

Optimizing the Treatment of Diabetes Patients

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Description

On average, diabetes patients have more than three comorbid conditions, the most common being hypertension and hyperlipidemia. Having these comorbid conditions in addition to diabetes can negatively affect a patient's health status and result in significantly higher medical costs and poorer work productivity. Therefore, it is important to identify optimal treatments for these highly complex patients so that their quality of life is maximized without adding too much burden. As an initial step in prioritizing interventions for diabetes patients, this study used quantitative models to determine the best treatment plans for hyperlipidemia and hypertension and examined the impact of adherence and non-adherence on treatment.

Specific Aims

1. Develop a mathematical model (Markov model) to compare existing treatment guidelines on the basis of quality of life and cost for the management of diabetes, hyperlipidemia, and hypertension.
2. Assess the use of medications among diabetes patients by evaluating a) the relationship between hypertension and hyperlipidemia and adherence to prescribed medication, and b) the health outcomes associated with prescribed medication, non-adherence, and discontinuation of medication.
3. Translate the results of the mathematical models into point-of-care decision-making tools to help practitioners choose the best treatment for their patients with diabetes and other comorbid conditions.

Findings

- A number of factors, including the heart disease risk model used and the age, gender, and health status of the patient, influenced the best time to begin statin therapy.

Main Objective

Determine individualized treatment plans for hyperlipidemia and hypertension among diabetes patients.

Chronic Conditions Considered

Diabetes
Hypertension
Hyperlipidemia

Preventive Service Considered

This project did not address a specific clinical preventive service.

Study Design, Data Sources & Sample Size

Analytic epidemiological study

Decision analysis

Cohort of 663 patients, aged 40 to 80 from the Mayo Clinic Diabetes Electronic Management System between 1997 and 2006. A cohort of more than 1.4 million persons with a diagnosis of diabetes and at least 3 years of follow-up from Ingenix.

Strategies Addressed from the HHS Strategic Framework on Multiple Chronic Conditions

- 2.C. Provide tools for medication management
- 4.C. Increase clinical health research

Optimizing the Treatment of Diabetes Patients (Continued)

- About 25% of patients consistently took their statins as directed, and this adherence increased their expected Quality Adjusted Life-Years. However, given the large percentage of patients who did not consistently take their statins, it may be helpful to delay the start of treatment.

Implications

By shedding light on the optimal timing and combination of treatments, mathematical modeling may contribute to improved care for complex patients with diabetes, who are at significant risk of developing serious and costly comorbidities and complications.

Publications (as of September 2013)

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