Community-driven research on *H. pylori* infection in the Inuvialuit Settlement Region

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Abstract

Despite limited systematic data on its presence in northern Canada, *Helicobacter pylori* infection has been an emerging health concern in northern Aboriginal communities, where people are becoming aware of its health risks. In many such communities, people worry about the link between *H. pylori* and stomach cancer, a cancer that occurs more frequently in this region than on average across Canada. Physicians in the north view this infection as a major challenge because it is found in many patients with common stomach complaints and standard treatment is often ineffective in this setting. Health authorities have identified the need for research aimed at developing *H. pylori* control strategies appropriate for the north. This research program seeks to generate knowledge about how health care decision makers can effectively manage *H. pylori* infection in a manner that addresses community concerns. To achieve these goals, the applicants formed the Canadian North *Helicobacter pylori* (CANHelp) Working Group, a collaborative team that links the University of Alberta with northern health officials and community organizations. While the research goals require data from multiple northern settings, the team conducted a pilot project as a starting point in Aklavik, NWT, where they found that 62% of participants had *H. pylori* infection, and among those infected, there was a high prevalence of precancerous stomach conditions. This research program, developed at the request of the Inuvialuit Regional Corporation, aims to: 1) Expand the research to additional communities in the Inuvialuit Settlement Region to obtain representative data required for developing regional public health strategies pertaining to *H. pylori* infection; 2) Identify cost-effective and culturally appropriate *H. pylori* management strategies for northern communities; 3) Create knowledge exchange strategies to help community members understand *H. pylori* health risks and currently available solutions.

Key Messages

- Health risks from *H. pylori* infection include chronic digestive problems, stomach ulcers and in rare instances, stomach cancer.
- Chronic *H. pylori* infection induces chronic inflammation of the stomach lining, glandular atrophy and intestinal metaplasia, which are all associated with increased risk of stomach cancer.
- Communities in the Inuvialuit Settlement Region (ISR) are concerned about health risks from *H. pylori* infection.
- Community leaders seek research to understand the health risks and develop locally appropriate strategies for reducing these risks throughout the Inuvialuit Settlement Region.
- The Canadian North *Helicobacter pylori* (CANHelp) Working Group was formed to link University of Alberta investigators with northern community leaders and health care providers in the conduct of research aimed at addressing community concerns about health risks from *H. pylori* infection. The Aklavik *H. pylori* Project, the initial project of the CANHelp Working Group, found that:
  - Of 355 participants tested, 61% were *H. pylori*-positive.
  - Around 90% of *H. pylori*-positive participants had moderate to severe inflammation of the stomach lining.
- Information from additional northern communities is needed to fulfill the research goals of the CANHelp Working Group.
- The Inuvialuit Regional Corporation (IRC) asked the CANHelp Working Group to expand the research to additional ISR communities.
- The regional IRC leadership requested the development of a research agreement between the Inuvialuit Regional Corporation and the University of Alberta for the ISR *H. pylori* Project.
- In March 2012, IRC partner Billy Turner, who collaborated with the CANHelp Working Group since starting his position in August 2011, was replaced by Diane Archie.
During March and April 2012, CANHelp staff returned to Tuktoyaktuk to disseminate project information to the community and to continue recruitment and data collection.

To date, 106 people were recruited and tested for *H. pylori* infection (proportion positive: 56%) and questionnaires were completed with approximately 90 participants.

In April 2012, IRC partner Diane Archie requested that the regional project planning committee be replaced by community project planning committees.

As such, planning for the ISR *H. pylori* Project progressed slowly due to changes in planning committee structures.

In May 2012, digestive disease specialist Dr. Sander van Zanten, traveled to Tuktoyaktuk to meet with project participants who wanted more information on *H. pylori* and/or the ISR *H. pylori* Project.

That same month, Dr. van Zanten held information sessions on *H. pylori* infection and approaches to treatment for health centre staff in Tuktoyaktuk and Beaufort-Delta physicians in Inuvik.

