Reviewer’s report

Title: Microbiology Investigation Criteria for Reporting Objectively (MICRO): a framework for the reporting and interpretation of clinical microbiology data

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Reviewer: Matthew Robinson

Reviewer's report:

The manuscript, "Microbiology Investigation Criteria for Reporting Objectively (MICRO): a framework for the reporting and interpretation of clinical microbiology data," introduces a series of criteria to standardize the reporting of AMR data with a focus on LMICs. Systematic and consistent reporting of clinical AMR data is lacking from many LMICs, and there is a lack of guidance for how to better report such data. The authors describe a methodical process by which they created these criteria which included reviewing a subset of a systematic review and consultation with relevant content experts. Although these criteria are thoughtful and useful, there are some important limitations in how they were derived and a lack of clarity as for whom they are intended.

General comments:
It would be helpful to more clearly define the audience for these criteria. It seems that the goal is to provide a framework to report microbiology data from LMICs, but this is not clear from the title or abstract. Additionally, the data used to derive this framework appears to be restricted to studies performed in South and Southeast Asia. Although this region is of critical importance to understanding the global epidemiology of AMR, if the goal is to provide a framework to be used globally, or at least in LMICs, data from other regions would improve confidence in the generalizability of this approach. Additionally, the authors appear to be based exclusively in the UK and Southeast Asia. If this is supposed to be applied more globally, it would be helpful to seek the input of authors outside of these locations.

The global challenge of treating resistant Gram-negative infections seems to be outpacing the challenge of treating resistant Gram-positive infections. This framework I believe places too much emphasis on GP organisms and not enough emphasis on GN organisms.

Background
Table 1 and lines 139 - 141: Of the many inconsistencies in global AMR data reporting, the choice of which beta-lactam drug to classify a Staph aureus isolate as MRSA or not seems to be a minor one. If this is going to be a main emphasis in this article, the authors should provide a reference or justification as to why MRSA rates determined by testing with alternative beta lactams such as cefazolin yield clinically meaningful differences compared to testing with cefoxitin.

Table 1: The authors suggest that it is inappropriate for bacteriology labs to avoid vancomycin
susceptibility testing for MSSA. I do not think that this is correct. When resources are limited or for reasons of diagnostic stewardship, it can be appropriate to only selectively test for and report resistance to 2nd line agents when 1st line agents are susceptible.

Table 1: The definitions for MDR published 6 years ago by Magiorakos are no longer recent. I think that it is worth referencing them, but not in isolation as others since then have reported ways of standardizing MDR definitions across pathogens.

Methods
Lines 118 - 124. Although it is helpful that the database is briefly described, the link provided to PROSPERO describes only the initial search strategy. There is no reference to the data itself. I believe that there have been multiple publications already generated by the systematic review, "Mapping the aetiology of non-malarial febrile illness globally in malaria endemic regions." It would be helpful to the readers to provide a reference to this.
Line 138: I imagine that there were many deviations in AST reporting practices. How did the authors choose the particular deviations on which to focus their criticism?
Lines 129 - 132: Among the GLASS pathogens, why did the authors choose to include Klebsiella, Salmonella, Staph aureus, and Strep pneumoniae and exclude Acinetobacter, E. coli, Neisseria, and Shigella? In many settings, effective treatment for drug-resistant is already used routinely for Strep pneumoniae, while clinicians struggle to find effective regimens for drug resistant E. coli and Acinetobacter.
Line 153-155: This particular criticism of how Klebsiella AST is reported seems to miss the mark on highlighting the most problematic issues regarding GN AST reporting.
Lines 160 - 168 and Table 2: It is unclear to me who was invited for the group discussions that led to the final checklist. Were they all bacteriologist based in Southeast Asia? Were they all affiliated with international research organizations? I think that if these guidelines are to be adopted probably for use in LMICs it would be important to have the input of bacteriologist from a variety of geographic locations and institution types including public health agencies, private hospitals, local medical schools, etc.

Discussion
Lines 195 - 196: What is meant by a "well-functioning clinical microbiology laboratory service?" Do the authors mean that routine microbiology data from a lab with fewer resources should simply not report their data?
Lines 196 - 197: There is a typo in the sentence: "It expected"

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Not applicable
Are the conclusions drawn adequately supported by the data shown?
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Yes

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