Reviewer's report

Title: What potential could there be for a S. aureus vaccine in a hospital setting on top of other preventative measures? A model-based analysis.

Version: 3 Date: 30 November 2013

Reviewer: Laura Temime

Reviewer's report:

The authors have satisfactorily addressed a number of my concerns in this revised version of the paper, including all the minor revisions I requested. However, I believe that some major issues still need to be addressed (at least in the form of relevant new paragraphs in the Discussion, and possibly with appropriate sensitivity or uncertainty analyses) for the paper to be acceptable for publication.

Major compulsory revisions

1. I remain unconvinced that the choice of the model developed by D'Agata and Webb et al. was an obvious one in this context and believe that the authors should try and justify their choice in the Discussion (other than by mentioning that including both CA and HA-MRSA is adequate here). In particular, they should discuss the potential implications of this choice (vs. other models they could have chosen) on the results they obtain.

2. I think that telling the reader that "baseline estimates for the model parameters were provided in full" in the original model is misleading. Indeed, as mentioned in my earlier review, while it is indeed true that many baseline parameter estimates were obtained from epidemiological data in the original study by D'Agata et al., this was not the case for the transmission parameters, for which no source was provided except for in-vitro studies. Moreover, I disagree with the authors when they write that there are no robust estimates available for MRSA transmissibility. There are a number of studies in which MRSA transmission parameters in hospital settings were estimated using well-adapted statistical methods and detailed longitudinal data; see for instance (Worby et al., Am. J. Epidemiol., 2013, 177 (11): 1306-1313) for a very recent effort.

Hence, the fact that the transmission parameters used in this study were not based on reliable estimates should be at least mentioned in the Discussion. Ideally, as, from my experience, model predictions will be strongly dependent on the assumed values of these transmission parameters, sensitivity and uncertainty analyses should be performed.

3. Although a paragraph was added to the Discussion in order to underline that the results are hospital and setting-dependent, I still feel that the assumptions regarding the investigated vaccination coverage should be interpreted and
debated in the Discussion. For instance, in which setting and under which conditions would a 100% coverage be realistic? How would this coverage be reduced in other settings? How may this be influenced by the duration before full immunity is reached following vaccination?

Such a discussion would to my mind strongly enhance the paper's value, as it would help the reader better understand its implications.

**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