Reviewer's report

Title: School-based syndromic surveillance for detecting malaria epidemics: experiences from Ethiopia

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Reviewer: Olivier Maillard

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This article presents results of a prospective study of a school based syndromic surveillance focused on absenteeism indicators for detecting malaria epidemics in the community. Unfortunately, no malaria epidemics occurred during the study and results were thus inconsistent.

I am quiet upset about this study particularly its methods. As illness is not the major factor for school absenteeism, it is actually difficult to make the assumption that school attendance could be an indicator of malaria burden at community level especially in a low transmission place. There is also a lack of sensitivity and specificity as malaria may not represent all the diseases even with fever. Only 50% of children who reported fever as a reason for absence from school attended a health facility. Moreover, the study location is not exactly well defined in the SNNPR region (altitude, malaria epidemiological profile, school and health facility density compared to the whole country)

Some limitations need to be mentioned as the little number of school and pupils included without presentation of the sample size calculation, the feasibility of reporting accurate school attendance indicators by schools, local thresholds …

In Oromia study, more than 20000 pupils from 197 schools have been included. The range age was also larger from 5 to 18 yo !

Major Compulsory Revisions

Authors have first to shorten their article, particularly the method section (as it is said school surveys followed a standard methodology previously described and cited in references) and the discussion. A sample size calculation should be presented, as for the threshold chosen depending on each school attendance history

I wonder if the article title is really accurate for 2 reasons : first no significant results are reported for detecting malaria epidemics but for non-enrolment, second assumptions made and methods used are not clear. As Phase 1 did not show any relevant findings that neither school attendance, nor absenteeism and febrile illness could be good indicators for malaria epidemics in the community, it is unclear how Phase 2 has been conducted. A school based “syndromic” surveillance to be accurate does not require diagnosis. Moreover absenteeism is not actually a health indicator and the authors would rather talk about school based surveillance. Then, as presented in Table 1, targeted diseases are usually
communicable diseases such as influenza (a seasonal surveillance can thus be settled), outbreaks generally speaking (high attack rate compared to other age group and likely to spread disease to relatives), emerging infectious diseases .... Therefore malaria is not so a good example of disease especially when illness is not the first reason of absenteeism. Furthermore, as enrolment is stately irregular and insufficient, a school based surveillance system for monitoring community health and epidemics is not a good system particularly when non-enrolment is a confounding factor for the targeted disease.

In fact, these findings could have been provided by simple observations or after Phase 1. Concerning the other results based on school-based syndromic surveillance, they already have been published in this setting and lack of school enrolment make difficult an assumption of the results at community level.

As a conclusion, this study assesses results already made and published in this setting. Many limitations could have been predicted with simple investigation.

I suggest to axe the paper on school based surveillance and the limitations of enrolment in the local context. It was attempted to study/validate this system during malaria season but some other limitations occurred.

Minor Essential Revisions

P4L7 : only one reference (reference 14 from 1994 in Kenya) is used to assess the rational that school absenteeism is a recognised consequence of malaria epidemics in the highlands of East Africa

P4L13 : delays in data reporting, incomplete or inaccurate data also exist in a school based system

P4L17 : please provide a date of access for reference 23

P4L18 : reference 24 article is based on the comparison of RDT prevalence in school and community population, not on school surrogate and syndromic indicators for predicting malaria burden in the community.

P5L6 : why using a box 1 in the introduction section ?

P8L5 : Duration of Phase 2 is unclear. Till January 2013 in the text or till the end of the transmission season (December 2012 on Figure 1)

P9L2 : how was chosen a convenience sample of schools ? why 5 schools from cluster A and 2 schools from cluster B ?

P10L2 : the authors could have applied an Hosmer and Lemeshow test to check the fitness of the final model.

P10L8 : did the risk the same along the study period and over the SNNPRS region for calculating mean absenteeism ?

P10L22 : written consent were compulsory to include children in school surveys but only from the head to include the whole household members even if a verbal assent was sought for them ??

P11L1 : treatment by primaquine with checking of G6PD deficiency was not available in the country ?
Is it the mean prevalence or median one as the range is mentioned?

What kind of symptoms could be checked at school level by the teachers?

Oromia study seems not so different and methodology was the same as authors said.

Obviously, children that are not enrolled at school are more likely to have malaria during farming activities so this part of the population (only 54% are reported to be enrolled) may be more representative of the malaria burden.

The goal of school based surveillance is to provide a sooner alert and response system than hospital/dispensary surveillance. If absence are reported once a week and of unknown origin, it is a serious limitation.

In the method section?

This could be of interest if dropout is more likely to be due to illness/malaria!

This kind of system would involve trained health extension worker without subjectivity to what is a normal absenteeism or not and data collection would be needed.

That is really the key limitation of this study.

Some words are missing.

Table 2: School-aged children

Level of interest: An article of limited interest

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.