Dispensation of drug regimens to treat *Helicobacter pylori* infection in First Nations and Inuit peoples in Alberta, Canada

A Colquhoun, B Healy, C Voyageur, A Letendre,
S Veldhuyzen van Zanten, KJ Goodman

Outline

- Background
- Methods
- Results
- Important considerations
- Summary and conclusions

Background: Alberta context

Population

Total in 2011 = 3,568,000

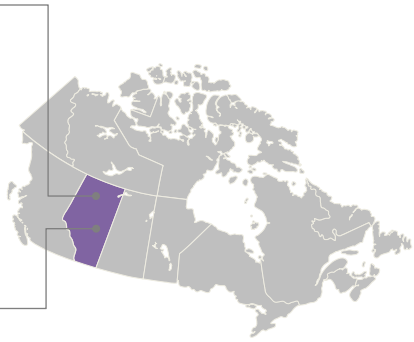
3.3% First Nations
2.7% Metis
0.1% Inuit

Background: Alberta context

Population

Total in 2011 = 3,568,000

3.3% First Nations
2.7% Metis
0.1% Inuit



Cancer

Cancer control initiative:
First Nations-specific cancer information is lacking

Initiative aims to build knowledge base in province

Background: Alberta context

Population

Total in 2011 = 3,568,000

3.3% First Nations
2.7% Metis
0.1% Inuit

Stomach Cancer

Age-standardized incidence rate, both sexes combined, Alberta, 2010:

First Nations: 11.5 per 100,000
All Alberta: 6.3 per 100,000

Cancer

Cancer control initiative: First Nations-specific cancer information is lacking

Initiative aims to build knowledge base in province

Background: Alberta context

Population

Total in 2011 = 3,568,000

3.3% First Nations
2.7% Metis
0.1% Inuit

Stomach Cancer

Age-standardized incidence rate, both sexes combined, Alberta, 2010:

First Nations: 11.5 per 100,000
All Alberta: 6.3 per 100,000

Risk Factors

Risk factors for stomach cancer include infection with the *Helicobacter pylori* bacterium

Many people around the world have *H. pylori* infection

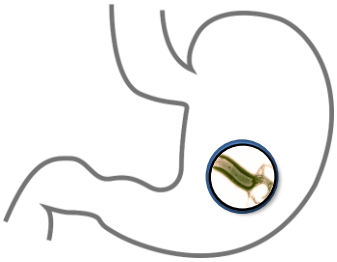
In Canada, Aboriginal peoples are a high prevalence population

Cancer

Cancer control initiative: First Nations-specific cancer information is lacking

Initiative aims to build knowledge base in province

Background: *Helicobacter pylori*



How is *H. pylori* spread?

- Most often during childhood
- Most likely from an *H. pylori*-infected person who is sick with vomiting or diarrhea

What happens if you have *H. pylori*?

- Most who are infected do not get sick
- May cause: stomach irritation, sores in stomach lining, stomach cancer (very rare)

How is *H. pylori* infection typically treated?

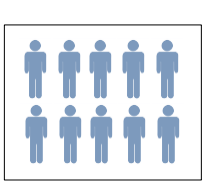
- Best treatments require 3-4 drugs for 14 days
- Under the best circumstances initial treatment cures ~80%
- In populations where *H. pylori* is common, treatment failure is also common

Background: current aims

- Describe *H. pylori* infection treatment in Alberta:
  - which drug regimens are being prescribed
  - which healthcare practitioners are prescribing the drugs
- Describe burden of *H. pylori* infection in Alberta and assess differences across populations

Methods: drug regimens

Pharmaceutical Information Network



2009-2014

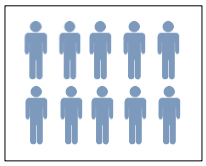
Treatment for *H. pylori* infection defined by:

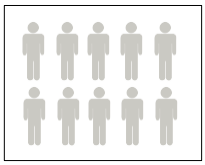
One of eight antibiotic drug regimens dispensed, along with a protein pump inhibitor, to a person on the same day

Methods: population identification

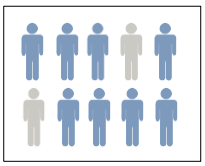
Alberta Health Care Insurance Plan Registry (First Nations/Inuit Identifying Information)

Pharmaceutical Information Network

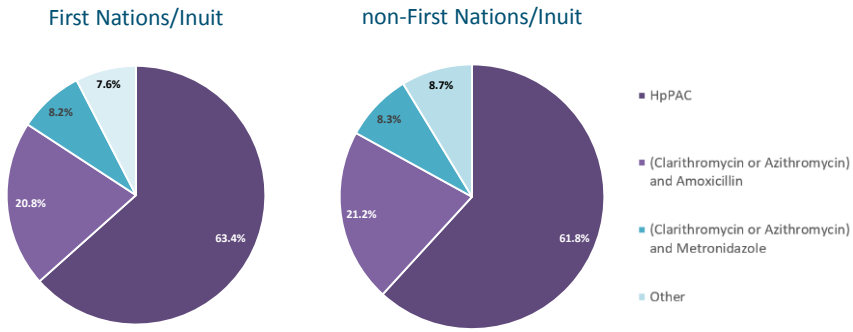




First Nations/Inuit Individuals Identified

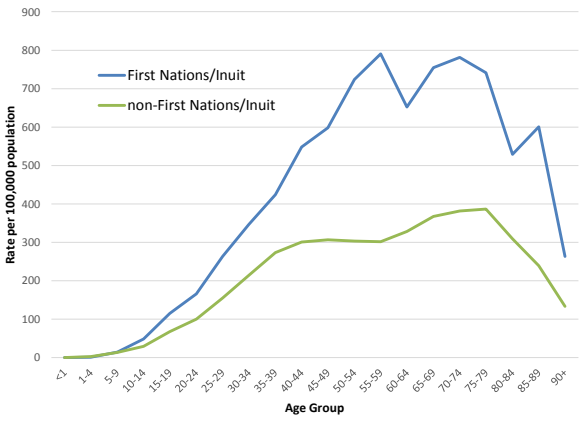


Results: drug regimens & prescribers



For both populations, majority of drug regimens prescribed by general practitioners (70%). Other prescribers include gastroenterologists, general surgeons, and internal medicine specialists (3-5%).

