

ACE Inhibitors for All Patients with Type 2 Diabetes?

Golan L, Birkmeyer JD, Welch HG. The cost-effectiveness of treating all patients with type 2 diabetes with angiotensin-converting enzyme inhibitors. *Ann Intern Med* 1999;131:660–7.

Study Overview

Objective. To evaluate the cost-effectiveness of 3 strategies for preserving renal function in patients with type 2 diabetes: (1) treating all patients with angiotensin-converting enzyme (ACE) inhibitors, (2) screening for microalbuminuria, and (3) screening for gross proteinuria.

Design. Markov model representing the incidence and longitudinal progression of diabetic nephropathy in patients with type 2 diabetes. The model was built with data from randomized trials evaluating the progression of diabetic nephropathy with and without ACE-inhibitor therapy.

Patients. Simulated patients 50 years of age with newly diagnosed type 2 diabetes (fasting plasma glucose level ≥ 7.8 mmol/L [140 mg/dL]). The definition of type 2 diabetes is the older diagnostic criterion used in the randomized trials.

Main outcome measures. Lifetime cost, quality-adjusted life expectancy, and marginal cost-effectiveness from the societal perspective.

Main results. Treating all newly diagnosed patients with ACE inhibitors was more expensive than screening patients for microalbuminuria (\$15,240 versus \$14,940 per patient) but was associated with increased quality-adjusted life expectancy (11.82 versus 11.78 quality-adjusted life years [QALYs]). The marginal cost-effectiveness ratio was \$7500 per QALY gained. These results were sensitive to changes in the cost, effectiveness, and quality-of-life parameters associated with ACE-inhibitor therapy. Screening for gross proteinuria had the highest cost and lowest benefit of the 3 strategies.

Conclusion

Treating all middle-aged diabetic patients with ACE inhibitors, except for those who have negative side effects from such therapy, is cost-effective.

Commentary

The most common cause of end-stage renal disease (ESRD) is diabetes mellitus, and both ESRD and diabetes are becoming

increasingly prevalent [1]. ESRD is associated with a high mortality rate, reduced patient quality of life, and high treatment costs. Although tight glycemic and hypertension control are important strategies for slowing the progression to ESRD, therapy with ACE inhibitors may be the most promising approach [2]. Current clinical guidelines recommend screening diabetes patients for microalbuminuria to identify those with incipient diabetic nephropathy so appropriate therapy can be started [3]. However, because not all physicians follow these guidelines, some patients who would benefit from ACE inhibitor therapy are not receiving it [3,4]. Prescribing ACE inhibitors for all patients with diabetes may be a simpler and more effective strategy than screening. The current study provides valuable insights on the expected cost-effectiveness of such a strategy and on the drivers that may increase or decrease its cost-effectiveness. However, its findings will need to be reassessed over time to determine whether the strategy of treating all newly diagnosed diabetes patients will remain cost-effective as new data are compiled and put into the model.

Applications for Clinical Practice

All middle-aged patients who meet the older diagnostic criteria for diabetes (glucose level \geq to 7.8 mmol/L [140 mg/dL]) should receive ACE inhibitors. It is important to note that this study's findings do not apply to patients who meet the lower diagnostic threshold recently recommended by the American Diabetes Association [5].

References

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