Reviewer's report

Title: Natural history of colonization with methicillin-resistant Staphylococcus aureus (MRSA) and vancomycin-resistant Enterococcus (VRE): a systematic review

Version: Date: 2 December 2013

Reviewer: Casper den Heijer

Reviewer's report:

The article by Shenoy et al. addresses an important issue, namely the (duration of) colonization by MRSA and VRE. At least for MRSA I know that Wertheim et al (2005) concluded that the strain found in a (S. aureus) infection, often equals the colonizing strain. The authors also state important implications for patient care and healthcare costs related to the colonization by these drug-resistant microorganisms. The article includes a systematic review and a meta analysis on the duration of colonization.

Major Compulsory Revisions

1) There appears to be a lot of heterogeneity between the studies included in the meta analysis (type of design, setting, definition of clearance, variation in frequency of sampling and variation in duration of follow-up). With this heterogeneity, I wonder whether it is justified to perform a pooled analysis. At this moment, isn’t it better to show your results of the systematic review, point out the limitations (eg heterogeneity) of the present literature and conclude that consensus is needed regarding the definition of clearance, sampling frequency and follow-up in order to allow a meta analysis in the future?

Minor Essential Revisions

2) I wonder whether it was possible to find a decrease of documented clearance over time, because all included patients at baseline needed to be colonized. The conclusion that the documented clearance decreased over time doesn’t seem surprising to me.

3) Could the authors comment on why the quality of the studies was assessed separately and not included (as a weight) in the main analyses, i.e. assessment of the median time to clearance?

4) On page 11, different categories are given on the proportion of loss to follow-up reported and a category of studies that did not report loss to follow-up. The number of studies given add up to 10 (3+3+4). Was it not possible to classify the other (six) included studies?

5) Why was logistic regression analysis performed on these data? It seems to me that survival analyses are more suitable to analyze the median time to clearance.
6) On page 13, it is stated that the median time to clearance exceeded 208 weeks by excluding the Robicsek study. However, the Robicsek study was the only study that had a follow-up time of 208 weeks. Isn’t it better to state that the median time to clearance exceeded 172 weeks (Sanford study: study with most weeks to clearance in this sensitivity analysis)?

7) On page 14, how was the duration of glycopeptide use defined by Park (2011)? Was it categorized or measured in days/hours? This will help to interpret the given ORs.

8) On page 16, it is stated that three studies were excluded in the sensitivity analysis restricting the time to follow-up for MRSA studies to 43 weeks. However, in table 1A more than three studies have follow-up times longer than 43 weeks (eg Robicsek)? Can the authors explain this discrepancy?

9) Figures 2A-C are given as Figures 3-5 in my documents

Discretionary Revisions

10) In the Introduction, the sentences "... the prevalence of colonization is increasing. It is estimated that these infections..." implies, to me, that colonization is equal to infection, which is actually not the case. Perhaps the authors could rewrite one of the sentences.

11) On page 13 it is stated "... again resulted in 13 studies included..." I wonder why "again" is used? In the MRSA meta analysis I believe that 16 studies were included.

12) On page 17/18 it is mentioned that the colonization time could be underestimated due to the lag time between initial colonization and identification. However, I think that the colonization time could also be overestimated, because of infrequent sampling in the follow-up period.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.