Author’s response to reviews

Title: A prospective study of rural drinking water quality and acute gastrointestinal illness

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PDF covering letter
In response to the suggestions from reviewer #1, Eugene Rice:

1. **Provide a more detailed description of the microbiological methods used to analyze total coliform bacteria and Escherichia coli.**

   Agree – Added
   A section on water sample analysis for total coliforms, E. coli and background bacteria was added. (bottom of page 5)

2. **Explain the basis for choosing 150 CFU/100ml as the parameter used in censoring data for the logistic regression model.**

   Disagree – Further clarification provided
   The reviewers have confused the term background bacteria with the term heterotrophic bacteria. Background bacteria is a term used in Ontario to describe bacteria which grow on an Endo plate during total coliform enumeration because of the non-selective nature of the medium. Background bacteria at high levels obscure the enumeration of coliforms. Background bacteria are associated with water pollution because of contamination by soil, sediment, fecal wastes and/or sewage. An explanation of how background bacteria are enumerated was added to the methods section (page 5/6) and a further explanation of the cutpoint of 150 cfu/100ml was added. (page 7) The term background bacteria is a distinct from heterotrophic bacteria.

3. **E. coli levels in the first paragraph on page 9**

   Agree – Corrected

4. **More information on the physical characteristics of the individual wells.**

   Agree – Added
   More information on well age, depth and well type was added. (page 8)
In response to the suggestions from reviewer #2, Dr. Paul Hunter:

1. Use of a vague case definition.
   
   Agreed – Issue raised in discussion
   A justification of why this case definition was chosen and a qualifying remark that the use of this case definition may make comparison with other studies difficult was added. (page 10)

2. Reliance on two water samples to define fecal contamination and absence of fecal streptococcal counts.
   
   Use of two water samples to define exposure was added to the discussion section. “Although the quality of small, untreated water supplies may vary over a short period of time any reported episode of AGII in this study would be associated with a water sample taken at most 7 days from the episode.” (page 10) The objective of this study was to examine the association of current water quality indicators used and AGII. Fecal streptococcus is not a routine indicator of water quality at present but the issue of misclassification has been addressed in the discussion. (page 10)

   
   Agree – corrected (page 18)

4. Paragraph 2 of background section “studies worldwide have been unable to demonstrate....”.
   
   Agree – corrected (page 3)
   The qualifier “self-reported” was added to the sentence.

5. Comment only.

6. Immunity issue
   
   Agree – limited changes were made to this paragraph
   One additional reference was added to the paper regarding the immunity issue. (page 11) A detailed paragraph of the independently associated variables exits. No further changes were made.

7. “The authors suggest that consuming contaminated water does not increase individual risk of AGII.”
   
   Agree – There may be a risk associated with consuming contaminated water. Although we do not have statistically significant results, the point estimate for E. coli was 2.85. We cannot suggest that consuming contaminated water does not increase individuals risk of AGII given our sample size (the power we had to
detect a significant finding) may preclude the finding of a significant association. The conclusions of the study have been revised.