Reviewer's report

Title: Adjustment of Nursing Home Quality Indicators

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Reviewer: Howard Degenholtz

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Adjustment of Nursing Home Quality Indicators

BMC: HSR

The authors have provided a nice overview of the topic, and present new analyses intended to support the next generation of adjusted indicators. The ms needs to be edited for grammar and typos; see Minor revisions below.

Major Compulsory Revisions

1. The data presented are drawn from previous CMS funded contracts with Abt Associates. A general reader might not be familiar with these efforts and the various technical reports, some additional effort is needed to clarify the rationale for this ms and distinguish the analyses presented here from the Abt report. For example, the passage at the top of p. 8 referencing the methodology for the QI scores refers to prior work (regression coefficients) not presented here, so the reader cannot assess this important aspect of the risk adjustment.

2. The authors do not present data on the impact of the new risk adjustment approach on the number of facilities that might be flagged for having poor quality (c.f. Berlowitz et al.). Please address this point, either with new analysis or justification.

3. Table 2 is extremely long, and Tables 3, 4 and 5 summarize aspects of the adjustment in a way that obfuscates the approach. I strongly recommend combining the information on standardization and stratification into columns on Table 2, so the reader can see which approach goes with each QI. This will be a large table that could be turned into an appendix. One indicator from each domain should be retained in the main text, along with the total number of QIs per domain.

4. Figure 3 should be reduced to a small (e.g., one per domain) number of exemplary graphs. The full can be presented as an appendix.

5. The discussion is brief given the length of the paper and amount of analysis presented. What are the implications of this new system for policy or practice? Do these results differ from what is reported in NHCompare (see #2)? Can they make the case that this new approach is sufficiently transparent to gain acceptance by the industry? Is the new method computationally intensive?

6. In the conclusion, the comments about appropriate reference facilities are not supported by this manuscript, as the authors did not appear to analyze the impact of different reference groups on the results. The suggestion for peer
nominated facilities is interesting, but off topic. Please revise this section after responding to #5 above regarding the Discussion.

Minor Essential Revisions:
1. P. 4; 1st full para, 2nd sentence “First, differences in types of residents…”, is unclear what is meant by care sectors.
2. Same para, “NQ” seems to be out of place.
3. The phrase, “must be carefully considered” does not add to the general critique of deriving QIs from resident assessment data. The authors should be more precise about the issues they are raising.
4. The sentence beginning “Third, many relevant NH outcome measures are rare…” is an important point, but it is not clear that the new methods will alleviate this problem. The words ‘prevalent’ and ‘rate’ should be deleted as they do not add to the thought.
5. 3rd para, sentence that begins “Disadvantages include…” should be revised to drop the parenthetical, which is overly technical. Change “coarse adjustment” to “coarseness of the adjustment and creation of strata with small denominators….” Delete the word ‘indicator’.
6. P. 5, 1st full oara, 2nd sentence, end after the word ‘facilities’ and start a new sentence with “Expected rates…”
7. P. 5; 3nd full para, “(variability in valence…” This phrase is dense and technical. Please expand and explain
8. P. 7; 2nd sentence, “QI” should be plural.
9. P. 8; 2nd full para, 2nd sentence, fix typo in word ‘using’: “improved through using”
10. P. 10; 2nd para, sentence that begins “Responsive strategies…” there is an extra word “a” to delete
11. P. 15; the word “indict” seems a bit strong. Nevertheless, please change “is” to “as” to read “indict a QI as invalid.”
12. P. 17, last line on the page is a fragment.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

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