During August 2012, Dr. van Zanten initiated the treatment phase of the ISR *H. pylori* Project in Tuktoyaktuk.

To date, 20 project participants have consented to the treatment phase of the project and 19 have been assigned treatment.

In March 2013, University of Alberta gastroenterologists will travel to Inuvik to offer Tuktoyaktuk project participants upper gastrointestinal endoscopy at the Inuvik Regional Hospital.

Additional trips to Tuktoyaktuk will be made throughout 2013 to evaluate participants’ post-treatment *H. pylori* status using the urea breath test, and to develop and implement additional knowledge exchange activities to inform community members of study progress and findings.

**Objectives**

*Helicobacter pylori* infection, linked to peptic ulcer disease and stomach cancer, is a health concern in northern Aboriginal communities, where people are aware of its health risks. Health care providers in the north view this infection as a major challenge because it is found in many patients with common stomach complaints and standard treatment is often ineffective in this setting. This research program seeks to generate knowledge about how health care decision makers can effectively manage *H. pylori* infection in a manner that addresses community concerns. While the research goals require data from multiple northern settings, the team conducted a pilot project as a starting point in Aklavik, NWT, where they found that a high prevalence of *H. pylori* infection, and among those infected, a high prevalence of precancerous stomach conditions.

This research program aims to:

1. Expand the research to additional communities in the Inuvialuit Settlement Region to obtain representative data required for developing regional public health strategies pertaining to *H. pylori* infection;
2. Identify cost-effective and culturally appropriate *H. pylori* management strategies for northern communities;
3. Create knowledge exchange strategies to help community members understand *H. pylori* health risks and currently available solutions.

**Introduction**

*Helicobacter pylori* infection has been a health concern in some northern Aboriginal communities,
where people are aware of its health risks. In many such communities, people worry about the link between \textit{H. pylori} and stomach cancer, a cancer that is more common in this region than on average across Canada. Northern health care providers see this infection as a challenge because it is found in many patients evaluated for stomach complaints, but treatment in this region is often ineffective. Public health authorities have identified the need for research to develop locally appropriate \textit{H. pylori} control strategies.

This research program was developed at the request of the Inuvialuit Regional Corporation (IRC) on behalf of communities in the Inuvialuit Settlement Region (ISR) of western Canada. The goal is a comprehensive investigation of \textit{H. pylori} infection in ISR communities so that such communities are represented in a broader research agenda that aims to develop public health strategies for \textit{H. pylori} infection in northern Canada. This research seeks to generate knowledge about how northern health authorities can manage \textit{H. pylori} infection in a manner that addresses community concerns about health risks. To achieve these goals, the research team formed the Canadian North \textit{Helicobacter pylori} (CANHelp) Working Group to link northern community organizations and health officials with University of Alberta researchers.

To develop this research, the CANHelp team initiated a pilot project in Aklavik, NWT, focused on: investigating the burden of disease and risk factors associated with \textit{H. pylori} infection in the Aklavik population; identifying effective therapies; and developing knowledge exchange strategies that address community concerns. This preliminary research has shown that 61\% of Aklavik’s project participants had \textit{H. pylori} infection, and among those infected there was a high prevalence of severe inflammation and precancerous lesions in the stomach. In a trial to compare standard treatment against a new regimen in 87 people who had not been treated before, cure rates were 74\% of 38 on sequential therapy and 59\% of 49 on standard therapy, a study size too small for precise estimates of the treatment effect size.

To generate study results with greater certainty, the CANHelp research program needs a larger number of participants representing additional northern communities. A second project outside the ISR was initiated in 2010. We have been working with the IRC since January 2010 on the development of a research agreement to begin projects in the remaining Inuvialuit Settlement Region communities.

