Author's response to reviews

Title: Oropharyngeal and nasal Staphylococcus aureus carriage by healthy children

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Author's response to reviews:

Editor
BMC Infectious Diseases

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Dear Editor,

Please find attached our manuscript # MS: 1558141099137412 “Oropharyngeal and nasal Staphylococcus aureus carriage by healthy children” which we submit for publication as Original Research in BMC Infectious Diseases.

Please find attached the revised manuscript and our replies to reviewers’ requests. The authors, all of whom contributed significantly to the manuscript and declare that they have no potential conflict of interest, have seen and approved the final version of the manuscript.

We declare that the text has been reviewed by a native English speaker with appropriate knowledge of the subject matter. We hope that you will now find the paper suitable for publication in BMC Infectious Diseases.

Yours faithfully,

Susanna Esposito, MD
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The manuscript by Esposito et al. describes a comprehensive study accessing the prevalence of oropharyngeal and nasal S. aureus carriage in healthy children and adolescents. A total of 497 oropharyngeal and nasal swabs were collected during the second and third week of December 2013 from children and adolescents attending five randomly selected schools in Milan, Italy. As it had been previously demonstrated by others, the authors highlighted the importance of adding throat to nasal screening when monitoring the circulation of S. aureus in the community. The study was well performed and provided demographic and epidemiological data of S. aureus carriers.

Thank you very much for the appreciation of your manuscript. The text has been revised according to the other reviewers’ suggestions.

Reviewer 2

Thank you for the opportunity to review the manuscript “Oropharyngeal and nasal Staphylococcus aureus carriage by healthy children” by Susanna Esposito, et al. The authors tested 497 healthy students at five schools in Milan, Italy for S. aureus carriage by PCR assay in the oropharynx and the nares; 53.1% had a positive test at one or both sites. They found that 25.9% carried S. aureus in the oropharynx, 39.2% carried it in the nares, and 12.1% carried it at both sites. 69/497 only carried S. aureus in the oropharynx and would not have been identified if only nares cultures were obtained; the use oropharyngeal swabs increased the measured prevalence by 13.8%. The authors found that oropharyngeal carriage was more common as the children were older and the opposite was true for nasal carriage. MRSA was only found in 3 children, a prevalence (0.6%) much lower than has been found in many other studies in other countries, where up to 15% of healthy children have been carriers of MRSA. The authors excluded children from their study with a chronic medical condition, those who had received an antibiotic in the previous three weeks, and apparently also those with a mild upper respiratory tract infection. The authors assessed a number of potential predictors of S. aureus colonization and found no associations with smoking among their parents, ethnicity, number of siblings, gestational age, birth weight, breastfeeding history, hospitalization in the previous three months, allergy history, or vaccination history.

The study is well designed overall. The manuscript is very clearly written and concise.

I have several comments and questions for the authors:

Thank you very much for your suggestions. The manuscript has been modified.
For identification of MSSA and MRSA, a commercial RT-PCR system was used. How do the results of this commercial assay compare with culture of the nares or oropharynx after broth enrichment? Are there references on this? Can the test yield a false-positive result, and if so, how often is this to be expected? Has this test been validated against culture for both of the tested anatomic sites?

1) The sentence regarding the characteristics of the kit used to identify MSSA and MRSA was changed. It has been detailed that the molecular technique has been validated for the identification of these pathogens and a new reference has been included (pp. 5-6, lines 104-110; p. 12, ref. 13 lines 267-268).

Children who had received an antibiotic recently may have been more likely to be a carrier of MRSA although they may have been otherwise healthy. This should be added as a limitation to the study that may have led to a bias toward underestimating carriage of MRSA in this population.

2) It has been detailed that the low incidence of MRSA could be, at least in part, related to the enrolment in the study of children that did not receive any antibiotic treatment in the three weeks before and that this, excluding the risk of oropharyngeal bacteria selection, could have led to an underestimation of MRSA circulation in the general population (p. 8, lines 174-178).

If the authors have any information available, it would be helpful to know if the enrolled children were representative of all of the children in the schools from which they were drawn. Was the sample representative by age, ethnicity, and gender? If this information is not available, it should be noted as a limitation of the study.

3) In the method has been reported that the enrolled children were representative of all of the children in the schools from which they were drawn because the school were randomly chosen among those attended by middle class population (p. 5, lines 81-82).

The lack of bacterial culture prevents the authors from presenting any genotyping or phenotyping data. Thus, they are not able to assess how often children with dual-site carriage had >1 strain type of S. aureus, which has been found to be a common phenomenon in children in previous studies. The authors may consider noting this as a limitation to their study.

4) It has been reported that, lacking bacterial cultures, genotyping and phenotyping data it was not possible to establish whether more than 1 strain type of S. aureus could be identified in children carrying this pathogen (p. 8, lines 168-171).