Reviewer's report

Title: Hydroclimatological variability and dengue transmission in Dhaka, Bangladesh: a time-series study

Version: 3 Date: 5 December 2011

Reviewer: Fernando Garelli

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Major Compulsory Revisions

The manuscript entitled “Hydroclimatological variability and dengue transmission in Dhaka, Bangladesh: a time-series study” aims to estimate the effect of river level and rainfall on the incidence of dengue in Dhaka while controlling for other seasonal determinants. This is pursued by statistical modeling of hospital data using mainly river level and meteorological data as explanatory variables. The authors report an association with river levels at 0-19 week lags and a causal link between river level and dengue cases is suggested.

In order to provide the reader the chance to understand the results better, a table reporting parameter estimates of the final model should be included (if too long, as supplementary information). Also, 19 week lags are included in the model, it is hard to interpret the relation with dengue cases of something occurring 5 months in the past, therefore an interpretation of this result should be better discussed.

The causal relationship suggested between flooding and dengue transmission is at the same time the manuscript’s most interesting and original feature and its biggest weakness. The originality of the findings provide interest to the manuscript but, in my opinion, also require more than a single statistical model (a tool only capable of showing associations) to support the causal process suggested, especially in the case of a variable like river level which can clearly be correlated to other climatic variables. Even though the authors recognize that only an association is found, I still believe that more evidence suggesting causality is needed.

Furthermore, Table S1 seems to show high model selection uncertainty (#AIC values <1) between models including river level and/or rainfall. Therefore, there does not seem to be enough weigh of evidence to select between the three models.

In order to add more support to the results and conclusions, perhaps not an exhaustive survey, but some entomological evidence would help. Another possibility would be to compare more thoroughly different candidate models including different variables reflecting different competing hypothesis using model selection techniques. Of course, it should be noted that perhaps other ways to better support the proposed mechanism can be found.
Overall, it is an interesting manuscript but it needs more evidence to support its main findings.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**
I declare that I have no competing interests