Author's response to reviews

Title: Diabetes screening with hemoglobin A1c prior to a change in guideline recommendations: prevalence and patient characteristics

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Diabetes screening with hemoglobin A1c prior to a change in guideline recommendations: prevalence and patient characteristics

Michelle Greiver, Babak Aliarzadeh, Rahim Moineddin, Christopher Meaney and Noah Ivers

We thank Dr Kirkman for her careful and detailed review of this paper. We appreciate the opportunity to address her comments. To enable tracking, we have reproduced parts of her comments in italics, followed by our response

Major comments

1. “Page 3, paragraph 4: The final sentence describing ADA recommendations is awkwardly worded and somewhat inaccurate.” This has been changed to “The ADA suggested that Hgb A1c be considered as an acceptable test to diagnose diabetes, with a confirmed value of 6.5% or greater being diagnostic”

2. “Page 5, paragraph 1: The readers need to know what proportion of patients opt out of the database.” We have added the number of patients opting out of the local database, as well as out of the national CPCSSN database

3. “Page 6, multiple areas: The authors have done an admirable job of attempting to rule out known diabetes, but the descriptions suggest that there may have been too much “weeding”. We attempted to improve the specificity of a diagnosis of diabetes for this study. Patients with Gestational Diabetes or PCOS were not counted as diabetics. The Hgb A1c test is not routinely used in Canada for PCOS; the preferred screening test is OGTT. Hgb A1c is used for GDM. In this study, with the primary results limited to patients age 45 and over, there were very few cases of GDM, and there were more males with a screening Hgb A1c. We could not reliably include patients with an Hgb A1c of 7% or more into the screened cohort; data in the EMR were not complete enough to allow us to determine whether the diagnosis of diabetes existed prior to the test, that is, there was uncertainty as to whether they were screened or monitored. Including patients with a Hgb A1c of 7% or more who were presumably screened may have inflated our results, and we preferred to be conservative in reporting our findings. We agree with the reviewer that this should be discussed, and it has been added to Limitations in the paper.

4. “Page 10, paragraph 1 and also methods: It’s possible the association with lower LDL cholesterol (misnamed LDL in the paper) is related to hypertriglyceridemia, a known association with insulin resistance/hyperglycemia.” This study examined factors extensively documented in the literature as being associated with cardiovascular risk factors and clinically likely to influence a family physician’s risk estimation, as described in the data elements of the Methods section. We have added a sentence in Methods to clarify this. There are a large number of data elements in the EMR, and we wished to be conservative in order to exclude spurious associations that could be significant due to the large sample size. We examined Triglycerides.
The total population age 45 and over had a mean TG of 1.3 (SD 0.8), non screened 1.2 (0.8) and screened 1.4 (0.9). Triglycerides have a weaker association with cardiovascular outcomes than does LDL cholesterol, and the differences between groups were small. We did not include a decreasing LDL cholesterol in the model due to its limited clinical plausibility, as outlined in the discussion. A repeated analysis, including TG, did not change the findings. We have added this in the Discussion.

Minor comments

1. “Page 3, paragraph 4: change plasma sugar level to plasma glucose level.” This has been changed to plasma glucose level
2. “Page 6, paragraph 1: As written, the sentence about the sensitivity of the algorithm suggests that this was its sensitivity in this study, which left me wondering what the gold standard was. The reference is to the validation study, so this needs to be clarified.” The sentence has been changed to: “we used free-text search terms that would likely maximize the number of true positives for the diagnosis of diabetes”. The approach is similar to a validated algorithm using EMR data; this study was not undertaken to validate the EMR search terms, as the reviewer rightly noted.
3. “Page 11, paragraph 3: Why can’t the time difference between the two tests suggest whether the A1C was confirmatory or not?” We suggest that the second test could be confirmatory, since increasing FBG levels were associated with greater odds ratios of having a Hgb A1c done. Confirming this would require surveying the physicians for their patterns of practice, which was not done in this study.

Other comments

1. “Consider changing to “diabetic patients” or “patients with diabetes”” We have changed the wording to “patients with diabetes”, as suggested.

We note the reviewer’s comments on performing additional analyses after the guidelines were changed. In July 2011, the Canadian Diabetes Association agreed with the ADA, and has recommended that a Hgb A1c level of 6.5% or more be added as an acceptable diagnostic test for diabetes. We intend to continue to follow the uptake of this recommendation.

Thank you once again for allowing us to reply to the review.

Michelle Greiver, Babak Aliarzadeh, Rahim Moineddin, Christopher Meaney and Noah Ivers