Reviewer’s report

Title: Cost-effectiveness and budget impact analyses of a colorectal cancer screening programme in a high adenoma prevalence scenario using MISCAN-Colon microsimulation model.

Version: 0 Date: 13 Sep 2017

Reviewer: David H. Howard

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The paper presents a careful analysis of a colorectal screening program in the Basque region of Spain. I have only one major comment. The rest are editorial.

1. The authors find that screening is cost-saving, but they only count the costs of treating colorectal cancer. Would results change if they considered the cost of treating unrelated illnesses? People whose lives are prolonged because of a positive screen and successful treatment will eventually die. Maybe they die of heart disease, maybe from another cancer. The model only counts costs for people who die from colorectal cancer. As a result, it is biased in favor of finding that screening is cost saving. Would the results change if you assumed that everyone who dies incurs a cost of 20,000 or more?

2. Introduction: "When a comprehensive approach to economic evaluation is applied." This sentence could be shorter.

3. The Introduction should make clear that the comparator is "no screening".

4. Methods: "The model's face validity is overwhelmingly proven..." I think the model is great, but I disagree that being cited in the literature for a long period of time proves face validity.

5. Methods: "The implementation time of the program...30 years." Is 30 years the time horizon of the analysis? Or do you mean that you assumed the program continued for 30 years? "Implementation time" is a confusing term.

6. Methods: "or 1 to 2 adenomas or tubular component or low degree of dysplasia were invited for screening." Can you please clarify "invited for screening"? Thanks.

7. Conclusion: I recommend dropping this sentence, "not only theoretical programmes but also the actual implementation of a population based programme can generate cost savings." This analysis is still theoretical, in that it is predicting the impact using a simulation model.
9. Conclusion: "Both numbers were lower in the scenario where dependency of FIT results in sequential screening rounds was assumed [41]. These predicted figures highlight the sustainability of the programme in operational terms, because the number of necessary diagnostic colonoscopies stabilized at approximately 8,000, which was the number already being delivered. When systematic false negative results in some individuals were considered in the model, both figures for necessary colonoscopy were reduced in the scenario." Are "dependency of FIT results" and "systematic false negative results" referring to the same concept? If so, this paragraph could be re-written for clarity.

10. I found the figures difficult to read, especially Figure 3. The labels should be clearer (what is "prevalence bibliography"). It would be best to put the labels directly next to the lines.

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

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I am able to assess the statistics

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