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: Albert M Vollard

Reviewer's report:

Purpose: identification of causative agent and transmission patterns of typhoid fever after a reported increase in fever cases on April 2007 with the intention to prevent further and future spread of disease.

Reason for survey: increase in fever cases
Primary and secondary outcomes not explicitly mentioned.
Location: South Dumdum, 392150 persons in 2001 (investigation 6 years later)
Period: Jan to May 2007 surveillance
Case: fever > 1 week from South Dumdum, ward 1
Source of information: interviews of cases, investigation of surveillance data of municipal data, visits to health care facilities.
Inclusion: blood specimens from a random sample without prior antibiotics (how were they selected, how many of them had taken antibiotics?).
Case definition: random person from fever group > 1 week: Widal 1/80.
Control group: next door neighbours without fever/typhoid.

What was the causative agent and how was it identified?

Results:
Descriptive epidemiology
103 cases (fever > 1 week) in the time interval February to April 2007 (I thought the increase was noticed in April 12th 2007, why February?)
Table 1: distinction between “early” (before April 10th) and “late” (after March 18th), but no explanation is given why this overlapping distinction is made
Outbreak started January 28th: however not shown in Figure 1.
Clustering shown in site maps in two locations (legend is partly missing in my print)
Laboratory investigations:
How many blood specimens were cultured in total? If only 4: how were these 4 selected? What was the Widal titer in these 4 patients?
What do we know about other diseases in the area with prolonged fever?
Why was the titer of 1/80 chosen? What is the background titer in the population?

Case-control study:
Which cases were recruited: the 65 with a positive Widal test?
Risk factors: food from sweet shop, low income, drink piped water, more household members, poorer hand washing hygiene, less use of utensils or purification methods/hygienic water storage methods. Is this a multi-variate analysis?

Environmental investigation:
How do we know the food handler suffered from typhoid (culture? Widal?). Prolonged fecal excretion in February may indeed explain secondary cases in March.

Discussion:
Half of cases explained by living close to sweet shop (what about the other half)
Suggested vehicle of transmission: dairy products from sweet shop.
Use of piped drinking water explained half of cases in second outbreak.
I do not understand why covered containers might decrease disease incidence: if the water is contaminated already in the source, coverage of containers will not contribute to contamination.
I do not understand why non-differential misclassification is assumed: if other diseases causing prolonged fever (3 out of 4 cases?) are not food- or water borne, the clustering and assumptions are preliminary.
The authors assume that their interventions have led to a decrease of the number of fever cases:
- any epidemic outbreak will subside
- no stool culture was performed of the food handler after treatment to exclude the end of the fecal excretion and not hand washing hygiene as the determining factor for the end of the spread of disease.

Concluding remarks:
Background information of fever incidence is missing.
Case definition is incomplete. Unclear why inclusion period was selected, unclear why Widal titer was selected. Unclear why 4 (?) blood cultures were performed.
Source definition is incomplete.
The only thing we know is that there was an increase in reported fever cases in a certain period, the rest are assumptions because the methods to investigate this rise in numbers were insufficient (probably due to financial constraints).
Therefore, since clear definition of cases is lacking the information in the article is incomplete, I do not see a contribution to international science. The information has local relevance at most.
Level of interest: An article of insufficient interest to warrant publication in a scientific/medical journal

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.