Reviewer's report

Title: A typhoid fever outbreak in a slum area of South Dumdum, West Bengal, India, 2007: Evidence for foodborne and waterborne transmission

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Reviewer: Katharina Alpers

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This is an interesting and generally well written and clear article on a problem which is relevant for public health in many developing countries. However, some issues need to be clarified:

Major Compulsory Revisions
1. Abstract: Needs to be consistent with main text (beginning of outbreak, case definition)
2. Background: explain reporting system: who reports what to whom? And how (paper, telephone?)?
3. How many wards does South Dumdum municipality consist of? How many inhabitants does ward 1 have?
4. Define “area of the outbreak” or “affected area” – use this term consistently
5. Diagnosis of typhoid fever

Methods
6. Case definition: how did you define fever? Where only cases who visited health care facilities included? Did you include the primary case (the food-handler at the sweet shop)?
7. How did you collect the information on the case-patients and from where (patient records?)?
8. If you only included cases from ward 1 why did you not use ward 1 population denominators for the calculation of attack rates?
9. How do you define “outliers”
10. Hypothesis generating interviews: how was the random sample to be interviewed chosen? How many did you interview? What did you ask them? Where the case-patients included in those interviews excluded from the case-control study?
11. Laboratory investigations: how and why did you randomize?
12. When did you take the samples (While the patients were still ill or after they had recovered)?
13. Case control study: when was the study conducted? What was the case-definition for the study: did you include all cases from the descriptive study
with a positive Widal test (i.e. with onset January-May 2007)? How did you select the controls among the neighbours precisely? Did you not match on age (the cases had a higher attack rate in age-group 5-14)?

14. Environmental: if your hypothesis generating interviews only pointed to the sweet shop why did you also investigate the water supply?

15. On whom did you pretest the questionnaire? Unclear: why did you translate it back into English?

Results:

16. Link your text to the tables and figures

17. Results: When did the outbreak start (28 Jan or 13 Feb)?

18. Clarify numbers: how many cases were identified in total? How many included in the descriptive study? How many included in hypothesis generating interviews? How many sampled for lab investigation? How many cases of the descriptive study remained without lab investigation? (If all cases of the descriptive study had laboratory investigations and the total number was 103, why do you mention the random sampling and the exclusion of patients who had received antibiotics in the lab methods section)

19. Did you consider analysing the matched pairs of the two waves of the “Epidemic curve” separately? Probably this would allow you to find much stronger associations!

20. The sentence “Patients who reported consumption of food from the sweet shop had an earlier date of onset than others (Figure 1).” belongs to the descriptive part

21. Mention that no specific food items were associated with illness in the sweet shop

22. How many “poor people residing in this area” consumed milk-based sweets, ice creams and yogurt?

23. Did the controls differ in age? Which “other characteristics” did you investigate?

24. Be consistent between text and tables: Did cases consume food or milk products from the sweet shop (MOR 6.2)

25. Does it make sense to calculate PAF in an outbreak setting? How do you interpret these results (in discussion)?

26. Lab: Why were only 4 blood cultures performed?

27. Environmental: The description is somewhat confusing: it would be helpful to link it to figure 2. Which water specimens were positive for coliforms? Which taps were contaminated?

Discussion

28. Try to shorten

29. I don’t think you can say that “shops or street vendors” all “have poor food hygiene”? 
30. Could you have missed cases by only searching through health care facilities?
31. If the controls where asked about different time periods than cases this might have lead to bias!
32. Do you know anything about the specificity of Widal test?
33. Do you really think the sequence first food- then waterborne is so unique? I can imagine it to happen easily in similar circumstances. And as such it is a relevant public health problem!
34. Why did you stop chlorination after the end of the outbreak? As long as the poor sanitation system persists, where water pipelines with negative pressure ran closely to the open drainage system, contaminated sewage can easily again be “sucked” in the piped water distribution system.
35. Which specific health education did you recommend?
36. Table 1: the dates for early and late are overlapping. Why do you present the data like this? What is your interpretation?
37. Figure 1: include information on the number of cases represented in the figure (n=?) include primary case
38. Title: include information on the number of cases represented in the figure (n=?), don’t you show the distribution of residences of the cases?
39. Is the whole South Dundum municipality represented in the figure? If yes, which part is ward 1?
40. The legend is not readable
41. Explain the arrows: do they represent the water pipes? Could you also include the drainage system?
42. What do you mean by “contaminated tap”?
43. The “Index case” is the first case to come to the attention of the investigator (see: Last: a dictionary of epidemiology), don’t you want to represent the residence of the primary case (the individual who supposedly introduced the disease into the community)?
44. Did all cases in one house always have the same exposure (food from shop)? If not how is this represented?

Minor Essential Revisions:

Methods:
1. laboratory investigations: As someone of the Lab of the Tropical Medical School in Kolkata is coauthor of the manuscript it would be prefarrable to say “samples were analysed at” instead of “we sent samples to the lab…”
2. Table 3: North or South Dumdum municipality?
3. Style: avoid epidemiological slang (“Epidemic curve”)
4. Consistent spelling: Salmonella (enterica) Typhi, Widal (capital)
5. English: check grammar and spelling

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**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