Environmental Exposures and *H. pylori* Infection in Northern Canadian Communities

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The role of environmental exposures in the acquisition of *H. pylori* infection has been a contentious issue in the scientific community due to difficulty detecting the live organism from sources outside of the human stomach. Some residents of Canadian Arctic communities have reported the belief that contamination of the natural environment with sources of the bacteria is responsible for the high prevalence of *H. pylori* (~60-70%, varying slightly by test method) in these communities.

This cross-sectional analysis aims to estimate the association between exposure to sources of biological contamination and prevalence of *H. pylori* infection in residents of 2 western Canadian Arctic communities. Investigated environmental exposures include untreated water, contaminated water (sewage), dogs, cats, mice/ mouse droppings or animal innards.

### RESULTS

**Prevalence of *H. pylori* in both communities combined was 61%**

**The most frequently reported environmental exposure was caring for dogs (68%)**

**A positive association was estimated for the presence of mice in the home (adjusted OR: 2.0; 95%CI: 0.7, 5.4), but this estimate is not statistically precise**

Our analysis provides evidence that exposure to mice (or mouse droppings) may be associated with prevalent *H. pylori* infection though this association may be confounded by risk factors that were not controlled in this analysis.

Other investigated zoonotic and waterborne exposures do not appear to play an important role in the transmission of *H. pylori* in the participating Canadian Arctic communities.

Ongoing research will continue to investigate the association between exposure to mice and *H. pylori* infection in Canadian Arctic communities.

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**DISCUSSION**

This analysis shows a positive association between having mice or mouse droppings in the home and prevalence of *H. pylori* infection, although the wide CI reflects uncertainty about the magnitude of this association, given the small number of people reporting evidence of mice in their homes. Given the small number of individuals who are exposed to mice in these communities, it is unlikely this exposure plays an important role in transmission, if at all.

The effect estimates for regular contact with animals suggest that pets are not an important factor in *H. pylori* transmission in the study population. Further, contact with animal innards does not appear to play an important role in transmission of this infection in the participating Canadian Arctic communities.

The effect estimates for pathways for waterborne transmission show null associations. These findings are consistent with the epidemiologic literature.

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**CONCLUSION**

A special thank you to the residents of Aklavik, NT and Tuktoyaktuk, NT.