Community-driven research on *Helicobacter pylori* infection in northern Canada

K J Goodman, J Huntington, R Munday, S van Zanten

& CANHelp

(Canadian North *Helicobacter pylori*)

Working Group
Research Context

- NWT communities
- NWT health authorities
- NWT government
- Many NWT communities are remote with respect to advanced medical services
CANHelp (Canadian North *Helicobacter pylori*) Working Group

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

**NWT Agencies**
- Andre Corriveau, Chief Medical Officer, Health and Social Services, NWT
- John Morse, Medical Director, Stanton Territorial Health Authority
- Leah Seaman, Beaufort-Delta Regional Health and Social Services Authority
- Susan Chatwood, Director, Arctic Health Research Network

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

**University of Alberta**
- Principal Investigator: Karen Goodman, Epidemiology
- Gastroenterology: Sander van Zanten, Justin Cheung, Amy Morse, Richard Fedorak
- Microbiology: Monika Keelan, Joanne-Simala Grant
- Pathology: Safwat Girgis
- Anthropology: Christopher Fletcher
- Health Policy: Carl Phillips
CANHelp Research Goals

- To address community concerns about health risks from *H. pylori* infection
- To recommend *H. pylori* management strategies to health authorities
- To reduce health risks from *H. pylori* infection
Pilot Project

Aklavik H. pylori Project
Pilot Project-The Aklavik H. pylori Project

1) Investigate *H. pylori* infection in Aklavik
2) Include community members in research planning and conduct
3) Knowledge exchange activities
Pilot Project-The Aklavik *H. pylori* Project

Why Aklavik?

- Selected by NWT health authorities as a starting place for this research
  - High level of community concern due to stomach cancer deaths in some families
  - Enthusiasm for the research from local health authorities
- Other communities to be included later
Study Community: Aklavik

- 2006 population: 590
  - 92% Inuvialuit (Inuit) or Gwich’in Dene (First Nation)
- Access
  - Reached only by air or by winter ice-road from Inuvik
Aklavik Health Centre
Aklavik *H. pylori* Project Components

- Community Survey and *H. pylori* Testing
- Endoscopy
- Treatment
- Policy Development
- Knowledge Exchange
Aklavik *H. pylori* Project: Timeline

- Feb 2007    Community approval obtained
- May 2007    Community input workshops initiated
- Sep 2007    NWT research license obtained
- Nov 2007    Fieldwork initiated
- Feb 2008    Endoscopy component completed; microbiology initiated
- Apr 2008    Pathology results reported to participants
- Nov 2008    Treatment trial initiated

Ongoing

- Survey data collection
- Breath testing
- Knowledge exchange (video documentary)
- Data analysis and presentation
Aklavik *H. pylori* Project: Participation

- Participants recruited: **368**
- Clinical surveys completed: **339**
- Individuals with breath test results: **313**
- Aklavik residents appearing for endoscopy: **200**
- Individuals from whom biopsies were obtained: **194**
- Epidemiology surveys completed to date:
  - Household: 94
  - Individual: 167
The Aklavik *H. pylori* Project-Results

*H. pylori* demographics

- Prevalence by age
- Among 313 Aklavik residents screened by UBT

<table>
<thead>
<tr>
<th>Age</th>
<th>n</th>
<th>UBT-Positive (%)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td>59</td>
<td>53</td>
<td>39-66</td>
</tr>
<tr>
<td>15-24</td>
<td>53</td>
<td>70</td>
<td>46-82</td>
</tr>
<tr>
<td>25-39</td>
<td>61</td>
<td>69</td>
<td>56-80</td>
</tr>
<tr>
<td>40-59</td>
<td>105</td>
<td>51</td>
<td>41-61</td>
</tr>
<tr>
<td>60-79</td>
<td>35</td>
<td>54</td>
<td>37-71</td>
</tr>
</tbody>
</table>
The Aklavik *H. pylori* Project-Results

*H. pylori* demographics

- Prevalence by sex
- *Among 313 Aklavik residents screened by UBT*

<table>
<thead>
<tr>
<th>Sex</th>
<th>n</th>
<th>UBT-Positive (%)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>140</td>
<td>61</td>
<td>53-70</td>
</tr>
<tr>
<td>Female</td>
<td>173</td>
<td>56</td>
<td>48-64</td>
</tr>
</tbody>
</table>
The Aklavik *H. pylori* Project-Results

