Reviewer's report

Title: Comparison of different vascular risk engines in the identification of type 2 diabetes patients with high cardiovascular risk

Version: 5 Date: 8 July 2015

Reviewer: Alice Owen

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NB: As there were no page numbers on the copy of the manuscript provided, for the following comments I refer to page numbers starting from page 1 being the manuscript title page.

Minor Essential Revisions

1. Page 3, line 3: Correct to ‘Background’

2. Page 3, line 9: What do you mean when you say that “Coronary heart (disease) mortality rates are contradictory..”? This is not clear, please amend

3. Please revise the sentence in lines 23-24 on page 1 of the background, which appears somewhat out of context and may confuse some readers.

4. Table formatting for Table 4 needs to be corrected for years since diabetes diagnosis

5. Page 10, sentence lines 15-20, please provide citation/s.

6. Page 11, lines 7-12, please provide citation/s

Major Compulsory Revisions

7. To support the primary conclusion of the paper; that a model predicting overall CVD risk (not just CHD) is required for type 2 diabetes patients in Southern Europe, it would be useful for the reader to be provided with information about the burden of non-coronary CVD in the diabetes patient population in this region. Generally adding new predictive variables to CVD risk equations provides a somewhat marginal predictive gain, which needs to be justified against the magnitude of the problem and the additional burden for clinical practice to collect these extra variables.

8. The background section identifies that some have suggested that secondary CVD prevention strategies should be applied to all diabetes patients. The capacity of lower resource health settings to accommodate this is an important issue (as highlighted by the authors), but also there is the issue of overtreatment of those who might be at low risk. Did the authors examine the level of agreement for those classified as low risk by these equations?
9. It is well described from previous studies of many CV risk prediction models that the models tend to predict only moderately when applied to different population settings and need to be recalibrated and validated in the population to which they are being applied. It has been shown that both UKPDS (which was developed from a pre-statin era cohort) and ADVANCE tend to overestimate risk in high risk patients, and without outcome data in the current analyses it is not possible to assess to what extent REGICOR might be underpredicting risk and/or ADVANCE or UKPDS overpredicting. However the utility of the REGICOR algorithm against 5-year observed event rate in patients with diabetes has previously been reported (Marrugat et al in the Journal of Epidemiology and Community Health in 2007, Figure 4 of that paper). Could the authors please justify why they did not cite and discuss that work?

10. Page 9, line 21-22: Please clarify what you mean by ‘patients classified as high risk by REGICOR are excluded from the UKPDS and ADVANCE functions’ Do you mean that there was insufficient data from these patients for the UKPDS and ADVANCE to be used? Or that they were not classified as high risk by these alternate risk algorithms?

11. The population prevalence of diabetes in the Spanish population is in the order of 10-15% (eg refer Soriguer et al, Diabetelologia 2012), however the major basis for criticism of the REGICOR risk equation by the authors is that the proportion of diabetic patients in validation cohort was “very low” (Discussion, page 10 line 16) at 16.4%. I am not convinced that the “very low” criticism is reasonable. Could the authors please respond?

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

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests: I declare that I have no competing interests