This research addresses a health problem that imposes a disproportionate burden on northern communities relative to other groups in Canada. It aims to improve the management of \textit{H. pylori} infection in northern communities, and reduce corresponding health risks. The research design conforms to principles of community-based participatory research, incorporates innovative approaches to knowledge exchange, and adheres to the ACUNS Ethical Principles for the Conduct of Research in the North and CIHR Guidelines for Health Research Involving Aboriginal People. The effectiveness of this research will be enhanced by the collaborative research team that links scientists across a comprehensive set of scholarly disciplines with decision-makers, industry partners, and community groups toward the common goal of improving community health.

**Activities**

The development of research agreements between communities and researchers regarding the conduct of community-based, participatory health research projects is a developing area in health research, with evolving standards. The elaboration of such agreements is a relatively new undertaking for researchers, university research administrators, and community organizations. As reported in 2010, we began developing a research agreement with the Inuvialuit Regional Corporation for the conduct of an ISR \textit{H. pylori} Project in 2010. In January 2011, it was signed by the IRC leadership. However, it took most of 2011 for the agreement to be signed by representatives from the individual ISR communities. In April 2012,
IRC partner Diane Archie requested that the regional project planning committee be replaced individual community project planning committees. As such, planning for the ISR *H. pylori* Project progressed slowly due to changes in planning committee structures.

During 2012, the following activities were completed:

- The launch of the completed CANHelp Working Group website was widely publicized in January 2012
  - Throughout the year, CANHelp staff maintained a website to facilitate communication regarding research program activities within the CANHelp Working Group and to the public
- In March, graduate students Amy Colquhoun and Emily Hastings and CANHelp staff Hsiu-Ju Chang gave oral presentations at the University of Alberta’s Northern Research Day
- During March and April, CANHelp project staff returned to Tuktoyaktuk, NT to disseminate project information to community members and to continue recruitment and data collection
  - To date, 106 people have been recruited and tested for *H. pylori* infection (proportion positive: 56%) and questionnaires were completed with approximately 90 participants
- In April, IRC partner Diane Archie requested that the regional project planning committee be replaced by individual community project planning committees
- In April, Karen Goodman was an invited speaker at the Children in Developing Countries Meeting in Seattle, WA sponsored by the American Gastroenterology Association Institute and the Gates Foundation
- In April, graduate students Amy Colquhoun, Janis Geary, and Emily Hastings presented posters at the International Polar Year 2012 Conference in Montreal, QC
- In May, graduate student Emily Hastings was awarded NSTP and CCI grants
- In May, digestive disease specialist Dr. Sander van Zanten, traveled to Tuktoyaktuk to meet with project participants who wanted more information on *H. pylori* infection and the ISR *H. pylori* Project
- That same month, Dr. van Zanten held information sessions on *H. pylori* infection and approaches to treatment for health centre staff in Tuktoyaktuk and Beaufort-Delta physicians in Inuvik
- In June, graduate student Emily Hastings gave an oral presentation at the National Gathering of Graduate Students in Montreal
- In June, McMaster University PhD student, Sally Carraher, concluded a year of field work in Aklavik to conduct her ethnographic thesis research, which included follow-up *H. pylori* testing of Aklavik Project participants
- In June, the CANHelp Working Group launched a Facebook page to further to facilitate communication to the public on research program activities
- In the beginning of August, we submitted a letter of intent (LOI) to Alberta Innovates - Health Solutions (AIHS) Collaborative Research and Innovations (CRI) - Program competition. For this application, we were joined by the following NWT CANHelp partners:
  - Dr. Kami Kandola - NWT Deputy Chief Public Health Officer
  - Diane Archie - Executive Director of Community Development, Inuvialuit Regional Corporation
  - Jane Smith - Director of Client Services, Beaufort-Delta Health and Social Services Authority
  - Rachel Munday - Nurse-in-Charge, Aklavik Health Centre
• In August, graduate students Janis Geary, Katharine Fagan-Garcia, and Sally Carracher, and CANHelp project staff Hsiu-Ju Chang and Laura Aplin gave oral presentations at the International Congress on Circumpolar Health in Fairbanks, AK

