Reviewer's report

Title: Antimicrobial susceptibility and genetic characteristics of Neisseria gonorrhoeae isolates from India, Pakistan and Bhutan - 2007-2011

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Reviewer: Jo-Anne Dillon

Reviewer's report:

The paper could be edited and checked for syntax. Further, the sections on mechanisms of resistance in the results are a mix of introductory comments, results and discussion. There is almost no background on mechanisms of resistance in the Introduction.

Data on genetic mechanisms of resistance should be summarized in a Table. The authors state that most of the isolates tested had intermediate susceptibility to an amoxicillin/clavulanate combination. Then (abstract) they state that this antibiotic combination should not be used. The authors should explain why this no-longer recommended combination was tested. Further, some (younger) readers might forget that ß-lactamase acts against amoxicillin and that, with 52% of the isolates producing ß-lactamase, this combination cannot be recommended despite seemingly intermediate MICs. This needs to be discussed more thoroughly. I would not recommend reporting these results as they are misleading.

Many results, for example the very high number of NG-MAST strain types, might be explained because the selection of isolates was random and occurred over several years from several countries. Given that scenario, it is not surprising that so many NG-MAST types were observed and there is a great deal of literature (uncited) to support such an observation. Furthermore, data on the STs are not provided, even though the abstract claims that 43 STs were never before reported.

The authors also conducted full porB sequencing analysis. That is also a valid typing method. Were the results compared to the NG-MAST results?

The collection, identification and testing and storage of strains need to be described. Where and how were strains collected? Where were the isolates initially cultured, identified and stored. Was all testing done at the same site, or were strains or DNA shipped to various sites? What was the basis of isolate collection – all isolates collected in one year at a given hospital? Other? Such information might elucidate some of the data obtained (such as NG-MAST).

Other comments by section:

Introduction:
Line 71. The statement on dual antimicrobial therapy should be explained. Is dual
therapy being used in the countries covered in this study? What is the recommended therapy in these countries? Such an explanation would make the discussion more relevant.

Line 91. What methods are outdated? A reference is needed for that statement.

Line 101-102. Methods of interpretation of ribotyping, Opa-typing and other methods which require discrimination of bands are described as being “relatively subjective”. Do the authors mean that these methods cannot be compare results between laboratories because there is no standardized interpretive data base? The sentence reads as if the method itself is subjective. The method(s) is/are very reproducible within laboratories.

Line 103. “selected” genetics…. determinants. What was the basis of this selection?

Materials and methods:
The medium used for MIC testing should be stated.

Results:
Table 1 should include results for #-lactamse testing.
A Table should be developed describing the various mechanisms of resistance.

Statements such as this –Line 184, “penB alterations causing a decreased efflux....” are unreferenced and un-described. Another such statement occurs in line 165 – “which explains the high level of intermediate susceptibility”. There is no reference or explanation subsequently.

The discussion is very general and should compare and contrast more relevant publications on mechanisms of resistance.

Corrections in syntax:
The paragraph starting on line 77 should be split into several, referenced sentences.
The sentence starting on Line96 (In south Asia) should be split.
There are other grammatical errors throughout –the addition of the, a etc. The text should be carefully reviewed.

ompulsory Revisions:

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I have interacted on a professional level with several authors of this paper, including Bala and Unemo. I recently published with Unemo. This does not impede my review of the manuscript. I have no other competing interests,