Reviewer’s report

Title: Outbreak of Cryptosporidium hominis following river flooding in the city of Halle (Saale), Germany, August 2013

Version: 1 Date: 3 November 2014

Reviewer: Richard A Snyder

Reviewer’s report:

This manuscript describes the response and analysis for a Cryptosporidium hominis outbreak following a flood event in an urban landscape. The work implicates contamination of human use areas persisting after flood waters withdrew, which is an important finding for public health officials in determining the safety of public land use in the wake of such events. The methods are sound and the report is generally straightforward. Some English usage could be corrected. A lack of emphasis on the source of the problem should be addressed. Was effluent from the treatment plant analyzed before and after sterilization? Species determination in environmental samples was ‘not successful’ and molecular typing showed 32/106 fecal samples were C. hominis. From these data the conclusions extrapolate to C. hominis from environmental sources were the cause of the outbreak? I think that conclusion should be softened/qualified a bit more than the paper presents.

Specific comments:
P2 L6 perhaps: “the river Saale overflowed its banks, flooded the part of the city centre in the flood plain, and resulted in failure of the central sewerage system.”
P2 L16 Italicize Cryptosporidium (here and throughout)
P4 L2-3 “The protozoa in the genus Cryptosporidium are important parasitic pathogens causing water and food contamination leading to diarrheal disease.”
P4 L4-5 “…recreational water exposure as well as drinking water consumption.”
P4 L6 replace ‘or’ with ‘and’
P4 Ln 12 “…species in the genus have been identified. Disease in…”
P4 L13 delete ‘(C.)’
P4 Ln17-18 “…chlorine disinfection as commonly applied in drinking water and sewage effluent treatments. Transmission takes place by oral ingestion. The incubation….”
P4 Ln 20-21 “…to notify the local public health department of patients with stool tests positive for Cryptosporidium by Federal Law.”
P4 Ln 22-23 “…annually between 2008 and 2012 in Germany. Outbreaks
resulting in notifications were restricted ..."
P5 Ln 8 "...along the river and on the..."
P5 Ln 16 insert comma after 'Bathing'
P6 Ln 3 "...Halle. By comparison, the ...
P6 Ln 18 delete 'initially'
P6 Ln 21 "...test procedures, laboratory testing frequency, and ...."
P7 Ln 3 Italicize Cryptosporidium
P7 Ln 5 "...7 days of the 2 to 14 day incubation period..."
P7 Ln 7 "...household, kindergarten, or school...
P7 Ln 10. I do not see any hypotheses stated in this section. Either remove the heading, or clearly state the hypotheses being tested by this study.
P7 Ln 21. main hypothesized sources/transmission modes are not clearly stated in the above section.
P8 Ln4 Kindergartens in Halle were informed
p8 In 8 The informational material provided to the parents of control subjects contained
p8 In 9 delete 'by the parents of controls'
p8 In 16 replace 'comprise' with 'utilized'
p9 In 10-12 ...August 2013), 13 from pools of public baths, 12 samples from 10 different sites int he river Saale including lateral branches and 5 samples from other bodies of water in Halle..."
p9 In 20 parasite (no 's')
p10 In 11 one 'L' in initial, "... in Halle, 7 of 11 (64%) reported..."
P10 In 12-15. This does not make sense to me, please rewrite and clarify
P11 In 1-7 replace ; with , patients were male, 60/167
P11 In 3 ...and 21/60 (35%) of the secondary cases were from kindergartens.
p11 In "...4 of 16 diarrheal cases in children confirmed as Cryptosporidium by laboratory analysis was detected in ...
p11 In 5-7 "In the rural district of Saalekris which encircles the city of Halle, 23 cases were reported during weeks 27 through 47 compared to the annual average for 2008 to 2012 of 5 cases/yr."
p11 In 9 replace 'of' with 'with'
p11 In 11 ".pools that tested positive..."
p11 In 15 delete 'background'
p11 In 16 space after 'holidays.'
p13 In 4 'sampling'
p13 In 6 'Saale were confirmed'
p13 In 7 if there is nothing to report, do not make it a separate section, just a sentence int he methods would suffice.
p13 In 17-19 ".later, after considering the findings front he exposure interviews and with the first tap water samples testing negative for oocysts. Two public swimming pools were positive and were closed."
p17 In 22" ...and advised against bathing..."
add to results- some description of municipal agency operation of the waste water treatment facility and any Crypto testing done there. Any pre and post effluent sterilization tests available? Tracking to source seems by inference, rather than direct tracking to source. Samples form upriver of the treatment facility?
P14 In 13 human fecal samples
P14 In 14 PCR confirmation was obtained for all but 8 (7%) if 114 samples recorded as positive for visual fluorescent antibody testing. The ability of PCR to determine the presence of Cryptosporidium in samples negative for visual analysis was not determined.
P14 In 18-20 ".evidence for exposure from human activities in the areas affected by the flood waters, including numerous playgrounds and the river beach, as a primary risk factor for the infection of children.
P14 In 22 capitalize Cryptosporidium here and throughout.
p15 In 21 which should be which
p15 bottom- thus no definitive source tracking to the river was obtained, and the conclusion that contamination of the floodplain by the river flood is made by inference.
P16 In 19 'weather'
p17 In 3 "such that activities can both can be" does not make sense, rewrite.
P 17 In 17 main conclusion should be persistent infectious disease contamination of the floodplain after flooding
Figure 2 is too small, and legend type too small

**Level of interest:** An article whose findings are important to those with closely related research interests

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

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

**Declaration of competing interests:**

I declare that I have no competing interests