Author’s response to reviews

Title: Cost-effectiveness analysis of a school-based dental caries prevention program using fluoridated milk in Bangkok, Thailand

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Version: 1 Date: 30 Oct 2017

Author’s response to reviews:

30 October 2015

Dr Cecilia Devoto
Editor in Chief
BMC Oral Health

Re OHEA-D-16-00511 named "Cost-effectiveness analysis of a caries prevention program in Thailand".

Dear Dr Devoto,

Thank you for your letter dated 8th of September 2017 advising us that we could resubmit a revised manuscript. We note that the reviewers raised some helpful comments. My colleagues and I have reviewed the manuscript in view of the referees’ comments and have addressed them as follows:
Carlos Zaror, MSc (Reviewer 1): In general, the study is well written and assesses the cost-effectiveness of a preventive caries program with fluoridated milk, in children attending schools in Bangkok, Thailand. There is a comprehensive description of the alternatives to be evaluated, the sources of cost and benefits are adequate and well detailed. However, some aspects should be clarified.

- The title should state the preventive measure implemented (fluoridated milk)

Reply: Noted and modified

- Please state and describe the economic model used (markov, microsimulation, etc.)

Reply: Noted and included

- State the type of currency and year considered

Reply: Noted and modified

- The cost of the dental nurse for promotion was not reported.

Reply: Noted and included

- To determine the opportunity cost, how many visits per child were considered?

Reply: This is already included in treatment cost descriptions and assumptions (point 7. d)

- State the type of sensitive analysis used. If only univariate sensitivity analysis was performed, it should be reported in methods.

Reply: Noted and modified

- The references format should be reviewed according to the instruction for authors (E.g. reference 13 and 21). [http://www.biomedcentral.com/bmcoralhealth/authors/instructions](http://www.biomedcentral.com/bmcoralhealth/authors/instructions).
Peter Milgrom (Reviewer 2):

1) This is a report of a cost effectiveness analysis from a societal perspective of a milk fluoridation program in Thailand. Overall, the approach is sound but some missing details and poor editing detracts from an otherwise useful contribution.

Reply: Noted and modified. The paper has been proof-read by a professional editor.

2) The background section would be improved if the authors reviewed the available data on the expected magnitude of caries reductive effect.

Reply: This information is included in the Sensitivity Analysis section, point a).

3) It would also be helpful to include a brief description of the dental care system in Thailand. For example, are sealants used?

Reply: Noted and included

4) Also, in terms of purpose, what magnitude of effect is considered important? There is a vague reference to this in the discussion (page 14, line 25).

Reply: Noted and included

5) Given the empirical data, it might be reasonable to ask whether having this program is a good use of scarce resources even if the effect is positive?

Reply: The overall result of the program represents savings to the whole society. The cost of adding fluoride into large scale milk production at each dairy, delivered to school children under the existing national school milk program to improve the oral health of children, showed a lower cost compared to individualized fluoride supplementation. The benefit can be measured in terms of equity for every child in school, without adding any task for the teacher.
6) Is the characterization of the benefits/savings in the conclusion as "considerable" actually justified?

Reply: Noted and modified

7) The authors might note that value of topical fluorides in low caries rate populations has been questioned.

Reply: In each population, high caries risk children will benefit more from any prevention measure compared to a low caries risk group. Individual risk assessment models may not simply be established with precise prediction. Milk fluoridation can be a basic prevention measure for all children with the compromised benefit to low caries risk children. This analysis was conducted to provide additional input when confronted with this question and decisions about mil-f programs.

8) Also, why 6 years? If the same children were examined every year, the authors could improve the paper by looking at the incremental savings.

Reply: This study aims to assess improvement for permanent teeth of children under the situation of the national school milk programme in Thailand that provides school milk to school children.

As explained in the methods, this study used modelling economic evaluation. It was assumed that the caries experience was equally distributed over the study period. After 6 years the students leave primary school and, therefore, the project.

