Reviewer’s report

Title: Definition and characterization of localized meningitis epidemics in Burkina Faso: a longitudinal retrospective study

Version: 2 Date: 31 October 2011

Reviewer: Lydiane Agier

Reviewer’s report:

Minor issues not for publication
- Methods: (paragraph 3) Give the percentage in numbers, not in letters
- Method: Maybe you could define here Health Center (HC) and localised epidemics (LE) so there are not so many acronyms to define in the Tables and Figures.
- Discussion: (paragraph 5) There is a '(5)' which I do not understand what it refers to? (should be '[5]'?)
- Table 1: (legend) ‘within in a given year’: remove ‘in’
- Figure 1: (legend) Boxplots are only for the HC level. You could simplify (and clarify) the legend.

Discretionary Revisions
- Abstract: results: I would rather insist on the time gained and on the difference in annual incidence in LE/non-LE
- Results: (paragraph 8) You should give results for epidemics declared at district level vs localised epidemics for LE75, not only for RT@HC. It would better explain why you decide to investigate RT@HC more deeply.
- Results: (paragraph 8) The last 2 sentences are a bit redundant; it could be ’34 with consecutive epidemic declaration in the districts (among which 20 were identified at least one week in advance).
- Discussion: (paragraph 2) When defining LE75 as the retained epidemic definition, you should give the main results of sensitivity, specificity, and positive predictive values again.
- Discussion: (paragraph 8) It would be interesting to know which epidemic definition is used in Mali and Togo where the reactive vaccine campaigns are based on the health centre level incidence data.
- Figure 4: It is not the most elegant way to present the results. Rather have a single line around adjacent LE for the given year, or a circle around each LE.

Minor Essential Revisions
- Abstract: The English level is fine in the article, except in the abstract. You should correct it.
- Abstract, Results: you must give the Positive predictive value along with the
sensitivity and specificity if you are tackling a public health problem.
- Method: You should define district-year and health center-year, and explain how you compute the length of the localised epidemic? Is it minimally 2 weeks for the 2 weeks used to test the epidemic definition on, or can it be only 1 week?
- Method: (paragraph 4) You cannot affirm 'the threshold with the best diagnostic performance was chosen', as it is a trade-off between sensitivity and specificity
- Results: (paragraph 2) Make clear what the P-value refers to in (Figure2, P<0.001). This was not explained in the method section, unless it refers to a Poisson model, in which case I do not understand how you test this.
- Results: (paragraph 8) 95 localised epidemics detected: but 40+20+34=94!!
- Results: (paragraph 8) what is the PPV of 63% relating to? Are you counting district*year or health center*year?
- Discussion: (paragraph 1) ‘Precisely to a few calendar weeks’ This is already the case for epidemic definition at district level
- Discussion: (paragraph 1) the analysis is also and mostly based on data collected at the health center level
- Discussion: (paragraph 10) You do not ‘avoid a bias’, but you can overcome it.
- Discussion: You should insist more on the positive predictive value, which is rather low when considering RT@HC epidemic definition (17%) instead of LE75 (50%), and what it means in terms of public health perspectives (false alarms).

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

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