Reviewer’s report

Title: Illness and Economic Costs Associated with Recreational Waterborne Illness on United States Surface Waters

Version: 0 Date: 05 Sep 2017

Reviewer: Alessandro Cassini

Reviewer's report:

The authors provide an extensive overview of the health and economic burden due to recreational water activities in the USA. The manuscript is very well written and flows in a logical and comprehensive way.

General comments:

* It is unfortunate that the underlying data refers to a large time span, with the main economic burden referring to 2007. Was it not possible to provide more up-to-date results?

* Why was the estimation of the cost of severe illness restricted to GI illnesses only?

* Supplementary material, tables with parameters (e.g. Table S4 and S5). Did the authors make sure that the sum of mild/moderate/severe illness equals and does not exceed the total number of infected? How did they ensure this?

* Supplementary material, tables with attributable fractions by illness: did the model foresee the possible state of co-morbidity (e.g. eye&ear infection)? If yes, how was it dealt with? If not, how did the authors ensure that the AF did not exceed 1?

* How is it possible that the total cost per severe case (0.30 million USD, Table S12) is less than the mild and moderate costs per case?

* Methods, lines 98-105. If I understood correctly, the authors have applied a multiplication factor (MF) of 25.5 to the number of notified severe GI case, in order to account for under-estimation of cases. This MF was based on a study aiming at evaluating the under-estimation of all cases (mild to severe) during an outbreak, not only the severe ones. If this is the case, it seems that this is an important assumption, with the potential to grossly over-estimate the health and economic burden. Moreover, intuitively the MF (25.5) seems high for cases that visit the hospital and that should be captured by the surveillance system. If indeed the authors think that this high MF is justified, this should be better explained.

* Methods, lines 111-112. To which GIs is this statement referred to? Why doubling, what is the rationale? How is doubling justified?
* Methods, line 120. Sequelae are mentioned here, but no information is available as to the relative risk of developing these. Sequelae can be an extremely costly short and long-term consequence, so this should be better described, at least in the Supplementary material.

* Table 3: the concept of moderate severity is new and not explained in the text.

* The total number of severe cases and total number of deaths are missing from the text/table of the main manuscript - readers will surely be interested in having this presented.

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