Author’s response to reviews

Title: Available, Bed-sided, Comprehensive (ABC) Score to A Diagnosis of Methicillin-Resistant Staphylococcus aureus Infection: A Derivation and Validation Study

Authors:
Nori Yoshioka (yoshioka@hp-infect.med.osaka-u.ac.jp)
Matsuo Deguchi (exit@hp-lab.med.osaka-u.ac.jp)
Hideharu Hagiya (highgear@hp-infect.med.osaka-u.ac.jp)
Hisao Yoshida (falco60v@yahoo.co.jp)
Norihisa Yamamoto (norihisa65@hp-infect.med.osaka-u.ac.jp)
Shoji Hashimoto (hashisyo@ra.opho.jp)
Yukihiro Aceda (akeda@biken.osaka-u.ac.jp)
Kazunori Tomono (tomono@hp-infect.med.osaka-u.ac.jp)

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Dr. Philippa Harris
Editor-in-Chief
BMC Infectious Diseases

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Title: Available, Bed-sided, Comprehensive (ABC) Score to A Diagnosis of Methicillin-Resistant Staphylococcus aureus Infection: A Derivation and Validation Study

Authors: Nori Yoshioka, et al.
Dear Dr. Harris:

Thank you for your careful review and constructive comments on our manuscript. In accordance with the reviewers' recommendations, we have revised and added discussion to the manuscript. RED indicates modified portions.

We are grateful to you for allowing us to submit our revised manuscript. We hope that this revised manuscript is acceptable for publication in your esteemed journal.

Sincerely yours,

Nori Yoshioka
Corresponding author

Division of Infection Control and Prevention
Osaka University Hospital
2-15 Yamadaoka, Suita, Osaka 565-0871, Japan

Phone number: +81-6-6879-5093
Fax number: +81-6-6879-5094
E-mail: yoshioka@hp-infect.med.osaka-u.ac.jp

Editor Comments:
Comment.

Please include your supplemental files as these are missing from the current version and as a result we could not fully assess these.

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Answer.

For the current revision, we are sure to include the supplemental files.

Also, we have checked the journal policy carefully.

Reviewer reports:

Shey-Ying Chen (Reviewer 3): Though the manuscript was revised and English-edited significantly by the authors, there remain concerns before it is accepted for publication.

Comment #1.

My first comment is about the purpose and clinical application of the ABC score in this study. The authors mentioned that "The present study aimed to establish an available, bed-sided, comprehensive (ABC) score to differentiate various types of active MRSA infections from its colonization,...", so it is the clinicians but not infection control practitioners will use this ABC score. Judgement of active infection or no active infection of a patient is the job of clinicians. I don't think a non-doctor infection control practitioner can use this ABC score to suggest prescribing or discontinuing antibiotics use.

Answer #1.
Thank you very much for your comment. As you pointed out, medical doctors are responsible for the clinical diagnosis and subsequent treatment, which cannot be substituted by non-doctors. That is true. We have described that, as a part of infection control activity, non-medical doctors are engaged in a surveillance work. For them, it is very difficult to distinguish active infection from colonization. Our ABC score will be helpful for them in this point. For better understanding of the purpose of this scoring system, we have added a sentence in the discussion. (Page 5: Line 80-82)

Comment #2.

The second comment also is my major concern. I believe in clinical practice, most patients who need receive sterile site specimen culture usually also have certain clinical signs of infection or inflammation. A patient with positive MRSA culture from sterile specimen therefore should be considered as having active infection before the infection diagnosis can be safely excluded. So I worry about the inappropriate use of this ABC score might lead to delay treatment of patient with MRSA infection. The authors should mention this point in the limitation section.

Answer #2.

We appreciate your constructive comment again. We agree that the point should be emphasized in the discussion to avoid misdiagnosis of the MRSA active infection, possibly leading to a delay in proper treatment. We have added sentences in the limitation part. (Page 17: Line 288-293)

Comment #3.

I would like to suggest the author to do subgroup analysis for the ABC score sensitivity/specificity/PPN/NPC and re-plot the ROC curves and corresponding AUC values, by subgrouping patients with MRSA culture from sterile site and non-sterile site. It gives readers a more clear sense of using the ABC score in different clinical situations.

Answer #3.

Thank you for your constructive comments. Following your opinion, we additionally performed the subgroup analysis by dividing the cases into non-sterile (Group 0-2) and sterile samples
(Group 3) in both derivation and validation studies. The results indicated that the ABC score can be applied in both two subgroups with a high discriminatory power. We added the sentences in the manuscript (Page 13: Line 223-227; Page 14: Line 240-245; Page 15: Line 266-267)

Comment #4.

Finally, in "Background", the authors mentioned the difficulty in the diagnosis of "MRSA infection" and said "Scoring approaches for diagnosing MRSA infection have been invented. For example, multi-centered retrospective cohort studies have led to the development of simple risk scores to identify patients with community-acquired MRSA pneumonia who might benefit from MRSA therapy [13, 14]." The MRSA risk score developed by Shorr et al., however, is to stratify the risk of MRSA as causative pathogen among patients with pneumonia. It is not a score to differentiate colonization or non-colonization of pneumonia patients with positive MRSA culture. It is inappropriate to cite this reference in the background section.

Answer #4.

Thank you for your indication. We have misunderstood the reference. It was excluded from our manuscript. The corresponding part was revised appropriately. (Page 5: Line 71-74)

Thank you for your review.

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Declarations

- Ethics approval and consent to participate
- Consent to publish
- Availability of data and materials
- Competing interests
- Funding
- Authors' Contributions
- Acknowledgements

Response to Editorial office

We have carefully read the journal's Submission Guidelines web page again, and improved the manuscript as it fits to it. Please check the “Declaration” part. (Page 18-19)