• Graduate students Amy Colquhoun, Emily Hastings, Sally Carracher, and CANHelp project staff Laura Aplin and Ashley Wynne also gave poster presentations at the International Congress on Circumpolar Health in Fairbanks

• In August, Dr. van Zanten initiated the treatment phase of the ISR H. pylori Project in Tuktoyaktuk
  » To date, 20 project participants have consented to the treatment phase of the ISR H. pylori Project and 19 have been assigned treatment

• In September, microbiology lead Dr. Monika Keelan and PhD student Sally Carraher traveled to Aklavik to meet with the Aklavik Health Committee, community members, and organizations, and to recruit two youth for the knowledge dissemination grant awarded by CIHR in 2011
  » In October, two youth from Aklavik traveled to the CANHelp offices at the University of Alberta in Edmonton for one week to learn how H. pylori microbiology samples were processed and analyzed, and how results were interpreted
  » Throughout November and December, the two youth from Aklavik worked with Aklavik’s grade 10 general science students to develop materials for educating community members about H. pylori microbiology research

• In October, we were invited to submit to full application to the AIHS CRIIO Program competition. For the full application, in addition to the NWT CANHelp partners who joined us for the LOI, we were also joined by NWT partners:
  » Leah Seaman, Medical Health Officer, Beaufort-Delta Health and Social Services Authority
  » Joanne Engram, Director of Client Services, Beaufort-Delta Health and Social Services Authority
  » This application was successfully submitted in January 2013

• In November, graduate students Emily Hastings and Amy Colquhoun gave poster presentations at the University of Alberta INSIGHTS School of Public Health Research Day

• In December, graduate students Emily Hastings and Sally Carracher, and two Aklavik youth gave poster presentations at the 8th Annual ArcticNet Scientific Meeting
  » This poster received first place in the graduate student poster competition

• Throughout the year, graduate students and other staff members conducted data analysis and submitted abstracts and delivered presentations at 3 international conferences, 2 national conferences and 2 campus conferences

• Throughout the year, graduate students Janis Geary, Amy Coquhoun, Megan Lefebvre, and Sally Carracher each submitted a lead-author manuscript for publication

In March 2013, University of Alberta gastroenterologists will travel to Inuvik, NT to offer Tuktoyaktuk project participants upper gastrointestinal endoscopy at the Inuvik Regional Hospital. Planning for this phase of the ISR H. pylori Project has been ongoing since Summer 2012. Additional trips to Tuktoyaktuk will be made throughout 2013 to return histopathology findings from endoscopy, to evaluate participants’ post-treatment H. pylori status using the urea breath test, and to develop and implement additional knowledge exchange activities to inform community members of overall study progress and findings.

Results

The Aklavik H. pylori Project (n=384) yielded data on clinical factors (n=345), individual-level socio-
environmental factors (n=285), household-level socio-environmental factors (n=145), as well as UBTs (n=333; positivity=58%) and gastric biopsies (n=194). Examination of biopsies revealed high frequencies of severe gastric inflammation, gastric atrophy and metaplasia. Our initial treatment trial showed that the standard therapy used in Canada achieved cure in only 59% of Aklavik participants randomized to this treatment, in contrast to 80% effectiveness observed across Canada. A pilot study was also done in Aklavik to investigate the incidence rate of new cases of H. pylori infection and rates of reinfection in successfully treated participants. The incidence rate was estimated at 2.1% per year among participants aged 15 and older.

The ISR H. pylori pilot project (n=117) yielded data on clinical factors (n=85), individual level socio-environmental factors (n=125), household-level socio-environmental factors (n=83), as well as UBTs (n=103; positivity=56%). Endoscopy and the treatment trial for Tuktoyaktuk are underway. Participants who wish to participate in endoscopy will be transported to Inuvik Regional Hospital for upper gastric endoscopy procedures.

