Reviewer's report

Title: Insufficient neutralization in testing a chlorhexidine-containing ethanol-based hand rub can result in a false positive efficacy assessment

Version: 1 Date: 19 April 2005

Reviewer: manfred rotter

Reviewer's report:

General
This paper deals with the importance of effective neutralization in the in-vivo evaluation of hand disinfectants. In a test for the effectiveness of hygienic hand rubs according to the European Norm EN 1500, the authors compared an ethanol (61% w/w) plus chlorhexidine gluconate (1% w/w) -containing rub with a product consisting only of ethanol (85% w/w) and with the reference (isopropanol 60% v/v). The two products were applied for 30s, the reference – as required by the norm – for 60s. For recovery of the post-treatment values, a chlorhexidine neutralizing mixture consisting of 0.5% lecithine and 4% polysorbate 20 in Butterfields phosphate buffer was used or not used. The results revealed that the addition of an effective neutralizer to the sampling fluids and thei dilutions is of paramount importance as without neutralizer the chlorhexidine-containing product produced a very favourable result (lg reduction 4.8) for the product, whereas with neutralizer the bactericidal effectiveness was the lowest of the three disinfectants (2.7 lg). The product containing only ethanol and the reference produced with and without neutralizer nearly identical results (3.3 vs. 3.3 and 3.7 vs. 3.5 lg respectively).

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
The design of the study must be made clear, as it is uncertain whether the three agents were tested concurrently in a Latin square design or in three individual experiments. In this case, a comparison of the results would not be justified.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
The table should be produced in a more clearly arranged fashion: headline should go over the table, the column “Samples without detectable bacteria” should be called “… detectable test bacteria”, also an N should be given to this column so that the reader can clearly see out of how many samples a number of samples contained bacteria. It should be indicated at the P-value against which result a statistical test has been performed (probably each product against the reference). If a Latin square design was used a pair-wise Wilcoxon test is not the right choice; instead an ANOVA should be done to find out whether there are significant differences between the mean lg reductions; if this is the case, the Wilcoxon-Wilcox test should be applied.
The English should be improved and in the methods section the part “Evaluation of neutralizing agents” must be shortened for instance by placing the repeated description of the culture at the end of this text only once.

Discretionary Revisions (which the author can choose to ignore)
What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

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

Statistical review: No

Declaration of competing interests:
I have no competing interests.