# Perceptions about environmental causes of *Helicobacter pylori* infection in a Canadian Arctic community

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Figure 1- Map of Canada and circumpolar region

*Helicobacter pylori* infection, a risk factor for stomach cancer, is of growing concern in some northern Canadian communities due to perceived high rates of this cancer, along with frequent failure of *H. pylori* therapy in this region. Residents of Aklavik, a hamlet in the Northwest Territories, identified *H. pylori* infection as a health research priority. The Aklavik *H. pylori* Project arose from collaboration between community leaders, health authorities and scientists. Overall, the project aims to describe socio-demographic patterns of *H. pylori* infection and the associated burden of disease to generate evidence for local health care policy development and address community concerns regarding health risks. **Although research worldwide has not identified an environmental reservoir as a major mode of *H. pylori* transmission, frequently voiced local concerns focus on the worry that *H. pylori* infection comes from contaminated drinking water sources. This analysis aims to describe local understandings of *H. pylori* as related to environmental factors in order to guide further research and knowledge exchange.**

## BACKGROUND:

- Prevalence of *H. pylori* infection has been shown to be high in northern populations in Canada, Greenland, and Russia; prevalence among study participants in Aklavik was 58%.
- Gastric cancer is the 4th most frequently diagnosed cancer in NWT males, compared to 10th in males across Canada.
- Extensive research on transmission suggests that *H. pylori* usually spreads directly from person to person, perhaps most readily during bouts of acute gastroenteritis with vomiting and/or diarrhea.
- Existing evidence neither confirms nor rules out an environmental reservoir; research so far has been inconclusive due to difficulties in culturing *H. pylori* from environmental sources.

## Methods

Since the project launched in November 2007, 344 (58%) of Aklavik's 590 residents participated in a survey that ascertained whether they had heard of *H. pylori* infection and if they thought it was a community concern. Those indicating that they had heard of it were asked if they had an idea about how people get it, and if so, to specify their ideas about this (as an open-ended query). Those indicating it was a community concern were asked why (as an open-ended query). Responses were entered into a database and coded for similarity. Frequencies were analyzed using SPSS 17 and Stata 10. Response frequencies and 95% confidence intervals (CI) are presented as percents of those responding to the specific question. Only respondents aged 12 years and up were included because younger participants did not all respond by themselves.

## Results

Of the 298 respondents aged 12+ years, 162 people, 54% (95% CI 49-60), indicated they had heard of *H. pylori* infection. 80 people of 160, or 50% (95% CI 42-58), indicated they had an idea of how people get it, and their responses are outlined in Table 1 and Figure 2. 228 of the 298 respondents, representing 77% (95% CI 71-81), agreed that *H. pylori* is a community concern and 188 stated one or more reasons for concern, outlined in Table 2 and Figure 3.

Table 1- Categorized responses of individuals who responded that they had an idea of how people get *H. pylori* (n=80)

| | n | % | 95% CI |
|---|---|---|---|
| Water | 50 | 63 | (51-73) |
| Personal contact/poor hygiene | 22 | 28 | (18-39) |
| "Germs"/ infectious agent | 11 | 14 | (7-23) |

*These are the most frequent response categories. People may have mentioned more than one response. Percents refer to the proportion who mentioned that source among those who mentioned at least one idea.

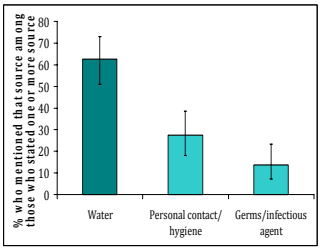


Figure 2- Categorized responses of individuals who responded that they had an idea of how people get *H. pylori* (n=80)

Table 2- Categorized responses of individuals who indicated they thought *H. pylori* a community concern and gave a reason (n=188)

| | n | % | 95% CI |
|---|---|---|---|
| Many people in the community are infected | 43 | 23 | (17-30) |
| Link with cancer | 43 | 23 | (17-30) |
| Causes illness | 28 | 15 | (10-21) |
| Its in the water | 24 | 13 | (8-18) |
| People are worried/ want answers | 15 | 8 | (5-13) |
| Its a matter of health/ safety | 12 | 6 | (3-11) |

*These are the most frequent response categories. People may have mentioned more than one response. Percents refer to the proportion who mentioned that reason for concern among those who mentioned at least one reason.

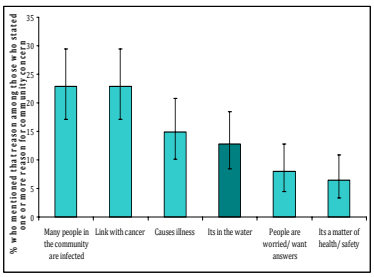


Figure 3- Categorized responses of individuals who indicated they thought *H. pylori* a community concern and gave a reason (n=188)

## Discussion

Among participants who expressed an idea about how people get *H. pylori* infection, most mentioned the local water as a potential source. A substantial proportion of people stated that *H. pylori* is a community concern because "its in the water", reflecting the importance Aklavik residents place on water quality as an environmental health issue. Perceptions about environmental sources of *H. pylori* infection may have important implications for developing effective prevention strategies. Effective knowledge exchange strategies are needed to address the perception that *H. pylori* infection is a result of contaminated water, with emphasis on what current scientific evidence suggests.

## Conclusion

**This work represents a first step in describing ideas and concerns related to the role of the environment in emerging awareness of an infectious cause of cancer in an Arctic hamlet, and will aid researchers in designing knowledge exchange strategies aimed at the community understanding the risks to their health related to *H. pylori* infection.**

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