Reviewer’s report

Title: The high-cost type 2 diabetes mellitus patient: an analysis of managed care administrative data

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Reviewer: Ning Yan Gu

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MAJOR COMPULSORY REVISIONS

• The authors stated that they used data from January 1, 2005 to December 31, 2010 as the time window to identify patients who had at least two diagnoses of T2DM. Subsequently, qualified patients were followed for 1 year. On page 6, second paragraph, the authors stated that “To allow for adequate follow-up time….patients were required to have at least 12 months of continuous post-index date observation.” If the window for the index date was between January 1, 2005 and December 31, 2010 as indicated by the authors, then shouldn’t the authors have another year of data that extends to December 31, 2011? If not, then the time window to identify patients (index date) should end at December 31, 2010. Please clarify.

• The strong predictors for high cost T2DM patients that the authors identified in the study including: higher CCI score, renal impairment, obesity, hypertension and, receipt of insulin. Knowingly, these health conditions are all associated with high healthcare costs or, will result in high costs due to comorbidities. There is ample information on this in the existing literature. Hence, the implication of the study or the contribution of this paper to the literature may be marginal.

• The introduction was not well structured with regard to the specific research question: The introduction provides abundant information on the diabetes and related therapies and costs (which in any case are very well known), but does not present enough background information with regard to predictors of high cost patients.

• In the methods section, please provide further details as to how the predictors were chosen, for instance, what constructive steps the authors used to determine the set of predictors?

• Please clarify how are the missing data were handled in this claims data analysis.

• The authors discussed and analyzed costs for groups who were top 10% of cost distribution as well as those who were top 20% of cost distribution, however, the abstract only mentioned the group who were top 10% of cost distribution. Please revise and provide more complete information in abstract.
• Page 6, paragraph 2, line 11: “The mean CCI score, along with the number and percentage of patients with a score<2 or >2, was reported.” please provide reasons behind using CCI=2 as the cut-off point.

• Page 6, paragraph 2, last sentence: “Furthermore, to obtain the largest possible sample size of patients with T2DM, we did not require patients to have received a diabetic medication....” With a sample as large as 1.72 million, sample size (power) should not be a problem, so more strict inclusion criteria (e.g. patients with at least two diagnoses of T2DM + have received at least one diabetic medication) may be more appropriate for this study.

• Page 7, first paragraph, I suggest the authors revise the sentence “All-cause costs were examined (rather than T2DM-related costs)…” to statements indicating that both types of costs were examined in their analyses. Since the authors analyzed both all-cause costs and T2DM-related costs in the study, that sentence was misleading.

• Page 7, last sentence: “Because we wished to evaluate underlying comorbidity burden independent of T2DM, comorbidities corresponding to T2DM were removed from the CCI score”. Why??

• The result section can be significantly shortened. For example, the first paragraph (from line 4 to 15) discussing results for top 20% seemed that the authors used the exact same sentences as in the second paragraph on page 11 discussing results for top 10%. It looks very redundant. The same issue applies for the second paragraph on page 12 and the second paragraph on page 13.

• The discussion was weak. The authors used more than half of space to repeat the results and did not adequately discuss the implication of the findings and important limitations of the study.

MINOR ESSENTIAL REVISIONS

• Page 4, last paragraph, please provide a reference for the information given on medical costs.

• Page 12, paragraph 2, line 1, “Health care costs related to T2DM were, on average, $2,997 more...” Please clarify and revise the “$2,997”. Did the authors mean “$3,780-$803=2,977$” instead?

• Page 24, table 1, Male=50.12%> Female=49.78% in Top 10% group, however, Male=47.84% < Female=52.15% in Top 20% group. It is a little abnormal here, please re-check them.

• Page 27, table 1, for Top 10% group, diabetes without chronic complications=98.74% and diabetes with chronic complications=26.24%, 98.74%+26.24%>1? Why? The same for the Top 20% group. Please re-check them.

• Page 29, table 2, compared with older patients (55+ years), young patients are
more likely to be higher-cost? It does not make sense and it is contrary to table 1, in which older patients have a much higher percent in high-cost group.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I do not have any competing or conflict of interests in performing my peer-reviewer service for this paper.