A high prevalence of H. pylori infection has been observed in Aklavik and Tuktoyaktuk. High frequencies of H. pylori-attributed stomach disorders in Aklavik indicate that community concerns are warranted. Preliminary findings from the treatment trial also ascertain the need to review current management guidelines. The CANHelp Working Group aims to help identify strategies for reducing the H. pylori-associated disease burden and will continue its work with communities.

Please see Table 1 and Table 2 on this page and the following selected presentations:

Table 1. Preliminary Results - H. pylori Prevalence

<table>
<thead>
<tr>
<th>Community Projects</th>
<th>H. pylori Prevalence (All participants)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Aklavik, NWT</td>
<td>58</td>
</tr>
<tr>
<td>Old Crow, YT</td>
<td>68</td>
</tr>
<tr>
<td>Tuktoyaktuk, NWT</td>
<td>56</td>
</tr>
<tr>
<td>Fort McPherson, NWT</td>
<td>56</td>
</tr>
</tbody>
</table>

Table 2. Preliminary Results - Histopathology and Treatment

<table>
<thead>
<tr>
<th>Results</th>
<th>Aklavik, NWT</th>
<th>Old Crow, YT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>H. pylori+</td>
</tr>
<tr>
<td></td>
<td>Participants</td>
<td>Participants</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Histopathology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastritis</td>
<td>67</td>
<td>98</td>
</tr>
<tr>
<td>Severe</td>
<td>29</td>
<td>47</td>
</tr>
<tr>
<td>Moderate</td>
<td>31</td>
<td>129</td>
</tr>
<tr>
<td>Mild</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Gastric Atrophy</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>Intestinal Metaplasia</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Treatment Success</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Therapy</td>
<td>-</td>
<td>59</td>
</tr>
<tr>
<td>Sequential</td>
<td>-</td>
<td>74</td>
</tr>
<tr>
<td>Therapy</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Quadruple Therapy</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

NWT, Northwest Territories; YT, Yukon Territory; Hp+, H. pylori-positive
Discussion

Analysis of data collected to date confirms the need to increase participation in this research program so that informative statistical analyses can be carried out. New results from gastric biopsy data obtained during 2012 in Old Crow, YT (outside the scope of the ArcticNet project) showed a higher prevalence of *H. pylori*-associated disease than was observed in Aklavik, confirming important inter-community differences in *H. pylori* disease burden, even between closely related communities such as Aklavik and Old Crow.

Highlights of 2012 Results:

We observed high prevalence of *H. pylori* infection in Aklavik (58%) and Tuktoyaktuk (56%). In Aklavik we also observed high frequencies of severe gastric inflammation in people with *H. pylori* infection, and a pattern of *H. pylori*-associated stomach disorders that indicates increased risk of stomach cancer. These findings suggest that community concerns about health risks from *H. pylori* infection are warranted.

Our Aklavik research has revealed that general awareness and concerns about *H. pylori* infection were common, but few respondents articulated specific knowledge or reasons for concern. Knowledge exchange activities were held over the past year to help community members in Aklavik and researchers in the University of Alberta understand each other’s views of *H. pylori* infection. We plan to develop strategies in partnership with Aklavik community members to help make the project more meaningful to the community.

One question raised by participating community members is whether water is a source of *H. pylori* infection. To address this question, a data analysis project was carried out to investigate transmission of *H. pylori* using data from Aklavik and Tuktoyaktuk, NT and Old Crow, YT. The analyses showed a positive association between exposure to mice (or mouse droppings) and prevalent *H. pylori*, while consuming untreated or contaminated water did not appear to be a risk factor for *H. pylori* infection. More data is needed to further explore these findings.

A pilot study was also carried out in Aklavik to investigate the incidence rate of new cases of *H. pylori* infection or rates of re-infection in those successfully treated. The incidence rate of *H. pylori* among participating community members was estimated at 2.1% per year among those aged 15 and older. While the sample size is small, the findings suggest that incidence and re-infection rates have an inverse association with age and a positive association with Aboriginal status.

