Reviewer’s report

Title: Lessons from an active surveillance pilot to assess the Pneumonia of Unknown Etiology Surveillance System in China, 2016: the need to increase clinician participation in the detection and reporting of emerging respiratory infectious diseases

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Reviewer: Niranjan Bhat

Reviewer's report:

Overall Comments

Public health significance: This manuscript reports on an important issue regarding the quality of surveillance for emerging infectious diseases in China. This is particularly important, as the area has been at the epicenter of several emerging infectious diseases, such as various avian influenza subtypes and SARS. Having said that, this report examines a relatively small part of the system. The authors raise some provocative points and the study has the potential to raise some larger questions about the approach of the national authorities in developing the particular case definition, the feasibility or practicality of the system if complete reporting was done, and the methods in which the surveillance was established and maintained. However, the authors do not follow through with recommendations that address all of the issues that they raise.

Specifically, one of the objectives states for the study was to identify ways to improve the system's detection. However, while the authors propose modifications to improve participation and awareness of the system, which would increase its sensitivity, they do not address the problem identified of potentially overwhelming the system with false positive cases, in other words to improve specificity.

Originality: Surveillance system evaluations are necessary, but not unique, and the investigators do not use any innovative techniques to assess the performance of the system, although this may not be necessary.

Reader interest: This topic is of relevance to mainly PH practitioners in terms of sharing the realities and practicalities of implementing national surveillance at a grassroots level. The interest of this report is potentially undercut by the absolute lack of functionality of the system; it might be more interesting if it were at least somewhat operational, thus providing the opportunity for a more nuanced look at the strengths and weaknesses of such a system; the lack of detection of any emerging disease cases also reduces the interest level. Perhaps a repeat evaluation after an intervention, or during the course of an outbreak would provide some valuable comparative data.

Specific comments

Background

The background section is generally concise and informative.
Methods

Would be better to change the order of the paragraphs, grouping together the description of the surveillance system ("PUE reporting description", PUE case definition) and description of the evaluation study ("Evaluation sites", description of evaluation study enrollment, etc.)

In the screening list of ARI diagnoses, can we assume that the term (in English) "bronchiolitis", which is the most common reason for hospitalization in infants, is covered by the diagnoses numbered 41-43?
In terms of the data analysis, how were the reported 95% confidence intervals calculated?

Results

It would be helpful to provide more characteristics of the hospitals that were ultimately chosen. For instance, later in the manuscript we learn that the Fuyang hospital is an infectious disease hospital, and has experience with avian flu cases, while Lu'an hospital is more general and has no experience.

For Table 1, places the column regarding total ARI admissions first (in other words to the left), then the column showing the percentage of those that met the PUE case definition would potentially flow more logically. The column describing those that did not meet the case definition is not necessary, as one can easily calculate from the yes column. It may be helpful to somehow show what percentage of overall PUE cases come from each department.

In terms of laboratory results, nasopharyngeal swabs may be more sensitive in detecting the relevant pathogens compared to throat swabs, but this varies by pathogen. In the future, it may be more useful to obtain from both sites; they can be placed in the same container.

Regarding the recording of relevant exposures, it may be useful to describe any forms used by clinicians, particularly the use of a checklist, as mentioned later in the manuscript. What are all the items that are required in the medical history? Occupation is mentioned, and apparently contact with hepatitis B, tuberculosis, and schistosomiasis are as well.

In Table 3, are items with zero positive responses included in the table because they were asked? It would be helpful to indicate this.

In describing the one PUE case that was reported up to the local CDC, the authors do not investigate why the case was not reported to the national system. More could be said here, or in the discussion section, regarding why cases are or are not reported to the various entities.

Discussion

In the first paragraph, the authors summarize key points and express valid criticism of the feasibility of the existing PUE system, as it would likely be overwhelmed if all eligible cases were reported. However, the rest of the section discusses the issue of under-reporting and how
rates can be improved. More could be said about ways to refine the PUE case definition to be more specific, or other modifications to the surveillance system that would make it more targeted and manageable. The conclusions and recommendations paragraph reflect this same imbalance, stating the problem of potentially overwhelming the system, but only providing recommendations on how to increase reporting.

The authors place significant importance on the national training on PUE surveillance conducted in 2008. They reasonably suggest that better initial training as clinicians enter the workforce and refresher courses may be helpful. They also suggest adding more items to the "standard infectious disease history checklist", as they would become required elements. Other means to improve reporting that could occur on a continuous basis should be considered, such as structural modifications, including posting notices in clinical areas, incorporating public health issues into hospital policies, or assigning personnel to screen admission diagnoses, could be proposed.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
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Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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