

Diabetes Mellitus, Comorbidity Conditions, and Mortality

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Description

Intensive glycemic control reduces the risk of complications in patients with type 1 or type 2 diabetes. However, little evidence exists about the best overall treatment for older adults who have both diabetes and another chronic health condition. Most deaths among patients with diabetes are for cardiovascular disease, so statin therapy, blood pressure treatment, and aspirin therapy may be better overall treatments than intensive glycemic control in these patients. This study examined the comorbidity and factors associated with mortality among older patients with diabetes.

Specific Aims

1. Estimate the prevalence and incidence of diabetes and combinations of comorbid coronary artery disease (CAD), congestive heart failure (CHF), hypertension, and depression.
2. Estimate the contribution of combinations of the four comorbid conditions to mortality in patients with diabetes and one or more of these conditions, compared to patients with diabetes alone.
3. Compare whether glycemic burden from treatment failure is lower in enrollees with diabetes alone than in enrollees with comorbid conditions.
4. Test whether, paradoxically, higher hemoglobin A1c scores and cholesterol levels are related to lower mortality among patients with diabetes and CHF and/or CAD.
5. Estimate the contribution of hemoglobin A1c scores to all-cause mortality.

Main Objective

Elucidate patterns of comorbidity and factors most associated with mortality in a cohort of older patients with type 1 or 2 diabetes.

Chronic Conditions Considered

Diabetes
Coronary artery disease
Congestive heart failure
Hypertension
Depression

Preventive Service Considered

This project did not address a specific clinical preventive service.

Study Design, Data Sources & Sample Size

Longitudinal epidemiologic description

9,871 patients from Group Health (an integrated health system) with type 1 or type 2 diabetes from 1997 to 2006.

Strategies Addressed from the HHS Strategic Framework on Multiple Chronic Conditions

4. B. Understand the epidemiology of multiple chronic conditions
- 4.C. Increase clinical health research

Diabetes Mellitus, Comorbidity Conditions, and Mortality (Continued)

Findings

- The comorbid conditions were common in these patients with diabetes. About 87% of patients had at least one of the four conditions and one diabetes complication during the study period.
- For patients with diabetes, CHF was the strongest determinant of all-cause mortality. Risk of death from CHF outweighed that from hypertension, CAD, chronic pulmonary disease, depression, or diabetes complications.
- HbA_{1c} decile scores had inconsistent associations with mortality, generally having a U-shaped distribution, where HbA_{1c} scores 6.6 and 7.34 had the lowest mortality, HbA_{1c} scores < 6.02 had significantly higher mortality, and HbA_{1c} scores \geq 7.34 had non-significantly higher mortality.
- Little evidence supported the hypothesis that higher HbA_{1c} scores and LDL cholesterol levels were related to lower mortality among patients with diabetes and CHF and/or CAD.

Implications

Preventing heart failure in older adults with diabetes should be a clinical priority to prevent premature mortality.

Publications (as of September 2013)

Publications currently in preparation.

Posters and Presentations

Grembowski D, Ralston J, Anderson M. Comorbid conditions, hemoglobin A1c and mortality in patients with diabetes: a retrospective 9-Year cohort study. Poster presented at 2011 AcademyHealth Conference; 2011 ; Seattle, Washington.

Grembowski D, Ralston JD, Anderson ML, Hecht J. Diabetes mellitus, comorbid conditions and mortality. Poster presented at: AHRQ 2010 Annual Conference; 2010 Sept 26; Bethesda, MD.