*H. pylori* demographics

- Prevalence by ethnicity
- *Among 313 Aklavik residents screened by UBT*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>n</th>
<th>UBT-Positive (%)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gwich’in</td>
<td>79</td>
<td>57</td>
<td>45-68</td>
</tr>
<tr>
<td>Inuvialuit</td>
<td>157</td>
<td>65</td>
<td>57-72</td>
</tr>
<tr>
<td>Other Aboriginal</td>
<td>12</td>
<td>67</td>
<td>35-90</td>
</tr>
<tr>
<td>Aboriginal Non-Aboriginal</td>
<td>36</td>
<td>25</td>
<td>12-42</td>
</tr>
</tbody>
</table>
The Aklavik *H. pylori* Project-Results

- Of 194 scoped persons, percent who had the following:

<table>
<thead>
<tr>
<th>Apparent inflammation</th>
<th>Gastritis</th>
<th>13.8%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duodenitis</td>
<td>6.7%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Erosions</th>
<th>Gastric</th>
<th>6.2%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duodenal</td>
<td>0.5%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ulcers</th>
<th>Gastric</th>
<th>3.1%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duodenal</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cancer</th>
<th>0</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Esophagitis</td>
<td>10.4%</td>
<td></td>
</tr>
<tr>
<td>Barrett’s Esophagus</td>
<td>2.6%</td>
<td></td>
</tr>
</tbody>
</table>
The Aklavik *H. pylori* Project-Results

- Histopathology results of 194 residents having an endoscopy

<table>
<thead>
<tr>
<th></th>
<th>All <em>H. pylori</em> Positive</th>
<th>All Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>n</strong></td>
<td>129</td>
<td>194</td>
</tr>
<tr>
<td><strong>Inflammation</strong></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><strong>Atrophy (%)</strong></td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td><strong>Intestinal Metaplasia (%)</strong></td>
<td>11</td>
<td>8</td>
</tr>
</tbody>
</table>
Effectiveness of treatment for 71 residents completing treatment trial

- **Alternate therapy:** 27/35 were negative after treatment
  - 77% effective (95% CI: 60-90)

- **Standard therapy:** 24/36 were negative after treatment
  - 67% effective (95% CI: 49-81)

We need more data for statistically precise estimates of the treatment success difference.
The Aklavik *H. pylori* Project
Conclusions Presented to Community

- Endoscopic and histopathologic evaluation of Aboriginal residents of Aklavik, NWT shows a pattern consistent with an elevated risk of gastric cancer.

- This assessment suggests that community worries over cancer risks from *H. pylori* infection are well-placed.

- The Aklavik *H. pylori* Project will develop additional knowledge exchange strategies that help community members understand *H. pylori* health risks as well as currently available solutions and unsolved challenges for reducing these health risks.

- This research will expand to other northern Canadian Aboriginal communities to obtain representative data for informing regional health policy aimed at reducing health risks from *H. pylori* infection.
CANHelp Next Steps
Helicobacter Pylori Bacterium study in the community of Old Crow

Whereas; For many years the community members of Old Crow have voiced concerns about the high number of internal body health problems;

Whereas; Many citizens feel there is a need to address *H. Pylori* health concerns because of its link to developing ulcers and then stomach cancer;

Whereas; It is vitally important to have early detection and prevention of health complications that could lead to cancer and possibly death;

Whereas; *H. Pylori* is an urgent health concern that effects many residents of Old Crow and which we would like health authorities to address;

Whereas; An *H. Pylori* research study presentation was described in an information session held at the 2008 International Gwitchin Gathering in Old Crow.

Therefore Be It Resolved;

The Vuntut Gwitchin First Nation General Assembly has considered the value of participating in a *H. Pylori* research study and we have unanimously decided that such a project be carried out in the community of Old Crow for those citizens willing to participate;

the community of Old Crow; Yukon healthcare professionals and the Division of Gastroenterology, University of Alberta lead and facilitate this project to ensure that it stays focused on community priorities and benefits the people of Old Crow, Yukoners and the citizens of the world.
Aklavik *H. pylori* Project: Funding Agencies

- 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
- NEAHR
- Public Health Agency of Canada
- Indian and Northern Affairs Canada
- Canadian Circumpolar Institute
Aklavik *H. pylori* Project: Supporters