Reviewer's report

Title: PRIMEtime CE: a multistate life table model for estimating the cost-effectiveness of interventions affecting diet and physical activity.

Version: 1 Date: 18 Nov 2018

Reviewer: Lennert Veerman

Reviewer's report:

You have responded well to the previous round of comments, and the work described in the two papers remains impressive. The comments below are minor, and suggestions only.

Paper 1, Table 2: Some of the units of change for fruits and vegetables are per 106g/day, others for 100g/day. Units change for serum cholesterol and SBP are negative (and most RRs <1), others positive. I assume that stays true to the sources, but it does hinder interpretation (comparison). Some of the values could be converted to form a more consistent set.

Table 2, page 25-26, 'Mediation factors': Does this require a new set of headers? The final column does not seem to be about RRs.

Table 9, 'No unrelated disease costs included': In the MSLT, fully removing all 'unrelated' disease costs is not possible. It cannot be done for the diseases in the model, which are influenced by the risk factors in the model, but which also act to add health care costs in added years of life.

Line 360-1: As currently described, PRIMEtime CE only has limited power to address the issue of impact on inequalities; it only presents results for the aggregate population of England (by age and sex), not inequalities by socio-economic position or ethnicity.

Line 412-3: Please mention the set of disability weights that was used. These were the Dutch DWs: Stouthard, M., Essink-Bot, M., Bonsel, G. & Group., D. D. W. (2000) Disability weights for diseases - A modified protocol and results for a Western European region, European Journal of Public Health, 10, 24. Or see http://dro.deakin.edu.au/eserv/2003/02/stevenson-burdenofdisease-2003.pdf. I recognize that is not as well-documented as it should have been. These weights were then applied to what the team judged to be the most likely distribution across stages/conditions within the prevalent pool of each disease.

Paper 2, line 221: Please add uncertainty around industry costs.

Line 229: Total implementation cost to industry and government (GBP598.0m) is less than the GBP599m that was used as input for industry cost alone, despite the addition of about GBP5.7m
of government cost. This could be due to randomness but it looks a bit odd, given this is the outcome of 2,000 iterations. Are these values correct?

Line 451-3: GBD disability weights are for mostly for conditions like 'uncomplicated DM' or 'terminal cancer'. How were these weighted to give average DWs for each prevalent disease?

Additional data file paper 2, page 11: The table with the overview of sensitivity analyses is now named S1. I suggest checking numbering/naming of tables throughout the document. A spelling check is also recommended.

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

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With the addition of Linda Cobiac as an author, I now have a conflict of interest. I was one of Linda’s PhD supervisors and we have collaborated on publications since. I have no other competing interests.

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