Reviewer's report

Title: Validating physician review and probabilistic modelling (InterVA) approaches to verbal autopsy interpretation using hospital causes of death

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Reviewer: Chalapati Rao

Reviewer's report:

This manuscript describes research undertaken to measure the validity of cause specific mortality as derived from different approaches to ascertaining causes of death from verbal autopsy.

1. The authors do not explain why there were such high losses to follow up; i.e only 145 out of 438 potential cases were included in the study. This could have seriously implications for the generalisability of the study findings.

2. The sample size and limited categories of causes of death are not sufficient to support the conclusions regarding utility of the InterVA method. There is no information on several important causes of adult deaths; such as site specific cancers, Chronic obstructive pulmonary disease, major subdivisions of cardiovascular disease - e.g. ischaemic heart disease/ stroke;or other conditions such as liver cirrhosis; renal failure; or pneumonia.

2. Also, the methods used do not produce directly comparable data; since the HCOD and physician review yield underlying causes of death (presumably based on the ICD principles, although not stated as such in the article); while the InterVA yields only the likelihood of one or more causes based on probability, without taking into consideration any causal relationship (or absence thereof) between the multiple causes of death.

3. The inferences derived from the apparent similarity in cause-specific fractions observed from the different methods are misleading. These similarities seem fortuitous; when you take the misclassification patterns into account. Additional files 3 and 4 indicate that physician review demonstrates higher validity and markedly less misclassification than InterVA, at the individual level.

4. The kappa scores also suggest much higher accuracy for the physician review (0.52) as compared to the InterVA (0.32).

5. In Table 2, the physician review also demonstrate higher sensitivities within narrow 95% CI; as compared to the InterVA model.

6. The manuscript does not give compelling evidence on the 'high' costs for physician review ; to justify that speed and costs are sufficient reasons to accept a compromise on accuracy in cause- attribution at the individual level; and thereby adopt the InterVA method and reject physician review.

7. A study with a larger sample, and which yields directly comparable data would be required to provide robust evidence to support the InterVA method.
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.