Reviewer’s report

Title: Development and validation of a bedside risk score for MRSA among patients hospitalized with complicated skin and skin structure infections

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Reviewer: Robert S Daum

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This manuscript by Zilberberg, et al, uses retrospective patient data to develop a bedside risk score for MRSA infections among hospitalized patients. The score is based largely on the patient being free of risk factors for healthcare associated MRSA. Thus the patient most likely has community-associated MRSA and this is probably the explanation for why it works. However, my concern is that the sensitivity and specificity of the test is too low for clinical use and that the score is an elaborate calculation to show that most MRSA infections these days occur among otherwise healthy citizens in the community. The study also has some methodology problems detailed in the text, some language problems. The important ones are summarized in the comments below.

SOME SPECIFIC COMMENTS

1. In the Introduction, in the first sentence, the authors correctly point out that MRSA rates have been rising in recent years. They also point out that the CDC has suggested that the rise may be abating. Apples and oranges, however. The CDC is commenting on healthcare-associated infections that are clearly abating. Community associated MRSA incidence was on the rise during the study period.

2. The sentence, "Much of the emerging resistance..." in the Introduction, is incorrect with respect to CA MRSA.

3. Please provide a definition of complicated skin and skin structure infections (cSSSI).

4. In the Introduction, second line, second paragraph, were only patients with cellulitis hospitalized?

5. On page 4, re cohort selection, it is stated that admission to the hospital had a primary diagnosis from Table 1. I presume some of the patients were admitted with a primary diagnosis of cSSSI but this is not discernible from Table 1. Were patients excluded or included who had comorbidities?

6. The authors should provide a rationale for extending the score gathering period to the "first 24 hours" of hospitalization. This would seem to negate the value of a simple bedside test that is applicable on admission. If this is incorrect, please explain in the Discussion.

7. On page 7, the term, "non-MRSA," is introduced. This group is very important because they provide the controls for the MRSA group. However, they are not characterized at all. Please indicate what bacteria infected the non-MRSA
patients. In this regard, also please explain what is meant by the term, "medical service," and the term, "comorbidity burden," both of which can be found under "patient characteristics," on page 7.

8. The authors should indicate how they arrived at the scoring system for the age item. It seems peculiar.

9. On page 8, the first line, please explain the randomization scheme that you used.

10. On page 9, the opening paragraph of the Discussion, discusses MRSA as if it were one thing. Since it simply an antibiotic susceptibility pattern of certain Staphylococcus aureus strains, please modify this language.

11. Page 9, second paragraph, the term, "the escalating penetration of resistant organisms into what appeared to be community-acquired infections," is obscure and this language should be modified.

12. Page 11, please give the reader some feeling for how much variation there was among the 60 hospitals that are the subject for this study.

**Level of interest:** An article of insufficient interest to warrant publication in a scientific/medical journal

**Quality of written English:** Acceptable

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