Our analysis of hygienic behaviors on *H. pylori* infection did not yield clear evidence, although our findings support further investigation of sharing behaviours as risk factors. For more accurate results, we need more data to address key limitations of the small sample size.

Given that northern Aboriginal communities in Canada face serious interrelated socio-environmental challenges that impact health, disentangling the effect of household environmental factors on *H. pylori* prevalence is challenging. We need additional data from diverse communities to enhance the
statistical precision of analyses aimed at identifying socioenvironmental risk factors.

We also need additional data to perform analyses of associations between \textit{H. pylori} genotypes and specific disease outcomes.

**Conclusion**

The continuing development of the ISR \textit{H. pylori} Project has allowed our team to develop expertise in research agreements between scientists and communities for community-based, participatory research in health science.

Many factors influence \textit{H. pylori} infection and disease risk in Arctic Aboriginal communities. Our initial research in Aklavik was a start toward generating the information needed to obtain data required for developing regional public health strategies for reducing health risks from \textit{H. pylori} infection. Analysis of data collected from this ISR community provides a strong rational for the need to expand this research to additional communities. Our continued progress toward including additional communities in this research is permitting us to accumulate data from diverse Arctic communities. This will allow us to conduct policy analysis to identify cost-effective \textit{H. pylori} management strategies that are ethically, economically, and culturally appropriate for northern communities. We also continue to develop the expertise of our team in knowledge exchange strategies that help community members understand \textit{H. pylori} health risks as well as currently available solutions and unsolved challenges for reducing these health risks.

**Acknowledgements and References**

As the Aklavik \textit{H. pylori} Project, from its inception in 2007, and other CANHelp Working Group research outside the ISR provide important background for further research in the ISR as well as statistical power for informing regional policy recommendations, we would like to acknowledge all the funders and supporters of our research program:

**Funders:**
- Canadian Institutes of Health Research (CIHR)
  - Institute of Aboriginal People’s Health
  - Network Environments of Aboriginal Health Research
- Aboriginal Affairs and Northern Development Canada - Northern Scientific Training Program
- Nasivvik Centre for Inuit Health and Changing Environments

**NWT Supporters:**
- Aklavik Community Corporation
- Ehdiitat Gwich’in Council
- Aklavik Health Committee
- NWT Health and Social Services (Kami Kandola)
- Beaufort Delta Regional Health Authority (Leah Seaman)
- Aklavik Health Center (Rachel Munday)

**Yukon Supporters:**
- Vuntut Gwitchin First Nation (Chief: Norma Kassi)
- Arctic Health Research Network-Yukon (Jody Butler-Walker)
- Chief Medical Officer of Health (Brendan Hanley)
- Old Crow Health Center
- Yukon Legislature (MLA Darius Elias)

**Alberta Health Services Supporters:**
- Northern Health Services Network (Robert Bailey)
Publications

All ArcticNet refereed publications are available on the ASTIS website (http://www.aina.ucalgary.ca/arcticnet/).


Morse A, Goodman KJ, Munday R, Chang H, Morse

H. pylori infection

ANNEX

Community-Driven Research on H. pylori Infection: Making Microbiology Data Meaningful in Indigenous Arctic Communities

**Background:** The Aklavik H. pylori Project was founded to address concerns raised by the community about the infection, which was identified through a case-control study. The project aims to understand the prevalence and transmission of H. pylori in Aklavik, as well as the factors contributing to its spread.

**Purpose:** The project is designed to empower community members by involving them in every aspect of the research process, from data collection to dissemination. The goal is to ensure that the research is grounded in the community and that the results are used to inform local health strategies.

