in the COPD population, and adopted into international guidance [12], the causal relationship between asthma and CVD is a source of continued debate. Observational studies have conflicting findings due to the heterogeneity of the datasets studied, with variable levels of disease severity and differing age groups, error due to missing data and a reliance on self-reporting [3, 7]. Those studies with a positive association primarily established links in older populations with evidence of severe or fixed airflow obstruction, with some finding a positive association in female asthma patients more than in men [6–8, 13, 14]. MR studies in the last 3 years have assessed for causal links but only found evidence of asthma increasing the risk of HF and atrial fibrillation (AF) [10, 11]. While there is scientific uncertainty as to whether the association between asthma and CHD is causal, it would be unwise to commit research efforts and funding on developing drugs to target potential underlying mechanisms.