Reviewer’s report

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

Version: 2 Date: 4 April 2011

Reviewer: David Michael Meads

Reviewer’s report:

General comments
The paper describes a novel method of attributing clinical meaning to scores on a health status questionnaire. The report describes an interesting combination of issues surrounding clinical meaning/importance of questionnaire scores, Rasch analysis and mapping between measures. However, as a consequence, clinicians may find it a challenge to grasp the overall aims. Since the research describes novel methodological work with outcomes questionnaires it might be better appreciated in an outcomes-focussed journal.

Discretionary Revisions
1. More explanation perhaps required on the clinical implications of the work and its practical use

Minor revisions
1. “The key property of this type of scale is the assumption that, for an item of given severity, a patient will have a high probability of responding positively to items that indicate lesser severity than the item in question and a lower probability of responding to items that reflect greater severity.” (Page 4)
A caveat should be added that this is the case when positive responses denote the presence of an impairment or disability

2. “A conversion table allows CAT scores to be converted to logits or vice versa.” Please state if this is available with the original publication.

3. Description of the data should be moved from Results to Methods

4. Can the authors justify the combination of multinational data? Would the scenarios be the same if they were derived using individual country data – aside from sample size issues.

5. A statement (and reference) is needed about sample independence of Rasch to help justify use of two different data samples for the mapping.

6. Can the authors offer an explanation for the low correlation (R=0.16) between the measures? Include this in the discussion.

7. Mention should be made of the likely significant uncertainty surrounding the categorisation of patients into scenarios since this combines uncertainty around the original thresholds devised for the CAT (Mild – Severe) and then uncertainty
in the mapping of items from the SGRQ-C to the CAT.

8. References 7 and 10 are the same. In general, I think the paper would benefit by referencing a wider range of studies.

Major revisions

1. References should be provided on the validity of the methods described, and on the validity of the mapping process using Rasch. What previous work has been conducted in this area?

There are examples of the use of Rasch analysis to map between measures:


And on using Rasch to develop scenarios:


2. More details are required on the mapping process. It’s not very clear whether the mapping process took place on the basis of item logit positions or item response category positions. Presumably it’s possible that the mild categories of some questions may map to the mild CAT level while the severe response category for the same item may map to the severe CAT level?

3. The categorisation of patients into scenarios should be tested and validated – for example by reverse checking patient CAT level to SGRQ-C responses and level of agreement or prediction error. If this is beyond the scope of the current work then it should be noted that future research should seek test the validity and robustness of the mapping and categorisation of patients using data where SGRQ-C and CAT are collected concurrently.

Level of interest: An article of importance in its field

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