Reviewer's report

**Title:** Comparing measures of comorbidity and functional status for risk adjustment to evaluate colorectal cancer surgery: a retrospective data-linkage study

**Version:** 4  
**Date:** 2 March 2015

**Reviewer:** Niels Peek

**Reviewer's report:**

The authors have properly addressed most of my comments, and the manuscript has clearly improved from the revision.

**Major compulsory revisions**

1. One of the conclusions of the paper, that the Charlson index has complete coverage, should be tuned down. It is true that the Charlson can be computed from administrative data for all patients, but we do not know how much we are missing. As is noted in the Discussion, these Charlson index thus computed is likely to underestimate the "true" Charlon index. This should be noted in the Conclusion.

2. I don't see how the first sentence of the Conclusions in the Abstract ("Adjusting for a measure of patient health status improves the face validity of conclusions of studies based on administrative health data.") is supported by the study. This was not evaluated. I suggest to remove this sentence.

3. Same comment for the first sentence of 2nd para of Conclusion on p. 15.

4. I am not convinced that one should adjust for peer groups in the analysis. As explained earlier, this seems a bad idea. The authors write in their rebuttal that "this was the primary factor of interest". I am quite confused by this explanation as the manuscript suggests that measures for comorbidity and functional status were the primary factors of interest in this study.

**Minor essential revisions**

5. Background section in the Abstract describes study methods ("We assessed how ...").

6. Background section in the Abstract lacks study objective.

7. The "Statistical Analysis" section in the Methods says that "two-level multilevel logistic regression models" were fitted. Please explain which random effects were included in the model, and report the intra-cluster correlation coefficient in the results.

8. There is no reference to Table 2 in the text. I suggest to refer to this table.
when reporting the correlations between the three measures.

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

**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.