Reviewer's report

Title: Development and Validation of an Algorithm to Assess Risk of First-Time Falling Among Home Care Clients

Version: 0 Date: 11 Dec 2018

Reviewer: Adam L Gordon

Reviewer's report:

This is a worthwhile study. It describes using a decision tree analysis on the interRAI-HC dataset from four Canadian provinces to develop and evaluate an algorithm to identify non-fallers who are at high risk of falls. The work is well described, the statistical analyses sound and the caveats well stated.

There is a limitation here which is not mentioned or discussed, which is that this uses the interRAI, a highly validated tool which has been extensively validated and comes with it's own suite of training and implementation packages. Of course this could be rolled out tomorrow in countries which have the interRAI, whilst countries with similar widespread MDS-type indices (e.g. MDS 4.0) could develop and validate their own falls prediction algorithm. But, for countries that don't have a minimum dataset, the development work would be more difficult, as first they would have to develop a set of widely utilised resident level variables which were validated in terms of inter-rater and test-retest reliability, before they could even start to work on an algorithm like this.

I wonder if I can challenge the authors to address this in their discussion - they have the advantage of having already implemented the interRAI. Is the only way to develop a falls prediction algorithm like this to have interRAI, or an equivalent, embedded or can they see an alternative way to arrive at such a predictive algorithm in systems were interRAI is non-native. I think I can anticipate their response, which will be to trumpet the value of the interRAI. I would have no objection if this is what they felt was the correct thing to do.

Minor things:

Our Canadian colleagues will know better what the convention is, but Province is a proper noun, shouldn't it be capitalised throughout?

Line 26 - "Falls are," not, "falls is."

Line 120 - "each levels", should be, "each level."

Are the methods appropriate and well described? 
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls? 
If not, please specify which controls are required in your comments to the authors.
Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
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I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

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