The Aklavik *H. pylori* Project
Introduction

-The Aklavik *H. pylori* Project came about because community members were concerned about health risks from *H. pylori*.

-This project has been conducted by the CANHelp (Canadian North *Helicobacter pylori*) Working Group, a collaborative group that formed as the project developed.

-The CANHelp Working Group links community members with researchers, health care providers, health decision makers, and health technology partners, all working together to reduce health risks from *H. pylori*.
Helicobacter pylori

• Bacteria that inhabit the stomach lining

Photo from Blaser *Sci Am* Feb 1996, pp. 104-7
About *H. pylori*

- Infects half or more of the world population, in some communities more than in others.
- Most people with *H. pylori* get it in childhood; some people stay infected throughout their lives.
- In most infected people *H. pylori* only causes mild irritation of the stomach, and they don’t notice it.
- In a small fraction of infected people, it causes stomach ulcers or stomach cancer.
- People living in crowded conditions are more likely to have it.
About H. pylori

- Experts are not sure how it spreads
  - Research from around the world shows it probably usually spreads directly from one person to another through close contact
  - Not certain how often people get it from water or other environmental exposures

- Health authorities are not sure how to prevent or control it
The CANHelp Working Group includes:

**Aklavik Community Organizations**
- Aklavik Health Committee
- Rachel Munday, Nurse in Charge, Aklavik Health Centre
- Billie Archie, Arctic Health Research Network

**NWT Agencies**
- Kami Kandola, Chief Public Health Officer
- John Morse, Former Medical Director, Stanton Territorial Health Authority
- Leah Seaman, BDHSS
- Susan Chatwood, Director, Institute for Circumpolar Health Research

**Alberta Health Services**
- Robert Bailey, Director, Northern Health Services Network

**University of Alberta**
- Team Leader: Karen Goodman, Epidemiologist
- Gastroenterology: Sander van Zanten, Justin Cheung, Amy Morse, Richard Fedorak
- Microbiology: Monika Keelan
- Pathology: Safwat Girgis
- Anthropology: Christopher Fletcher
- Health Policy: Carl Phillips
Community seeks information due to concerns about *H. pylori* infection.

NWT health authorities hear community concerns and seek input from University of Alberta researchers to identify solutions.

CANHelp working group forms to conduct research to obtain information for the community and health authorities.

Seeking Research

Conducting Research

Exchanging Knowledge
## Project Goals

<table>
<thead>
<tr>
<th>Investigate</th>
<th>Include</th>
<th>Inform</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>H. pylori</em> infection in Aklavik</td>
<td>Community representatives in planning and conducting the research</td>
<td>The community about the ongoing research and the results that emerge using effective communication tools to exchange information</td>
</tr>
</tbody>
</table>
Investigate

Questions we hope the research will answer about *H. pylori* in Aklavik:

- How widespread is the infection?
- What environmental factors are associated with it?
- What health problems result from it?
- Who requires medical care related to it?
- What are the best ways to treat it?
- How can it be assessed in remote communities?
- How can communities be protected from it?
Challenges for the research team:

Obstacles to finding effective solutions:

- Despite a lot of research around the world aimed at finding out how people get *H. pylori*, a source has not been pinpointed; for this reason, researchers believe that it probably usually spreads directly from person to person through close contact.

- Researchers have not figured out how to get rid of it from communities where many people are infected.

The research team aims to find information that benefits the community even if all of the questions can’t be answered.
Timeline

**Jan-Feb 2007**
- Community approval
  - Hamlet Council
  - Gwich’in Band & Council
  - Aklavik Community Corporation

**May 2007**
- Planning Committee established
- Initial community input workshops held

**Sep 2007**
- NWT Research License obtained (renewed for 2008 in 12/2007)

**Nov 2007**
- Aklavik field team hired and trained
- UA graduate student RA team hired and trained
- Project office established in Aklavik Health Centre
- Community informed about project
  - Health Centre newsletters
  - Flyers distributed to all residents
  - Radio announcements and call-in programs
- Project logo contest held
Timeline

- **Nov 2007 – Feb 2008**
  - Wave 1
    - Enrollment and clinical surveys
    - *H. pylori* breath tests

- **Feb 4 – 8, 2008**
  - Scope week

- **Feb – Apr 2008**
  - Pathology diagnosis

- **Feb – ongoing**
  - Microbiology lab work

- **April 2008**
  - Pathology results reported to participants
  - Epidemiology survey, initial phase

- **Sep-Oct 2008**
  - Wave 2
    - Breath tests, surveys

- **Nov 2008 – June 2009**
  - Treatment

- **Through Dec 2010**
  - Long-term treatment follow-up

- **Ongoing**
  - Inform community of research results
Project Components

- Knowledge Exchange
- Community Survey and UBT Screening
- Policy Development
- Treatment
- Endoscopy
Breath Test Results

- 313 people were tested for \textit{H. pylori} with the breath test
  - 58\% were positive

- By linking the breath test results to questionnaire information collected about each person, we can learn which kinds of people are more likely to have \textit{H. pylori}
What we have learned

313 were tested for *H. pylori* by the breath test:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of Participants</th>
<th>% Positive</th>
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</thead>
<tbody>
<tr>
<td>Males</td>
<td>140</td>
<td>61%</td>
</tr>
<tr>
<td>Females</td>
<td>173</td>
<td>56%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of Participants</th>
<th>% Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 14</td>
<td>59</td>
<td>53%</td>
</tr>
<tr>
<td>15 – 39</td>
<td>114</td>
<td>69%</td>
</tr>
<tr>
<td>40 – 79</td>
<td>140</td>
<td>52%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Number of Participants</th>
<th>% Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboriginal</td>
<td>248</td>
<td>63%</td>
</tr>
<tr>
<td>Non-aboriginal</td>
<td>36</td>
<td>25%</td>
</tr>
</tbody>
</table>
Limits of this data

- Sometimes, there isn’t enough data (that is, information) to be sure that differences are real, and do not just occur by chance.

