Author’s response to reviews

Title: Economic evaluation of Type 2 Diabetes Prevention Programmes: Markov model of low- and high-intensity lifestyle programmes and metformin in participants with different categories of intermediate hyperglycaemia

Authors:

Samantha Roberts (samantha.roberts@gtc.ox.ac.uk)
Dawn Craig (dawn.craig@ncl.ac.uk)
Amanda Adler (aiadler@me.com)
Klim McPherson (klim.mcpherson@phc.ox.ac.uk)
Trisha Greenhalgh (trish.greenhalgh@phc.ox.ac.uk)

Version: 2 Date: 30 Nov 2017

Author’s response to reviews:

Dear Editors

Re: Response to reviewers comments for BMED-D-17-00890

Thank you for the opportunity to respond to reviewers comments on our article ‘Economic evaluation of Type 2 Diabetes Prevention Programmes: Markov model of low and high intensity lifestyle programmes and metformin in participants with different categories of intermediate hyperglycaemia’. We have updated the manuscript with changes suggested by reviewers and provided additional explanation below.

Reviewer 1:

Reviewer’s comment: The external validation comparison with UK data is a bit 'asymmetric' with the DM prevalence in model being higher at younger ages and lower at older ages. Why? Is this acceptable? For example, Danish modelling studies show a profound fall in DM prevalence at older ages (due to competing mortality I assume) as does this UK model, but it is not match
with English prevalence data. Why? Evolution of trends over time? If the model is not correct here, what impact would it have on modelled cost effectiveness results?

There is a great deal of uncertainty regarding prevalence of T2DM by age group in the UK, both in terms of the % prevalence and the shape of the prevalence curve. We utilized data from the National Diabetes Audit as a comparator because it is the most recent data, with the largest sample and the most detailed reporting of age-specific prevalence. To illustrate the range of reported values, we have attached as a supplementary file a table which compares two other sources of national prevalence data (the English Longitudinal Study of Ageing[1] and Health Survey for England [2]) with the National Diabetes Audit and our model.

Differences in prevalence estimates are due to variation in: 1) who reports the data (patient survey or doctors’ records), the criteria for defining a case of T2DM (diagnosis of diabetes, specific level of HbA1c, fasting plasma glucose or post-load glucose), manner in which undiagnosed cases of T2DM are accounted for and the demographics of the included cohort (race, socioeconomic status and body mass index are all independently associated with increased prevalence of T2DM). Given the wide range of reported prevalence estimates, we conclude that our model’s estimates are within an acceptable range.

However, assuming the National Diabetes Audit prevalence data is correct and our estimates of T2DM are too low in people over the age of 85, we do not believe this will significantly affect our results due to the effect of discounting and high mortality rates at this age. The combined effect of these factors mean that the costs, QALYs and incidence of T2DM accumulated from age 85 onwards only account for 4%, 3% and 4% of total respectively. Therefore, inaccuracy in diabetes prevalence in this age group is unlikely to make a significant difference to total values or our conclusions.

Reviewer’s comment: A footnote to Table 3 for similarly confused readers might help? (I do not think this has been done.)

Thank you for noticing this. A footnote has been added to Table 3 (Appendix page 4).
Thank you for drawing our attention to the very interesting paper on randomized Markov chains.

Reviewer comment: Figure 1.- In State 1, replace 'Gluose' by 'Glucose'.

This spelling error has been corrected in an updated version of Figure 1 (Appendix page 1).

Best regards

Samantha Roberts

References
