Reviewer's report

Title: Water and sewage systems, socio-demographics, and duration of residence associated with endemic intestinal infectious diseases: A cohort study

Version: 1 Date: 6 April 2010

Reviewer: Clarence Tam

Reviewer's report:

Major comments:

1. My main comment on this paper is that there is very little discussion of the potential role of health care use, immunity and health behaviour in the interpretation of results. It is well known that healthcare contact patterns are related to many of the factors that the authors investigate in this paper. As the outcomes they investigate (physician consultations and hospitalizations) are dependent on healthcare contact, any differences in rates between age groups, socioeconomic groups, geographic areas could be influenced by differences in healthcare use and not necessarily reflect true differences in disease risk.

2. In that vein, the citation to reference 36 is incorrect. That paper did not identify higher rates of disease among those with lower socioeconomic position. Instead, the authors found that those with lower socioeconomic position (or variables indicative of this) were more likely to consult their GP for an episode of enteric illness than those with higher socioeconomic position.

3. Similarly, it is possible that those with private water supplies have different healthcare use patterns than those with mains supplies, e.g. they may be less likely to consult their doctor for an episode of enteric illness, either because disease is common and they do not feel the need to seek medical advice, because they are more likely to live in rural areas with less convenient access to healthcare, or other reasons. There is also reasonable evidence that individuals with high risk of exposure to GI pathogens, such as farm workers, abattoir workers and potentially those with private water supplies, over time have generally lower risks of disease, presumably because continuous exposure is important in immune development. Finally, individuals' healthcare behaviour may change over time, so that those who have recently moved into an area may be more likely to seek medical advice, but their propensity to do so may decrease over time. I think these issues need much more detailed consideration in the discussion.

4. I find the figures difficult to interpret. In figure 1, there are notable spikes in the very elderly ages, presumably because the population size is very small beyond 80 years of age, while there is generally very little variation in the rates in the middle years. Grouping age into reasonable age groups and presenting 95% CIs would make this figure clearer. Similarly, figure 2 is difficult to interpret without 95% CIs.
5. Adding equations for the regression models in the methods would help clarify what exactly is being included in the models.

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

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests.