Reviewer's report

Title: A cost-effectiveness analysis of a preventive exercise program for patients with advanced head and neck cancer treated with concomitant chemo-radiotherapy

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Reviewer: Keng Ho Pwee

Reviewer’s report:

1) This is a well-written report of an economic evaluation of an adjunctive intervention for a specific group of patients. I think the manuscript can be accepted for publication with just a few points of clarification required. These are listed below.

Minor essential revisions

2) The abstract should mention the perspective of the economic evaluation in the methods.

3) In the conclusion of the abstract, replace 'highest probability' with 'higher probability' since it is a comparison between two states. This should also be done in the conclusion (pg 14).

4) Pg 5, Background - replace 'contribute' with 'contribution' in the last line of the first paragraph.

5) Pg 6, Case description - '... as and adjunct ...' to change to 'as an adjunct'.

6) Pg 7, Case description - it's mentioned that 'Since no significant differences in QoL and functional outcomes were found between the two arms, for the present cost-effectiveness study, both PREP arms were taken together.' That handles the effectiveness part, but what about costs? If the costs were also similar, that should be mentioned. If the costs were not similar, then was it reasonable to still combine the arms?

7) Pg 8, Health effects - The only statement on how quality of life was evaluated was 'The quality of life of patients treated with CCRT was examined by Ackerstaff et al, 2009'. While the details may be available in that paper, it would still be useful to the reader if a bit more detail on this (maybe an extra line or two) explaining the method could be included in this paper.

8) Pg 8, Health effects - same statement as above - the correct reference appears to be ref. no. 3 rather than 4. Might need to re-check all the reference numbering.

9) Table 3 - is the ICER 3167 Euros rather than 3197 Euros? Looks like a typographical error since 285 divided by 0.09 is 3166.6666 ...
10) Pg 10, Mean results - it would be useful to mention the base case ICER in the mean results.

11) Pg 10, Uncertainty analyses - it is not apparent to me how the sentence 'When focusing on quality adjusted survival, the PREP has the highest [should amend to 'higher'] probability of being cost-effective as long as the willingness to pay threshold for 1 additional QALY is at least 3,200 Euros/QALY (see Fig 1 and 2)' follows from Fig 1. and Fig 2. Please be more explicit in the text.

12) Fig 2. - I was not sure why there were two cost-effectiveness acceptability curves; I would have thought that there would be one curve based on the comparison between PREP and UC. However, I am not familiar with CEACs and I am recommending this part be reviewed by someone more adequately qualified.

13) Fig 3. - as a corollary to the above comment, I am similarly not sure about having separate curves for PREP and UC in this diagram, rather than one curve for each of the different situations.

14) Pg 12, Discussion - The second paragraph notes that 'a quarter of the patients in the usual care cohort needed a feeding tube at 12 months, in contrast to only 3% in the PREP cohort. This suggests that patients in the UC group are more likely to suffer from aspiration rather than those in PREP, ...' However, Table 1 shows that the UC group had 8 tube dependent patients before CCRT compared to 0 in the PREP group. The UC group also had later stage patients compared to the PREP group. The discussion comments should be amended to take this into account.

15) Table 2 - 'Succes rates' is mispelled. Some of the abbreviations are also not spelled out at the bottom, while some are - would be good to be consistent. Utilities low, Utilities high and Costs: the rows should be continuous rather than divided.

Thanks for the opportunity to review this manuscript.

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

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests