

# Proton Pump Inhibitor Use and Risks of Cardiovascular Disease and Mortality in Patients With Type 2 Diabetes

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## Abstract

### Context

Proton pump inhibitors (PPIs) are widely used drugs for gastric acid–related diseases and may affect the gut microbiome.

### Objective

We aimed to evaluate the associations of PPI use with risks of cardiovascular disease (CVD) and all-cause mortality in patients with type 2 diabetes (T2D).

### Methods

We analyzed the associations of PPI use with risks of coronary artery disease (CAD), myocardial infarction (MI), heart failure (HF), stroke, and all-cause mortality in 19 229 adults with T2D using data from the UK Biobank study.

### Results

During a median follow-up of 10.9 to 11.2 years, we documented 2971 CAD, 1827 MI, 1192 HF, and 738 stroke cases, along with 2297 total deaths. PPI use was significantly associated with higher risks of CAD (hazard ratio [HR], 1.27; 95% CI, 1.15–1.40), MI (HR, 1.34; 95% CI,

stroke (HR, 1.11; 95% CI, 0.90–1.36). The results were consistent in the subgroup analyses stratified by factors including indications of PPI, antidiabetic medication use, and antiplatelet drug use. Analyses in a 1:1 propensity score-matched cohort of PPI users vs nonusers yielded similar results.

## Conclusion

Our data suggest that PPI use is associated with higher risks of CVD events and mortality among patients with T2D. The benefits and risks of PPI use should be carefully balanced among patients with T2D, and monitoring of adverse CVD events during PPI therapy should be enhanced.

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**Keywords:** [proton pump inhibitors](#), [cardiovascular disease](#), [coronary artery disease](#), [heart failure](#), [mortality](#), [type 2 diabetes](#)

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