Reviewer's report

Title: Guidelines adherence in the treatment of patients with newly diagnosed type 2 diabetes: a historical cohort comparing the use of metformin in Quebec pre and post-Canadian Diabetes Association guidelines

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Reviewer: Scott Klarenbach

Reviewer's report:

The question is well-defined, as the authors to determine the impact of CDA guidelines for first-line therapy of oral anti-diabetes agents in Québec.

The methods are appropriate and are well described, specifically the authors have accounted for position clustering.

The data appear to be sound and there are references provided to support the use of the databases, particularly the MOXXI electronic health record. Inclusion and exclusion criteria, and the proportion of patients excluded at each step are well described.

The authors discuss the limitations of the work adequately. Of particular note they report on the contemporaneous reporting of harms associated with TZDs that were reported at around the same time of guideline publication. Given this contemporaneous change, it is unclear what factor led to a change in prescribing habits and as such the conclusions of the study should be attenuated.

The authors of knowledge previous work, however they only briefly mention previous studies demonstrating the lowest clearance to guidelines. If under their assertion that this guideline was responsible for a change in practice, greater discussion of previous studies and how they are similar or different would be of benefit.

The title and abstract accurately represent the findings, although as above it is arguable whether it is the change in diabetes guidelines, or the harms reported with rosiglitazone that led to a change in prescribing.

Discretionary revisions:

Given that there is essentially only one agent with in the biguanide class, suggests that metformin be used throughout the manuscript for consistency.

Greater discussion of previous work assessing the impact of guidelines on prescribing practices would be useful given the contrasting findings.

In the background, there is controversy whether osteoporosis is causal or strongly associated with diabetes. While I do not feel strongly about this, this could be excluded.
Minor essential revisions:
In the background, Alpha – glucose should be changed to Alpha – glucosidase.

Major compulsory revisions:
Given that two simultaneous advance occurred, namely the production of guidelines recommending metformin as first-line use, and that rosiglitazone was associated harm, it cannot be determined which led to a change in observed prescribing. The authors state that this was likely secondary to the guidelines because sulfonylurea prescribing also decreased – however, this was not statistically significant and nor was the magnitude anywhere near the reduction in TZD prescribing. While this does not alter the results, the conclusions should be tempered from how they are currently written asserting that guidelines was responsible for the change in prescribing, and acknowledging that harms with rosiglitazone (or perhaps even other contemporaneous changes that may have also occurred) are responsible.

**Level of interest**: An article whose findings are important to those with closely related research interests

**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 have no competing interests