Reviewer’s report

Title: Diabetes screening intervals based on risk stratification

Version: 0 Date: 29 Jun 2016

Reviewer: Francis Finucane

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Reviewer comments: BEND-D-16-00101

This large retrospective cohort study sought to determine whether optimal diabetes screening intervals with HbA1c differ when other factors such as age category and BMI are taken into consideration. The question is a novel and interesting one.

The introduction is well written and referenced, concise and interesting. The rationale for the proposed work is clearly established.

In the methods, it is unclear why age was treated as a categorical rather than a continuous variable. The description of the statistical methodological approach is good, but many readers will not be familiar with signal to noise ratio as it applies to diabetes epidemiology. Little is considered of the sensitivity and specificity of using different intervals of HbA1c for diagnosing diabetes based on differences in age, BMI or other factors. This would make the paper more relevant to clinicians and would allow people to make a determination of how well the (screening intervals for the) test might perform at different age and BMI thresholds, even if these were arbitrarily defined by the authors. A risk "matrix" similar to ones used for determining low, intermediate and high cardiovascular risk might help to illustrate the clinical importance of the very interesting findings. This might have age category on one axis and BMI category on the other, with the cells within the matrix containing the optimal screening interval in years. However this additional work would not be essential to allow the paper to be published.

It would be worth stating explicitly that though ethics approval was obtained for the study, patients did not provide written informed consent and the data used was obtained through routine clinical practice. It would be helpful to clarify why approximately 30% of the cohort were not eligible for inclusion. Define FRS at its first use (or better still just give it its full name throughout).

Did you report the influence of smoking status on diabetes risk? If not, you should.
The limitations are very comprehensively addressed in the discussion.

Overall, this is a strong, important paper which ought to be highly cited by other scientists with an interest in screening methodology and diabetes epidemiology. It is a clever and succinct description of an important observation. It is an excellent paper.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable
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I have received honoraria, travel grants and speaker fees from numerous pharmaceutical companies, but this does not pose a conflict in reviewing this paper I believe.

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