**Acknowledgments:**

- **Carraher, Sally:** Anthropology, McMaster University
- **Colquhoun, Amy:** University of Alberta, Edmonton, Canada
- **Goodman, Karen:** University of Alberta, Edmonton, Canada
- **Keelan, Monika:** University of Western Ontario, Canada
- **Koe, Bonnie Lynn:** University of Alberta, Edmonton, Canada
- **Munday, Rachel:** Mount Royal University, Calgary, Canada
- **O’Donnell, Amy:** University of Alberta, Edmonton, Canada
- **Peel, Prairie Dawn:** University of Alberta, Edmonton, Canada
- **Rae, Bonnie:** University of Alberta, Edmonton, Canada

**Working Group Members:**

- **Carraher, Sally:** Anthropology, McMaster University
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- **Goodman, Karen:** University of Alberta, Edmonton, Canada
- **Koe, Bonnie Lynn:** University of Alberta, Edmonton, Canada
- **Munday, Rachel:** Mount Royal University, Calgary, Canada
- **Peel, Prairie Dawn:** University of Alberta, Edmonton, Canada

**Project timeline:**

**September 2012:**
- Researchers traveled to Aklavik, where the project was presented to community members.
- Discussed the need for community involvement in the research process.

**October 2012:**
- Aklavik residents traveled to Edmonton, where they presented their experiences with the project.

**Making microbiology meaningful:** Six key findings

1. **Resident well informed about:**
   - The Aklavik H. pylori Project was developed to empower community members by involving them in every aspect of the research process, from data collection to dissemination. The goal is to ensure that the research is grounded in the community and that the results are used to inform local health strategies.

2. **Resident less informed about:**
   - The Aklavik H. pylori Project was developed to empower community members by involving them in every aspect of the research process, from data collection to dissemination. The goal is to ensure that the research is grounded in the community and that the results are used to inform local health strategies.

3. **Residents’ questions:**
   - What are the risks of catching H. pylori? How can we prevent getting infected? How effective are our current treatments for H. pylori infection?

**Next steps:**

- **In Aklavik:**
  - BK and PE are developing materials to present what they have learned about the H. pylori data to community members and will maintain communication with Chilkoot researchers via email and social media.

- **In Edmonton:**
  - BK and PE are developing materials to present what they have learned about the H. pylori data to community members and will maintain communication with Chilkoot researchers via email and social media.

- **KT exchange:**
  - BK and PE are developing materials to present what they have learned about the H. pylori data to community members and will maintain communication with Chilkoot researchers via email and social media.

- **KT in both directions:**
  - BK and PE are developing materials to present what they have learned about the H. pylori data to community members and will maintain communication with Chilkoot researchers via email and social media.

**Acknowledgments:**

- **Carraher, Sally:** Anthropology, McMaster University
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- **Koe, Bonnie Lynn:** University of Alberta, Edmonton, Canada
- **Munday, Rachel:** Mount Royal University, Calgary, Canada
- **Peel, Prairie Dawn:** University of Alberta, Edmonton, Canada
- **Rae, Bonnie:** University of Alberta, Edmonton, Canada

ArcticNet Annual Research Compendium (2012-13)
Articles were included if they described:... 

Individuals understand new information in a manner that depends on their existing conceptualizations and views.4 

Articles were categorized into main themes: “research”, “related research in northern Canada.”

Work is currently underway in Aboriginal communities in the Yukon and Northwest Territories, Canada to address concerns about Helicobacter pylori, a bacterium known to cause stomach and stomach cancer.1

Results:

Articles mentioning ‘community concerns’ described stomach cancer, or cancer in general, as the main focus of concern. 68% were framed around research on H. pylori in northern Canada; 3% around associated diseases; 6% around community concerns; and 3% around descriptions of the bacteria (data not shown).

In response to these concerns, a community driven project has been established that links local community members and territorial health officials with researchers.

To originate from community members (Figure 4).

A huge thank you to participating communities in the Yukon and Northwest Territories, Canada and to other members of the Canadian North Helicobacter pylori (CANK) Working Group.


Acknowledgements: a huge thank you to participating communities in the Yukon and Northwest Territories, Canada and to other members of the Canadian North Helicobacter pylori (CANK) Working Group.