Results: age and sex



Age-specific rates of a first dispensation of an *H. pylori* treatment regimen during 2009-2014 by First Nation/Inuit status and age group, Alberta

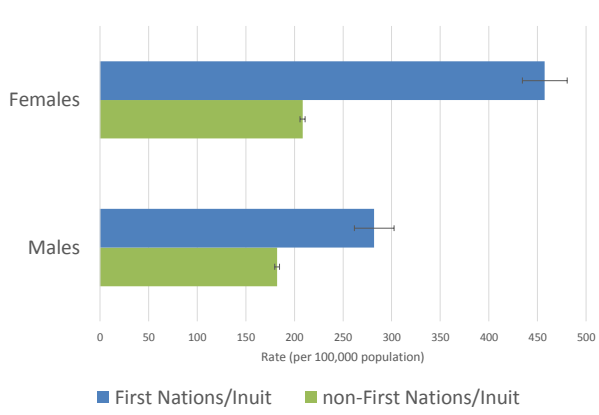
Dispensation events:

Fewer than 1% of population
(FN/I: annual avg 470/159,182)

Majority dispensed to those aged 35-59
(FN/I: 58%; non-FN/I: 52%)

Majority dispensed to females
(FN/I: 64%; non-FN/I: 53%)

Results: First Nations/Inuit status



Standardized Rate Ratio

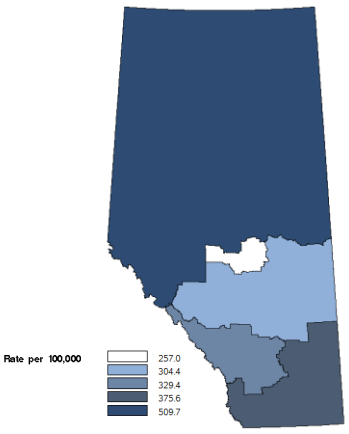
2.19 (2.14 – 2.25)

1.55 (1.47 – 1.62)

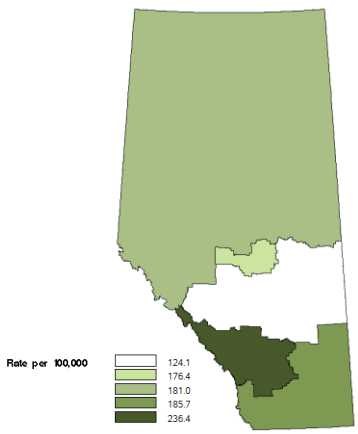
Age-standardized average annual rate (ASR) of a **first** dispensation of an *H. pylori* treatment regimen during 2009-2014 by First Nations/Inuit status and sex, Alberta

Results: geography (healthcare zone)

First Nations/Inuit

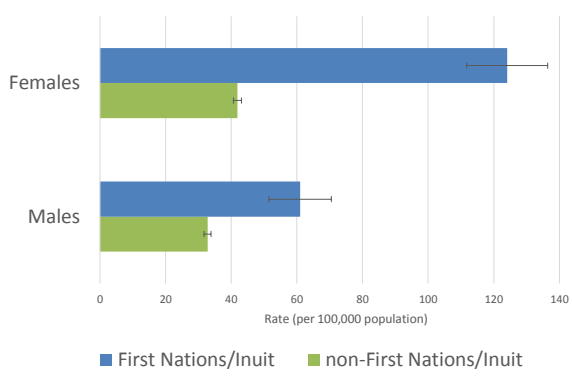


non-First Nations/Inuit



Age-standardized rates (ASR) of a first dispensation of an *H. pylori* treatment dispensation during 2009-2014 by First Nations/Inuit status, healthcare geographic area, both sexes combined; Alberta

Results: second dispensation event



Standardized Rate Ratio

2.96 (2.86 – 3.06)

1.86 (1.70 – 2.02)

Age-standardized average annual rate (ASR) of a **second** dispensation of an *H. pylori* treatment regimen during 2009-2014 by First Nations/Inuit status and sex, Alberta

Important considerations

- Excludes asymptomatic people
- Limitations with First Nations/Inuit identifiers

2009
Health premiums eliminated

No additional external information

2009+
First Nations identifiers less reliable

Summary and conclusions

- Results suggest a higher burden of *H. pylori* infection in First Nations/Inuit compared to non-First Nations/Inuit living in Alberta, Canada.
- Particularly true among females and those living in the northern areas of the province.
- First Nations/Inuit are also more likely to experience more than one round of treatment.

Thank you!

Appendix

***H. pylori* drug regimen**
Metronidazole and Tetracycline
(Clarithromycin or Azithromycin) and Amoxicillin
(Clarithromycin or Azithromycin) and Metronidazole
Amoxicillin and (Clarithromycin or Azithromycin) and Metronidazole
Amoxicillin and Metronidazole
(Levofloxacin or Moxifloxacin) and Amoxicillin
Amoxicillin and Levofloxacin and Metronidazole
HpPAC

Protein Pump Inhibitor

1. Omeprazole
2. Pantoprazole
3. Lansoprazole
4. Rabeprazole
5. Esomeprazole
6. Dexlansoprazole