Reviewer's report

Title: Malaria hospitalization between 1999 and 2008 across Kenya

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Reviewer: Peter Byass

Reviewer's report:

I was very interested to read this exceptionally fascinating, but complex, paper. I am not aware of any other work that takes a national (Kenya) long term (10 year) view of paediatric malaria while also taking into account background factors such as catchment populations of health facilities, meteorological data, etc.

I think it is realistic to suppose that the majority of readers will see this as a "black box" approach, from which interesting findings emerge. In my opinion, you have achieved a generally good balance in your Methods section between describing your approach, but not going into so much technical detail as to make it incomprehensible. Nevertheless there is still some degree of jargon with which the majority of readers might be unfamiliar - for example "convex hull polygon", "discontinuous EA polygons were smoothed", "spatial-temporal Bayesian generalised linear geo-statistical model", "longer-term trend signals", and so on. I think it would be worthwhile trying to re-review your text from an outsider's perspective and insert a few further clarifications for the less-specialist reader.

The reference to "Noor et al. submitted" is also obviously crucial to the methods used this paper - hopefully that can be available by the time this paper is published.

In the manuscript copy that I have, Figure 2 extends over several pages but even so is too small to read properly! I am not sure how that can be resolved, or how a journal might handle that in a published version, but it needs some further thought.

Which journal?: Appropriate or potentially appropriate for BMC Medicine: an article of outstanding merit and interest in its field

What next?: Accept for publication in BMC Medicine after minor essential revisions

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

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