Reviewer's report

Title: A cost minimisation analysis alongside a clustered randomised trial in teledermatology

Version: 1 Date: 27 March 2009

Reviewer: Wilbert van den Hout

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Major Compulsory Revisions

1) The paper uses probabilistic sensitivity analysis (PSA) to analyze the uncertainty of the estimated cost difference. More details need to be provided on how this methodology was applied:

1.a) The uncertainty in PSA should reflect the uncertainty of the associated parameter. Instead, looking at the ranges in table 1, the uncertainty in this paper seems to reflect the between-patient variability. This is not appropriate.

1.b) In table 1 the costs of diagnosis and treatment for GP and dermatologist are both 87.6 euro, with the same range from 60 to 115 euro. Mentioning these costs twice suggests that these are two different parameters in the model. However, in table 2 both have the same mean 87.3 (different from 87.6 due to random error), which suggests that both share the same single parameter. Which is true?

Since the analysis is a CMA, it is appropriate to assume that the conventional and the teledermatology process include the same medical care. However, this assumption is not certain. Should you not include a parameter that quantifies this uncertainty?

1.c) It is especially the assumed variances of the input parameters that determine the variability of the output (figure 1). For most parameters you used triangular distributions, which is common practice but does not necessarily provide a good estimate for the variance of the input. The reader should at least be warned about the impact of the assumed distributions and their variances.

1.d) How were the estimates from different experts aggregated?

1.e) It would be nice to provide insight into the relative impact of different parameters.

1.f) The paper uses the word “significance”. I do not think this is a relevant or justified term in PSA.

1.g) Please describe how the mean and variance of the beta distributions for the four proportions in the model were estimated.

1.h) Please provide a reference for this methodology.

2) An important determinant of the model is whether the live consultation with the dermatologist was appropriate. This was determined by the dermatologist, during the live consultation. Please explain in more detail how this parameter was
estimated and why.
2.a) Shouldn’t this have been determined prior to the live consultation? Whether or not this consultation can be prevented in practice should not be based on information that was obtained during the consultation.
2.b) Shouldn’t this have been determined by the GP? In practice, isn’t the GP the one who determines whether or not the teledermatological consultation was sufficient?

Relatively minor and discretionary revisions
3) Page 8: In total 282 variables were used in the model. How does this number compare to the 31 distributions mentioned in the abstract? Were 251 parameters known without uncertainty?
4) Page 8: For the conventional process, you only assumed GP costs for the first consultation. Is this appropriate? Wouldn’t it be possible that, after visiting the dermatologist, the patient receives additional care from the GP? This care was included for the conventional process, but not for the teledermatology process.
5) Page 11: Please describe how you checked the reliability of the findings.
6) Page 16, “at least a fifth”: why do you consider this (unbiased?) estimate a lower bound for the true proportion of preventable consultations?
7) Page 17: A statement is made about selection of particular groups of patients for teledermatology. Reducing the number of patients increases the investment costs per patient. Was this incorporated in the model? How?
8) Page 17: It is stated that the analysis needs to be adjusted to in order to assess savings for different groups of patients. Why did you not include this adjustment? It requires the number of preventable consultations per type of patient, which I think you can derive from your study?
9) Page 17: It is stated that an adjustment in cost model is necessary to assess larger travel distances. Why would the current model no longer be appropriate?
10) Page 18: Please report briefly on the results of the economic evaluations for real-time teledermatology.
11) Page 19: In the conclusions it is stated that societal savings due to the use of teledermatology are not possible. This statement is not supported by the analysis. The analysis shows that the probability of societal savings is 11%, which I would think is a possibility.
12) Figures: I think it is more appropriate not to truncate the vertical axes.
13) Figures: Could you indicate the baseline analysis in all figures?
14) Table 1: Please include the assumptions on the beta distributions for the four proportions in the model.
15) Table 1: What do you mean by “most important” parameters? The table includes 25 parameter estimates, so 31-25 = 6 are missing. I think, four of the parameters are the proportions. So only two parameters were not sufficiently important? Why not include all 31 parameters in this table?
16) Table 2: Could you include the number of (first) visits?
17) Table 2: The total costs in the final column do not add up, because you omitted the investment costs.

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.