Reviewer's report

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

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Reviewer: Jason Gurney

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

Reviewer comments:

The authors assessed 1) the commonality with which the Eastern Cooperative Oncology Group (ECOG) and American Society of Anesthesiologists (ASA) measures of patient morbidity are recorded on administrative datasets; and 2) whether these two measures added additional predictive ‘value’ (in terms of predicting patient outcomes) beyond that which is achievable using solely the Charlson Index.

Major Compulsory Revisions:

• The results of the first objective of this study – to assess how frequently the ASA score and ECOG performance status can be obtained from population-based administrative data collections – is likely to vary considerably by region (particularly country-to-country, but also within countries that do not have a nationalised standard/requirement for the collection and reporting of particular measures. As such, those results which relate to the ‘completeness’ of this data are specific to one (albeit large) region – and the authors must acknowledge this as early as possible in the manuscript. I would suggest that the objective be re-worded to include ‘…in a large Australian population’ (or similar), and then address this more fully (with an extra paragraph) in the limitations section.

• Am I correct that your full cohort were limited to those for whom surgery was performed for curative intent? If so, this is important (in terms of applicability of your results to the wider colon cancer population), and needs to be stated more up-front.

• The authors need to comment on the potential missing-ness of private hospital data. A recent study in the New Zealand context showed that a substantial proportion of colon cancer treatment data are missing from centralised collections, likely due to the high number of patients who seek treatment for this cancer in the private sector. (Gurney, Sarfati, Dennett, & Koea, 2013)

• The authors need to comment more on the fact that their predictive modelling is necessarily minimised to those who have complete data. Is there anything
conceivably ‘different’ about those patients for whom data was available, and how might this impact their results (if at all)? The patient characteristics supplied in Table 1 look highly-similar between the full cohort and those with ASA/ECOG data, but there may be other factors that the authors wish to comment on.

Minor Essential Revisions:
• Lines 110-112: This sentence is fragmented and should be re-worded.
• Lines 116-117: Please state the ASA categories explicitly.
• Lines 119-121: Please state the ECOG categories explicitly.

Discretionary Revisions:
• For completeness, the authors may wish to comment on the recently-published ‘C3 Index’, a cancer-specific measure of patient comorbidity.(Sarfati et al., 2014) They may wish to comment on how the use of this measure may have influenced their results — particularly the inclusion and weighting of comorbid conditions which are colon cancer-specific (these are available in that paper). They may also wish to comment on the fact that the creators of the C3 Index found similarly-minor improvements in predictive model performance above that observable when using the Charlson Index alone. (This discussion would fit particularly well into the paragraph beginning at line 205.)
• Line 119-201: Your comment that resources put towards the general improvement of ECOG completeness may be a ‘stretch’ given a) the narrowness of your focus (i.e. colon cancer only, and a sub-set of that population for whom ECOG could be determined), and b) the usefulness of ECOG outside of the scope of population-level epidemiological investigations (e.g. in patient-level clinical care). I would suggest that this language is softened, or that more caveats (beyond that given in the next sentence) are added here.

Overall, a well-written and presented manuscript which I believe will benefit from those recommendations in this review.

References

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.