Reviewer's report

Title: Variable performance of models for predicting methicillin-resistant Staphylococcus aureus carriage in European surgical wards

Version: 2 Date: 16 December 2014

Reviewer: Makoto Jones

Reviewer's report:

Minor Essential Revisions:
I believe that the manuscript is well-written and that the point made is important; however, it would be advantageous to explore the rationale for making this comparison between models.

1) Please at least briefly mention the other available methods that could be used and explain why this particular comparison is important.

2) It also seems to me that some framework that would help explain why the "simple" model was better would be helpful. I am not a statistician but I think that a model that contains fewer factors and yet does a better job predicting outcomes on the validation set suggests that most of the other models are overfit to the training set. Perhaps a bit more discussion on optimism and the role of BMA might help.

3) Although it makes some intuitive sense, it would be helpful to have an explanation for the "simple approach."

4) Line 89: 2014 will be over soon.

5) Line 338: Again, I am not a statistician, but the use of the word, "corrected" seems a little strong.

Discretionary Revisions

1) I am not sure that the word "simple" best conveys the strategy used in the "simple model." If this term is common in the literature, please reference.

2) Line 97: the sentence "an under-recognized limitation" is a bit convoluted.

3) It may be useful when considering the impact of the rule that a substantial portion of individuals have a previously positive test. The authors discuss the proportion of individuals without a past MRSA test that would be identified, which is a conservative and straightforward point. However, it is most clinically relevant what proportion of the whole may be detected.

Level of interest: An article of importance in its field

Quality of written English: Acceptable
Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests: I declare that I have no competing interests.