Reviewer's report

Title: Inadequate glucose control in type 2 diabetes is associated with impaired lung function and with systemic inflammation.

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Reviewer: Peter J Savage

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The paper can be shortened and distinguish between confirmatory and new findings in this report, with emphasis on the latter.

This report indicates that there is an association between levels of HbA1c of 7.0% and below vs. higher levels with measures of decreased pulmonary function and some laboratory measures of inflammation. The authors should explain why they chose this "cutpoint" for the primary analysis. Do they have any evidence to expect a change in risk over a narrow range? How do they integrate these analyses with results of the quintile analyses in Table 5?

There is a difference in reported duration of diabetes between the “adequate” and “inadequate” control groups. The authors should comment on the potential implications of this difference. Despite the well known problems with estimating true duration of diabetic hyperglycemia in a patient with type 2 diabetes, this difference could explain at least part of the difference in observed lung function and inflammatory marker levels that the authors ascribe to differences in glycemic control. In other published studies, both duration of diabetes and degree of control have been linked to impaired lung function.

Information on existing chronic or recent acute pulmonary disease should be included in Table 1.

Speculation on mechanisms for which relevant new data and analyses are not provided can be minimized or deleted.

- Minor Essential Revisions

The revision should also include more data on the specific lab tests and information re quality control of the assays, both general and when measures were in different batches, comparability of control data over time.

Indicate units of measure for all variables in table 1.

There is no information on the clinical significance of the abnormalities found. Brief comments on the clinical importance of the magnitude of changes observed may be helpful to readers.

- Discretionary Revisions
What data do you have on the case mix of patients in your study sample relative to cases seen in the area and among other patients attending your center – how representative of the local diabetic population is your sample? How is the cost of care at your institution covered?

Do you have verified data on the duration of diabetes among your study participants? If so, what type of data – patient history, chart review, sequential glucose documentation, etc.?

What was the total number of volunteers excluded? Can you provide more information about exclusions for known chronic or recent acute inflammatory lung disease?

Pulmonary function averages may vary by racial/ethnic group. What do you know about the comparability of lung function measures in the two referenced studies to the group you studied?

Please provide more information on laboratory methods used and quality control information for your labs for each of the tests. How were samples processed, stored? If all samples were not run in the same assay, include information re stability of samples and control results for assays run over time.

See earlier question as to how diabetes duration was determined. Because of the possible long time between development of diabetic hyperglycemia and the diagnosis of diabetes in type 2 diabetes patients, duration data derived from patient history or chart review is known to contain considerable error. This should be acknowledged.

Define GOLD stage 1

Please clarify. Are you presenting results for both diabetics with “adequate” and “inadequate” control vs. results from your reference population? Did the reference population include patients with diabetes? Do your data indicate that results in your “adequate” control group are still lower than the predicted value for their age, gender, etc.?

diabetes (not “diabetics”)

Comment more on results in Table 5 and address question of whether these data support a dose effect in the Discussion.

Did the authors look at possible associations of type of treatment diabetes treatment with lung function and inflammatory markers? Could other drugs, such as statins, have altered inflammation?

The comment on smoking is speculative. The data on pack years are not available.

The duration issue is a problem because of the well known difficulty of clearly establishing the duration of type 2 diabetes. Failure of adjustment to
change the results may be due to accuracy of the duration data. If, as Table 5 suggests, there is not a strong, relatively linear relationship with lung function abnormalities, inflammatory markers and control, it is even more difficult to interpret these data. (HbA1c, gives an estimate of glucose control over several weeks, not the long run.) Comment on the possibility that both duration and degree of glycemic control may alter pulmonary function abnormalities.

Level of interest
An article of limited interest since the main comparison is cross sectional and essentially confirms previously published data on the association of diabetes with abnormal pulmonary function and an association of the pulmonary abnormalities with elevation in HbA1c. Inflammatory marker data goes beyond earlier studies but sample size is relatively small.

**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 have no competing interests.