

Statins and ACE Inhibitors in Adults with Diabetes and Comorbid Conditions

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Description

Statins and angiotensin-converting-enzyme (ACE) inhibitors are standard treatments for heart disease risk, but few studies have examined whether a large, population-level increase in statin use has health benefits for adults with diabetes and other comorbid conditions. This is an important gap in knowledge because most deaths among patients with diabetes are from heart disease. In 2003–2005, Group Health implemented a pharmacy-based, system-wide outreach effort that increased statin use from 30% to about 70%, and ACE inhibitor use from 60% to 73%, among nearly 7,000 patients with diabetes. In this initiative, the drugs were prescribed preventively to patients with diabetes even if they did not have typical cardiovascular indicators, such as high cholesterol. This study analyzed the impact of increased preventive statin and ACE inhibitor use on major cardiovascular disease events in patients with diabetes.

Specific Aims

1. Describe the use of statins and ACE inhibitors for diabetes patients with hypertension, coronary artery disease, congestive heart failure, and depression.
2. Following Group Health's pharmacy outreach efforts, estimate the associations between statin and ACE inhibitor use and major vascular events by comorbid group.

Findings

- Cumulative statin use was greater among participants with risk factors for cardiovascular disease, and greater statin use was associated with greater use of ACE inhibitors.
- Among participants who were first-time statin users following the Group Health pharmacy outreach program, preliminary results indicate that greater exposure to statins, and to a lesser extent ACE inhibitors, was related to lower incidence of both myocardial infarction and stroke.

Main Objective

Analyze the impact of increased preventive statin and ACE inhibitor use on major cardiovascular disease events in patients with diabetes and other comorbid conditions.

Chronic Conditions Considered

Diabetes
Hypertension
Coronary Artery Disease
Congestive Heart Failure
Chronic Obstructive Pulmonary Disease

Study Design & Methods

Analytic epidemiologic study:
Population-based, retrospective longitudinal cohort design.

Descriptive and bivariate statistics, time series graphs, Cox proportional hazards, and other regression models.

Data Sources & Sample Size

14,489 adults who were enrolled in the Group Health Diabetes Registry from 1997-2006, survived to 2006, and were followed through 2010.

Strategies Addressed from the HHS Strategic Framework on Multiple Chronic Conditions

- 1.F. Evaluate models of care, incentives, and other health system interventions
- 3.A. Identify best practices and tools
- 4.C. Increase clinical research

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- Preliminary analyses also found that greater exposure to statins and ACE inhibitors was related to higher all-cause mortality, but the statistical association was weak. This is likely because adults who have taken these drugs the longest also have more risk factors for mortality, including: being older, having diabetes for more years, having more diabetes complications, having other potentially life-threatening medical conditions, and greater intensity of diabetes treatment.

Implications

Within an integrated healthcare delivery system, pharmacy outreach can increase the use of statins and ACE inhibitors/ARBs. Greater statin use, and to a lesser extent ACE inhibitor/ARB use, are related to lower incidence of stroke and MI in complex diabetes patients. Greater use of the two drugs is also associated with greater all-cause mortality, which may be due to confounding by indication.

Publications (as of September 2013)

Grembowski DE, Schaefer J, Johnson K, Fischer H, Moore SL, Tai-Seale M, Ricciardi R, Fraser JR, Miller D, LeRoy L. The AHRQ Multiple Chronic Conditions Research Network conceptual model for research on complex patient care. *Medical Care*. In Press, 2014.

(Additional papers currently in preparation).

Posters and Presentations

Grembowski D, Anderson M, Ralston J, Luesa J. Health outcomes of population-based pharmacy outreach to increase statin use for primary prevention in patients with diabetes. Poster presented at: 2013 Jun 23-25. AcademyHealth Conference; Baltimore, MD.

Grembowski D. Statins and ace inhibitors in adults with diabetes and comorbid conditions. Poster presented at: Moving ahead: Leveraging knowledge and action to improve healthcare quality. 6th Annual Conference of the Agency for Healthcare Research and Quality; 2012 Sept 9-12; Bethesda, MD.