9) Given that the dental caries in this population is likely concentrated in the first permanent molars and that caries develops in these molars largely when they are erupting, why continue the program past the first couple of grades? The authors could also look specifically at the benefit for the second molars, if there is any.

Reply: The oral examination was carried out through every tooth erupted in the mouth. The mean DMFS was calculated. We agree with the reviewer in that caries risk is greater at eruption due to enamel immaturity and difficulty cleaning, however the risk can occur at any time after eruption

10) In the abstract and throughout the manuscript there is lack of clarity of the sample size. This is also true in the tabular material. The abstract should include the cost results in terms of cavities averted.
Reply: The results are not presented in terms of savings per dental caries averted, this is because the magnitude of the negative ICERs is not informative and might be misleading, and difficult to interpret, as the more effective the model is, the smaller the ICER obtained, which does not reflect the high cost-effectiveness of the program. For this reason, the results of this evaluation were presented in incremental costs and incremental effectiveness.

11) The description of the source of the outcome measure and the sampling that is alluded to (page 9 line 27) is not comprehensible.

Reply: Noted and included

12) Also, presentation of the results at the surface level likely inflates the results.

Reply: We considered that using tooth surfaces as the unit of measurement provide more sensitive comparison, in terms of dental caries prevention, compared to at the tooth level

13) No information is provided about how missing teeth were translated into surfaces. The results should be presented at the tooth level.

Reply: Noted and included

14) The authors should clarify why they needed sampling? How many children is this based on?

Reply: Noted and included

15) The authors cite a government report saying that the groups were equivalent at the initiation of the study period. One assumes this is related to the two schools from which the caries data were derived. The paper would be improved if the data regarding the equivalency were included in the paper.

Reply: Noted and included

16) Reference to an unpublished government report, likely in Thai language, that the reader would have trouble obtaining is not acceptable.
Reply: More references have been added. These include documents available on the web. They are in Thai, though. It is not unexpected that official documents are in the language of the country, which we do not think makes them unacceptable. In any case, interested readers could easily translate these documents using translations tools available in the web.

17) The authors should provide greater detail about how these variables were measured and also explain whether they are available at the child level. One would like to know if the caries increment calculation is adjusted for baseline caries score?

Reply: The calculations are based on the assumption that at 6 years old, when permanent detention starts erupting, the DMFS is “0”.

18) One would also like to know about the use of fluoridated toothpaste or other concomitant treatment.

Reply: Fluoridated toothpaste use, presence of sealants, and oral hygiene were examined for both groups. There were no significant differences at baseline and after 6 years.

19) The authors should clarify the proportion of parents who consented to the program and whether children who did not receive the milk were included in the exams of the sampled school.

Reply: 100 percent of parents provided consent to participate in the milk fluoridation programme.

Every child in the sampled classroom of the sampled school in the study was examined.

20) Throughout the methods, the authors refer to the Royal Chitralada project. The paper would be clearer if this was explained.

Reply: Noted and clarified

21) Is this the entire milk fluoridation project nationwide? Perhaps the paper would be clearer if it contained a table with each element of data identified with its source, including whether it was an extrapolation or what.
Reply: No, the model used was based in the Bangkok Metropolitan Administration (BMA), sources of information for each data and its source has been clearly identified and referenced. However, we believe that the analysis represents the conditions prevalent in Thailand.

22) Throughout, the nomenclature THB.### is often unclear because of the lack of spacing.
Reply: Noted and clarified

23) Page 13, line 58 is completely unclear.
Reply: Noted and clarified

24) Grammar should also be check on page 15, line 58.
Reply: Noted and checked

25) Table 1 is not needed and the contents included in the text. Other tables need to be labelled so that they can be interpreted without reference to the text.
Reply: Noted and clarified

26) On page 18, "Ethic" should be fixed.
Reply: Noted and modified

27) The line spacing in reference 17 is incorrect.
Reply: Noted and modified

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Thank you again for reviewing the manuscript and considering the publication of this study in the BMC Oral Health. If you have any further questions, please contact me.

Kind regards,
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