- Why are there differences between these groups?

- We are still collecting data to answer that question:
  - Of 368 people who enrolled in the project, only 167 responded to surveys designed to help us learn why some people have *H. pylori* and others don’t.
  - The more data we get, the more certain we can be about what we find.
Endoscopy

- Endoscopy allows doctors to view the lining of the stomach through a tiny camera to see how healthy it is and to take biopsies (that is, tiny pieces of stomach tissue).

- Each participant’s stomach biopsies are examined under a microscope by a pathologist to see if the stomach tissue is healthy.

- Each participant’s stomach biopsies are also examined in a lab by a microbiologist to see if *H. pylori* bacteria can be cultured (that is, grown) from the biopsies:
  - If *H. pylori* bacteria grow in the lab, the bacteria can be tested to see which antibiotics might work better to get rid of them.
  - The microbiologist can also test the *H. pylori* to see what strains they are (that is, which *H. pylori* family they belong to).
    - If we learn about Aklavik strains of *H. pylori*, we can see how the Aklavik strains compare to strains from other communities.
Of 194 scoped persons, percent who had the following conditions seen through the scope:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Gastric</th>
<th>Duodenal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastritis</td>
<td>13.8%</td>
<td></td>
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<tr>
<td>Duodenitis</td>
<td>6.7%</td>
<td></td>
</tr>
<tr>
<td>Gastric Erosions</td>
<td>6.2%</td>
<td></td>
</tr>
<tr>
<td>Duodenal Erosions</td>
<td>0.5%</td>
<td></td>
</tr>
<tr>
<td>Gastric Ulcer</td>
<td>3.1%</td>
<td></td>
</tr>
<tr>
<td>Duodenal Ulcer</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td>0</td>
<td></td>
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</tbody>
</table>
Pathology Results
(looking at stomach biopsies under a microscope)

* Inflammation is irritation of the stomach lining

<table>
<thead>
<tr>
<th></th>
<th>All \textit{H. pylori} Positive</th>
<th>All Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textbf{n}</td>
<td>129</td>
<td>194</td>
</tr>
<tr>
<td>Inflammation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild (%)</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Moderate (%)</td>
<td>47</td>
<td>31</td>
</tr>
<tr>
<td>Severe (%)</td>
<td>43</td>
<td>29</td>
</tr>
<tr>
<td>Atrophy (%)</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td>Intestinal Metaplasia (%)</td>
<td>11</td>
<td>8</td>
</tr>
</tbody>
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Treatment Trial

**Enrollment**

- Anyone who tested positive was invited to get treated
- The treatment included a combination of medications because *H. pylori* has many defense mechanisms and is difficult to cure:
  - Antibiotics (that is, medications that kill bacteria)
  - A medication that suppresses stomach acid so the antibiotics work better
- Across Canada, the standard treatment only works in about 8 of every 10 people who are treated
- We wanted to see if there is a combination of medications that works better than the standard treatment in Aklavik
- We found that one treatment seemed to work a bit better than the other, but there weren’t enough people in the trial to know if this difference didn’t just occur by chance
Treatment Trial

Results

- 110 people were part of the treatment trial
- But only 71 treatment participants came back to see if their treatment had worked
  - **Alternate therapy**: of 35 on alternate therapy, 27 were negative after treatment
    - 77% effective
  - **Standard therapy**: of 36 on standard therapy, 24 were negative after treatment
    - 67% effective
- Is there really a difference between the regimens?
- We would have a better idea if everyone who was treated was tested again to see if it worked
Limitations of this data

Data analysis

- We are still looking at other things that might have changed how well the treatment worked, like how bad the side effects were and if people were able to take all doses of medications

- If we enroll more communities in the project, we will know more about which treatments work the best

- Still following up with people who were treated to see if it worked

  ✓ We need everyone who was treated to have a follow-up breath test
What we’ve learned so far

- Many people in Aklavik are concerned about health risks from *H. pylori* infection and are willing to contribute to research to find solutions.

- It is possible to bring advanced health care technology to hamlets like Aklavik to conduct research of interest to the community.

*H. pylori* infection in Aklavik
What we’ve learned so far

- 58% of people tested in Aklavik have *H. pylori* infection, including over 50% of children tested.

- Among people with *H. pylori* infection in Aklavik, there is an increased frequency of severe inflammation and conditions that reflect an increased risk of stomach cancer.

- The standard *H. pylori* treatment works in about two thirds of people treated in Aklavik; it may be possible to increase that with a different treatment.

Investigate

*H. pylori* infection in Aklavik
What we’ve learned so far

- For greater certainty about our results, we need more people to
  - Participate in the household and individual epidemiology survey
  - Get follow-up breath tests if they got treated

- Other communities would like to take part in this research and this will add information for answering our questions

Investigate

*H. pylori* infection in Aklavik
Acknowledgements

- Alberta Heritage Foundation for Medical Research
- Canadian Association for Gastroenterology with Canadian Institutes for Health Research & Industry Partners
- Social Sciences and Humanities Research Council of Canada
- Public Health Agency of Canada
- Indian and Northern Affairs Canada
- Canadian Circumpolar Institute
Have questions?

- Please ask!
- Tomorrow I will be on the radio, can call in and ask questions at that time also
- But remember: If you have a question, someone else might have the same question but be too shy to ask