Reviewer's report

Title: Economic burden of cholera in the WHO African Region

Version: 1 Date: 14 August 2008

Reviewer: Richard Rheingans

Reviewer's report:

Comments below are labeled as discretionary, minor, or compulsory as requested. From my perspective most are compulsory in the sense that the authors should address the issue or explain why they do not wish to.

Specific comments:

Figure 1 – I don’t find this figure to be useful. It repeats what is described already in the text and its structure does not add any new information or understanding. (compulsory)

P 4. The authors seem to assume that treatment guidelines reflect actual practice. It would be good to have more understanding of what fraction of cases receive this treatment and the implications of them not receiving it. (compulsory)

Figure 2 – this does not add much analytical value. The only information is fraction of cases that are mild/moderate, severe and fatal. This could be summarized easily in text or added to a table. (compulsory)

P 4. For the transportation expense, is there an empirical basis for the assumptions about the number of visits or the cost of each visit? (compulsory)

P 4. For productivity losses, clarify here whether costs are discounted. Based on best practices, they should be. The assumption of the value of income lost each year always problematic. The a priori assumption that those who suffer cholera mortality would have future earnings equal to the regional average is likely not realistic. Poorer households are much more likely to be affected, as are those in poorer countries. This assumption also does not account for the fact high unemployment is likely to make the marginal productivity of labor much less than the average. While it is difficult to find a perfect estimate of income lost, the implications should be described. (compulsory)

P 6. The presentation of formulas and data inputs is a bit confusing. The formulas add transparency, but could be summarized easily without the formula. The actual data inputs could be better presented in a separate table. This would allow the reader to review the assumptions and the source of the data more clearly. (discretionary)

P 6-9. My understanding is that WHO costs are by regional and mortality strata. How was a single estimate developed? Does it account for the likely higher proportion in lower income countries with lower costs? (discretionary)
P 8-9. Please explain where assumptions like the number of outpatient visits comes from. If these are author assumptions, it should be clearly stated. (discretionary)

P 9. Do all cholera cases receive a diagnostic test. One hospitals charge for the test may not be a very representative value of the opportunity cost throughout the region – especially if it comes from a setting with relatively low cholera rates or high income. (compulsory)

P 9. The cost of visits seems quite high. Not all will incur any cost for transport. The reference is for one country and for a very different category of treatment (mental health) and these costs may not be comparable if the types of individuals seeking care for mental health disorders and cholera are different (quite possible). (compulsory)

P 10. See comments above regarding the value of each life year lost. In addition, all future costs should be discounted, according to best practices.

P 10. It is unclear to me, but the description on productivity losses due to non-fatal illness appears to value work loss for children under 5. This seems unrealistic. (compulsory)

P 12. The description of caregiver costs assumes that the caregiver was employed and all lost time from work. The existing literature on the economic burden of diarrheal disease does not support this. Typically less than half of caregivers might lose time from work. It is true that there is a value for time missed for leisure or household chores, but if that is what is being valued, than national income levels may not provide accurate estimates of the cost. (discretionary)

P 13. The results are very limited. It may be worth highlighting costs by age or severity level. (discretionary)

P 13. The claim that this is an underestimate is problematic. Some factors, such as the number of cases and tourism losses, are underestimated or not included. However other factors like productivity losses and treatment costs may well be overestimates. (compulsory)

P 13. Regarding user-fees. WHO estimates include the full cost of providing services, regardless of who pays. As a result they would include the portion covered by user fees. So these are in fact included, however their burden on the household isn’t (as the authors point out). (compulsory)

Table 3. These appear to be cost per patient, not cost per capita. The latter would use the entire population as the denominator. (discretionary)

Other. I don’t find the base year for the analysis stated. Please make sure that the year is specified. (sorry if it is there but I missed it). (compulsory)

Response to specific questions:
1. Is the question posed by the authors well defined?
Yes. It is clearly stated.

2. Are the methods appropriate and well described?
In general, the methods follow standard practice in this field. Some exceptions include the lack of discounting. There are several places where there are debates over the proper method, such as valuation of premature mortality. The authors approach is generally acceptable, but it isn’t fully addressed in the discussion. On this point the discussion focuses on how this may be an underestimate, but it could easily result in an overestimate for different reasons.

3. Are the data sound?
For studies of this type, it is very difficult to have sound, complete data for all variables. The use of WHO cost data is appropriate, but it is unclear whether the point estimates for hotel costs are for the entire region or if they are weighted by the relative incidence of cholera in different areas. A variables table that lists the input variables and each source clearly would help the reader understand what is based on data and what is based on assumptions.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
Yes, except where noted elsewhere.

5. Are the discussion and conclusions well balanced and adequately supported by the data?
Yes, except for #6 below.

6. Are limitations of the work clearly stated?
The limitations tend to focus on where this may be an underestimate, but neglect where the assumptions could lead to an overestimate. Given that mortality accounts for the vast majority of the burden, more attention should be paid to how these assumptions affect the confidence in the result.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
Yes. There isn’t much to build on though.

8. Do the title and abstract accurately convey what has been found?
Yes.

9. Is the writing acceptable?
Yes. I find the formulas to be overused and the presentation of data assumptions in the text to be hard to follow and evaluate. Data assumptions should be pulled out so that their source (or assumption) can be clearly identified.
What next?

Based on your assessment of the validity of the manuscript, what do you advise should be the next step?

- Accept after minor essential revisions (which the authors can be trusted to make)
- Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest

BMC International Health and Human Rights has a policy of publishing all scientifically sound research whatever its level of interest. However, if you choose one of the first three categories below, we may ask the authors if they would like the manuscript considered instead for the more selective journal BMC Medicine.

- An article of importance in its field

Quality of written English

- Acceptable

Statistical review

- No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests

'I declare that I have no competing interests'

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

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I declare that I have no competing interests