Reviewer's report

Title: Creating scenarios of the impact of COPD and their relationship to COPD assessment test (CAT) scores

Version: 2 Date: 1 April 2011

Reviewer: Julie Morris

Reviewer's report:

Statistical Review:

This paper describes the derivation of ‘qualitative’ labels for categories of CAT scores based on a mapping of CAT scores to SGRQ-C scores.

There are some aspects of the statistical methodology used, their interpretation and the presentation of results that need to be addressed. The mapping of CAT scores to SGRQ scores using logits is appropriate. However, a more comprehensive application of the Bland and Altman technique should be carried out, and a more detailed interpretation of these results would be advised.

Major Compulsory Revisions:

1. A Bland and Altman plot is constructed, but the mean bias and 95% limits of agreement are not calculated. The latter are important because they indicate the ‘extremes’ of any discrepancy between the two scoring systems. A clinical judgment should then be made as to whether these limits correspond to acceptable discrepancies. From Figure 3 I would guess the 95% limits of agreement are approximately +/- 20. This means that the two scoring systems could differ by around 20%. It is this percentage that then needs to be assessed as being clinically acceptable or not.

Minor essential revisions:

2. Methods. Comparison of CAT and SGRQ scores. ‘The correlation between SGRQ and CAT scores is good (r=0.82) [3].’ It is not clear why this correlation value is quoted. Reference 3 quotes correlations of 0.8 in stable patients and 0.78 in acute patients, ie does not quote a correlation of r=0.82.

3. In the authors’ description of the Bland and Altman plot (paragraph ‘Correlation with SGRG’), the over- and under-estimation is presented in terms of CAT original units. It would seem more appropriate to describe these differences in terms of adjCat, ie comparable SGRQ and CAT units.

4. Table 2. It would help the reader if the CAT severity bands were labelled with the corresponding CAT score ranges (eg. Low impact = 1 to 10) etc.

5. Figure 1. It is not clear how the co-ordinates of the dotted lines were chosen. It would see more appropriate to place them at the thresholds of the CAT score
severity bands.

6. Abstract. ‘A Bland and Altman plot showed a consistent relationship (r=0.82) between CAT scores and scores obtained with the St George’s Respiratory Questionnaire for COPD…….’. But the quoted correlation is not connected to the Bland and Altman analyses (see above).

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests