Reviewer’s report

Title: Evaluation of the impact of shigellosis exclusion policies in childcare settings upon detection of a shigellosis outbreak

Version: 0 Date: 30 May 2018

Reviewer: Katherine Lamba

Reviewer's report:

Title: Evaluation of the impact of shigellosis exclusion policies in childcare settings

General Comments:

Thank you for the opportunity to review "Evaluation of the impact of shigellosis exclusion policies in childcare settings" by Dr. Carias and colleagues. The aim of the study was to compare shigellosis exclusion policies in childcare outbreak settings and their impact on risk of shigellosis transmission and childcare-days lost. This study and its findings have important public health implications, and the accompanying spreadsheet tool may be valuable for guiding public health professionals' decisions when implementing outbreak control measures. One strength of the study was that the authors evaluated the impact of exclusion policies based on PCR testing; this is particularly important given the increasing use of culture-independent diagnostic tests (CIDT) for Shigella detection. Furthermore, the inclusion of the four treatment options and their effects on the exclusion policies evaluated was an important component of the study.

Overall, I think there are some points and definitions that need to be clarified in order to guide readers through the methods and findings of the study in a more logical progression. They are listed as follows: 1) It is not immediately clear to the reader that the exclusion policies were evaluated in the setting of an outbreak, as opposed to exclusion policies for sporadic cases returning to childcare settings. This needs to be clarified from the outset. 2) As a reader, there are some missing links between the results and conclusions stated in the abstract, the results section, and the data provided in the figures and appendices. The data shown in the figures and appendices should be fleshed out a bit more in the text of the results to support your statements in the abstract and make clear to the reader how these conclusions were reached. Additional detailed feedback is provided below.
Specific Comments:

Abstract

Again, it should be made clearer that these policies were evaluated in a childcare outbreak setting (vs. exclusion policies for sporadic cases). This should be addressed in the abstract, background (last paragraph, line 80), and possibly in the title of the manuscript.

See General Comments: statements in the results and conclusions sections of the abstract should be more clearly supported by your results.

Lines 51-52: the phrase "policies' impact evidence is little" does not read clearly. I would suggest rewording this.

Background

Line 69: would list incubation period as approximately 1-3 days

Make clear what is meant by "childcare"

Methods

Line 93: use "data were" instead of "data was"

For the four treatment options, "effective" and "ineffective" treatment should be defined. Additional details were provided in Table 1, panel II, but you may want to define this up front in methods.

Treatment scenarios A-C are based on the assumption that the child seeks medical care on Day 2 of illness. Was this assumption based on published data or expert opinion? Consider sensitivity analyses to account for variations in this assumption (up to Day 4 would be reasonable). You may also want to include this as a parameter in your spreadsheet tool.

For the calculation of childcare-days lost, were only weekdays included, or all days of the week? This should be clarified and taken into account in calculations.
For the exclusion policies involving two negative tests (both culture and PCR), the assumption is made that the second test is not done until the results of the first test are available (per details provided in Figure 1 panel b and Table A2). I would consider the scenario where two stool specimens are collected sequentially (at least 24 hours apart), prior to waiting for results of the first test.

In Appendix B, Calculations 1, calculations for the maximum number of additional cases are provided- include this in the methods.

Results

As previously stated, I think this section can be fleshed out a bit more. The links between the results and the abstract, and the results and the figures/appendices are not immediately clear to the reader, particularly since Figure 2 is difficult to read. For example, the data stated in the abstract are buried in Appendix B and should be more explicitly addressed in the results.

Consider including more details regarding the results from Appendix C, to support your conclusion on lines 126-127: "Results show that the cost comparison (in childcare-days lost) hinges on treatment effectiveness". Explicitly state what that means, and how those conclusions were drawn based on data provided in figures C1 and C2.

Discussion

Line 138-139: ineffective treatment defined here, but should be defined up front

In the limitations you state that the "findings reflect scenarios with known shigellosis, such as during a shigellosis outbreak…” (Lines 151-152). What implications might these analyses have for known sporadic cases of shigellosis in non-outbreak settings?

Tables

Table 2: The footnote "¶ Assumption based on the information provided…” is missing the corresponding symbol in the table
Figures

Figure 1: This is a nice visual, but does not provide much additional information that is not already provided in Table 1.

Figure 2: This figure is a very important part of the results, but unfortunately the layout and overlapping text make it difficult to read. I assume this is due to the way the graph is generated in Excel. You may want to consider also including a table that shows the key results and takeaway from this figure and the Calculations in Appendix B. I think that will make more clear to the reader how you reached the conclusions stated in the abstract and results section.

It's not immediately clear to the reader that there are data points missing because they are overlapping. Add a footnote to clarify this.

Figure 2 notes: policy is listed as "seven days after the end of antimicrobial treatment" - error

Supplementary Material

The use of "total childcare days excluded"- in some figures (in the appendices as well as the text of manuscript), this appears to refer to the number of days per child, whereas in others the "total childcare days lost" refer to total numbers in aggregate. This needs to be clarified in the methods (Line 105-106) and used consistently

Appendix A

Table A1 and A2: wording of the third exclusion policy, "1 laboratory analysis of convalescent stool samples yields no Shigella", is unclear. This is intended to mean stool culture?

Appendix B

Overall, I think this is a good tool that can be valuable for decision making by public health professionals in outbreak settings. However, you may want to consider ways that the information
can be presented in a more digestible and user-friendly format for your intended audience. As a public health professional, what and where are my main take home points from using this tool?

Again, the layout of the figure in "Fig1_MS returnpat" makes it difficult to read. Hovering over the data points does help some but not completely.

There are several typos throughout this appendix where exclusion policy is written as "7 days after end of antimicrobial treatment" instead of "beginning"

Home worksheet:

- Row 18: use "symptom onset" instead of "symptom identification" for consistency with wording in manuscript

- The listing of the worksheets (Rows 35-43) do not actually correspond with the worksheets that are there. For example, there is no "Sources" worksheet

Inputs - Policies worksheet:

- Row 8: use "symptom onset" instead of "symptom identification" for consistency with wording in manuscript

Inputs - Treatment worksheet:

- Row 6: It is not clear what is meant by "day 1/2 of illness"
- Row 8: It is not clear what is meant by "day 1/4 of illness"

Fig1_MS returnpat worksheet:

- Use a more descriptive title. "per patient type" is confusing, since the term "treatment type" is used in the text of the manuscript

- The same comments for Figure 2 apply here

FigB1_MS returnpat worksheet: the term "per patient mix" is inconsistent with the use of the term "treatment mix" in the text of the manuscript

Fig2_MS Days lost worksheet:
Use a more descriptive title

Same comment re: use of the term "patient mix" vs. "treatment mix"

Calculations 2 worksheet: provide some supplementary explanation of these data tables, since this is not addressed in the methods

Appendix C

Line 9: Table B1 is referenced- there is no table B1 (C1?)

Footnotes for Figures C1 and C2 have some errors:

- "five policies" (Lines 23 and 48) are referenced but figure title refers to 7. Make sure wording is consistent throughout

- "seven days after end of antimicrobial treatment" (Lines 25 and 50) should say beginning

- Table S2 is referenced (Lines 29 and 55)- there is no table S2

Figure C2 title: "and treatment mixes as in Table B1..."- there is no table B1 (C1?)

Figure C2, Panels a, b, and c: suggest reordering the first four rows to be consistent with the other tables in the manuscript (culture first, then PCR)

Line 58 (Figure C2 notes): "Panel A is shown in the main text"- it does not appear in the main text

**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.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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Please indicate the quality of language in the manuscript:

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