Reviewer's report

Title: Rapid and robust phylotyping of spa t003, a dominant MRSA clone in Luxembourg and other European countries.

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Reviewer: Alexander Mellmann

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In their manuscript entitled “Rapid and robust phylotyping of spa t003, a dominant MRSA clone in Luxembourg and other European countries” Engelthaler et al. developed, based on wgs, realtime-PCR assays to subtype predominant MRSA clones in central Europe based on canonical SNPs. After wgs and SNP typing of a large collection of strains, they stated that their assay enables subtyping of previously identical (using MLST, spa) MRSA isolates.

Major Compulsory Revisions

In general, this manuscript addresses current challenges due to the clonal spread of MRSA that complicates typing efforts. However, there are some aspects that should be clarified for the reader.

1. It should be clarified that typing results should always be linked to the local background population of MRSA (based on MLST/spa) and to the current epidemiology to judge the need for an expansion of typing efforts. In an endemic situation like described here is it obvious, however, in other countries or areas it could be completely different (especially in low endemic countries/regions or in regions with a very heterogeneous background population).

2. Moreover, the authors describe great sequencing efforts to determine canSNPs, however, they did not relate their results with the epidemiology of these strains. This is however of utmost importance as the public health officer or the hospital epidemiologist need to know whether typing result and epidemiology corroborate or not to evaluate their investigations/findings and the measures to prevent further spread of strains.

3. The last paragraph of the discussion is very general and could be shortened.

Minor Essential Revisions

1. As not every reader is familiar with the different approaches to determine informative SNP localizations, this should be explained in more detail. For example, whether only coding regions were included and how the in-house script is functioning. Is this script also available as supplementary data as this would be interesting also for other researchers?

2. In figure 1 and in the suppl. figures, all MLST STs and spa types should be completed and given in the same order to facilitate understanding and interpretation.
Level of interest: An article of importance in its field

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