Title: Changes in Glycemic Control from 1996 to 2006 among Adults with Type 2 Diabetes: A Longitudinal Cohort Study

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Reviewer: lawrence C Perlmutter

Reviewer's report:

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To the authors

The secular review of changes in glycemic control from 1996-2006 constitutes a tantalizing paper lacking in closure and completeness. While the paper provides some answers to the “what” question, it lacks sufficient speculation and concern with the “why” question. Apparently patients with type 2 diabetes were recruited in large number from MGH and its satellites. In this report, focus was upon Type 2 patients who were evaluated in 1996 and again in 2006. What occurred within the ten-year interval seemed almost irrelevant so long as the patients remained accessible in the bookend periods of 1996 and 2006. Did the patients continue to receive evaluations, instruction, and adjustments, during the intervening ten years?

What motivated or prompted this study?

Even though as discussed on Page 6, the improvement in glycemic control seemed to fit a regression toward the mean model, the authors dismissed this possible outcome simply because all patients were included in the overall analyses. I am not convinced with that argument although it has some appeal. I think ‘playing’ with various subgroups at baseline and follow up could have more exhaustively tested this possibility of regression toward the mean, but this strategy was not pursued.

However, one of the major weaknesses with the study was the failure to perform zero order correlations among the potentially relevant confounding variables. This analytic strategy could have been followed by linear multiple regression analyses thereby controlling for the variables needing control including cholesterol and triglycerides. Thus, the evaluation for general improvement in glycemic control over the decade could have been more critically assessed. Also, the predictive utility of “English” as the critical language partly responsible for improving glycemic control raises several questions. Is English a proxy for Educational level? Was there any examination of the use of translators in the treatment program? Why was continuous HbA1c not the primary dependent variable?

Why not establish a statistical ‘moderator’ approach rather than simply utilizing a series of independent variables?
It seems as if there were an aversion to an attempt to ‘explain’ and to provide a why rather than just a what model. I think this strategy is unfortunate since there is such a potential wealth of data in this study including possibly vital information on causal factors associated with mortality in diabetes.

**Level of interest:** An article of insufficient interest to warrant publication in a scientific/medical journal

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests