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# First Nations Health Status Report

ALBERTA REGION 2010–2011



***Health Canada is the federal department responsible for helping the people of Canada maintain and improve their health. We assess the safety of drugs and many consumer products, help improve the safety of food, and provide information to Canadians to help them make healthy decisions. We provide health services to First Nations people and to Inuit communities. We work with the provinces to ensure our health care system serves the needs of Canadians.***

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First Nations Health Status Report – Albert Region 2010–2011

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## MESSAGE FROM THE MEDICAL OFFICER OF HEALTH

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Dear reader,

Welcome to the First Nations Health Status Report-Alberta Region 2010–2011.

This year, the report on the health status of First Nations in Alberta expands over last year's to include an analysis of the *causes of deaths across all age groups*; a closer look at *Injuries*, the leading cause of deaths among First Nations in the region; a detailed examination of the impact of *Diabetes*; and the *Health Protection* indicators in Communicable Disease Control and Environmental Public Health.

The purpose of this report is to provide a 'diagnostic' of the health of First Nations communities in Alberta in the specified areas above. This is intended to serve as a catalyst for action by health planners and decision-makers at various levels. In addition, every year each community also receives a separate report with data relevant to their local context but serving the same purpose as the regional report.

As you may know, Public Health is defined as one of the collective efforts of society, in this case First Nations communities to protect, promote and restore the people's health.

Dr. John Last adds that *"it is the combination of sciences, skills and beliefs that is directed to the maintenance and improvement of the health of all people through collective and social action."* Core functions of Public Health include Surveillance and Health Assessment, Health Promotion, Disease Prevention, Health Protection, and Emergency Preparedness.

This report and its delivery stem from these functions with the goal of informing and propelling communities and region towards action. The Public Health approach to address local, regional or national issues or concerns follows essentially a similar path:

- Identifying/defining a health issue or problem through surveillance/monitoring
- Identifying risk factors/causes associated with that problem
- Developing community-level interventions to control or prevent the cause or the issue
- Implementing the interventions; and evaluating them as to their effectiveness.

I would like to make a specific mention of the ongoing value of partnership and collaboration: they are foundational to this

work. There is no doubt that this endeavour is the fruit of collaboration by community-based public and community health workers, Alberta Health & Wellness, Alberta Health Services, and First Nations and Inuit Health Branch multi-disciplinary teams from various program areas in Public Health. To all who contributed to this enterprise, a sincere expression of gratitude for your much appreciated efforts and support.

I look forward to your feedback and to the next annual report which will continue to address other public health issues important to First Nations communities in Alberta.

Together on the journey,



Dr. Wadieh Yacoub, MBBCh MSc FRCPC  
Medical Officer of Health  
Director of Health Protection,  
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Health Canada, Alberta Region

# HIGHLIGHTS

## Vital Statistics

Between 2000–2009, among First Nations in Alberta:

- There were 4,831 recorded deaths. As expected, the highest proportion (31%) of these deaths were among those aged 65 years and older. However, in the non-First Nations population in Alberta, the corresponding proportion was 75%.
- Most (60%) infant deaths occurred within the first month of life due to perinatal conditions such as maternal complications of pregnancy, labour and delivery. This cause is comparable to the deaths among non-First Nations infants in Alberta.



- Deaths among one–14-year-old children were six times higher than non-First Nations children in the same age group. By far, the leading cause was related to injuries. A similar pattern was observed in youth aged 15–24 years and adults aged 25–44 years.
- The second leading cause of death among adults was alcohol-related liver diseases.
- The top three leading causes of deaths among adults aged 45–64 years were injuries and poisonings, heart disease, and tumors.
- The top causes of deaths were similar to those among non-First Nations seniors (65+): heart disease, tumors, and respiratory diseases.

## Injuries

Between 2000–2009, among First Nations in Alberta:

- The death rate due to injuries was four times the rate among non-First Nations in Alberta.
- Injuries accounted for 49% of potential years of life lost (PYLL), which is 75% higher than the proportion among Alberta non-First Nations.

- Injuries also accounted for 54% and 41% of premature deaths among First Nations males and females in Alberta, respectively.
- The majority of injury deaths were unintentional (49%); 33% were intentional and another 17% were caused by events of undetermined intent.
- Motor vehicle collisions and suicides were each equally responsible for 23% of injury deaths.
- The average age at death by suicide is 29 years; this is much lower than the average age (44 years) among non-First Nations in Alberta.
- Suicide rates were consistently higher among males than females across the areas.

## Diabetes

Between 2001–2010, among First Nations in Alberta:

- The incidence of new cases of diabetes was relatively stable over the ten-year period regardless of gender. When adjusting for differences in age distribution, the rate of new cases among First Nations was double the rate among non-First Nations in Alberta.
- The rate of new cases increased with age and was consistent with the trend in Type 2 diabetes.





- The prevalence of diabetes was higher among females compared to males over the 10-year period. From 2001–2010, the prevalence increased by 39% and 60% among First Nations females and males, respectively. An increase in non-insured claims for antidiabetic medications was reported during the same time interval.
- The prevalence of diabetes was twice as high among First Nations compared to non-First Nations in Alberta.
- From 2001–2008, First Nations living with diabetes on-reserve were twice as likely to receive dialysis as non-First Nations living with diabetes.
- The proportion of lower limb amputation among First Nations living with diabetes on-reserve was more than double that of non-First Nations, although it fluctuated over the ten-year period.

- First Nations in Alberta living with diabetes had slightly lower prevalence of cardiovascular disease than non-First Nations over the ten-year interval, both showing a declining trend over time.

### Health Protection:

#### COMMUNICABLE DISEASE CONTROL

##### In 2010, in First Nations communities:

- Influenza immunization among First Nations seniors aged 65 years and over remained at 83%, the highest coverage rate among this high-risk age group in the last eight years of reporting. Community health staff are to be commended for this achievement.
- Immunization initiation among one-year-old First Nations infants approximated 100%; however, only 60% in this age group received complete series, as per the Alberta schedule.

- Eighty-six percent of reported notifiable infectious diseases in First Nations communities were sexually transmitted infections (STIs).
- The overall rate of invasive pneumococcal disease (IPD) among First Nations living on-reserve in Alberta has substantially declined since 2005. In addition, the gap between the rate of IPD infection for First Nations on-reserve and the Alberta off-reserve population is closing over time.
- The overall rate of invasive group A streptococcal disease among First Nations living on-reserve in Alberta has also significantly decreased over the past four years.
- A shigellosis outbreak began in multiple Alberta First Nations communities. Shigellosis had not been reported in Alberta First Nations communities since 2006. The last large shigellosis outbreak in Alberta region occurred in 1998–99.

- The lowest rate of TB in many years was reported in Alberta First Nations communities. The most common risk factors among TB cases (2006–2010) were being in contact with an active case in the last two years (25%), having a history of alcohol or other substance abuse (22%), diabetes (17%), and previous fibronodular chest x-ray (17%).
- There was a decline in certain STIs in comparison to similar observations in the Alberta general population. The exception was chlamydia, where disease incidence increased in the First Nations communities.
- With one exception in the previous fiscal year, the leading risk factor for HIV transmission among First Nations females in Alberta was again injection drug use.
- The number of reported animal bites in Alberta First Nations communities increased from 2000–2010. During that period, 1,355 animal bites were reported. In 2010, there were a total of 223 animal bites, a 6% increase from 2009.

## Health Protection:

### ENVIRONMENTAL PUBLIC HEALTH

In fiscal year 2010–11, in First Nations communities:

- Five First Nations communities met the 100% target for submitting routine

water samples for testing and are to be congratulated for their achievement: Bigstone, Meander River, Morley, Pikani, and Tsuu T'ina. Another 17 First Nations communities are to be commended for attaining the 90% mark.

- Water-testing frequency across First Nations communities in Alberta has shown stability over the last five years, remaining around the 80% range (83% in the last fiscal year).
- There were 72 drinking water advisories issued in 31 First Nations communities; 93% were boil-water advisories. Thirty-one per cent of the advisories were carried over from the previous year.
- Operational reasons remain the leading contributor to the drinking water advisories issued for public water and semi-public water systems. These include damage or failure of the treatment/distribution

equipment, undetermined source of contamination, damaged cistern or holding tank, and inadequate disinfection residual in the distribution system.

- A total of 2,281 facilities were inspected. Food facility and housing inspections constituted 33% and 32% of this activity, respectively.

### Congratulations to Alberta Region's FNIHB's environmental public health team which received two awards:

1. Indian and Northern Affairs Canada's Alberta Regional Director General Award – for their role in the National Assessment of Water and Wastewater Systems in First Nations Communities.
2. Health Canada's Regional Director General Award for Excellence in Innovation – in relation to the Safe Drinking Water Program.



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# Vital Statistics







## Vital Statistics

The life expectancy of Canadians is rising but this is not the case for Aboriginal peoples of Canada<sup>1</sup>. Recent analysis of life expectancy in Canada between 1991–2006 has shown that the expected survival of status First Nations to 75 years of age as being significantly lower than the general Canadian population<sup>2</sup>. The life expectancy among Alberta First Nations is considerably lower than Alberta non-First Nations<sup>3</sup>. The question asked in this chapter is: If Alberta First Nations are dying earlier than non-First Nations of Alberta, what are the causes of death?

After adjusting for age, the death rate among First Nations in Alberta was between 20% and 60% higher than non-First Nations of Alberta.

The leading causes of death among Alberta First Nations from 2000–2009 are injuries and poisonings, followed by circulatory diseases, neoplasms, and respiratory diseases.

The *2009–2010 First Nations Health Status Report-Alberta Region*, introduced the discussion on the leading causes of death<sup>3</sup>. This chapter examines the death of Alberta First Nations and non-First Nations of Alberta by age groups from infants to seniors. The aim is to provide programs and decision-makers with more detailed information about causes of death at various stages of life, and to help identify areas where increased efforts for health promotion and prevention can be directed.

There were 4,831 deaths within the First Nations population of Alberta between 2000 and 2009. After adjusting for the differences in ages of the two populations, the death rate among First Nations in Alberta was between 20% and 60% higher than non-First Nations of Alberta<sup>3</sup>. The majority of deaths occurring among Alberta First Nations was in those aged 65 years and older (31%), followed by 45–64 years (27%) and 25–44 years (24%). Although a similar pattern was observed among Alberta non-First Nations, the proportionate distribution of deaths varied greatly, with 75% occurring in those aged 65 years and older, 18% in the 45–64 year olds, and 5% in the 25–44 year olds. This is consistent with current knowledge and indicates that more Alberta First Nations are dying under the age of 65 years compared to non-First Nations<sup>2</sup>.



- 1 *Towards a healthy future second report on the health of Canadians* - Prepared by the Federal, Provincial and Territorial Advisory Committee on Population Health for the Meeting of Ministers of Health, Charlottetown, P.E.I., September 1999.
- 2 Tjepkema, M and Wilkins, R, *Remaining life expectancy at age 25 and probability of survival to age 75, by socio-economic status and Aboriginal ancestry*, Statistics Canada, Catalogue no. 82-003-XPE Health Reports, Vol. 22, no. 4, December 2011.
- 3 *First Nations Health Status Report – Alberta Region 2009–2010*, Health Canada, Catalogue no. H26-4/2010E.

## CAUSES OF DEATH BY AGE GROUP, 2000–2009

The leading causes of death among Alberta First Nations from 2000–2009 are injuries and poisonings, followed by circulatory diseases, neoplasms, and respiratory diseases. A detailed discussion of deaths due to injuries is included

in the following chapter. In contrast, the leading causes of death among Alberta non-First Nations for the same period are circulatory diseases, followed by neoplasms, respiratory diseases, and injuries.

Table 1.1 summarizes the leading causes of death in various age groups and highlights the various patterns among the top four causes of death.

**Table 1.1**

Distribution of leading causes of death, First Nations (by age) and non-First Nations, Alberta, 2000–2009

Rank	First Nations n (%)						All First Nations n (%)	All Non-First Nations n (%)
	AGE GROUPS (YEARS)							
	< 1	1–14	15–24	25–44	45–64	65+		
1	Perinatal Conditions 134 (45)	Injuries and Poisonings 85 (62)	Injuries and Poisonings 403 (87)	Injuries and Poisonings 688 (60)	Injuries and Poisonings 308 (24)	Circulatory Diseases 496 (33)	Injuries and Poisonings 1,564 (32)	Circulatory Diseases 64,879 (35)
2	Abnormal Clinical Findings 59 (20)	Nervous System Diseases 15 (11)	Neoplasms 15 (3)	Digestive Diseases 82 (7)	Circulatory Diseases 285 (22)	Neoplasms 344 (23)	Circulatory Diseases 844 (18)	Neoplasms 53,196 (28)
3	Congenital Anomalies 45 (15)	Neoplasms 9 (7)	Nervous System Diseases 7 (2)	Neoplasms 78 (7)	Neoplasms 248 (19)	Respiratory Diseases 206 (14)	Neoplasms 697 (14)	Respiratory Diseases 15,788 (8)
4	Respiratory Diseases 16 (5)	Congenital Anomalies 5 (4)	Congenital Anomalies 6 (1)	Mental Disorders 56 (5)	Digestive Diseases 128 (10)	Metabolic Diseases 130 (9)	Respiratory Diseases 374 (8)	Injuries and Poisonings 15,621 (8)
	Others 42 (14)	Others 23 (17)	Others 33 (7)	Others 240 (21)	Others 323 (25)	Others 322 (22)	Others 1,352 (28)	Others 38,612 (21)
<b>Total</b>	<b>296</b> (6% of all deaths)	<b>137</b> (3% of all deaths)	<b>464</b> (10% of all deaths)	<b>1,144</b> (24% of all deaths)	<b>1,292</b> (27% of all deaths)	<b>1,498</b> (31% of all deaths)	<b>4,831</b> (100%)	<b>188,096</b> (100%)

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File



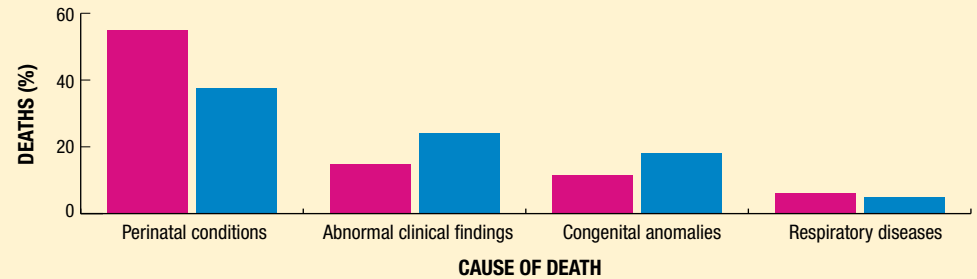


## Infants

There were 296 Alberta First Nations infant deaths from 2000–2009, ranging from 21–43 deaths per year. These deaths represent 6% of all Alberta First Nations deaths and were four times the proportion of Alberta non-First Nations infant deaths. The proportion of infant deaths by gender was comparable between First Nations and non-First Nations.

**Figure 1.1**

Proportion\* of leading causes of infant death (under 1 year), by gender, Alberta First Nations, 2000–2009



	Females	Males	All First Nations
Perinatal conditions	55.0	37.7	45.3
Abnormal clinical findings	14.7	24.0	19.9
Congenital anomalies	11.6	18.0	15.2
Respiratory diseases	6.2	4.8	5.4

\* Not all causes of death are included; therefore the sum of the above percent of deaths does not equal 100.

Source: Health Canada, FNIH - Alberta Region, FNMD

The leading cause of deaths among Alberta First Nations infants was perinatal conditions, followed by abnormal clinical findings such as sudden infant death syndrome, and congenital anomalies (Table 1.1). However, the pattern of leading causes of death among Alberta non-First Nations infants was different; perinatal conditions are followed by congenital anomalies and then abnormal clinical findings.

Proportionately, Alberta First Nations infant deaths resulting from perinatal conditions were higher among females (55%) compared to males (38%). The opposite pattern is seen with infant deaths resulting from abnormal clinical findings and congenital anomalies, where the proportion of males is higher than females (Figure 1.1).

Approximately 53% of all infant deaths occurring among Alberta First Nations were from the following four causes: fetus and newborn affected by maternal complications of pregnancy, labour, and delivery; sudden infant death syndrome; perinatal period respiratory and cardiovascular disorders; and length of gestation and fetal growth disorders (Figure 1.2).

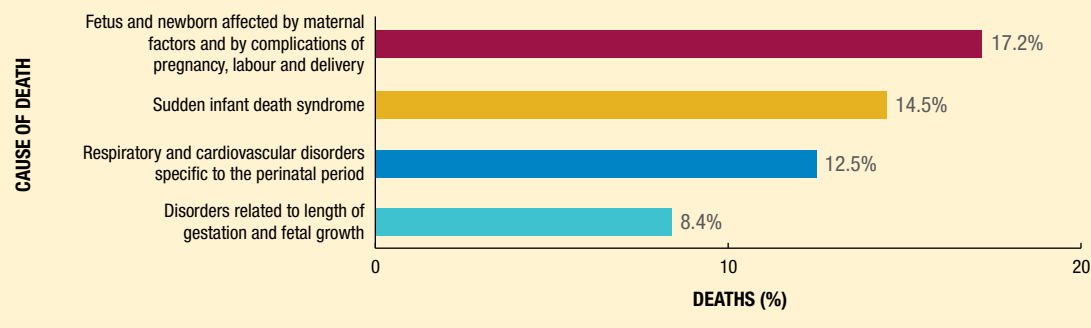
Most (60%) of Alberta First Nations infant deaths occurred within the first month of life and was mainly due to perinatal conditions. Infant deaths among Alberta First Nations that occurred after one month of life were mostly due to sudden infant death syndrome and respiratory diseases.

### Children - One–14 Years

For the period 2000–2009, there were 137 deaths among First Nations children, with the highest number of deaths occurring in 2000 (20 deaths) and the least in 2003 (8 deaths). These deaths represent 3% of all First Nations deaths within the reporting period, and are six times the proportion of deaths among Alberta non-First Nations children. For the majority of the years, the annual death rate among First Nations was significantly higher than for non-First Nations (Figure 1.3). On average, Alberta First Nations children had death rates three times higher than Alberta non-First Nations children.

Figure 1.2

Proportion\* of select causes of infant death, Alberta First Nations, 2000–2009

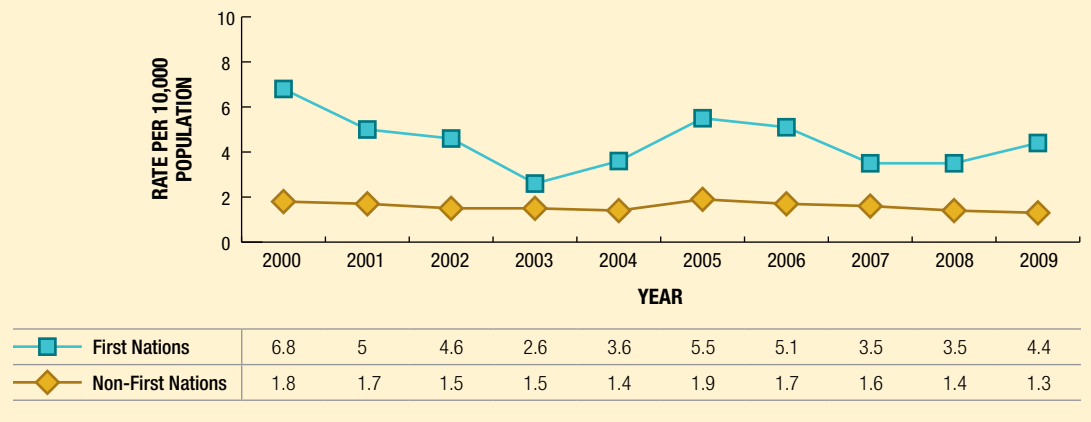


\* Not all causes of death are included; therefore the sum of the above percent of deaths does not equal 100.

Source: Health Canada, FNIH - Alberta Region, FNMD

Figure 1.3

Death rates among children (1–14 years), First Nations and non-First Nations, Alberta, 2000–2009



Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death file; AANDC, Indian Registry Population file; AHW, Population file

On average, Alberta First Nations children had death rates three times higher than Alberta non-First Nations children.

The main causes of deaths among First Nations children were: injuries and poisonings, nervous system diseases (mainly cerebral palsy), and neoplasms (mainly brain cancer) (Figure 1.4 and Table 1.1). However, the pattern of leading causes of death among Alberta non-First Nations children was injuries and poisonings, followed by neoplasms and nervous system diseases. Proportionally, First Nations male children had more deaths resulting from injuries and poisoning compared to First Nations female children.

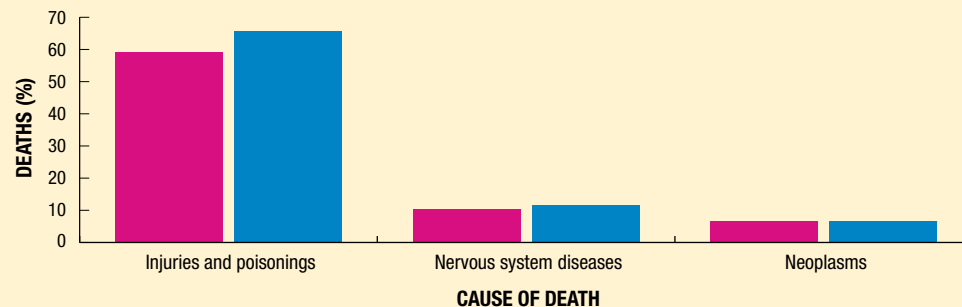
## Youth - 15–24 Years

There were 464 deaths among Alberta First Nations youth from 2000–2009, most (69%) being males. These deaths represent 10% of all Alberta First Nations deaths. The highest number of deaths within this period occurred in 2008 (67 deaths). The annual mortality rate among First Nations youth was significantly higher (up to six times) than non-First Nations (Figure 1.5). On average, Alberta First Nations youth had four times more deaths than Alberta non-First Nations youth.

On average, Alberta First Nations male youth (33 deaths per 10,000) had double the mortality rate compared to Alberta First Nations female youth (15 deaths per 10,000).

Figure 1.4

Proportion\* of leading causes of death among children (1–14 years), by gender, Alberta First Nations, 2000–2009



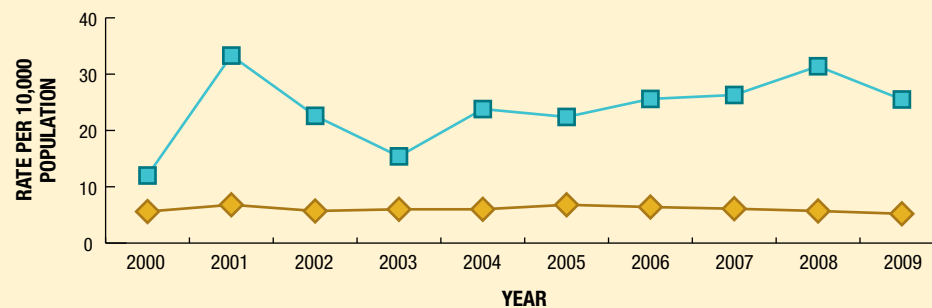
CAUSE OF DEATH	Females (%)	Males (%)	All First Nations (%)
Injuries and poisonings	59.2	65.6	62.0
Nervous system diseases	10.5	11.5	10.9
Neoplasms	6.6	6.6	6.6

\* Not all causes of death are included; therefore the sum of the above percent of deaths does not equal 100.

Source: Health Canada, FNIH - Alberta Region, FNMD

Figure 1.5

Death rates among youth (15–24 years), First Nations and non-First Nations, Alberta, 2000–2009



YEAR	First Nations	Non-First Nations
2000	12.0	5.6
2001	33.3	6.8
2002	22.6	5.7
2003	15.4	6.0
2004	23.8	6.0
2005	22.4	6.8
2006	25.6	6.4
2007	26.3	6.1
2008	31.4	5.7
2009	25.5	5.2

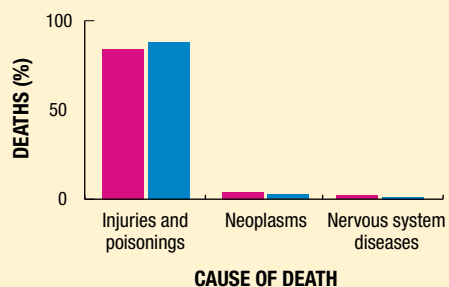
Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death file; AANDC, Indian Registry Population file; AHW, Population file

## CAUSES OF DEATH AMONG YOUTH

The leading causes of death among Alberta First Nations youth are injuries and poisonings, neoplasms, and diseases of the nervous system (Table 1.1 and Figure 1.6). This pattern is similar to the leading causes of death among Alberta non-First Nations youth.

Figure 1.6

Proportion\* of leading causes of death among youth (15–24 years), by gender, Alberta First Nations, 2000–2009

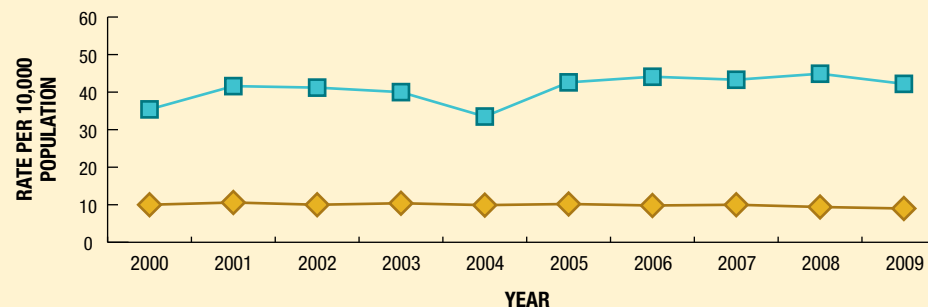


\* Not all causes of death are included; therefore the sum of the above percent of deaths does not equal 100.

Source: Health Canada, FNIH - Alberta Region, FNMD

Figure 1.7

Death rates among adults (25–44 years), First Nations and non-First Nations, Alberta, 2000–2009



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
First Nations	35.4	41.6	41.2	40.0	33.5	42.6	44.1	43.3	44.9	42.2
Non-First Nations	10.0	10.6	10.0	10.4	9.9	10.2	9.8	10.0	9.4	9.0

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death file; AANDC, Indian Registry Population file; AHW, Population file

## Adults - 25–44 Years

There were 1,144 deaths among Alberta First Nations adults from 2000–2009, with 58% being males. The number of deaths per year ranged from 91–133 deaths. First Nations adults were three to five times more likely to die than non-First Nations adults (Figure 1.7). The overall average death rate for First Nations adults was 41 deaths per 10,000 population.

On average, Alberta First Nations adult males (49 deaths per 10,000 population) had significantly higher (45%) rates of death compared to Alberta First Nations adult females (34 deaths per 10,000 population).

## CAUSES OF DEATH AMONG ADULTS (25–44 YEARS)

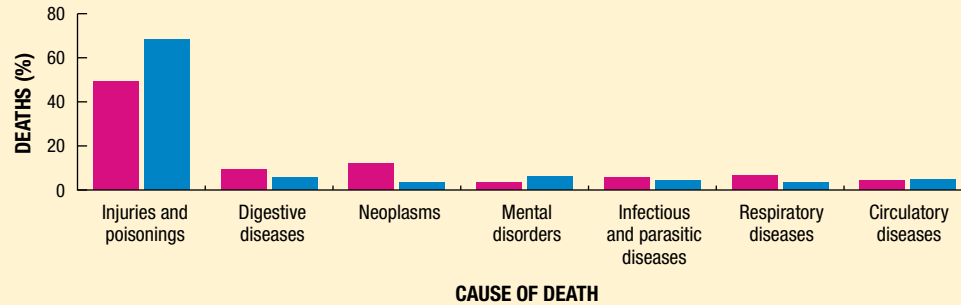
The leading causes of death among Alberta First Nations adults are injuries and poisonings, diseases of the digestive system, neoplasms, and mental and behavioural disorders (Table 1.1 and Figure 1.8). The leading causes of death among Alberta non-First Nations adults have a different pattern, leading with injuries and poisonings, followed by neoplasms, circulatory system diseases, and diseases of the nervous system.

A higher proportion of deaths among First Nations adult males resulted from injuries, and mental and behavioural disorders than among females. Conversely, First Nations adult females had higher proportions of



**Figure 1.8**

Proportion\* of leading causes of death among adults (25–44 years), by gender, Alberta First Nations, 2000–2009



	Injuries and poisonings	Digestive diseases	Neoplasms	Mental disorders	Infectious and parasitic diseases	Respiratory diseases	Circulatory diseases
Females	49.1	9.2	11.9	3.5	5.8	6.5	4.4
Males	68.1	5.7	3.2	5.9	4.1	3.6	4.7
All First Nations	60.1	7.2	6.8	4.9	4.8	4.8	4.5

\* Not all causes of death are included; therefore the sum of the above percent of deaths does not equal 100.

Source: Health Canada, FNIH - Alberta Region, FNMD

deaths resulted from neoplasms, diseases of the digestive system, diseases of the respiratory system, and certain infectious and parasitic diseases compared to males (Figure 1.8).

### DISEASES OF THE DIGESTIVE SYSTEM AMONG ADULTS

Diseases of the digestive system were the second leading cause of deaths among First Nations adults. The majority (63%) of these deaths were alcohol-related liver diseases (Figure 1.9).

### NEOPLASMS AMONG ADULTS

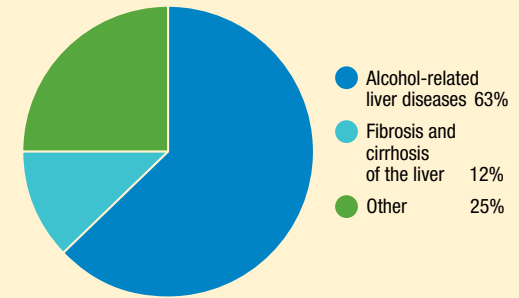
There were 78 deaths related to neoplasms among First Nations adults from 2000–2009. The most common deaths were cancers of the breast (18%), cervix (15%), lungs (9%), and stomach (8%).

### MENTAL DISORDERS AMONG ADULTS

Among Alberta First Nations adults, the majority (84%) of deaths due to mental disorders were related to the use of alcohol (Figure 1.10).

**Figure 1.9**

Proportion of deaths due to diseases of the digestive system among adults (25–44 years), Alberta First Nations, 2000–2009

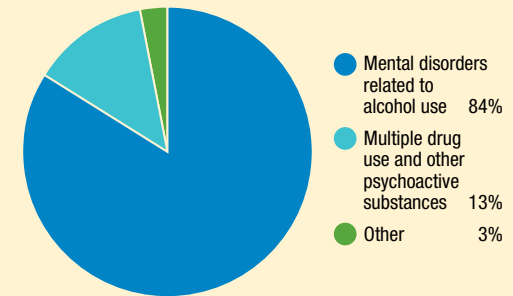


n = 82 deaths

Source: Health Canada, FNIH - Alberta Region, FNMD

**Figure 1.10**

Proportion of deaths due to mental disorders among adults (25–44 years), Alberta First Nations, 2000–2009



n = 56 deaths

Source: Health Canada, FNIH - Alberta Region, FNMD

## INFECTIOUS AND PARASITIC DISEASES AMONG ADULTS

Infectious and parasitic diseases were identified as the underlying cause of death for 55 First Nations adults; 64% were due to human immunodeficiency virus [HIV].

## DISEASES OF THE RESPIRATORY SYSTEM AMONG ADULTS

Respiratory system diseases were responsible for 55 deaths among Alberta First Nations adults. The majority (56%) was due to influenza and pneumonia; 29% resulted from lung diseases due to external agents such as pneumoconiosis (fungal infection) and pneumonitis (lung infection).

## DISEASES OF THE CIRCULATORY SYSTEM AMONG ADULTS

Circulatory system diseases accounted for 52 deaths among First Nations adults. Ischaemic heart disease accounted for 38% of these deaths, followed by cerebrovascular diseases (25%) and other forms of heart diseases (25%).

## Adults Aged 45–64 Years

There were a total of 1,292 deaths among Alberta First Nations adults from 2000–2009, with 54% being males. The number of deaths per year ranged from 88–171 deaths per year. First Nations adults had a death rate two to three times higher than non-First Nations (Figure 1.11).

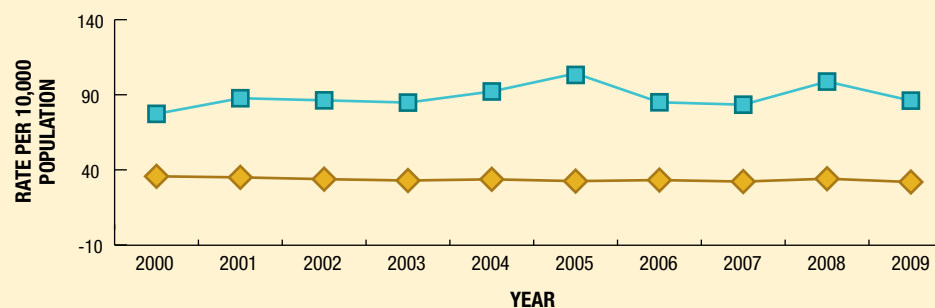
On average, Alberta First Nations adult males (120 deaths per 10,000 population) had a significantly higher (46% higher) rate of death compared to adult females (82 deaths per 10,000 population).

## CAUSES OF DEATH AMONG ADULTS

The overall leading causes of death among Alberta First Nations adults are injuries and poisonings, circulatory system diseases, neoplasms, digestive system diseases, and respiratory system diseases (Table 1.1 and Figure 1.12). While the leading causes of adult deaths among Alberta non-First Nations are similar, they have a different pattern: neoplasms, circulatory system diseases, injuries and poisonings, digestive system diseases, and respiratory system diseases.

Figure 1.11

Death rates among adults (45–64 years), First Nations and non-First Nations, Alberta, 2000–2009

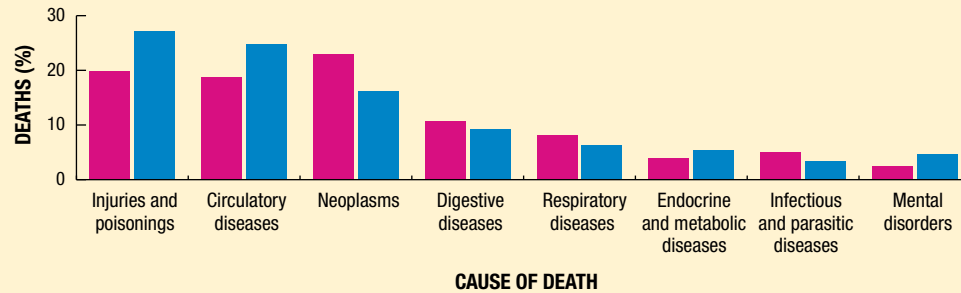


YEAR	First Nations	Non-First Nations
2000	87.5	45.9
2001	97.9	45.2
2002	96.5	44.0
2003	95.0	43.1
2004	102.4	43.9
2005	114.4	42.7
2006	95.2	43.4
2007	93.6	42.4
2008	109.0	44.3
2009	96.3	42.1

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death file; AANDC, Indian Registry Population file; AHW, Population file

**Figure 1.12**

Proportion\* of leading causes of death among adults (45–64 years), by gender, Alberta First Nations, 2000–2009



CAUSE OF DEATH	Females (%)	Males (%)	All First Nations (%)
Injuries and poisonings	19.8	27.2	23.8
Circulatory diseases	18.8	24.8	22.1
Neoplasms	22.9	16.1	19.2
Digestive diseases	10.7	9.3	9.9
Respiratory diseases	8.1	6.4	7.2
Endocrine and metabolic diseases	3.9	5.4	4.7
Infectious and parasitic diseases	5.1	3.3	4.1
Mental disorders	2.5	4.7	3.7

\* Not all causes of death are included; therefore the sum of the above percent of deaths does not equal 100.  
 Source: Health Canada, FNIH - Alberta Region, FNMD

The proportion and rank of the leading causes of adult deaths among First Nations varies by gender. First Nations male adults had a higher proportion of deaths resulting from injuries and poisonings, circulatory system diseases, endocrine, nutritional and metabolic diseases, and mental and behavioral disorders than females. On the other hand, First Nations female adults had a higher proportion of deaths from neoplasms, digestive system diseases, respiratory system diseases, and certain infectious and parasitic diseases than adult males (Figure 1.12).

### CIRCULATORY DISEASES AMONG ADULTS

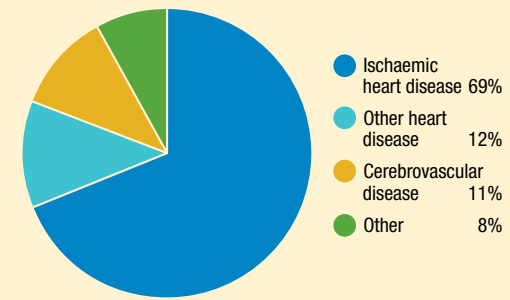
Circulatory system diseases were the second leading cause of death among Alberta First Nations adults and the main cause of death in this category was ischaemic heart disease (Figure 1.13).

### NEOPLASMS AMONG ADULTS

Neoplasms were the third main cause of death among Alberta First Nations adults, accounting for 248 deaths of which 54% were females. The main causes in this category among Alberta First Nations were cancers of the lung (18%), breast (11%), and colon (10%).

**Figure 1.13**

Proportion of deaths due to diseases of the circulatory system among adults (45–64 years), Alberta First Nations, 2000–2009



n = 285 deaths  
 Source: Health Canada, FNIH - Alberta Region, FNMD

### DISEASES OF THE DIGESTIVE SYSTEM AMONG ADULTS

Diseases of the digestive system were attributed to 128 deaths among First Nations adults. The major causes were liver disease related to alcohol use (49%), followed by fibrosis and cirrhosis of the liver (18%). In general, diseases of the liver accounted for 75% of these type of deaths.

## RESPIRATORY DISEASES AMONG ADULTS

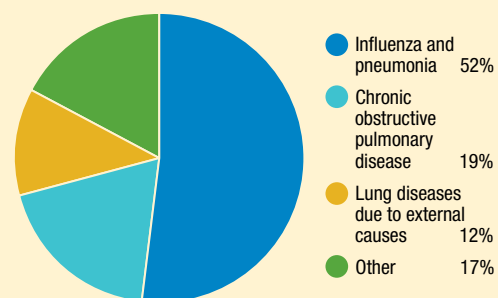
The leading causes of First Nations deaths among adults related to respiratory diseases are influenza and pneumonia (Figure 1.14).

## ENDOCRINE, NUTRITIONAL, AND METABOLIC DISEASES AMONG ADULTS

Endocrine, nutritional, and metabolic diseases were identified as the underlying cause of death for 61 First Nations adults; 62% were males. The major cause of death in this category was due to diabetes (90%).

Figure 1.14

Proportion of deaths due to respiratory diseases among adults (45–64 years), Alberta First Nations, 2000–2009



n = 93 deaths

Source: Health Canada, FNIH - Alberta Region, FNMD

## INFECTIOUS AND PARASITIC DISEASES AMONG ADULTS

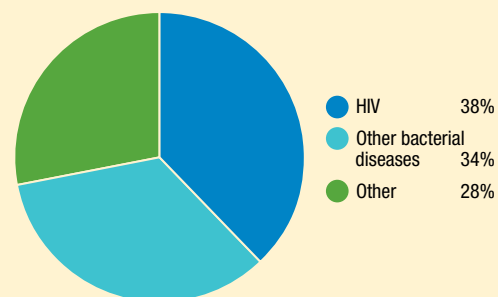
HIV was the main cause of death related to infectious and parasitic diseases among Alberta First Nations adults (Figure 1.15).

## MENTAL DISORDERS AMONG ADULTS

Mental and behavioural disorders were responsible for 48 deaths among Alberta First Nations adults, 69% being males. The majority (92%) was due to use of alcohol and 6% was due to multiple drug use and other psychoactive substances.

Figure 1.15

Proportion of deaths due to infectious and parasitic diseases among adults (45–64 years), Alberta First Nations, 2000–2009



n = 53 deaths

Source: Health Canada, FNIH - Alberta Region, FNMD

## Seniors Aged 65 Years and Older

As expected, the highest number of deaths occurred in this age group. There were 1,498 deaths among Alberta First Nations seniors from 2000–2009; 52% were females. The number of deaths per year ranged from 112–172 deaths. The overall average death





rate among First Nations seniors was 389 deaths per 10,000 population. The annual death rate was not significantly different between the First Nations and non-First Nations seniors of Alberta (Figure 1.16).

On average, Alberta First Nations male seniors (447 deaths per 10,000) had significantly higher (30% higher) rates of death than Alberta First Nations female seniors (346 deaths per 10,000).

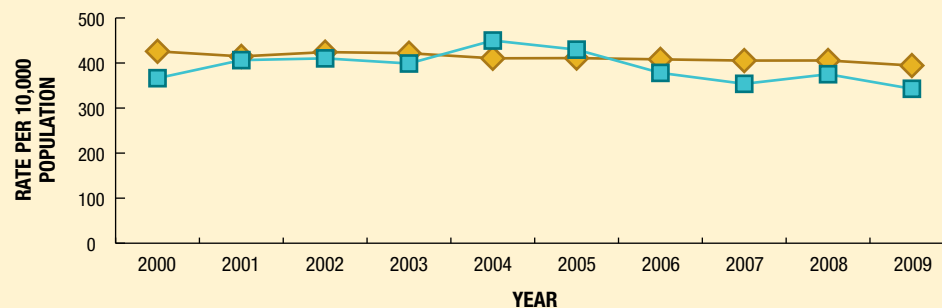
### CAUSES OF DEATH AMONG SENIORS

The overall leading causes of death among Alberta First Nations seniors are circulatory diseases, neoplasms, respiratory diseases, and endocrine, nutritional and metabolic diseases (Table 1.1 and Figure 1.17). Among Alberta non-First Nations seniors, the leading causes of death were mostly similar: circulatory diseases, neoplasms, respiratory diseases, and then diseases of the nervous system.

Proportionally, slightly more deaths among First Nations male seniors resulted from neoplasms, respiratory diseases, injuries and poisonings, and genitourinary diseases compared to First Nations female seniors. Most deaths among First Nations female seniors resulted from circulatory diseases, endocrine, nutritional, and metabolic diseases, and digestive system diseases (Figure 1.17).

Figure 1.16

Death rates among seniors (65 years and older), First Nations and non-First Nations, Alberta, 2000–2009



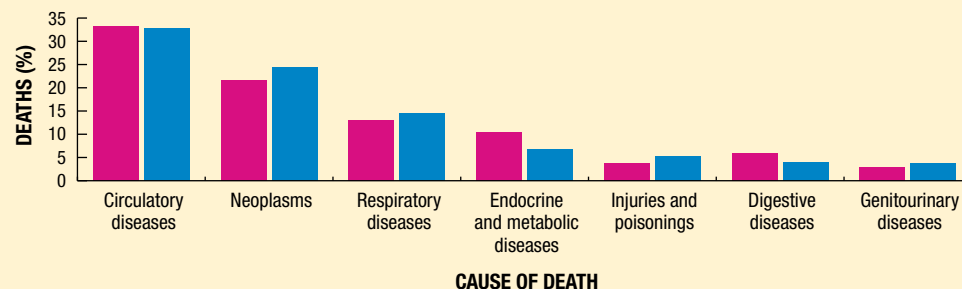
YEAR	First Nations	Non-First Nations
2000	366.3	425.9
2001	406.4	414.7
2002	410.3	424.2
2003	398.9	421.8
2004	449.9	410.4
2005	429.7	410.9
2006	378.1	408.1
2007	353.8	405.4
2008	375.1	405.6
2009	342.8	394.4

n = 53 deaths

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File; AANDC, Population File; AHW, Population File

Figure 1.17

Proportion\* of leading causes of death among seniors (65 years and older), by gender, Alberta First Nations, 2000–2009



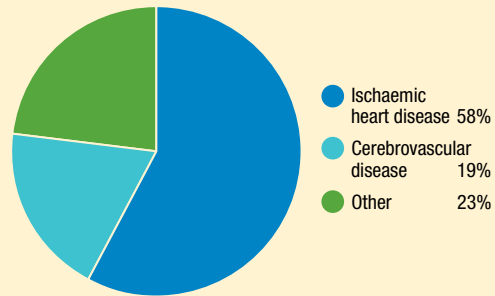
CAUSE OF DEATH	Females	Males	All First Nations
Circulatory diseases	33.3	32.9	33.1
Neoplasms	21.6	24.4	23.0
Respiratory diseases	13.1	14.5	13.8
Endocrine and metabolic diseases	10.5	6.7	8.7
Injuries and poisonings	3.8	5.2	5.0
Digestive diseases	6.0	4.0	4.5
Genitourinary diseases	3.0	3.7	3.3

\* Not all causes of death are included; therefore the sum of the above percent of deaths does not equal 100.

Source: Health Canada, FNIH - Alberta Region, FNMD

Figure 1.18

Proportion of deaths due to circulatory diseases among seniors (65 years and older), Alberta First Nations, 2000–2009

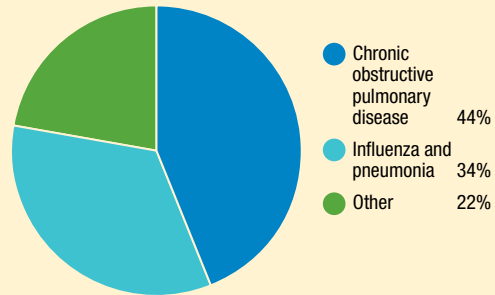


n = 496 deaths

Source: Health Canada, FNIH - Alberta Region, FNMD

Figure 1.19

Proportion of deaths due to respiratory diseases among seniors (65 years and older), Alberta First Nations, 2000–2009



n = 206 deaths

Source: Health Canada, FNIH - Alberta Region, FNMD

### CIRCULATORY DISEASES AMONG SENIORS

Circulatory diseases were the leading cause of death among Alberta First Nations seniors, and deaths in this category were mainly due to ischaemic heart disease (Figure 1.18).

### NEOPLASMS AMONG SENIORS

Neoplasms were the second highest cause of death among Alberta First Nations seniors, accounting for 344 deaths, 52% being males. These deaths were mainly due to cancers of the lung (25%), colon (10%), prostate (8%), and breast (6%).

### RESPIRATORY DISEASES AMONG SENIORS

Chronic obstructive pulmonary disease (COPD) was the main cause of death among Alberta First Nations seniors from respiratory diseases (Figure 1.19).

### ENDOCRINE, NUTRITIONAL, AND METABOLIC DISEASES AMONG SENIORS

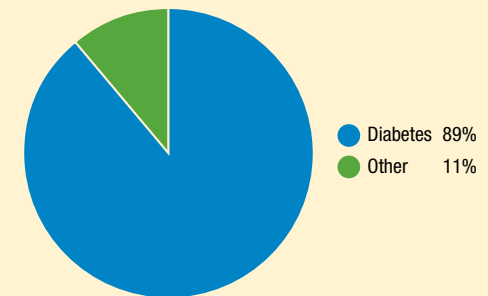
Diabetes was the major cause of all deaths related to endocrine, nutritional, and metabolic diseases among First Nations seniors (Figure 1.20).

### DISEASES OF THE DIGESTIVE SYSTEM AMONG SENIORS

Seventy-five deaths among First Nations seniors were due to diseases of the digestive system. These were mainly due to liver diseases (23%) and diseases of the intestines (12%).

Figure 1.20

Proportion of deaths due to endocrine, nutritional, and metabolic diseases among seniors (65 years and older), Alberta First Nations, 2000–2009



n = 130 deaths

Source: Health Canada, FNIH - Alberta Region, FNMD

## SUMMARY

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### The patterns of death between 2000–2009 among Alberta First Nations are summarized as follows:

- The comparison between First Nations and non-First Nations of Alberta indicates that the rate of mortality among Alberta First Nations is higher and First Nations are dying younger.
- Causes of death patterns are different for Alberta First Nations compared to non-First Nations. For example, injuries and poisonings were the leading cause of death among all Alberta First Nations, whereas diseases of the circulatory system were the leading cause of death among all Alberta non-First Nations. There were also differences in patterns among the various First Nations age categories.
- Most (60%) infant deaths among Alberta First Nations occurred within the first month of life. Deaths around the perinatal period ranked highest among infants of Alberta First Nations. This is also reflected in the pattern of infant deaths among the general population of Canada in 2005. While SIDS and congenital anomalies ranked second and third among Alberta First Nations, they ranked third and second, respectively, among infants in Canada.
- Injuries are the major cause of death among Alberta First Nations from age 1–64 years. The proportion of injury-related deaths among those in age groups one–44 years

were at least 1.5 times higher than all other causes of death combined, and were dominated by males.

- After injuries, the other causes of death over the ten-year period were small in number, but largely preventable. For example, there were 55 deaths due to diseases of the respiratory system among adults aged 25–44 years but over half were due to influenza and pneumonia. Another 55 deaths among First Nations adults were due to infectious diseases; 38% were due to HIV and 34% due to other systemic bacterial infections, such as septicemia.
- Alcohol played a large part in diseases of the digestive system and in mental disorders. Liver diseases related to alcohol use were responsible for 63% of digestive diseases among adults (25–44 years) and 49% in adults (45–64 years). Of the deaths due to mental disorders, alcohol-related mental disorders were responsible for 84% and 92% of deaths among adults aged 25–45 years and adults aged 45–64 years, respectively.
- The leading type of cancer among all Alberta First Nations is lung cancer; this is also the case for the adult and senior age groups of Alberta First Nations. However, cancers of the breast and cervix are the leading cancers among adult females.
- Diabetes was the main cause of death, for both adults (90%) and seniors (89%),

related to endocrine, nutritional, and metabolic diseases.

- The mortality rate among seniors was higher than all other First Nations age groups, with the main cause being ischemic heart disease. This corresponds to the main cause of death among Alberta non-First Nations seniors. Among Alberta First Nations seniors, respiratory diseases, such as COPD and influenza and pneumonia ranked second among the leading causes of death.

## METHODOLOGY

### Who is included in this chapter?

The Vital Statistics chapter used the Alberta Vital Statistics (AVS) death file and First Nations Mortality Database (FNMD) to identify Alberta First Nations and non-First Nations who were residents of Alberta at the time of their death.

The term ‘Alberta First Nations’ in this chapter does not include: 1) First Nations registered to non-Alberta bands and who died in Alberta, or 2) First Nations registered to Alberta bands who died outside the province of Alberta.

The term ‘Alberta non-First Nations’ includes all Alberta residents not previously defined by the term Alberta First Nations. Thus, the Alberta non-First Nations death dataset may include some First Nations registered to bands of other provinces who died in Alberta.

## Data Sources

This chapter is based on the analysis of the following data sources:

- FNMD: Alberta First Nations deaths were obtained from the First Nations Mortality Database (FNMD) held by the Health Assessment and Surveillance Unit of First Nations and Inuit Health-Alberta Region, Health Canada. FNMD was created through a series of steps that involved combining and matching information of First Nations deaths from AVS, Alberta Health and Wellness (AHW) death files, and a subset of the Indian Registry System (IRS) database of the Aboriginal Affairs and Northern Development Canada (AANDC) death file.
- AVS death file: Death data were obtained from Alberta Vital Statistics, Alberta Government Services.
- AANDC population file: The First Nations population data were obtained from the IRS database of Aboriginal Affairs and Northern Development Canada.
- AHW population file: The Alberta population was obtained from Alberta Health and Wellness by using the Government of Alberta's Interactive Tool. The difference between the Alberta population and the Alberta First Nations population was used as the population for non-First Nations in Alberta.

- Canadian population data: For the purpose of age-standardization, the 2006 Canadian Census population data were obtained from Statistics Canada.

## Identification of Causes of Death

All causes of death were identified based on the underlying causes of death listed on the AVS death files, and included in the FNMD which are coded using ICD-10 codes.

## Approach to Data Analysis

Whenever applicable, the “stage of life” death rate is provided. The stage of life death rate allows comparisons between Alberta First Nations and Alberta non-First Nations populations within an identified age group (stage of life). Alberta First Nations population data were obtained from the AANDC population file. The Alberta non-First Nations population data were created by subtracting the corresponding AANDC population from the Alberta population data of the same year and/or age group.

The following formula is used to calculate the annual stage of life death rate:

$$\frac{\text{Number of deaths within a given stage of life for a given year}}{\text{Population for the same stage of life for the same given year}} \times 10,000$$

To calculate the overall (ten year) average stage of life death rate, the denominator used was the sum of the population for the years 2000–2009. The resulting rate is the number of deaths per year per 10,000 population.

The proportion of a cause of death among a given population shows how common and regular a given cause of death is within the given population.

The following formula is used to calculate the proportion of a cause of death (within a category):

$$\frac{\text{Number of deaths by given cause (within the category)}}{\text{Total number of deaths (within the category)}} \times 100$$

## Data Limitations:

- AANDC population may not be complete as an individual's information on the IRS is usually updated on the reporting of a life event (e.g. birth, death) to the First Nations Indian Registry Administrator. Although some bands update the system on a regular basis, others update infrequently. The greatest limitation on IRS data involves the late reporting of these life events.
- FNMD files do not include Alberta First Nations individuals who died outside of Alberta.
- To create the FNMD, three databases are used to match and confirm Alberta First Nations deaths. Some First Nations individuals who died in Alberta may not be captured in FNMD.
- Alberta non-First Nations may include some First Nations who died in Alberta but were not registered to an Alberta First Nations band.





# Injuries

INJURIES







# Injuries

Injuries are one of the leading causes of death and hospitalization in Canada<sup>4, 5</sup>. As noted in the previous chapter, Vital Statistics, injuries are the leading cause of death among Alberta First Nations. This same trend has been noted during 1990–1999 among First Nations in Canada, where injuries occur two to five times more often, and were responsible for reduced life expectancy, when compared to the rest of the Canadian population<sup>6, 7, 8, 9</sup>. Between 1990–1999, motor vehicle collisions and suicides were the leading causes of injury contributing to over 50% of all injury-related deaths among Alberta First Nations<sup>9</sup>.

The economic burden of injuries is assessed through the direct health care cost and indirect costs, such as reduced productivity from hospitalizations, disability, and premature death. In 2004, the direct health care cost in Canada arising from injuries was \$10.7 billion and the indirect cost of injuries was \$9.0 billion<sup>10</sup>. In Alberta, in 2004, the direct and indirect costs due to injuries were \$1.6 and \$1.3 billion, respectively<sup>10</sup>.

This chapter provides an overall view of injury deaths and their leading causes among Alberta First Nations and non-First Nations from 2000–2009. Where differences between genders or between First Nations and non-First Nations are compared in this chapter, the word significant is used only if there is a statistically significant difference. Statistical significance in this report is assessed using “confidence intervals” at the 95% level. This information will assist in regional and community plans for injury prevention and health promotion.

In future reports, additional information will be provided to describe injury-related morbidity as illustrated by hospitalizations and emergency room visits.



4 Public Health Agency of Canada: <http://www.phac-aspc.gc.ca/publicat/lcd-pcd97/table1-eng.php>. Accessed on September 26, 2011.

5 Public Health Agency of Canada: <http://www.phac-aspc.gc.ca/publicat/lcd-pcd97/table2-eng.php>. Accessed on September 26, 2011.

6 A Statistical Profile on the Health of First Nations in Canada: *Health Services Utilization in Western Canada, 2000*: [http://www.hc-sc.gc.ca/fniah-spnia/alt\\_formats/fnihb-dgspni/pdf/pubs/aborig-autoch/2009-stats-profil-vol2-eng.pdf](http://www.hc-sc.gc.ca/fniah-spnia/alt_formats/fnihb-dgspni/pdf/pubs/aborig-autoch/2009-stats-profil-vol2-eng.pdf). Accessed on November 21, 2011.

7 Karmali et al, *Epidemiology of severe trauma among Status Aboriginal Canadians: a population-based study*, Canadian Medical Association Journal, April 12, 2005; 172 (8).

8 Chenier N.M., *Suicide among Aboriginal People: Royal Commission Report*, 23 February 1995 <http://www.parl.gc.ca/Content/LOP/researchpublications/mr131-e.htm>. Accessed on November 21, 2011.

9 First Nations and Inuit Health-Alberta: *Report to Alberta First Nations: Injury Related Mortality 1990–1999* (2007).

10 SMARTRISK: *The Economic Burden of Injury in Canada*. SMARTRISK: Toronto, ON (2009).

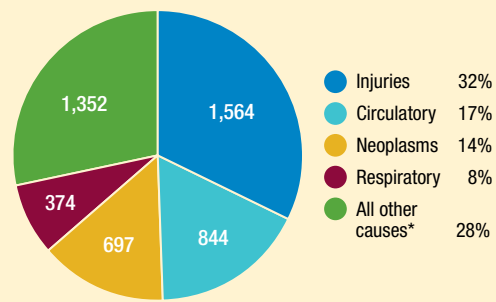
## INJURIES, 2000–2009

Injury is defined as any cause of physical damage to the body when it is suddenly subjected to levels of energy beyond its ability to absorb or the result of a lack of vital elements such as oxygen, water, or heat<sup>11, 12</sup>.

Injuries were the leading cause of deaths among Alberta First Nations aged 1-64 years between 2000–2009; injuries were responsible for 1,564 deaths, which accounted for 32% of all deaths (Figure 2.1). This trend is slightly lower than that reported between 1990–1999\*\*, where 37% of deaths among First Nations were associated with injuries<sup>13</sup>. In 2007, injuries were identified as the leading cause of death among Albertans under the age of 45 years<sup>14</sup>.

Figure 2.1

Number and proportion of deaths, by disease category, Alberta First Nations, 2000–2009



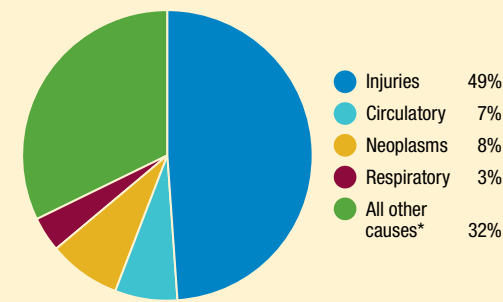
\* Includes 10 deaths with no underlying cause  
 Source: Health Canada, FNIH - Alberta Region, FNMD

The death rate due to injuries among Alberta First Nations was four times the rate among non-First Nations in Alberta. Similar trend was reported between 1990–1999<sup>13</sup>. The majority (65%) of injury deaths among Alberta First Nations between 2000–2009 occurred among males.

Injuries are the leading cause of potential years of life lost (PYLL) among Alberta First Nations, which is consistent with other reports<sup>15, 13</sup>. Injuries accounted for 49% of PYLL among Alberta First Nations [Figure 2.2], which is 75% higher than the proportion among Alberta non-First Nations. Injuries accounted for 54% of all premature deaths among Alberta First Nations males and 41%

Figure 2.2

Proportion of potential years of life lost (before 75 years of age), by disease category, Alberta First Nations, 2000–2009



\* Includes 10 deaths with no underlying cause.  
 Source: Health Canada, FNIH - Alberta Region, FNMD

among Alberta First Nations females between 2000–2009. The proportion of premature deaths due to injuries among Alberta First Nations males is similar to that reported between 1990–1999\*\*, but the females proportion was up by 4% from 37%<sup>13</sup>.

After adjusting for the difference in age distributions between First Nations and non-First Nations populations, injury deaths among Alberta First Nations occurred at a rate of 19 deaths per 10,000 population per year between 2000–2009. Alberta First Nations are three times more likely to die from injuries than non-First Nations.

\*\* The 1990–1999 and 2000–2009 reports analyzed the injury death data using different versions of the International Classification of Disease Codes (Versions 9 versus 10).

11 The National Committee on Injury Prevention and Control, *Injury prevention: meeting the challenge*, page 4, Oxford University press (1989).

12 *Defining Injury*- Health Canada: <http://www.hc-sc.gc.ca/hl-vs/secure/index-eng.php>. Accessed on November 21, 2011.

13 First Nations and Inuit Health-Alberta: *Report to Alberta First Nations: Injury Related Mortality 1990–1999 (2007)*.

14 Alberta Centre for Injury Control and Research (ACICR): [http://acicr.ca/Upload/documents-reports/injury-data-reports/injuries-in-alberta/2010\\_injuries.pdf](http://acicr.ca/Upload/documents-reports/injury-data-reports/injuries-in-alberta/2010_injuries.pdf). Accessed on September 27, 2011.

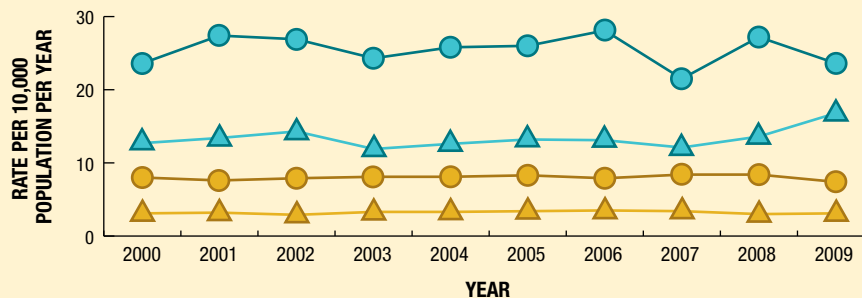
15 Karmali et al, *Epidemiology of severe trauma among Status Aboriginal Canadians: a population-based study*, Canadian Medical Association Journal, April 12, 2005; 172 (8).

Traumatic injuries are most common among First Nations males of Canada, who are more likely to die from their injuries than First Nations females<sup>16, 17</sup>. Alberta First Nations males are almost two times more likely to die from injuries than First Nation females annually (Figure 2.3). In Alberta, the annual injury death rate for First Nations males is three to four times higher than the rate for non-First Nations males. The annual injury death rate among First Nations females is four to five times higher than that of non-First Nations females.

Injuries among First Nations vary by area; therefore, throughout this chapter, injuries are described by treaty area<sup>17, 18, 19</sup>. When comparing Treaty 6, 7, and 8, the analysis for the time period 2000–2009 highlighted the following. The age-adjusted injury death rate was significantly higher among First Nations in all treaty areas than among non-First Nations. Treaty 6 First Nations had the highest age-adjusted injury death rate, which was significantly higher than the rate for Treaty 8 First Nations. The latter had the lowest age-adjusted injury death rate among the treaty areas (Figure 2.4).

Figure 2.3

Age-adjusted injury death rates\*, by gender, First Nations and non-First Nations, Alberta, 2000–2009



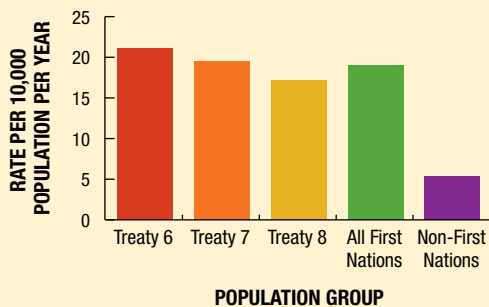
▲ First Nations Females	12.7	13.4	14.3	11.9	12.6	13.2	13.1	12.1	13.6	16.8
● First Nations Males	23.6	27.4	26.9	24.3	25.8	26.0	28.1	21.5	27.2	23.6
▲ Non-First Nations Females	3.1	3.2	2.9	3.3	3.3	3.4	3.5	3.4	3.0	3.1
● Non-First Nations Males	8.0	7.6	7.9	8.1	8.1	8.3	7.9	8.4	8.4	7.4

\* Rates are adjusted to the 2006 Canadian Census population.

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File; AANDC, Population File; AHW, Population File

Figure 2.4

Age-adjusted injury death rates\*, Treaty 6, 7 & 8 First Nations, all First Nations, and non-First Nations, Alberta, 2000–2009



\* Rates are adjusted to the 2006 Canadian Census population.

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File; AANDC, Population File; AHW, Population File

16 Karmali et al, *Epidemiology of severe trauma among Status Aboriginal Canadians: a population-based study*, Canadian Medical Association Journal, April 12, 2005; 172 (8).

17 MacNeil M., *An epidemiologic study of Aboriginal adolescent risk in Canada: The meaning of suicide*, Journal of Child and adolescent psychiatric Nursing 2008, Volume 21, Number 1 pages 3–12.

18 *Cultural continuity as a moderator of suicide risk among Canada's First Nations*. Lalonde and Chandler (1998) from Kimayer, L and Valaskakis, G (Eds) *The mental health of Canadian Aboriginal peoples: transformation, identity and community*, University of British Columbia press.

19 Kirmayer L.J. et al, *Suicide among aboriginal people in Canada*, Prepared for The Aboriginal Healing Foundation.

## LEADING CAUSES OF INJURY DEATHS, 2000–2009

The intent of injury is important when determining effective interventions requiring changes in human behavior<sup>20</sup>. Injuries fall into two main categories; intentional and unintentional:

- Intentional injuries are either self-inflicted (such as suicide or self-harm) or directed at others (such as family violence, child abuse, assault, murder)<sup>21, 22</sup>.
- Unintentional injury is damage to the body not caused on purpose and there is no intent to hurt or harm, either by oneself or another person (such as vehicle collisions and falls)<sup>21, 22, 23</sup>.

Between 2000–2009, intentional injuries accounted for 33% of all injury deaths among Alberta First Nations and unintentional injuries accounted for 49%. The remaining 17% were due to events of undetermined intent (Table 2.1).

An event of undetermined intent represents a case where it is not clear whether the death was the result of intentional self-harm, assault, or an accident.

Comparing the ten-year periods 1990–1999 and 2000–2009, unintentional injuries among Alberta First Nations increased by 7%<sup>20</sup>.

Poisoning represented 86% of all deaths due to events of undetermined intent. Twenty eight percent of all injury-related deaths among Alberta First Nations aged 35–64 years were from events of undetermined intent. Increased self-poisoning has been identified among First Nations in Canada, and the Aboriginal Healing Foundation of Canada suggests that deaths due to undetermined intent among First Nations are in fact deaths by suicide<sup>24, 25</sup>.

The leading causes of injury deaths among Alberta First Nations were suicides (23%) and motor vehicle collisions (MVCs) (23%), followed by events of undetermined intent and assault (Table 2.1).



MVC deaths are defined as unintentional deaths involving motor vehicles in motion, both on and off the highway or street.

This pattern was similar among non-First Nations of Alberta. Among Alberta First Nations, from 2000–2009, suicides and MVCs averaged 36 deaths per year and deaths of undetermined intent averaged 27 deaths per year.

20 First Nations and Inuit Health-Alberta: *Report to Alberta First Nations: Injury Related Mortality 1990-1999* (2007).

21 A Statistical Profile on the Health of First Nations in Canada: *Health Services Utilization in Western Canada, 2000*: [http://www.hc-sc.gc.ca/fniah-spnia/alt\\_formats/fnihb-dgspni/pdf/pubs/aborig-autoch/2009-stats-profil-vol2-eng.pdf](http://www.hc-sc.gc.ca/fniah-spnia/alt_formats/fnihb-dgspni/pdf/pubs/aborig-autoch/2009-stats-profil-vol2-eng.pdf). Accessed on November 21, 2011.

22 *Defining Injury*- Health Canada: <http://www.hc-sc.gc.ca/hl-vs/securit/index-eng.php>. Accessed on November 21, 2011.

23 G. Bergen et al., *Injury in the United States: 2007 Chartbook*. Hyattsville, MD: National Center for Health Statistics (2008).

24 MacNeil M., *An epidemiologic study of Aboriginal adolescent risk in Canada: The meaning of suicide*, Journal of Child and adolescent psychiatric Nursing 2008, Volume 21, Number 1 pages 3–12.

25 Kirmayer L.J. et al, *Suicide among aboriginal people in Canada*, Prepared for The Aboriginal Healing Foundation.

**Table 2.1**

Distribution\* of leading causes of injury deaths, First Nations (by age) and non-First Nations, Alberta, 2000-2009

Rank	First Nations n (%)							All First Nations n (%)	All Non-First Nations n (%)
	AGE GROUPS (YEARS)								
	0-14	15-24	25-34	35-44	45-54	55-64	65+		
1	Motor Vehicle Collisions 32 (1.0)	Suicides 151 (7.8)	Motor Vehicle Collisions 89 (6.0)	Events of Undetermined Intent 85 (6.5)	Events of Undetermined Intent 59 (7.0)	Events of Undetermined Intent 32 (7.1)	Motor Vehicle Collisions 16 (4.2)	Suicides 358 (3.7)	Suicides 4,162 (1.3)
2	Other Unintentional Injuries 18 (0.6)	Motor Vehicle Collisions 105 (5.4)	Suicides 88 (6.0)	Suicides 64 (4.9)	Suicides	Motor Vehicle Collisions 25 (5.5)	Other Unintentional Injuries 14 (3.6)	Motor Vehicle Collisions 355 (3.7)	Motor Vehicle Collisions 3,461 (1.1)
					Motor Vehicle Collisions 32 (3.8)				
3	Suicides 11 (0.4)	Assaults 42 (2.2)	Events of Undetermined Intent 53 (3.6)	Motor Vehicle Collisions 56 (4.3)	Accidental Poisonings 23 (2.7)	Accidental Poisonings 9 (2.0)	Excessive Natural Cold	Events of Undetermined Intent 272 (2.8)	Other Unintentional Injuries 2,019 (0.7)
							Falls		
							Accidental Poisonings 6 (1.6)		
4	Assaults 7 (0.2)	Events of Undetermined Intent 33 (1.7)	Assaults 51 (3.4)	Assaults	Other Unintentional Injuries 18 (2.1)	Suicides 8 (1.8)	Events of Undetermined Intent 5 (1.3)	Assaults 152 (1.6)	Events of Undetermined Intent 1,994 (0.6)
				Accidental Poisonings 30 (2.3)					
5	Drownings and Submersions 6 (0.2)	Other Transport Injuries 26 (1.4)	Accidental Poisonings 28 (1.9)	Excessive Natural Cold 17 (1.3)	Assaults	Assaults 5 (1.1)	Assaults	Accidental Poisonings 110 (1.2)	Falls 1,226 (0.4)
				Excessive Natural Cold 13 (1.5)	Excessive Natural Cold 13 (1.5)		Suicides 4 (1.0)		
All	All Injuries 98 (3.1)	All Injuries 403 (20.9)	All Injuries 360 (24.2)	All Injuries 328 (25.1)	All Injuries 214 (25.2)	All Injuries 94 (20.7)	All Injuries 67 (17.4)	All Injuries 1,564 (16.4)	All Injuries 15,619 (5.0)

\* Rates per 10,000 population per year

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File; AANDC, Population File; AHW, Population File



## Motor Vehicle Collisions

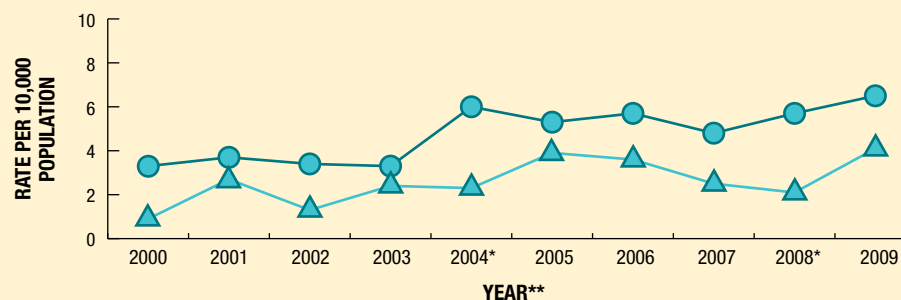
Motor Vehicle Collisions (MVCs) led to 355 deaths among Alberta First Nations between 2000–2009, at an annual rate of four deaths per 10,000 population, which is nearly four times the rate of MVC deaths among non-First Nations of Alberta over the same time period (Table 2.1). MVCs contribute substantially to premature death among Alberta First Nations<sup>26, 27, 28</sup>. The average age of Alberta First Nations who died due to MVCs was 31.9 years, which is lower than the average age among Alberta non-First Nations (40 years). MVCs are the leading cause of death among age groups: 0–14 years, 25–34 years, and 65 years and older. The annual rate of deaths was greater among Alberta First Nations aged 25–34 years (6 deaths per 10,000) than any other age group. Even though MVCs were ranked as the second leading cause of injury among the 15–24 year age group, more MVC-related deaths (105) occurred in this age group than any other between 2000–2009 (Table 2.1).

The annual death rate among Alberta First Nations did not significantly differ from one year to another among males or females (Figure 2.5). The trend showed that more First Nations males died due to MVCs than First Nations females, which is consistent with other reports<sup>26, 28</sup>, the differences between

genders are only significant in 2004 and 2007. Approximately two males for every female among Alberta First Nations died due to MVCs. The MVC death rate among First Nations males was consistently higher than the rate for females during the period 2000–2009.

Figure 2.5

Motor vehicle collision death rates, by gender, Alberta First Nations, 2000–2009



▲ First Nations Females	0.9	2.7	1.3	2.4	2.3	3.9	3.6	2.5	2.1	4.1
● First Nations Males	3.3	3.7	3.4	3.3	6.0	5.3	5.7	4.8	5.7	6.5
All First Nations	2.1	3.2	2.3	2.8	4.1	4.6	4.6	3.7	3.9	5.3

\* 95% confidence intervals<sup>†</sup> show significant difference between genders.

\*\* No significant difference between the years.

Source: Health Canada, FNIH - Alberta Region, FNMD

<sup>†</sup> Confidence Intervals (CIs): a 95% confidence interval is a range of values, within which we are 95% confident or sure that the 'true' result lies. A narrow 95% CI allows more precision in interpretation. Wide 95% CIs often occur when there is a small number of cases. Where overlapping confidence intervals are illustrated (e.g. Fig 2.5 and 2.10), no statistical significance is noted.

26 A Statistical Profile on the Health of First Nations in Canada: *Health Services Utilization in Western Canada, 2000*: [http://www.hc-sc.gc.ca/fnih-spnia/alt\\_formats/fnihb-dgspni/pdf/pubs/aborig-autoch/2009-stats-profil-vol2-eng.pdf](http://www.hc-sc.gc.ca/fnih-spnia/alt_formats/fnihb-dgspni/pdf/pubs/aborig-autoch/2009-stats-profil-vol2-eng.pdf). Accessed on November 21, 2011.

27 Karmali et al, *Epidemiology of severe trauma among Status Aboriginal Canadians: a population-based study*, Canadian Medical Association Journal, April 12, 2005; 172 (8).

28 First Nations and Inuit Health-Alberta: *Report to Alberta First Nations: Injury Related Mortality 1990–1999* (2007).

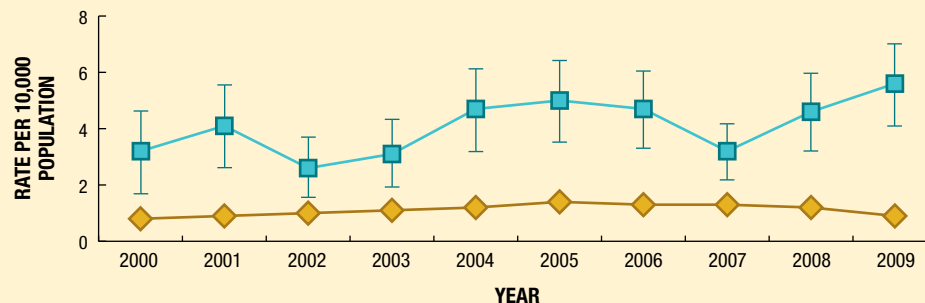


After adjusting for age, the MVC death rates among Alberta First Nations did not significantly differ from one year to another. However, the Alberta First Nations MVC death rates were consistently and significantly higher than the non-First Nations rates during the entire period from 2000–2009 (Figure 2.6). The average overall MVC death rate per year among First Nations was between three and four times higher than the rate for non-First Nations.

The age-adjusted MVC death rate among First Nations females in each treaty area was significantly (four to five times) higher than the rate for non-First Nations females (Figure 2.7). The MVC death rate among First Nation males in each treaty area was also significantly (three to four times) greater than the rate for non-First Nations males. The MVC death rates among males or females did not differ between Treaty 6, 7, and 8. However, the male death rate due to MVCs was significantly higher than for females in Treaty 6 and 8 (Figure 2.7).

**Figure 2.6**

Age-adjusted motor vehicle collision death rates\*, First Nations and non-First Nations, Alberta, 2000–2009



■ First Nations	3.2	4.1	2.6	3.1	4.7	5.0	4.7	3.2	4.6	5.6
◆ Non-First Nations	0.8	0.9	1.0	1.1	1.2	1.4	1.3	1.3	1.2	0.9

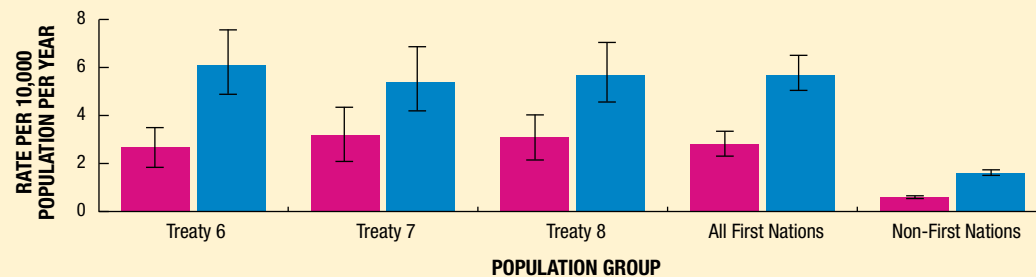
┆ 95% Confidence Interval

\* Rates are adjusted to the 2006 Canadian Census population, and should be used for comparison purposes, not used to report a rate in a population.

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File; AANDC, Population File; AHW, Population File

**Figure 2.7**

Age-adjusted motor vehicle collision death rates\*, by gender, Treaty 6, 7 & 8 First Nations, all First Nations, and non-First Nations, Alberta, 2000–2009



■ Females	2.7	3.2	3.1	2.8	0.6
■ Males	6.1	5.4	5.7	5.7	1.6

┆ 95% Confidence Interval

\* Rates are adjusted to the 2006 Canadian Census population, and should be used for comparison purposes, not used to report a rate in a population.

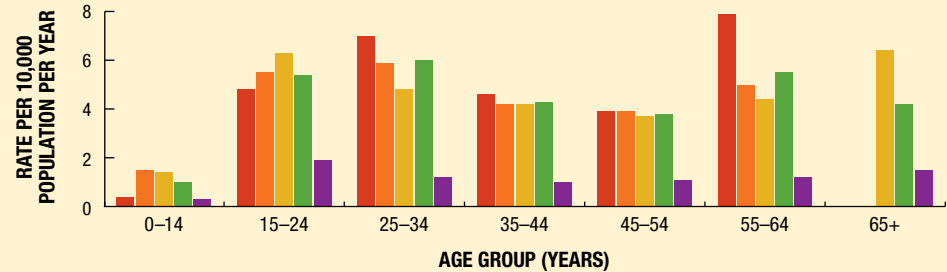
Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File; AANDC, Population File; AHW, Population File



The age-specific MVC death rates among the three treaty areas were comparable. Alberta First Nations in all treaty areas had significantly higher age-specific MVC death rates than non-First Nations except in age-groups 0–14 years and 55–64 years (Figure 2.8). Among First Nations of Treaty 6 and non-First Nations aged 0–14 years, there was no difference in the death rate due to MVCs. Among age group 55–64 years, there was no difference between Treaty 7 or 8 and non-First Nations of Alberta (Figure 2.8).

Figure 2.8

Motor vehicle collision death rates, by age, Treaty 6, 7 & 8 First Nations and non-First Nations, Alberta, 2000–2009



	0–14	15–24	25–34	35–44	45–54	55–64	65+
Treaty 6 First Nations	0.4	4.8	7.0	4.6	3.9	7.9	*
Treaty 7 First Nations	1.5	5.5	5.9	4.2	3.9	5.0	*
Treaty 8 First Nations	1.4	6.3	4.8	4.2	3.7	4.4	6.4
First Nations	1.0	5.4	6.0	4.3	3.8	5.5	4.2
Non-First Nations	0.3	1.9	1.2	1.0	1.1	1.2	1.5

\* Rate not shown as counts are less than 5.

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File; AANDC, Population File; AHW, Population File

## Suicides

Suicide is a tragic public health issue of concern throughout Canada. Attempted events and death by suicide continue to occur with regularity<sup>29,30</sup>. Alberta has the second highest suicide rate in Canada, occurring most often among the middle-aged<sup>29</sup>. Among Alberta First Nations, suicide is the leading cause of injury death. Although death by suicide is traditionally thought to result from depression, and other mental disorders and substance abuse. It is suggested that suicide is also related to

complex interaction between situational factors and socio-economic and cultural stressors experienced by the wider community and the individual family structure<sup>31, 32, 33, 34, 35</sup>.

The average age of death by suicide among Alberta First Nations is 29 years, which is lower than the average age (44 years) among Alberta non-First Nations, illustrating the influence of injuries in the premature deaths of Alberta First Nations. The earliest age of death by suicide in both First Nations and non-First Nations populations of Alberta is 10 years.

Three hundred and fifty-five deaths due to suicides took place among Alberta First Nations between 2000–2009, at an annual rate of four deaths per 10,000 population, which is three times higher than the rate among non-First Nations of Alberta (Table 2.1).

The greatest rate of suicide occurred among Alberta First Nations aged 15–24 years with an annual death rate of eight deaths per 10,000 population, followed by those aged 25–34 years (6 deaths per 10,000 population) and 35–44 years (5 deaths per 10,000 population) (Table 2.1).

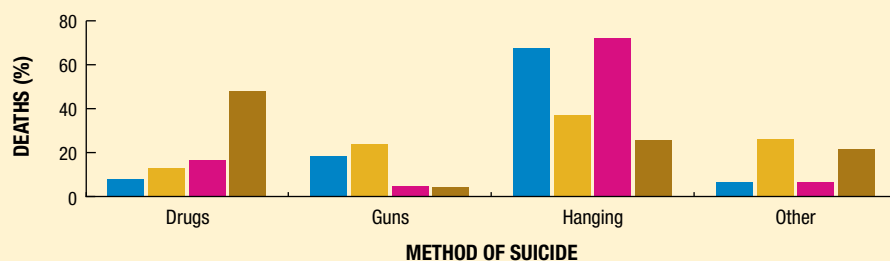
More males (73%) died by suicide in Alberta than females between 2002–2006<sup>29</sup>. Among First Nations, approximately three males for every two females died by suicide. More than 53% of suicide deaths among Alberta First Nations occurred at home, irrespective of the treaty area.

Alberta First Nations males and females were more likely to use hanging or strangulation as a method of suicide (67% and 72% respectively) compared to non-First Nations males and females (37% and 26% respectively). Guns were used in 18% of all

suicides among Alberta First Nations males and 24% among non-First Nations males. In contrast, the proportion of males using drugs to die by suicide was 8% among Alberta First Nations and 13% among non-First Nations. The proportion of females using drugs to die by suicide was 16% among Alberta First Nations and 48% among non-First Nations (Figure 2.9).

Figure 2.9

Methods of suicide, by gender, First Nations and non-First Nations, Alberta, 2000–2009



Method of Suicide	First Nations Males (%)	Non-First Nations Males (%)	First Nations Females (%)	Non-First Nations Females (%)
Drugs	7.8	12.8	16.4	47.9
Guns	18.3	23.8	5.0	4.3
Hanging	67.4	37.0	72.1	25.9
Other	6.4	26.4	6.4	21.8

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File

- 29 Morrison K.B. et al, *Adults' use of health services in the year before death by suicide in Alberta* <http://www.statcan.gc.ca/pub/82-003-x/2011003/article/11516-eng.htm>. Accessed on November 22, 2011.
- 30 B.C. Injury Research and Prevention Unit, *Suicides*, <http://www.phabc.org/pdfcore/suicide.pdf>. Accessed November 22, 2011.
- 31 Chenier N.M., *Suicide among Aboriginal People: Royal Commission Report*, 23 February 1995 <http://www.parl.gc.ca/Content/LOP/researchpublications/mr131-e.htm>. Accessed on November 21, 2011.
- 32 Mignone J. et al, *Social capital and youth suicide risk factors in First Nations communities*, *Canadian Journal of Public Health* 2005, volume 96, supplement 1 pages S51 - S54.
- 33 MacNeil M., *An epidemiologic study of Aboriginal adolescent risk in Canada: The meaning of suicide*, *Journal of Child and Adolescent Psychiatric Nursing* 2008, Volume 21, Number 1 pages 3–12.
- 34 *Cultural continuity as a moderator of suicide risk among Canada's First Nations*. Lalonde and Chandler (1998) from Kimayer, L and Valaskakis, G (Eds) *The mental health of Canadian Aboriginal peoples: transformation, identity and community*, University of British Columbia press.
- 35 Kirmayer L.J. et al, *Suicide among aboriginal people in Canada*, Prepared for The Aboriginal Healing Foundation.

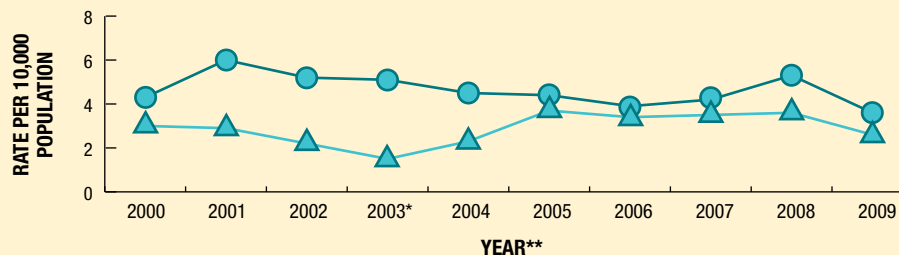
The suicide death rate did not significantly differ from one year to another among either males or females between 2000–2009 (Figure 2.10). The annual suicide death rate was consistently higher among Alberta First Nations males compared to Alberta First Nations females for the majority of years from 2000–2009, but only significant in 2003.

After adjusting for age, the suicide death rate among First Nations did not significantly differ from one year to another. However, the First Nations suicide death rates were consistently and significantly higher than non-First Nations rates during the entire period (2000–2009). (Figure 2.11). On average, death rates due to suicide among First Nations were between two and three times higher compared to those of non-First Nations.

After adjusting for age, the suicide death rates among First Nations females in the treaty areas were significantly higher by two to five times when compared to the non-First Nations females of Alberta. The rates among First Nations males in the treaty areas were also significantly higher, up to three times, than those for non-First Nations males (Figure 2.12). Significantly more First Nations males in Treaty 6, 7, and 8 died by suicide than First Nations females of the corresponding treaty area. The suicide rate of Treaty 8 First Nations males and females was significantly lower than the rate for First Nations males and females of Treaty 6 (Figure 2.12).

**Figure 2.10**

Suicide death rates, by gender, Alberta First Nations, 2000–2009



▲ First Nations Females	3.0	2.9	2.2	1.5	2.3	3.7	3.4	3.5	3.6	2.6
● First Nations Males	4.3	6.0	5.2	5.1	4.5	4.4	3.9	4.2	5.3	3.6
All First Nations	3.6	4.4	3.7	3.3	3.4	4.0	3.6	3.9	4.4	3.1

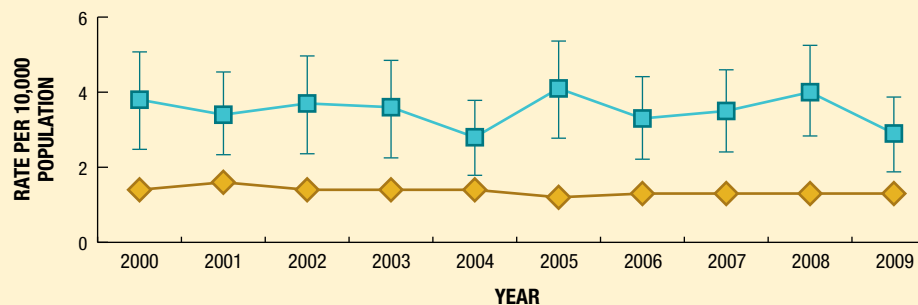
\* 95% confidence intervals show significant difference between genders.

\*\* No significant difference between the years

Source: Health Canada, FNIH - Alberta Region, FNMD

**Figure 2.11**

Age-adjusted suicide death rates\*, First Nations and non-First Nations, Alberta, 2000–2009



■ First Nations	3.8	3.4	3.7	3.6	2.8	4.1	3.3	3.5	4.0	2.9
◆ Non-First Nations	1.4	1.6	1.4	1.4	1.4	1.2	1.3	1.3	1.3	1.3

┆ 95% Confidence Interval

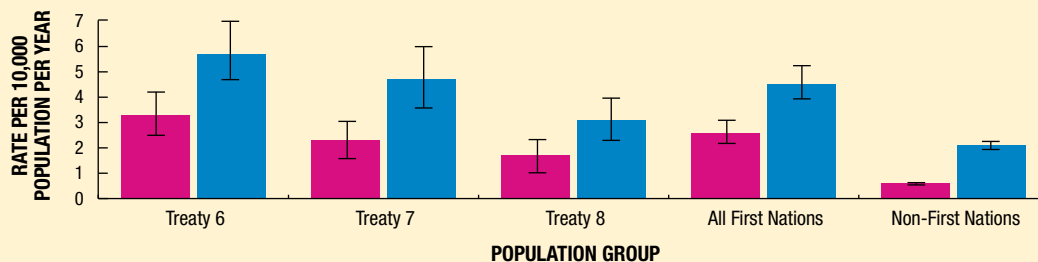
\* Rates are adjusted to the 2006 Canadian Census population, and should only be used for comparison purposes, not to be used to report a rate in a population.

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File; AANDC, Population File; AHW, Population File

When comparing the rates of death due to suicide by age groups, the suicide death rates varied between Alberta First Nations within Treaty 6, 7, and 8 and when compared to the non-First Nations of Alberta (Figure 2.12). Although, the death rate due to suicide among the 15–24 year age group was significantly higher among all three treaty areas than non-First Nations of Alberta, Treaty 8 exhibited a significantly lower rate than Treaty 7. Among individuals aged 35–44 years, Alberta First Nations of Treaty 6 and 7 exhibited a significantly higher suicide rate than non-First Nations but Treaty 8 and non-First Nations of Alberta did not differ significantly. In the Alberta population, the suicide rate was highest among individuals aged 45–54 years, which was the only age group with comparable rates between treaty areas and non-First Nations<sup>36</sup>.

Figure 2.12

Age-adjusted suicide death rates\*, by gender, Treaty 6, 7 & 8 First Nations, all First Nations, and non-First Nations, Alberta, 2000–2009



■ Females	3.3	2.3	1.7	2.6	0.6
■ Males	5.7	4.7	3.1	4.5	2.1

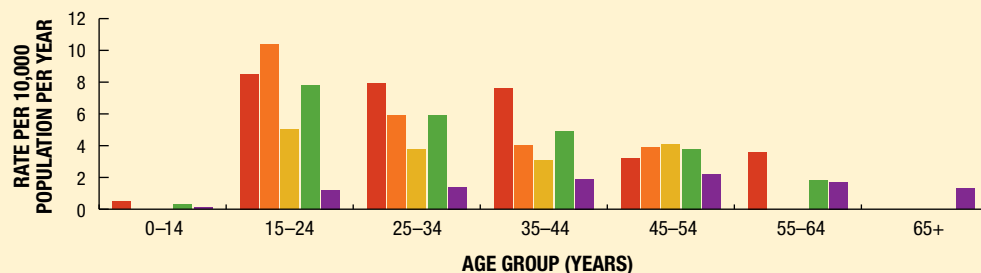
┆ 95% Confidence Interval

\* Rates are adjusted to the 2006 Canadian Census population and should only be used for comparison purposes, not used to report a rate in a population.

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File; AANDC, Population File; AHW, Population File

Figure 2.13

Suicide death rates, by age, Treaty 6, 7 & 8 First Nations, all First Nations, and non-First Nations, Alberta, 2000–2009



■ Treaty 6	0.5	8.5	7.9	7.6	3.2	3.6	*
■ Treaty 7	*	10.4	5.9	4.0	3.9	*	*
■ Treaty 8	*	5.0	3.8	3.1	4.1	*	*
■ All First Nations	0.3	7.8	5.9	4.9	3.8	1.8	*
■ Non-First Nations	0.1	1.2	1.4	1.9	2.2	1.7	1.3

\* Rate not shown as counts are less than 5.

Source: Health Canada, FNIH - Alberta Region, FNMD; Alberta Government Services, AVS, Death File; AANDC, Population File; AHW, Population File

36 Morrison K.B. et al, *Adults' use of health services in the year before death by suicide in Alberta* <http://www.statcan.gc.ca/pub/82-003-x/2011003/article/11516-eng.htm>. Accessed on November 22, 2011.



## SUMMARY

Injuries are the leading causes of death among Alberta First Nations, accounting for 32% of all deaths in this population. The average annual rate of death due to injuries among Alberta First Nations for the years 2000-2009 was 19 deaths per 10,000 population which was three to four times higher than the rate for non-First Nations in Alberta.

Alberta First Nations are dying prematurely due to injuries, resulting in 49% of potential years of life lost (PYLL) for this population. Fifty-five percent of PYLL among First Nations males and 41% among First Nations females were due to injuries. Significantly more First

Nations males died from injuries than First Nations females. Injury death rates among Alberta First Nations females were significantly higher than non-First Nations females and males in Alberta.

The leading causes of death due to injuries among Alberta First Nations were motor vehicle collisions (MVC) and suicides, which were among the top three causes of death for Alberta First Nations aged 0-54 years. Alberta First Nations died from both MVCs and suicides at an annual rate of 4 per 10,000 population, which was two to three times higher than the rate for non-First Nations in

Alberta. While the annual MVC death rate did not differ significantly by gender, the suicide rate was significantly higher among First Nations males than females.

Not all First Nations communities have suicide or MVC death rates greater than non-First Nations. This chapter also reviewed death rates by treaty areas to achieve some insight in this matter. The average MVC and suicide death rates from 2000-2009 revealed regional variations by gender and age, for example:

- The rate of death due to MVC among First Nations males in Treaty 6 and Treaty 7 was significantly higher than for First Nations females, but between First Nations males and females of Treaty 8, there was no significant difference. Comparing regional variations by age, the rate of MVC deaths among the 0-14 year age group was similar among Treaty 6 First Nations and non-First Nations of Alberta.
- The suicide rate was significantly higher among First Nations males than females in all three treaty areas. First Nations males and females of Treaty 8 had the lowest suicide rate among the treaty areas in Alberta.
- With the exception of the age group 45-54 years, the suicide rate was significantly lower among First Nations of Treaty 8 than Treaty 6 for all age groups.



- In the population of Alberta, the suicide rate is highest among individuals aged 45–54 years, the only age group where all treaty areas were comparable to non-First Nations.

Injuries due to undetermined intent are the leading cause of death among Alberta First Nations aged 35–64 years. The majority (80%) of injuries related to undetermined intent were due to poisonings. The Aboriginal Healing Foundation<sup>37</sup> has suggested that many deaths by suicide among First Nations in Canada, especially by means of poison, are classified incorrectly as deaths of undetermined intent. This suggestion requires discussion and analysis beyond the scope of this report.

It should also be noted that community planners among Alberta First Nations have requested information on the use of car restraints and alcohol with regard to MVC. At the time of writing, this information was unavailable to Health Canada’s First Nations and Inuit Health – Alberta Region.

Presently, there is considerable discussion within Alberta First Nations communities around the impact of cultural continuity, a factor thought by Chandler and Lalonde<sup>38</sup> to protect First Nations communities from injuries, particularly suicide. There is a growing body of evidence on the substantial impact that social determinants, including cultural continuity, play on health and wellbeing.

## METHODOLOGY

### Who is included in this chapter?

The *Injuries* chapter used the Alberta Vital Statistics (AVS) death file and First Nations Mortality Database (FNMD) to identify Alberta First Nations and non-First Nations who were residents of Alberta at the time of their death.

The term ‘Alberta First Nations’ in this chapter does not include: 1) First Nations registered to non-Alberta bands and who died in Alberta, or 2) First Nations registered to Alberta bands who died outside the province of Alberta.

The term ‘Alberta non-First Nations’ includes all Alberta residents not previously defined by the term Alberta First Nations. Thus, the Alberta non-First Nations death dataset may include some First Nations registered to bands of other provinces who died in Alberta.

Similarly, First Nations in a treaty area in Alberta (i.e. Treaty 6, 7, and 8), include all First Nations, as previously defined, who are registered with bands within that specific treaty area, regardless of where they died within Alberta.

### Data Sources

This chapter is based on the analysis of the following data sources:

- FNMD: Alberta First Nations deaths were obtained from the (FNMD) held by the Health Assessment and Surveillance Unit

of First Nations and Inuit Health-Alberta Region, Health Canada. FNMD was created through a series of steps that involved combining and matching information of First Nations deaths from AVS, Alberta Health and Wellness (AHW) death files, and a subset of the Indian Registry System (IRS) database of the Aboriginal and Northern Development Canada (AANDC) death file.

- AVS death file: Death data were obtained from Alberta Vital Statistics, Alberta Government Services.
- AANDC population file: The First Nations population data were obtained from IRS database of Aboriginal and Northern Development Canada.
- AHW population file: The Alberta population was obtained from Alberta Health and Wellness by using the Government of Alberta’s Interactive Tool. The difference between Alberta population and Alberta First Nation population was used as the population for Alberta non-First Nations.
- Canadian population data: For the purpose of age-standardization the 2006 Canadian Census population data were obtained from Statistics Canada.

<sup>37</sup> Kirmayer L.J. et al, *Suicide among aboriginal people in Canada*, Prepared for The Aboriginal Healing Foundation.

<sup>38</sup> *Cultural continuity as a moderator of suicide risk among Canada’s First Nations*. Lalonde and Chandler (1998) from Kirmayer, L and Valaskakis, G (Eds) *The mental health of Canadian Aboriginal peoples: transformation, identity and community*, University of British Columbia press.

## Identification of Injury Deaths

The overall causes of death due to injuries are divided into 12 broad categories in accordance with International Classification of Diseases tenth revision (ICD-10) codes V01 to Y98.

## Approach to Data Analysis

The direct method of age-adjustment was used to compare the death rates of Alberta First Nations with those of the non-First Nations Alberta population. This method provides a summary rate that takes into account the differences in age distributions between First Nations and non-First Nations. The resulting age-adjusted death rate shows what the death rates of First Nations individuals would be if these populations had the same age and/or gender distributions as the 2006 Canadian population (the standard population). Standardized rates are only for comparison purposes and are not to be confused with (crude) death rates.

Whenever applicable, the age-specific death rate is provided. The age-specific death rates allow comparisons between Alberta First Nations and Alberta non-First Nations populations within an identified age

group. Alberta First Nations population data were obtained from the AANDC population file. The Alberta non-First Nations population data were created by subtracting the corresponding AANDC population from the Alberta population data of the same year and/or age group.

The following formula is used to calculate the annual age-specific death rate (per 10,000):

$$\frac{\text{Number of deaths within an age group of life for a given year}}{\text{Population for the same age group for the same given year}} \times 10,000$$

To calculate the overall (ten-year) average age-specific death rate, the denominator used was the sum of the population for the years 2000–2009. The resulting rate is the number of deaths per year per 10,000 population.

The proportion of causes of death among a given population shows how common and regular a given cause of death is within the given population.

The following formula is used to calculate the proportion of a cause of death (within a category):

$$\frac{\text{Number of deaths by given cause (within the category)}}{\text{Total number of deaths (within the category)}} \times 100$$

## Data Limitations:

- AANDC population may not be complete as an individual's information on the IRS is usually updated on the reporting of a life event (e.g. birth, death) to the First Nations Indian Registry Administrator. Although some bands update the system on a regular basis, others update infrequently. The greatest limitation on IRS data involves the late reporting of these life events.
- FNMD files do not include Alberta First Nations individuals who died outside of Alberta.
- To create the FNMD, three databases are used to match and confirm Alberta First Nations deaths. Some First Nations individuals who died in Alberta may not be captured in FNMD.
- Alberta non-First Nations may include some First Nations who died in Alberta but were not registered to an Alberta First Nations band.





# Diabetes

DIABETES







# Diabetes

Diabetes is a metabolic disorder characterized by high blood glucose (hyperglycaemia) due to defective insulin secretion or action or both, and can potentially lead to devastating complications in various organs<sup>39, 40</sup>. The medical costs associated with diabetes are about three times higher than for those without diabetes and the economic expenditure for diabetes in Canada is expected to be around \$12.2 billion in 2010 (measured in 2005 dollars)<sup>41</sup>.

In 2005–06, the prevalence of diagnosed diabetes among Canadians was approximately 5.9% (5.5% for females and 6.2% for males respectively)<sup>42</sup>. In addition to those who have been diagnosed with diabetes, it has been estimated that a further 5% of the Canadian population are also living with diabetes or prediabetes (see Appendix 4) but are undiagnosed<sup>43</sup>. The prevalence of diabetes among Aboriginal Canadians has been reported to be three to five times higher than in the non-Aboriginal population<sup>42, 44</sup>. The higher prevalence among First Nations is thought to be related to a genetic predisposition and changes to lifestyle and diet resulting from colonization<sup>45</sup>.

The growing burden of diabetes among First Nations in Canada is an epidemic<sup>46</sup>. The Diabetes Report Card published by the Assembly of First Nations (2006) included several recommendations to address diabetes in First Nations and highlighted the need for more comprehensive diabetes surveillance within this population<sup>47</sup>. To better understand the impact of diabetes in First Nations in Alberta, this section provides an overview of incidence, prevalence, comorbidities, and antidiabetic medication utilization from two data sources: Alberta Diabetes Surveillance System (ADSS) and Non-Insured Health Benefits (NIHB) pharmacy claims database.



39 Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Managements of Diabetes in Canada. Canadian Journal of Diabetes. 2008;32 (suppl 1):S1-S201.

40 American Diabetes Association: *Clinical Practice Guidelines 2011*. Diabetes Care. 2011;34 (suppl 1):S1-S96.

41 *An Economic Tsunami: the Cost of Diabetes in Canada*. Canadian Diabetes Association [serial online]. 2009. Available at: [http://www.diabetes.ca/documents/get-involved/FINAL\\_Economic\\_Report.pdf](http://www.diabetes.ca/documents/get-involved/FINAL_Economic_Report.pdf). Accessed October 21, 2011.

42 *The Face of Diabetes in Canada*. Public Health Agency of Canada [serial online]. November 14, 2008. Available at: <http://www.phac-aspc.gc.ca/cd-mc/diabetes-diabete/face-eng.php>. Accessed November 15, 2011.

43 *Why Health Care Renewal Matters: Lessons from Diabetes*. Health Council of Canada [serial online]. 2007. Available at: [http://www.healthcouncilcanada.ca/docs/rpts/2007/HCC\\_DiabetesRpt.pdf](http://www.healthcouncilcanada.ca/docs/rpts/2007/HCC_DiabetesRpt.pdf). Accessed November 10, 2010.

44 *Diabetes in Canada: Highlights from the National Diabetes Surveillance System, 2004-2005*. Public Health Agency of Canada [serial online]. 2009. Available at: <http://www.phac-aspc.gc.ca/publicat/2008/dicndss-dacsnsd-04-05/dafnp-dcmpn-eng.php>. Accessed November 15, 2011.

45 Young TK, Reading J, Elias Bet al. *Type 2 Diabetes Mellitus in Canada's First Nations: Status of an Epidemic in Progress*. CMAJ. 2000;163(5):561-566.

46 *A First Nations Diabetes Report Card*. Assembly of First Nations [serial online]. 2006. Available at: <http://www.nada.ca/wp-content/uploads/504.pdf>. Accessed November 23, 2011.

47 *Non-Insured Health Benefits for First Nations and Inuit*. Health Canada [serial online]. May 19, 2011. Available at: <http://www.hc-sc.gc.ca/fniab-spnia.nihb-ssna/index-eng.php>. Accessed August 31, 2011.

# DIABETES, 2001–2010

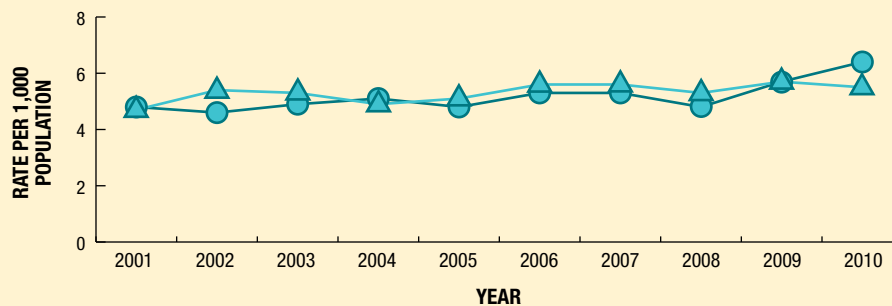
## Incidence of Diabetes

Incidence of diabetes describes the number of new cases of diabetes that develop in a population at-risk in a given year. Among First Nations in Alberta, the number of new cases of diabetes was relatively stable over the ten-year period regardless of gender (an average of 5 cases per 1,000 population) (Figure 3.1). For additional details on the incidence of diabetes, see Table 3.1 at the end of this chapter.



Figure 3.1

Incidence of diabetes, by gender, First Nations in Alberta, 2000–2010



Year	First Nations Females	First Nations Males	Both
2001	4.7	4.8	4.7
2002	5.4	4.6	5.0
2003	5.3	4.9	5.1
2004	4.9	5.1	5.0
2005	5.1	4.8	5.0
2006	5.6	5.3	5.4
2007	5.6	5.3	5.4
2008	5.3	4.8	5.1
2009	5.7	5.7	5.7
2010	5.5	6.4	5.9

Source: AHW: Alberta Hospital Discharge Abstract Database; Alberta Physician Claims Data; and Alberta Health Care Insurance Plan, Central Stakeholder Registry File (received October 2011)

The rate of new cases of diabetes among First Nations in Alberta increased with age for both females and males (Figures 3.2 and 3.3), and was consistent with Type 2 diabetes<sup>48, 49, 50, 51</sup>. The rate of new cases was stable during the ten-year period, with the exception of males and females aged 65 years and older, where the rate fluctuated. In 2010, more males were diagnosed with diabetes than females, with the exception of the 20–34 year age group. For the past three years (2008–2010), males 65 years and older have consistently had higher rates of new cases of diabetes than females of the same age group.

Figure 3.2

Incidence of diabetes among females, by age, First Nations in Alberta, 2001–2010

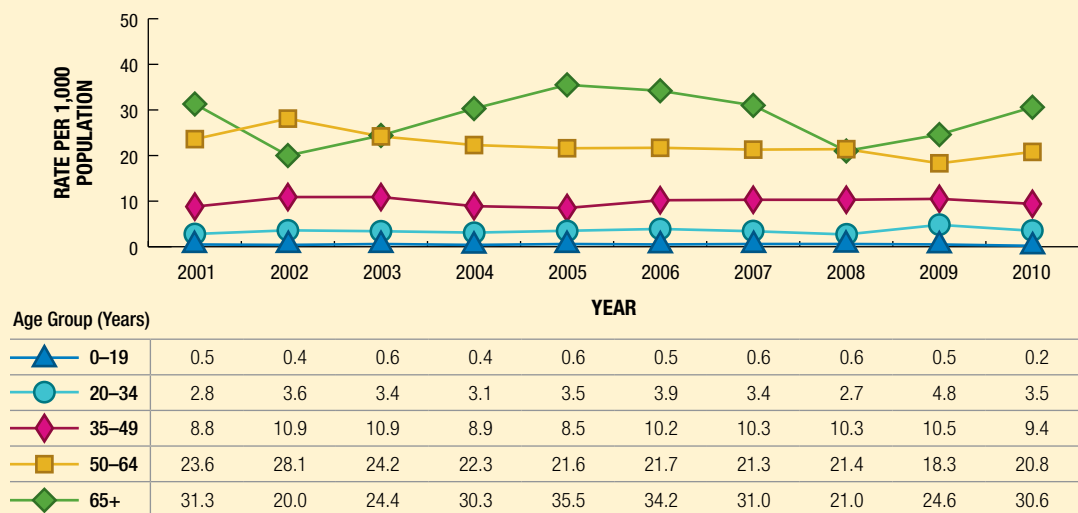
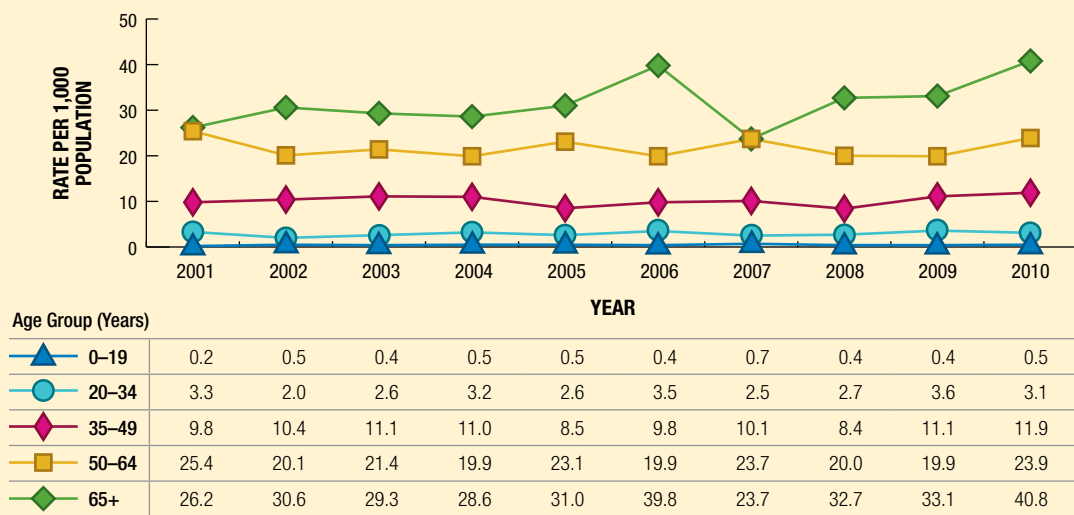


Figure 3.3

Incidence of diabetes among males, by age, First Nations in Alberta, 200–2010



Source: AHW: Alberta Hospital Discharge Abstract Database; Alberta Physician Claims Data; and Alberta Health Care Insurance Plan, Central Stakeholder Registry File (received October 2011)

Source: AHW: Alberta Hospital Discharge Abstract Database; Alberta Physician Claims Data; and Alberta Health Care Insurance Plan, Central Stakeholder Registry File (received October 2011)

48 A First Nations Diabetes Report Card. Assembly of First Nations [serial online]. 2006. Available at: <http://www.nada.ca/wp-content/uploads/504.pdf>. Accessed November 23, 2011.

49 *The Face of Diabetes in Canada*. Public Health Agency of Canada [serial online]. November 14, 2008. Available at: <http://www.phac-aspc.gc.ca/cd-mc/diabetes-diabete/face-eng.php>. Accessed November 15, 2011.

50 *Diabetes in Canada: Highlights from the National Diabetes Surveillance System, 2004-2005*. Public Health Agency of Canada [serial online]. 2009. Available at: <http://www.phac-aspc.gc.ca/publicat/2008/dicndss-dacsnsd-04-05/dafnp-dcmpn-eng.php>. Accessed November 15, 2011.

51 Goldney RD, Phillips PJ, Fisher L Jet al. *Diabetes, Depression, and Quality of Life: a Population Study*. *Diabetes Care*. 2004;27(5):1066-1070.

When adjusting for the difference in age distributions between First Nations and non-First Nations populations, the rate of new cases of diabetes in the First Nations population was double that of the non-First Nations population over the ten-year period (Figure 3.4). This implies a higher rate of new cases of diabetes among First Nations individuals. For additional details on the incidence of diabetes, see Table 3.1 at the end of this chapter.

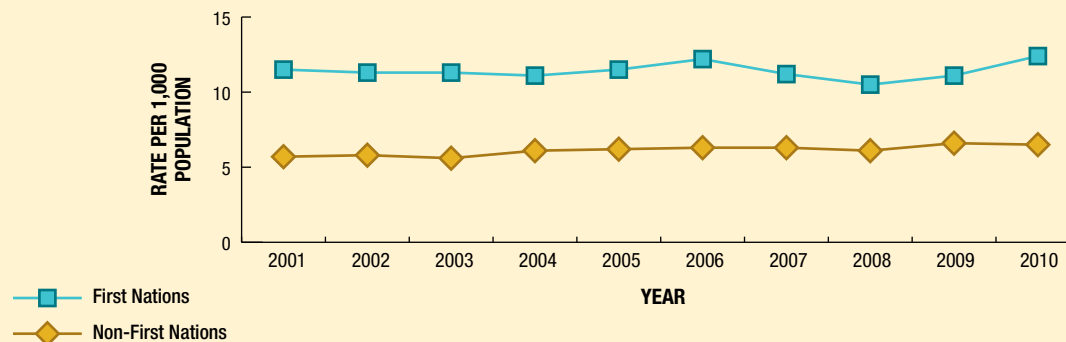
## Prevalence of Diabetes

Prevalence of diabetes describes the number of cases (new and existing) in a given population. The prevalence of diabetes was higher among First Nations females compared to First Nations males over the ten-year period (Figure 3.5). The prevalence increased by 39% among females and by 60% among males (Figure 3.5) from 2001–2010. For additional details on the prevalence of diabetes, see Table 3.2 at the end of this chapter.



**Figure 3.4**

Age-adjusted incidence\* of diabetes, First Nations and non-First Nations in Alberta, 2001–2010

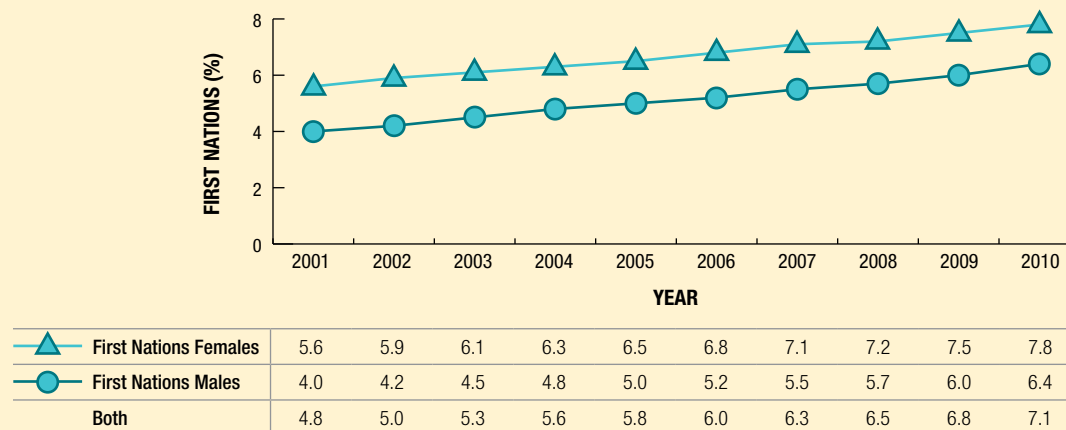


\* Adjusted to the 2006 Canadian Census population.

Source: AHW: Alberta Hospital Discharge Abstract Database; Alberta Physician Claims Data; and Alberta Health Care Insurance Plan, Central Stakeholder Registry File (received October 2011)

**Figure 3.5**

Prevalence of diabetes, by gender, First Nations in Alberta, 2001–2010

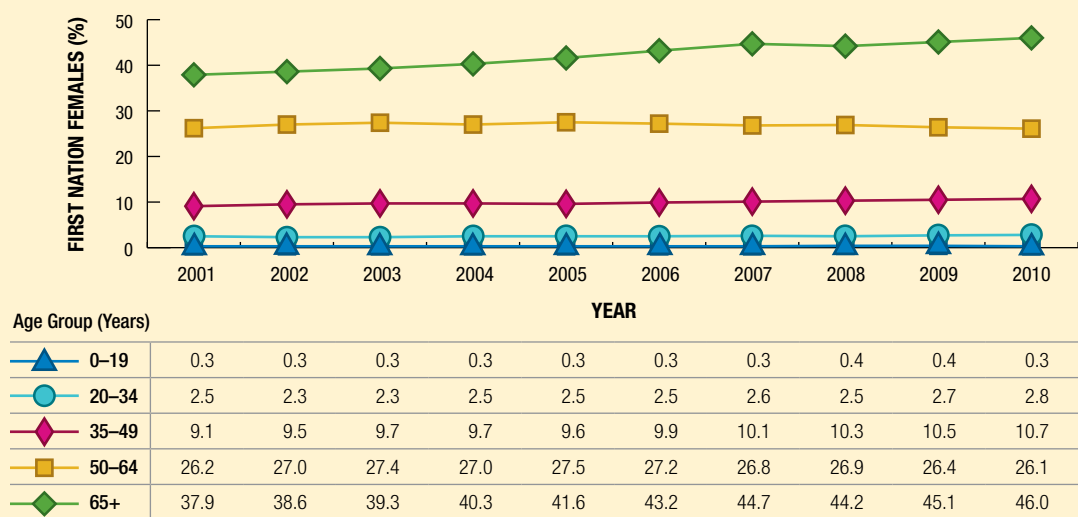


Source: AHW: Alberta Hospital Discharge Abstract Database; Alberta Physician Claims Data; and Alberta Health Care Insurance Plan, Central Stakeholder Registry File (received October 2011)

Among First Nations in Alberta, the prevalence of diabetes increased with age, independent of gender (Figures 3.6 and 3.7). The prevalence of diabetes among First Nations in Alberta remained consistent in all age groups over time, with the exception of the 65 years of age and older group which increased over time. Between 2001 and 2010, the prevalence of diabetes rose by 21% among females and by 44% among males 65 years and older. Although the prevalence of diabetes was higher among all age groups of females compared to males, the rate of new cases was higher among males (with the exception of those aged 20–34 years) than females among First Nations in Alberta in 2010 (Figures 3.2, 3.3, 3.6, and 3.7).

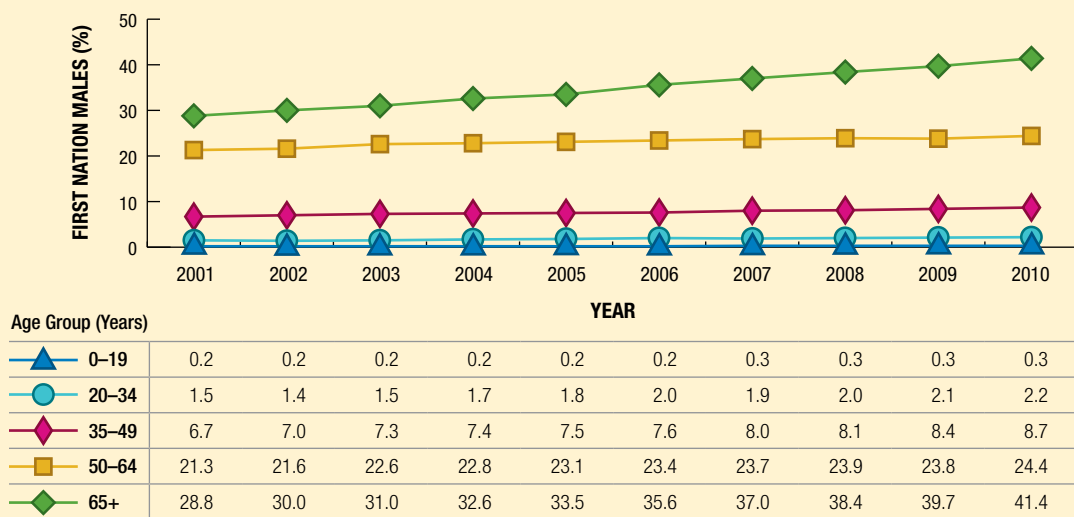
**Figure 3.6**

Prevalence of diabetes among females, by age, First Nations in Alberta, 2001–2010



**Figure 3.7**

Prevalence of diabetes among males, by age, First Nations in Alberta, 2001–2010



Source: AHW: Alberta Hospital Discharge Abstract Database; Alberta Physician Claims Data; and Alberta Health Care Insurance Plan, Central Stakeholder Registry File (received October 2011)

Source: AHW: Alberta Hospital Discharge Abstract Database; Alberta Physician Claims Data; and Alberta Health Care Insurance Plan, Central Stakeholder Registry File (received October 2011)



After adjusting for age, the prevalence of diabetes increased slightly among both First Nations and non-First Nations in Alberta between 2001 and 2010 (Figure 3.8). However, the prevalence of diabetes among First Nations was more than twice that of non-First Nations over the ten-year period 2001–2010. This pattern among First Nations and non-First Nations has been noted elsewhere<sup>52</sup>. For additional details on the prevalence of diabetes, see Table 3.2 at the end of this chapter.

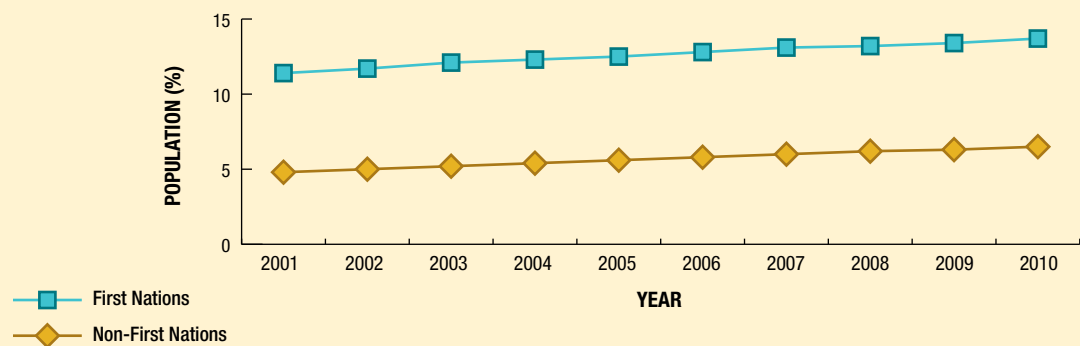
## Diabetes and Comorbidities

Comorbidity among people living with diabetes describes the occurrence of one or more additional chronic health conditions which existed or may occur with diabetes.

- 52 Dyck R, Osgood N, Lin T Het al. *Epidemiology of diabetes mellitus among First Nations and non-First Nations adults*. CMAJ. 2010;183(3):249-256.
- 53 *Why Health Care Renewal Matters: Lessons from Diabetes*. Health Council of Canada [serial online]. 2007. Available at: [http://www.healthcouncilcanada.ca/docs/rpts/2007/HCC\\_DiabetesRpt.pdf](http://www.healthcouncilcanada.ca/docs/rpts/2007/HCC_DiabetesRpt.pdf). Accessed November 10, 2010.
- 54 Valderas JM, Starfield B, Sibbald B et al. *Defining Comorbidity: Implications for Understanding Health and Health Services*. *Annals of Family Medicine*. 2009;7 (No.4):357-363.
- 55 Pierre JD, Kerr EA. *The Impact of Comorbid Chronic Conditions on Diabetes Care*. *Diabetes Care* [serial online]. 2006;29 (No.3). Available at: <http://care.diabetesjournals.org/content/29/3/725.full.pdf+html>. Accessed November 10, 2011.
- 56 *Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Managements of Diabetes in Canada*. *Canadian Journal of Diabetes*. 2008;32 (suppl 1):S1-S201.
- 57 Dyck RF, Osgood ND, Lin TH et al. *End Stage Renal Disease Among People with Diabetes: A Comparison of First Nations People and Other Saskatchewan Residents from 1981 to 2005*. *Canadian Journal of Diabetes*. 2010;34(4):324-333.

Figure 3.8

Age-adjusted prevalence\* of diabetes, First Nations and non-First Nations in Alberta, 2001–2010



\* Adjusted to the 2006 Canadian Census population

Source: AHW: Alberta Hospital Discharge Abstract Database; Alberta Physician Claims Data; and Alberta Health Care Insurance Plan, Central Stakeholder Registry File (received October 2011)

Individuals living with diabetes are up to 40% more likely to also be living with other chronic health conditions than individuals without diabetes<sup>53</sup>. Comorbidities, such as cardiovascular disease (stroke and heart attacks), vision loss, and kidney disease are commonly associated with diabetes and are linked with an increase in health care expenditure<sup>53, 54</sup>. Comorbidities reduce the quality of life among individuals living with diabetes and also pose a big challenge to self-management of diabetes<sup>53, 55</sup>. First Nations are likely to have more severe complications due to diabetes than non-First Nations in Canada. For example, the Health Council of Canada reported a 1999 study from Ontario showing that First Nations living with diabetes had a rate of amputations two to

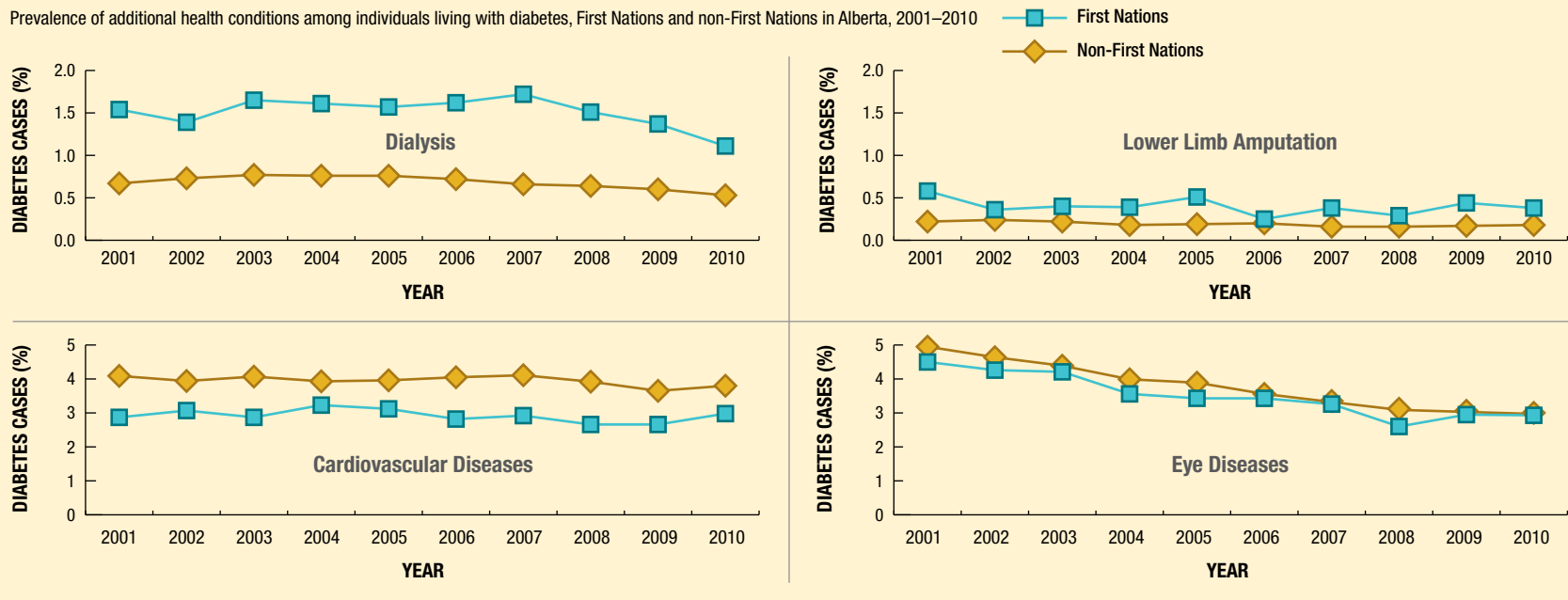
three times greater than non-First Nations<sup>53</sup>. The following section provides a picture of comorbidities or comorbidity-related treatment procedures among First Nations in Alberta.

## DIALYSIS

About 50% of people living with diabetes also have chronic kidney disease (CKD)<sup>56</sup>. When CKD progresses to end-stage renal disease (ESRD), maintenance dialysis and kidney transplantation are the treatment options. In Saskatchewan, ESRD among First Nations living with diabetes has been reported to be three to four times higher than in the general population and was associated with younger age at onset and low survival rate<sup>57</sup>. From 2001–2008, First Nations in Alberta living with diabetes were twice as likely to receive

Figure 3.9

Prevalence of additional health conditions among individuals living with diabetes, First Nations and non-First Nations in Alberta, 2001–2010



Source: AHW: Alberta Hospital Discharge Abstract Database; and Alberta Physician Claims Data (received October 2011)

dialysis as Alberta non-First Nations living with diabetes (Figure 3.9). The prevalence of dialysis among First Nations in Alberta living with diabetes decreased considerably (by 35%) from 2007–2010, while among Alberta non-First Nations over the same time period, the decrease in dialysis was lower (19%) (Figure 3.9). This decrease may be impacted by a change in the accessibility of dialysis and not reflect the diminishing need for dialysis, as there is no evidence of reduced incidence or prevalence of diabetes among First Nations of Alberta. The availability of dialysis has been noted elsewhere

as a possible reason for the reluctance to access dialysis and the progression of renal disease among First Nations<sup>58</sup>.

### LOWER LIMB AMPUTATIONS

Foot diseases (peripheral neuropathy and/or peripheral vascular disease) are major contributors to morbidity and mortality of those living with diabetes<sup>59</sup>. Lower limb amputation (LLA) is the severe consequence of foot diseases. The proper management of diabetes and foot care can prevent or heal diabetic foot ulcers, greatly decreasing the

chance of amputation<sup>59</sup>. Over the ten-year period, the proportion of LLA among First Nations in Alberta living with diabetes was more than double that of non-First Nations living with diabetes and showed more fluctuation over time (Figure 3.9).

58 Dyck RF, Osgood ND, Lin T et al. *End Stage Renal Disease Among People with Diabetes: A Comparison of First Nations People and Other Saskatchewan Residents from 1981 to 2005*. Canadian Journal of Diabetes. 2010;34(4):324-333.

59 *Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Managements of Diabetes in Canada*. Canadian Journal of Diabetes. 2008;32 (suppl 1):S1-S201.

## CARDIOVASCULAR DISEASES

Diabetes is an independent risk factor for cardiovascular disease (CVD) among both females and males<sup>60</sup>. CVD is the leading cause of morbidity and mortality among those living with diabetes and is associated with the largest proportion of health care costs attributed to diabetes<sup>61</sup>. First Nations in Alberta living with diabetes had slightly lower prevalence of CVD compared to non-First Nations living with diabetes (an average of 3.5% versus 3.8%) over the ten-year period, and both decreased over time. This trend was also observed in Ontario<sup>62</sup> (Figure 3.9).

## EYE DISEASES

Diabetic retinopathy is a small blood vessel complication treatable by retinal interventions. In addition, the presence of diabetes

increases the risk of developing glaucoma and cataracts<sup>63</sup>. If untreated, these eye diseases can lead to blindness and decreased quality of life. First Nations in Alberta living with diabetes had consistently lower prevalence of eye diseases compared to non-First Nations in Alberta living with diabetes (an average of 2.92% versus 3.95%) over the ten-year period (Figure 3.9). It is unlikely that First Nations experience less eye disease than non-First Nations, considering that the incidence and prevalence of people living with diabetes is higher among First Nations; as with dialysis, this may be due to reduced access to eye care or retinal screening among First Nations compared to non-First Nations. Cases of eye disease among individuals living with diabetes

are taken from physician claims for cataracts, glaucoma, etc. Without screening for the presence of eye disease, physician action would not become apparent.

## Utilization of Antidiabetic Medications

Antidiabetic medications are used when lifestyle interventions (diet and physical activity) fail to control blood glucose adequately in Type 2 diabetes. Insulin therapy should be used in people living with Type 1 diabetes in addition to lifestyle interventions<sup>64</sup>. This section provides an overview of the trends of antidiabetic medication use among First Nations of Alberta to help understand the burden and management of diabetes in this population.

60 Grundy SM, Benjamin IJ, Burke G Let al. *Diabetes and Cardiovascular Disease: A Statement for Healthcare Professionals From the American Heart Association*. American Heart Association [serial online]. 2011. Available at: <http://circ.ahajournals.org/content/100/10/1134.full.df+html>. Accessed October 21, 2011.

61 *American Diabetes Association: Clinical Practice Guideline 2011*. Diabetes Care. 2011;34 (suppl 1):S1-S96.

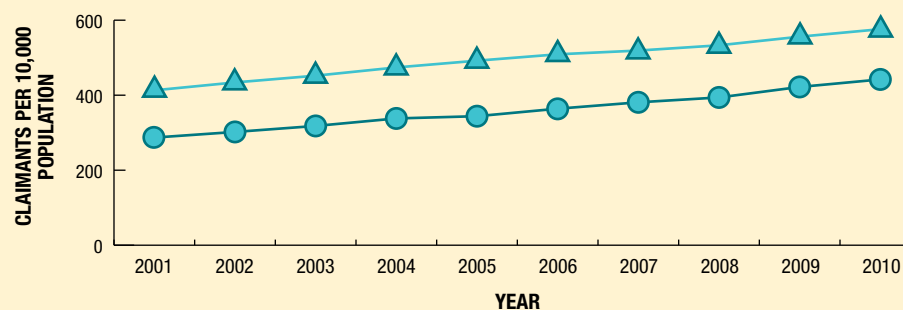
62 *Diabetes in Ontario: Practice Atlas*. Institute for Clinical Evaluative Science (ICES) [serial online]. 2003. Available at: [http://www.ices.on.ca/webpage.cfm?site\\_id=1&org\\_id=31&morg\\_id=0&gsec\\_id=0&item\\_id=1312](http://www.ices.on.ca/webpage.cfm?site_id=1&org_id=31&morg_id=0&gsec_id=0&item_id=1312). Accessed November 15, 2011.

63 *Alberta Diabetes Atlas 2007*. Edmonton: Institute of Health Economics [serial online]. 2011. Available at: [http://www.ihe.ca/documents/Alberta\\_Diabetes\\_Atlas\\_2007.pdf](http://www.ihe.ca/documents/Alberta_Diabetes_Atlas_2007.pdf). Accessed October 21, 2011.

64 *Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Managements of Diabetes in Canada*. Canadian Journal of Diabetes. 2008;32 (suppl 1):S1-S201.

Figure 3.10

Proportion of antidiabetic medication claimants, by gender, First Nations in Alberta, 2001–2010



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
▲ First Nations Females	413	434	452	474	492	509	519	533	556	576
● First Nations Males	287	302	318	338	344	364	381	394	422	442
Both	351	369	386	407	419	438	451	465	490	510

Source: NIHB Pharmacy Claims Data (extracted October 2011); and AANDC Population File

## Antidiabetic Medications Claims

The proportion of First Nations in Alberta making antidiabetic medication claims increased by 45% from 2001–2010; with higher increases among males (54%) compared to females (39%). A higher proportion of females filled these prescriptions than males for all years (Figure 3.10); this trend is consistent with a higher prevalence of diabetes among First Nations females.

As with the trends in the prevalence of diabetes in First Nations in Alberta, the proportion of antidiabetic medication claimants from 2001–2010 increased with age, and was higher among females of all age categories

Figure 3.11

Proportion of antidiabetic medication claimants, among females, by age, First Nations in Alberta, 2001–2010

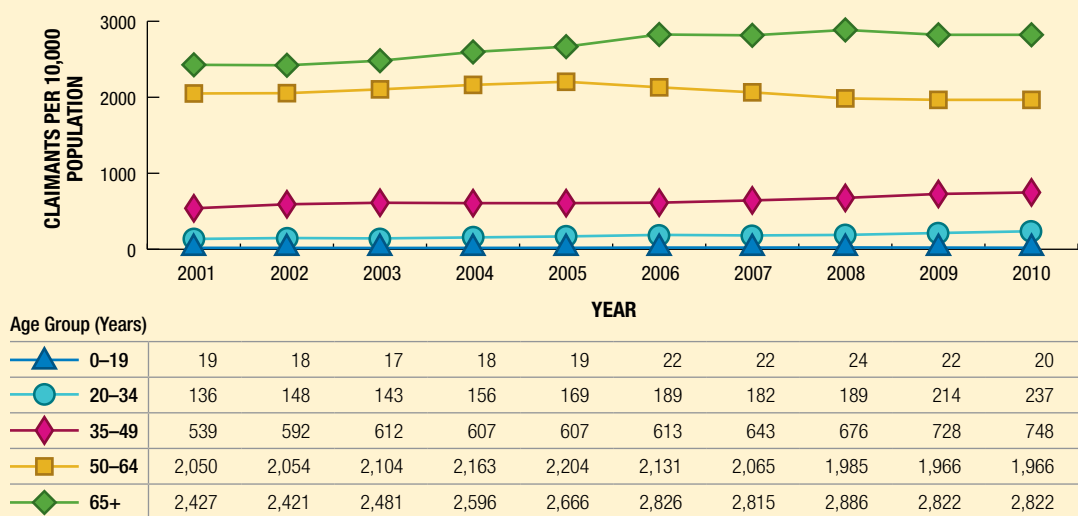
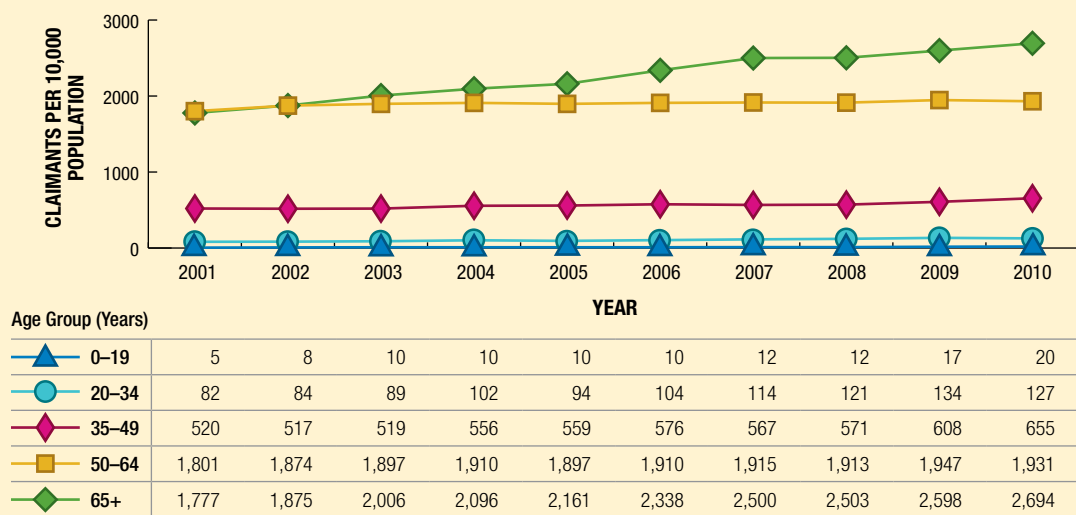


Figure 3.12

Proportion of antidiabetic medication claimants among males, by age, First Nations in Alberta, 2001–2010



Source: NIHB Pharmacy Claims Data (extracted October 2011); and AANDC Population File

(Figures 3.11 and 3.12). With the exception of First Nations females in Alberta aged 50–64 years (for whom claims for antidiabetic medication decreased), there was an increase in antidiabetic medication claims among all age categories of First Nations in Alberta among both females and males in the ten-year period. The most notable increase in antidiabetic claimants was among females and males aged 65 years and older (Figures 3.11 and 3.12).

Source: NIHB Pharmacy Claims Data (extracted October 2011); and AANDC Population File



## Making “the Healthier Choice the Easy Choice”\*

There is a profound relationship between diabetes and lifestyle factors such as proper nutrition and physical activity<sup>65</sup>. Healthy eating not only promotes healthy aging but also protects individuals from diet-related chronic diseases such as diabetes. The Good Food Box project is an example of a successful and ongoing health promotion activity related to the prevention and management of diabetes, and has been implemented by health promoters in several First Nations communities in Alberta under the Aboriginal Diabetes Initiative. This project aims to increase access to food at a low cost to community members and to promote healthy

eating and community development. It is a partnership with the local grocery stores and other departments/programs (Social Development, Canada Prenatal Nutrition Program, and local volunteers). Community members pay \$10–\$25 per month for a bag/box of healthy foods which would cost much more if purchased individually at the store. Recipes are often included as well. This population-based approach helps to apply the healthy eating concept into everyday practice, which is critical to improving health and preventing diabetes, thus making it easier for First Nations to follow a healthier choice.

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\* Quote taken from Paul Veugeleres (2005)

65 American Diabetes Association: Clinical Practice Guideline 2011. *Diabetes Care*. 2011;34 (suppl 1):S1-S96.



## SUMMARY

This chapter suggests that prevention, screening, and management of diabetes are important for the First Nations communities in Alberta, based on the annual number of new cases, the rise in prevalence, and the disproportionate presence of comorbidities that exist among First Nations in Alberta as compared to non-First Nations.

A reduction in the number of First Nations in Alberta living with diabetes and improvements in the management of diabetes would not only improve the quality of life among First Nations in Alberta but also reduce health care expenditure.



- From 2001–2010, the overall rate of First Nations in Alberta newly diagnosed with diabetes remains steady at approximately five individuals per 1,000 population per year, which equates to an average of 500 new cases of diabetes per year. After adjusting for the difference in age distributions, the rate of new cases was significantly higher among First Nations than among non-First Nations in Alberta. Over the last ten years, First Nations in Alberta newly diagnosed with diabetes were more often observed among those aged 50 years and older. Overall, the rate of new cases among First Nations men and women is similar.
- Over the ten-year period from 2001–2010, the prevalence of First Nations in Alberta living with diabetes increased, most noticeably among individuals aged 65 years and older. Consistently, more First Nations females are living with diabetes than First Nations males over the same time period. After adjusting for the difference in age distributions, significantly more (double) First Nations in Alberta were living with diabetes than non-First Nations.

Antidiabetic medication claims give just one window into the management of diabetes; lifestyle factors are also pertinent to the prevalence of diabetes. Just as there was an increase in claims for antidiabetic medication from 2001–2010, there was a similar increase

in the prevalence of diabetes among First Nations in Alberta. There were differences in claims between First Nations males and females, with claims consistently higher among females. However, prescriptions filled do not always reflect prescriptions taken, and from the proportion of First Nations individuals living with lower limb amputations (LLA) and those requiring dialysis, it would seem that a considerable proportion of unmanaged diabetes exists among First Nations in Alberta.

It has already been stated that First Nations living with diabetes and other chronic diseases experience a decreased quality of life greater than non-First Nations living with diabetes. This was the case for LLA and dialysis where twice as many First Nations living with diabetes were on dialysis and had LLA than non-First Nations. However, this was not true of all comorbidities.

- From 2001–2010, incidence of cardiovascular diseases among First Nations and non-First Nations in Alberta were very similar and decreased in both groups over time.
- The information presented indicates that more non-First Nations than First Nations in Alberta living with diabetes also had eye diseases; this is more likely related to access by First Nations in Alberta to eye care, more precisely retinal screening, than to a difference in comorbidity.

## METHODOLOGY

### Who is included in this chapter?

The *Diabetes* chapter is based on information from the Alberta Diabetes Surveillance System (ADSS) and Non-Insured Health Benefits (NIHB) database of Health Canada. The information which described incidence, prevalence, and other health problems associated with individuals living with diabetes was based on information from the ADSS. Within ADSS, First Nations who reside in Alberta and are registered under the Federal Indian Act and entitled to treaty status were included as identified by the Alberta Health Care Insurance Plan (AHCIP) Central Stakeholder Registry file. However, to describe antidiabetic drug utilization, only registered Alberta First Nations who claimed their antidiabetic medications in Alberta (during the period January 1, 2001 to December 31, 2010) were included.

66 *Non-Insured Health Benefits for First Nations and Inuit. Health Canada* [serial online]. May 19, 2011. Available at: <http://www.hc-sc.gc.ca/fniah-spnia/nihb-ssna/index-eng.php>. Accessed August 31, 2011.

67 Goldney RD, Phillips PJ, Fisher LJet al. *Diabetes, Depression, and Quality of Life: a Population Study. Diabetes Care.* 2004;27(5):1066-1070.

### Data Sources

This chapter is based on the analysis of the following data sources:

- ADSS: The Alberta Diabetes Surveillance System was created in 2006 through collaboration between Alberta Health and Wellness (AHW) and the Institute of Health Economics to provide information about diabetes in Alberta. The Alberta Hospital Discharge Abstract Database, Alberta Physician Claims data, Ambulatory Care Classification System (includes emergency department encounters), Alberta Health Care Insurance Plan Central Stakeholder Registry File, and Alberta vital statistics data were employed to populate the ADSS.
- NIHB pharmacy claims data: Non-Insured Health Benefits is “Health Canada’s national, medically necessary health benefit program that provides coverage for benefit claims for a specified range of drugs... for eligible First Nations people and Inuit”<sup>66</sup>. NIHB pharmacy claims data is an administrative database.
- AANDC population file: The First Nations population data were obtained from the Indian Registry System database of Aboriginal and Northern Development Canada.



### Identification of Diabetes Cases

ADSS used the National Diabetes Surveillance System (NDSS) algorithm to define a case of diabetes, which requires that an individual must have:

1. One hospitalization with an ICD-9 code of 250 (diabetes mellitus), selected from all available diagnostic codes on the Alberta Hospital Discharge Abstract Database for years 1995–2001, or equivalent ICD-10 codes (E10-14) diabetes for years after 2001–2002; and/or
2. Two physician claims with an ICD-9 code of 250 (diabetes mellitus) within two years.

Gestational diabetes is excluded from the NDSS algorithm. No distinction is made between Type 1 and Type 2 diabetes but it is accepted most Canadians, 90–95%, are living with Type 2 diabetes<sup>67</sup>.

## Approach to Data Analysis

The prevalence of diabetes represents the number of cases of individuals who met the NDSS criteria of a diagnosis of diabetes. The following formula is used to calculate the prevalence of diabetes:

$$\frac{\text{Prevalence of diabetes cases in a given year}}{\text{Population for the same year}} \times 100$$

The incidence of diabetes represents the number of new cases of individuals who met the NDSS criteria for diabetes with no diabetes claims in the prior two years<sup>68</sup>. The following formula is used to calculate the incidence of diabetes:

$$\frac{\text{Incidence of diabetes cases in a given year}}{[\text{Population for the same year}] - [\text{Prevalence of diabetes cases for the same year}] + [\text{Incidence of diabetes cases for the same year}]} \times 1,000$$

Where the denominator is a population at risk, the following formula is used to calculate the percentage of people living with diabetes who had comorbidities:

$$\frac{\text{Prevalence diabetes cases with a comorbidity in a given year}}{\text{Prevalence diabetes cases for the same year}} \times 100$$

First Nations population information obtained from AANDC's Indian Registry System database was used as denominators for antidiabetic medication utilization measures.

## Data Limitations:

- Diabetes cases as defined by ADSS may exclude individuals living with undiagnosed diabetes, leading to an underestimation of Alberta diabetes prevalence and incidence.
- First Nations may access diabetes-related care through their local community (health center staff, nurses, elders, and other community supports). This care may not be captured in the Alberta Physician Claims data and those diabetes cases will not be included in this report.
- Information related to First Nations with Alberta band membership currently residing outside of Alberta cannot be captured by the data sources listed above, and are thus excluded from this report. Conversely, First Nations who are members of bands outside of Alberta but reside in Alberta may use Alberta's health services and cannot be distinguished for exclusion from this report.
- Medication claims by Albertan First Nations paid by alternate source (e.g. employer insurance coverage, out-of-pocket) are not captured in the NIHB pharmacy claims database.
- Medication claims by Alberta First Nations filled at community nursing stations are not captured in the NIHB pharmacy claims database.
- Prescriptions filled outside of Alberta are not included.
- The amount of medications prescribed may not reflect the amount actually consumed.
- Medications typically used to treat diabetes may be prescribed for other conditions. It is estimated that the impact of these situations will be minimal.
- Some cases of diabetes may be managed without medications (e.g. early Type 2 diabetes can be successfully managed through diet and lifestyle therapy). Thus, medication claims alone should not be interpreted as the actual prevalence or incidence of diagnosed disease in the population.

<sup>68</sup> Goldney RD, Phillips PJ, Fisher LJet al. *Diabetes, Depression, and Quality of Life: a Population Study*. *Diabetes Care*. 2004;27(5):1066-1070.

## Additional Information

**Table 3.1**

Incidence of diabetes, First Nations and non-First Nations in Alberta, 2001–2010

	Crude Rate				Age-Adjusted Rate	
	First Nations		Non-First Nations		First Nations	Non-First Nations
	Number	Rate/1,000	Number	Rate/1,000	Rate/1,000	Rate/1,000
2001	503	4.7	12,599	4.5	11.5	5.7
2002	544	5.0	13,266	4.6	11.3	5.8
2003	573	5.1	13,062	4.5	11.3	5.6
2004	570	5.0	14,641	5.0	11.1	6.1
2005	576	5.0	15,057	5.1	11.5	6.2
2006	641	5.4	15,901	5.3	12.2	6.3
2007	646	5.4	16,411	5.3	11.2	6.3
2008	612	5.1	16,505	5.2	10.5	6.1
2009	692	5.7	18,637	5.6	11.1	6.6
2010	725	5.9	18,716	5.5	12.4	6.5

**Table 3.2**

Prevalence of diabetes, First Nations and non-First Nations in Alberta, 2001–2010

	Crude Rate				Age-Adjusted Rate	
	First Nations		Non-First Nations		First Nations	Non-First Nations
	#	%	#	%	%	%
2001	5,330	4.8	115,687	4.0	11.4	4.8
2002	5,773	5.0	124,738	4.2	11.7	5.0
2003	6,241	5.3	133,151	4.4	12.1	5.2
2004	6,660	5.6	142,734	4.7	12.3	5.4
2005	7,050	5.8	152,774	4.9	12.5	5.6
2006	7,512	6.0	163,383	5.1	12.8	5.8
2007	7,976	6.3	174,183	5.3	13.1	6.0
2008	8,358	6.5	184,382	5.5	13.2	6.2
2009	8,807	6.8	196,936	5.6	13.4	6.3
2010	9,276	7.1	209,733	5.8	13.7	6.5

*Source: AHW: Alberta Hospital Discharge Abstract Database; Alberta Physician Claims Data; and Alberta Health Care Insurance Plan, Central Stakeholder Registry File (received October 2011)*

*Source: AHW: Alberta Hospital Discharge Abstract Database; Alberta Physician Claims Data; and Alberta Health Care Insurance Plan, Central Stakeholder Registry File (received October 2011)*





# Health Protection





# Health Protection

The *Health Protection* chapter features health status information on First Nation communities and the people who live in them. This chapter is designed to provide key health statistics in a concise format. The highlighted areas for this annual report are:

## 1) Communicable Disease Control

- Immunization
- Vaccine Management
- Notifiable Infectious Diseases
- Animal Bites

## 2) Environmental Public Health

- Recognition of Award-Winning Environmental Public Health Services
- Public Health Major Occurrences
- Safe Drinking Water Program
- Environmental Public Health Inspections



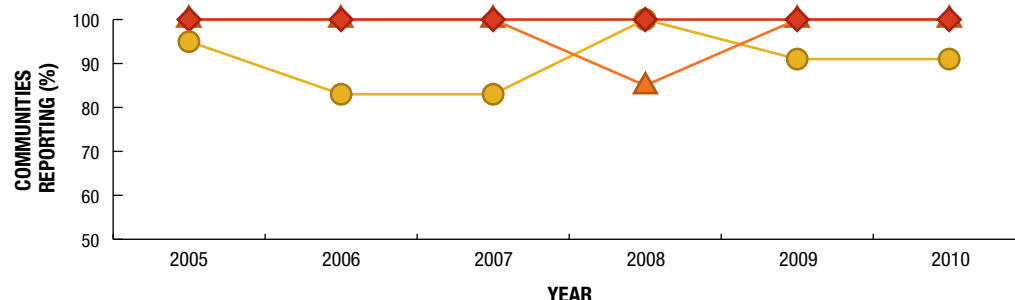
# COMMUNICABLE DISEASE CONTROL

## Immunization Coverage Reporting

“Immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine”<sup>69</sup>. Control of vaccine-preventable disease depends on high levels of immunization coverage. Immunization remains the most cost effective public health intervention to date, greatly reducing the rates of serious, sometimes fatal, diseases.

Figure 4.1.1

Proportion of Alberta First Nations communities reporting preschool immunization rates, by treaty area, 2005–2010



◆ Treaty 6	100%	100%	100%	100%	100%	100%
▲ Treaty 7	100%	100%	100%	85%	100%	100%
● Treaty 8	95%	83%	83%	100%	91%	91%

Source: Health Canada, FNIH – Alberta Region

### WHAT DOES THIS MEAN?

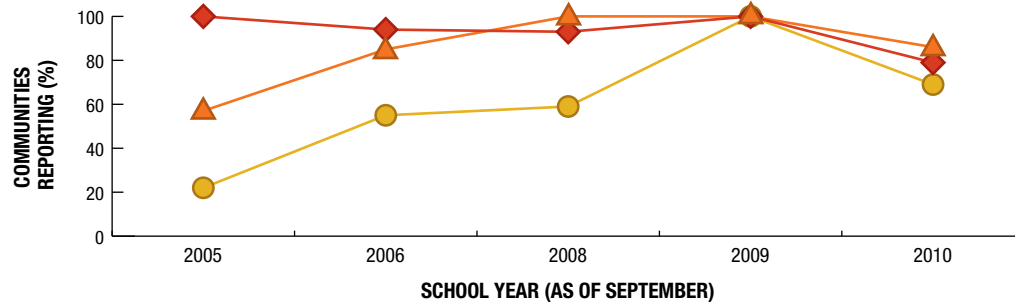
- In 2010, all communities reported preschool immunization rates in Treaty 6 and Treaty 7. Two communities in Treaty 8 did not report immunization rates because they did not have any nursing services in 2010 (Figure 4.1.1).
- School-age immunization coverage statistics (Grades 5 and 9) are collected separately at the end of each school year (Figure 4.1.2). In 2010, 94% of communities with schools reported school-age immunization rates.

<sup>69</sup> World Health Organization. 2011. Immunization. [www.who.int/topics/immunization/en/](http://www.who.int/topics/immunization/en/). Accessed November 2011.



**Figure 4.1.2**

Proportion of Alberta First Nations communities reporting school-age immunization rates, by treaty area, 2005–2011 (school years)



◆ Treaty 6	100%	94%	93%	100%	79%
▲ Treaty 7	57%	85%	100%	100%	86%
● Treaty 8	22%	55%	59%	100%	69%

*Source: Health Canada, FNIH – Alberta Region*

### Notes

- » Fort McKay reports immunization rates directly to Alberta Health Services. As such, this information is not included.
- » School-aged immunization includes those vaccines administered at the age of six and in Grades 5 and 9.
- » Communities without schools are excluded from reporting as there are no schools present. This is reflected in the denominator.
- » Data were unavailable for 2007–08 school year.



# Immunization of Preschool Children: One-Year-Olds

A series of vaccines are recommended throughout the childhood years, with the majority of recommended doses administered during the first two years of life: diphtheria, tetanus, pertussis and polio (DTaP-IPV); *Haemophilus influenzae* type b (Hib); meningococcal type C (MenC); pneumococcal conjugate (PCV7/13); measles, mumps and rubella (MMR); and varicella (chickenpox) (VZV).

## WHAT DOES THIS MEAN?

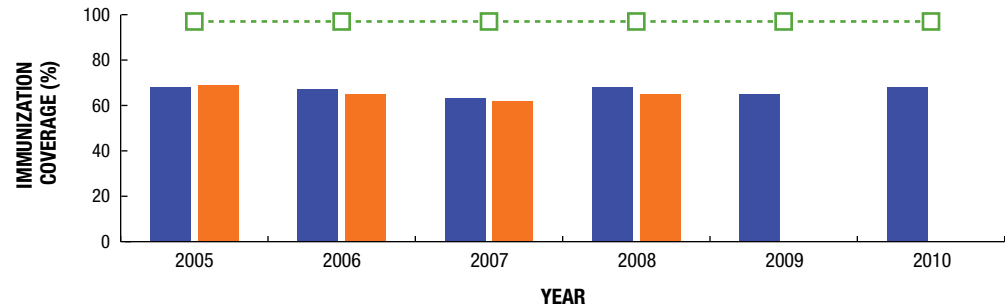
- Coverage rates for one-year-old children have remained relatively stable since 2005 (Figures 4.1.3 and 4.1.4).

### Notes:

- » The reporting measures of Hib and DTaP-IPV coverage changed in 2009 because of changes in the formulation of the vaccine.
- » The 7-valent pneumococcal conjugate vaccine (PCV7) was used for preschool children up to 2009. In 2010, the 13-valent pneumococcal conjugate vaccine (PCV13) was introduced in July.
- » SC = series complete
- » Coverage rates refer to the completion of the recommended doses of a vaccine by a specific age as per the Alberta immunization schedule.

Figure 4.1.3

DTaP-IPV and Hib immunization coverage for one-year-old children in Alberta First Nations Communities, 2005–2010

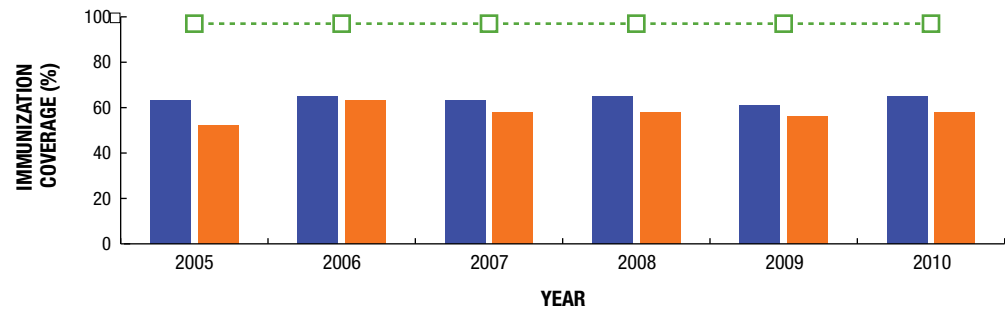


	2005	2006	2007	2008	2009	2010
#3 DTaP-IPV	68%	67%	63%	68%	65%	68%
#3 Hib	69%	65%	62%	65%	*	*
Target	97%	97%	97%	97%	97%	97%

Source: Health Canada, FNIH – Alberta Region

Figure 4.1.4

MenC and PCV7/13 immunization coverage for one-year-old children in Alberta First Nations Communities, 2005–2010



	2005	2006	2007	2008	2009	2010
SC MenC	63%	65%	63%	65%	61%	65%
SC PCV7/13	52%	63%	58%	58%	56%	58%
Target	97%	97%	97%	97%	97%	97%

Source: Health Canada, FNIH – Alberta Region

# Immunization of Preschool Children: Two-Year-Olds

A series of vaccines are recommended throughout the childhood years, with the majority of recommended doses administered during the first two years of life: diphtheria, tetanus, pertussis and polio (DTaP-IPV); *Haemophilus influenzae* type b (Hib); meningococcal type C (MenC); pneumococcal conjugate (PCV7/13); measles, mumps and rubella (MMR); and varicella (chickenpox) (VZV).

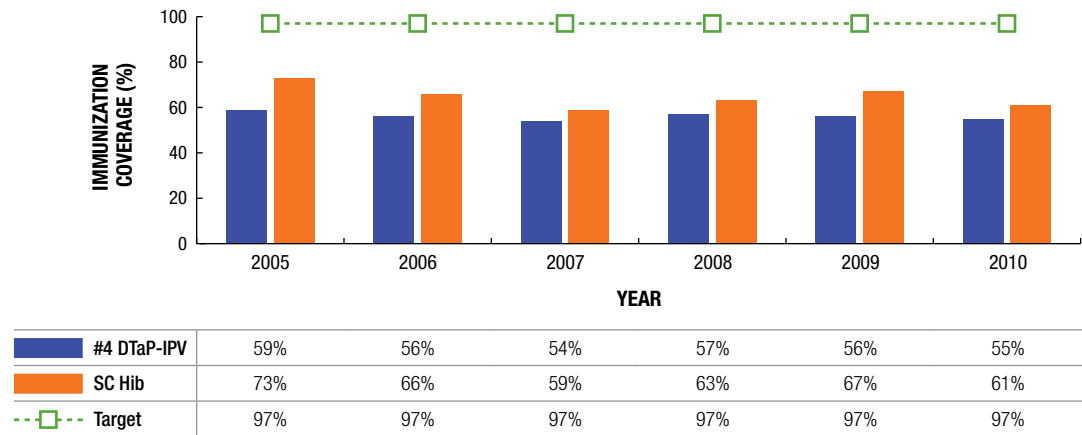
## WHAT DOES THIS MEAN?

- Most of the coverage rates for the vaccines have remained stable since 2005, with the exception of decreased rates from 2009–10 in MenC and PCV7/13 (Figures 4.1.5, 4.1.6, and 4.1.7).
- This slight downward trend needs to be monitored.
- The coverage rates for the vaccines that require only one dose prior to two years of age (MMR, VZV) are higher than the rates for vaccines requiring more doses (i.e., DTaP-IPV, which requires four doses for optimal protection).

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Figure 4.1.5

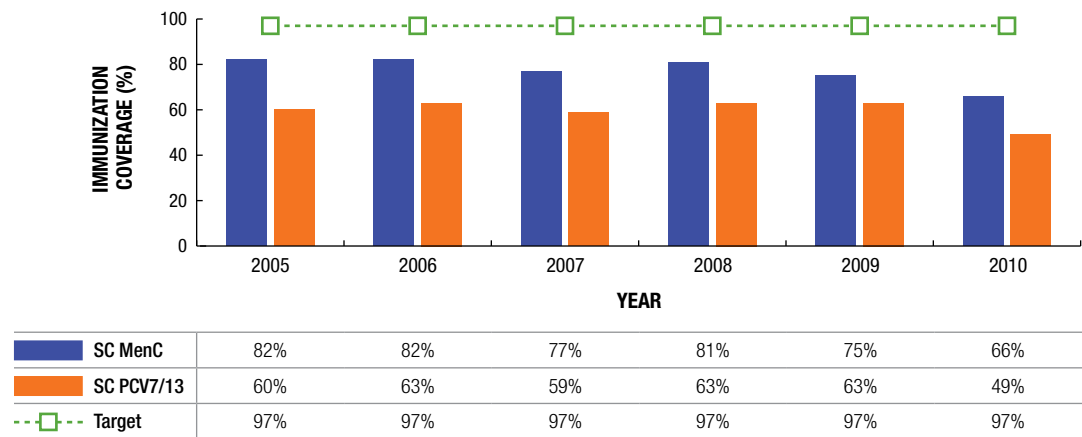
DTaP-IPV and Hib immunization coverage for two-year-old children in Alberta First Nations Communities, 2005–2010



Source: Health Canada, FNHI – Alberta Region

Figure 4.1.6

MenC and PCV7/13 immunization coverage for two-year-old children in Alberta First Nations Communities, 2005–2010



Source: Health Canada, FNHI – Alberta Region

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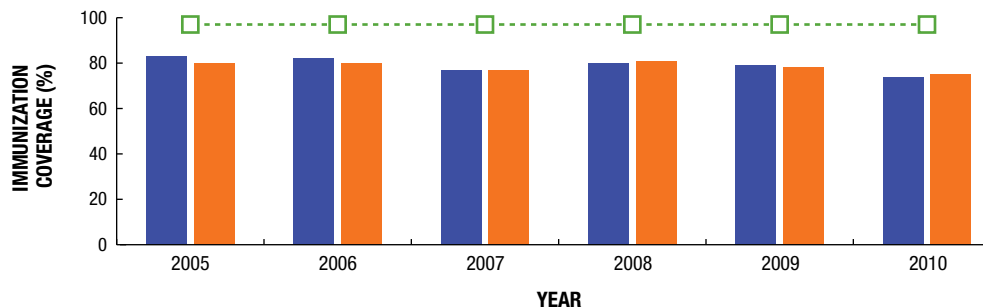
**Notes:**

- » SC = series completed
- » Coverage rates refer to the completion of the recommended doses of a vaccine by a specific age as per the Alberta immunization schedule.
- » In 2009, the Hib and DTaP-IPV coverage rates were combined.
- » The 7-valent pneumococcal conjugate vaccine (PCV 7) was used for preschool children up to 2009. In 2010, the 13-valent pneumococcal conjugate vaccine (PCV 13) was introduced.
- » Coverage rates refer to the completion of the recommended doses of a vaccine by a specific age as per the Alberta immunization schedule.



**Figure 4.1.7**

MMR and VZV immunization coverage for two-year-old children in Alberta First Nations Communities, 2005–2010



	2005	2006	2007	2008	2009	2010
MMR	83%	82%	77%	80%	79%	74%
VZV	80%	80%	77%	81%	78%	75%
Target	97%	97%	97%	97%	97%	97%

Source: Health Canada, FNIH – Alberta Region



# Immunization Uptake: One- and Two-Year-Old Children

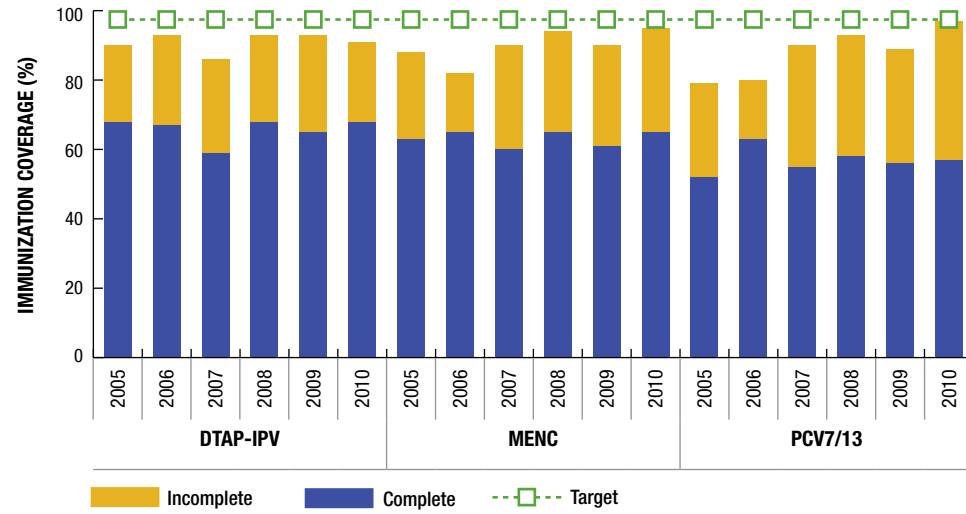
“Uptake” is used to indicate when a person has received some, but not all the required doses of a vaccine for full protection (series incomplete). Knowing the uptake of a vaccine provides an indication of the level of community protection.

## WHAT DOES THIS MEAN?

- A large proportion of First Nations children on-reserve have some protection against most vaccine-preventable diseases (Figure 4.1.8). From 2005–2010, complete vaccine coverage rates for PCV7/13 are generally lower (average of 57%) compared to DTaP-IPV and MenC. This indicates that all recommended vaccines are not administered during the same clinic visit. Clinic processes should be further explored to address the challenges to providing multiple vaccines during a child’s visit.
- Since 2006, immunization coverage rates for both one- and two-year-old First Nations children have been in the 70–80% range in Treaty 7 communities; however, coverage rates declined in 2010 for both age groups (Figure 4.1.9). Treaty 6 experienced an increase in coverage for one-year-olds but a drop for two-year-olds. Data from Treaty 8 communities illustrate a downward trend in coverage from 2009–2010.

Figure 4.1.8

Proportion of one-year-old children in Alberta First Nations communities with complete and incomplete routine immunization uptake, 2005–2010



Source: Health Canada, FNIH – Alberta Region

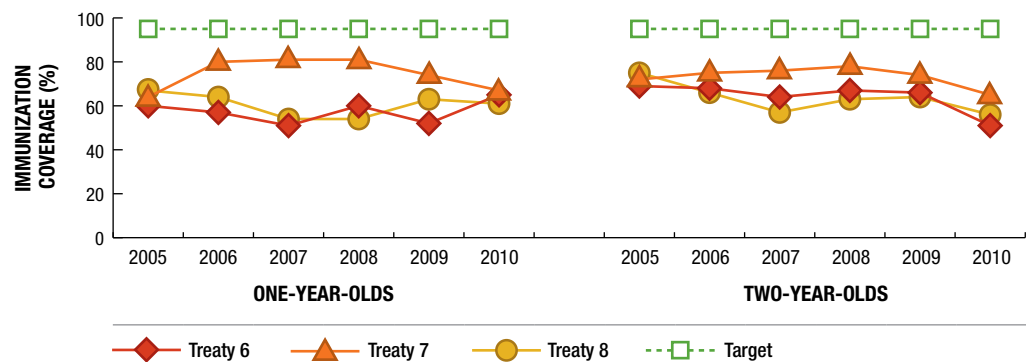
- Average coverage rates for two-year-old children declined in all treaty areas from 2009–2010 (Figure 4.1.9).

*Continued on next page >>>*

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Figure 4.1.9

Average immunization coverage for one- and two-year-old children in Alberta First Nations communities with complete routine immunization, by treaty area, 2005–2010



Source: Health Canada, FNIH – Alberta Region

**Notes:**

- » Coverage rates refer to the completion of the recommended doses of a vaccine by a specific age as per the Alberta immunization schedule.



# Immunization of School-Age Children: Six-Year-Olds

Routine preschool immunizations should be completed by about age five. An assessment at six years of age provides a review of the level of completion for these recommended vaccines; as well, this is an opportunity to evaluate and/or update the completion of recommended vaccines.

## WHAT DOES THIS MEAN?

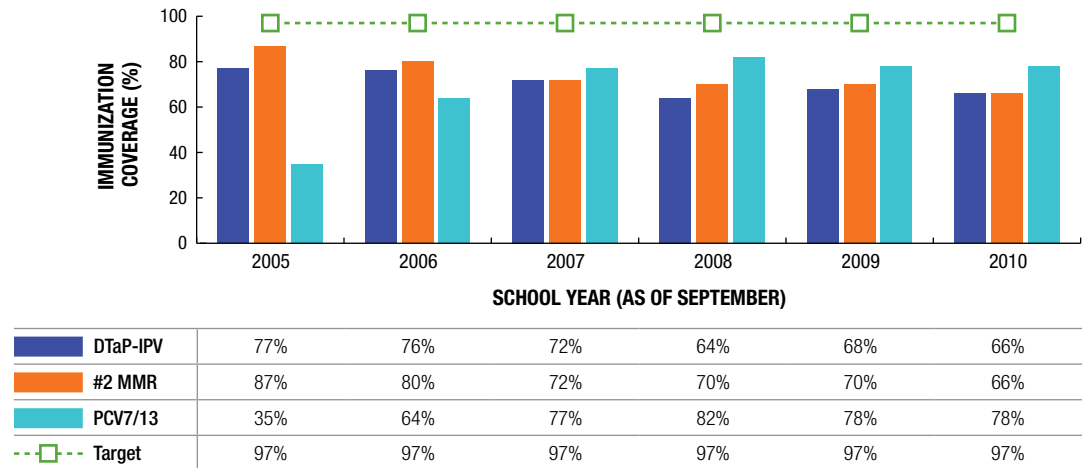
- Immunization coverage rates for the second dose of the MMR vaccine for six-year-olds have continued to decline since 2005, while DTaP-IPV and PCV7/13 coverage rates remained stable in the past few years (Figure 4.1.10).

### Notes:

- » DTaP-IPV = diphtheria, tetanus, pertussis and polio
- » PCV7/13 = pneumococcal conjugate
- » MMR = measles, mumps and rubella
- » The school year refers to September to June.

Figure 4.1.10

Proportion of six-year-old children in Alberta First Nations communities with complete immunization for DTaP-IPV, #2 MMR, and PCV7/13, 2005–2011 (school years)



Source: Health Canada, FNHIH – Alberta Region

# Immunization of School-Age Children: Grade 5 Students

Specific vaccines are offered in Grade 5: hepatitis B (HBV) and human papillomavirus (HPV). Students' charts are reviewed for other missing vaccines: measles, mumps, and rubella (MMR); varicella/chickenpox (VZV); and diphtheria, tetanus, pertussis, and polio (DTaP-IPV).

## WHAT DOES THIS MEAN?

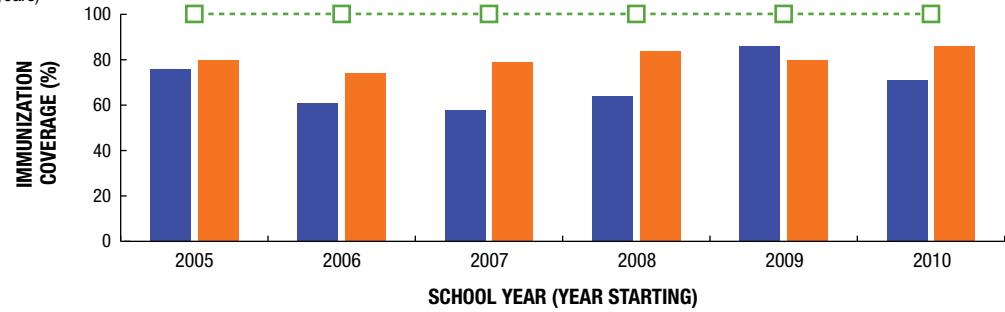
- HBV coverage has declined from 86% in 2009 to 71% in 2010 for Grade 5 students (Figure 4.1.11).
- Varicella (VZV) coverage in Grade 5 students peaked at 86% in 2010 (Figure 4.1.11).

## Notes:

- » HBV = hepatitis B vaccine
- » VZV = varicella (chickenpox)
- » The differences in coverage rates for HBV are likely directly related to the three-dose series, compared to a single dose for VZV.
- » The HPV vaccine was first offered to Grade 5 students in the 2008–09 school year.
- » The school year refers to September to June.

Figure 4.1.11

Proportion of Grade 5 students in Alberta First Nations communities with complete immunization for HBV and VZV, 2005–2006 to 2010–2011 (school years)



	2005	2006	2007	2008	2009	2010
HBV	76%	61%	58%	64%	86%	71%
VZV	80%	74%	79%	84%	80%	86%
Target	100%	100%	100%	100%	100%	100%

Source: Health Canada, FNIH – Alberta Region





# Immunization of School-Age Children: Grade 9 Students

Specific vaccines are offered in Grade 9: diphtheria, tetanus, pertussis (dTaP); and human papillomavirus (HPV). Grade 9 is also a final opportunity to evaluate and/or update the completion of recommended vaccines: measles, mumps and rubella (MMR); hepatitis B (HBV); and varicella/chickenpox (VZV).

## WHAT DOES THIS MEAN?

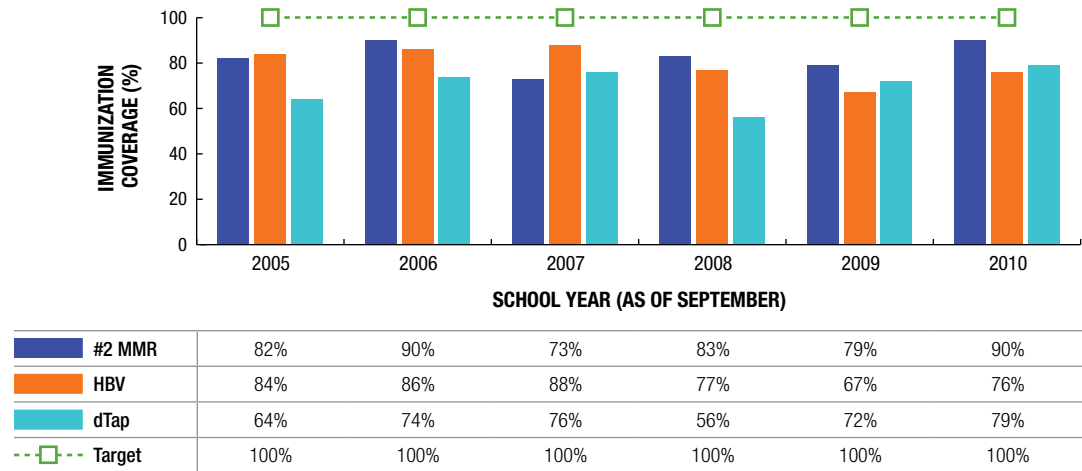
- Coverage rates in 2010–11 for the second dose of the MMR substantially increased over the previous year (79% in 2009 to 90% in 2010) for Grade 9 students in Alberta First Nation communities (Figure 4.1.12).
- A similar increase (9%) is also seen with the HBV vaccine for Grade 9 students (Figure 4.1.12).
- In Alberta First Nations, varicella immunization rates in Grade 9 students had remained stable around 70% (Figure 4.1.13).
- In 2010–11, a 20% increase over the previous year was reported for series-complete HPV immunization coverage for Grade 5 and 9 females (Figure 4.1.14).

## Notes:

- » VZV data for Grade 9 students began in the 2009–10 school year.
- » HPV data for Grade 9 students began in the 2008–09 school year. However, proper reporting began with the 2009–10 school year.
- » The differences in coverage rates for HBV are likely directly related to the three-dose schedule, compared to a single dose for MMR and VZV.
- » Rates are reflective of school attendance.

Figure 4.1.12

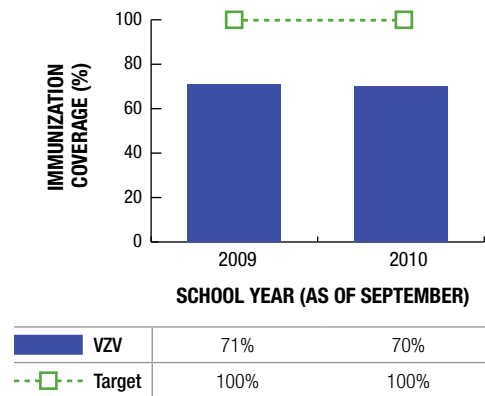
Proportion of Grade 9 students in Alberta First Nations communities with complete immunization for #2 MMR, HBV, and dTap, 2005–2010 (school years)



Source: Health Canada, FNIH – Alberta Region

Figure 4.1.13

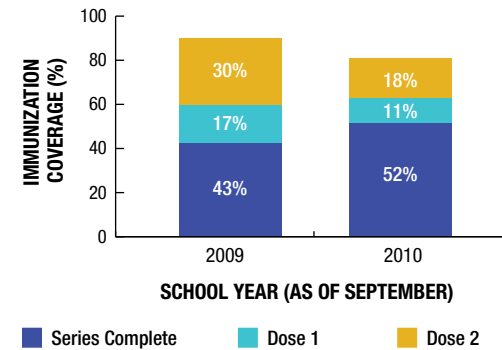
Proportion of Grade 9 students in Alberta First Nations communities with complete immunization for VZV, 2009 and 2010 (school years)



Source: Health Canada, FNIH – Alberta Region

Figure 4.1.14

Proportion of Grade 5 and 9 female students in Alberta First Nations communities with complete and incomplete immunization uptake for HPV, 2009 and 2010 (school years)



Source: Health Canada, FNIH – Alberta Region

# Influenza and Pneumococcal Vaccines

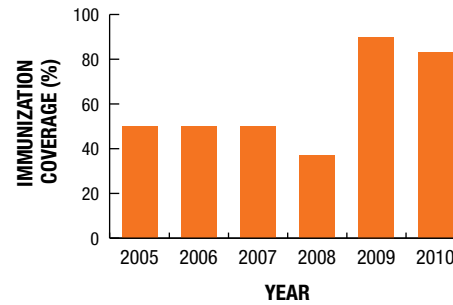
The viruses that cause seasonal influenza change annually, resulting in the need to develop and administer a new vaccine each year for optimal protection. The pneumococcal vaccine (PPV23) is generally given once in a lifetime. The number of individuals in a given age group who are protected with the PPV23 are reported each year, not the number of doses administered in a given year.

## WHAT DOES THIS MEAN?

- Although, the uptake of the seasonal influenza vaccine in individuals aged 65 years and older was lower than during the pandemic (2009), immunization coverage rates were higher than previous years (Figure 4.1.15).
- The proportion of Alberta First Nations 65 years and older protected with the PPV23 vaccine has consistently remained between 42–52% over time (Figure 4.1.16).
- A 9% increase is reported for individuals 65 and over protected with the PPV23 vaccine from 2009–10. (Figure 4.1.16).
- In 2010, 11,905 seasonal influenza vaccine doses were administered in Alberta First Nations communities, a 54% decrease from 2009 (25,840 doses) (Table 4.1.1). With the heightened awareness of the pandemic influenza (H1N1), influenza vaccine uptake during 2009 was exceptional.

Figure 4.1.15

Proportion of individuals 65 years and older in Alberta First Nations communities immunized for seasonal influenza, 2005–2010



Seasonal Influenza	2005	2006	2007	2008	2009	2010
	50%	50%	50%	37%	90%	83%

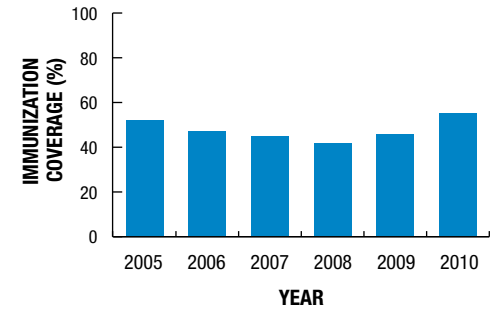
Source: Health Canada, FNIH – Alberta Region

## Notes:

- » PPV23 can be administered by many health care providers in many settings, so not all doses will be captured at the community level and thus are not represented in the data provided.

Figure 4.1.16

Proportion of individuals 65 years and older in Alberta First Nations communities protected with PPV23, 2005–2010



PPV23	2005	2006	2007	2008	2009	2010
	52%	47%	45%	42%	46%	55%

Source: Health Canada, FNIH – Alberta Region

Table 4.1.1

Distribution of individuals in Alberta First Nations Communities who received the seasonal influenza immunization, by target group, 2010

Target Group	Number of Individuals	
Age group	6–23 Months	328
	24–59 Months	625
	5–8 Years	982
	9–64 Years	7935
	65 Years and Older	966
Health Care Workers	838	
Pregnant Women	231	

Source: Health Canada, FNIH – Alberta Region

# Vaccine Management

Vaccine management refers to the process of vaccine distribution, from the time that vaccines are ordered until they are administered. One measure used to evaluate the effectiveness of the vaccine management process is vaccine wastage.

**Table 4.1.2**

Vaccine cold chain break information for Alberta First Nations communities, 2003–2010

Vaccine Cold Chain Break Information	2003	2004	2005	2006	2007	2008	2009	2010
Total Value of Vaccines Distributed	\$1,028,277	\$1,019,100	\$937,638	\$918,661	\$834,174	\$896,151	\$905,199	\$1,011,136
Number of Cold Chain Breaks	35 (26 communities)	51 (28 communities)	56 (29 communities)	59 (25 communities)	43 (19 communities)	59 (31 communities)	46 (25 communities)	54 (10 communities)
Value of Vaccines Exposed But Not Wasted	\$154,260	\$174,489	\$157,844	\$149,896	\$166,725	\$161,181	\$125,398	\$30,339
Value of Vaccines Discarded	\$48,909	\$62,954	\$34,624	\$30,904	\$7,755	\$11,366	\$4,179	\$1,240
Percent of Distributed Vaccines Wasted	4.7%	6.1%	3.7%	3.4%	0.9%	1.3%	0.5%	0.1%

Source: Health Canada, FNIH – Alberta Region

## WHAT DOES THIS MEAN?

- In 2010, there were 54 cold chain breaks (CCBs) in ten Alberta First Nations communities (Table 4.1.2).
- In 2010, 0.1% of distributed vaccines were wasted.
- In 2010, power outages and human error accounted for the majority of cold chain breaks incidents (69% and 17%, respectively) (Table 4.1.3).
- The number of CCBs increased in 2010 compared to 2009 while the cost of discarded vaccine declined considerably.

**Table 4.1.3**

Number of vaccine cold chain breaks in Alberta First Nations communities, by cause, 2003–2010

Cause of CCB	2003	2004	2005	2006	2007	2008	2009	2010
Power Outage	22	38	34	48	28	33	25	37
Human Error	3	11	13	4	4	15	8	9
Electricity Discontinued	3	2	4	2	1	1	2	0
Equipment Malfunction	2	0	0	4	3	1	1	4
Other	5	0	5	7	7	9	10	4

Source: Health Canada, FNIH – Alberta Region

- The ongoing monitoring of vaccine wastage is still important to ensure that vaccine products are appropriately managed and that the cost-effectiveness of immunization programs is maintained.

### Notes:

- » In 2010, under the cause “Other”, three CCBs occurred because of issues with transportation.

# Notifiable Infectious Diseases

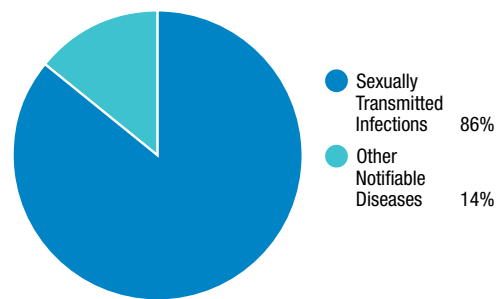
Notifiable diseases data for First Nations on-reserve are based on reports received from staff working in Alberta First Nations communities and are maintained in the regional Notifiable Diseases Registry (NDR) database. Data for the Alberta general population include First Nations and are based on the annual Alberta Health & Wellness report.

## WHAT DOES THIS MEAN?

- The majority (86%) of notifiable diseases reported were sexually transmitted infections (Figure 4.1.17).
- Aside from sexually transmitted infections, enteric diseases comprised the majority (71%) of other notifiable diseases (Figure 4.1.18). The number of enteric infections in 2010 were almost three times higher than in 2009 and was directly related to a shigellosis outbreak that began in 2010.
- Among First Nations on-reserve, the rates of shigellosis, hepatitis C, invasive pneumococcal disease, and invasive group A streptococcal disease were all higher compared to the Alberta off-reserve population (Table 4.1.4). More details are provided in subsequent sections.

Figure 4.1.17

Proportion of new cases of notifiable diseases reported in Alberta First Nations communities, 2010



n = 1,463 cases  
Source: Health Canada, FNIH – Alberta Region

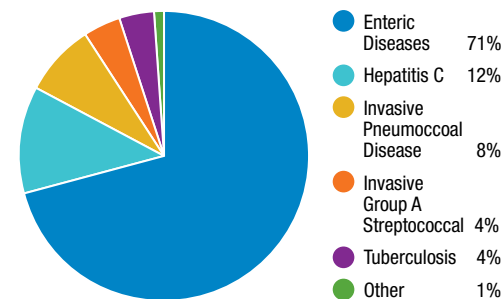
- In First Nations communities, hantavirus pulmonary syndrome was reported in 2010, the first time since 2007.
- In 2010, *E.coli* O157 was reported in Alberta First Nations communities, the first time in more than ten years.

## Notes:

- » Alberta off-reserve population (Table 4.1.4) includes non-First Nations and First Nations living off-reserve in Alberta.
- » The information provided is based on reported cases which are dependent on health care providers ordering tests to identify organisms (bacteria, virus, etc.).
- » Exact numbers are not reported for counts of less than five to ensure privacy of individuals.

Figure 4.1.18

Proportion of new cases of notifiable infectious diseases (excluding sexually transmitted infections) reported in Alberta First Nations communities, 2010



n = 202 cases  
Source: Health Canada, FNIH – Alberta Region



**Table 4.1.4**

Number of on-reserve cases of notifiable diseases (excluding sexually transmitted infections and blood-borne pathogens) and incidence rates in Alberta First Nations communities and Alberta off-reserve population, 2010

Disease	Cases Reported by First Nations Communities	Rate Per 10,000 Population	
		First Nations On-Reserve	Alberta Off-Reserve
Shigellosis	112	17.1	0.2
Hepatitis C	24	3.7	2.5
Salmonellosis	19	2.9	2.8
Invasive Pneumococcal Disease (IPD)	17	2.6	0.9
Campylobacteriosis	10	1.5	2.4
Invasive Group A Streptococcal Disease (iGAS)	9	1.4	0.5
Giardiasis	<5	NR	1.3
Ameobiasis	<5	NR	0.3
<i>E. Coli</i> O157	<5	NR	0.2
Hantavirus Pulmonary Syndrome	<5	NR	0.0

NR - not reportable, counts less than 5

Source: Health Canada, FNIH – Alberta Region; Alberta Health Services; AANDC, Indian Registry Population File



# Invasive Pneumococcal Disease

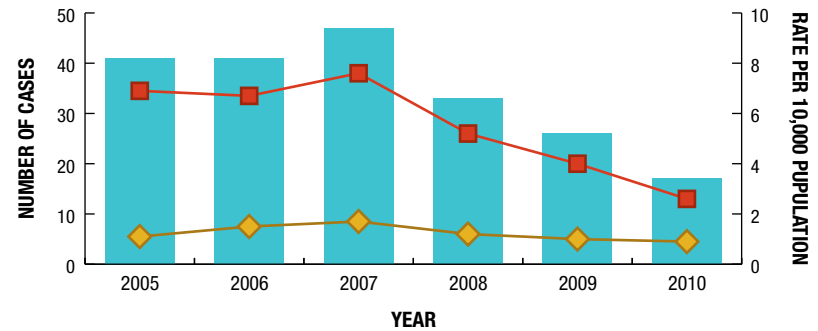
The bacterium *streptococcal pneumoniae* can attack different parts of the body and can result in pneumonia, septicemia, and meningitis which are referred to as invasive pneumococcal disease (IPD). The best way to prevent IPD is through immunization with vaccines that can protect against the more common strains of this organism.

## WHAT DOES THIS MEAN?

- While, invasive pneumococcal disease (IPD) has consistently been among the top five non-BBP/STI notifiable infectious diseases reported by First Nations communities, it is encouraging to see the overall rate had substantially declined since 2005. In addition, the gap between the rate of IPD infection for First Nations on-reserve and the Alberta off-reserve population is closing over time (Figure 4.1.19).
- There were 17 cases of IPD reported in 2010. (Figure 4.1.19). One IPD infection occurred in a child under one year of age. The literature indicates that the pneumococcal conjugate vaccine (PCV7) covers about 62% of the strains causing IPD among Aboriginal and non-Aboriginal children under the age of two<sup>70</sup>.
- In 2010, IPD rates in Alberta First Nations communities were highest among those aged 30–49 years (6.4 per 10,000 population), followed by those aged 50 years and older (4.6 per 10,000 population)

Figure 4.1.19

Number of on-reserve cases of invasive pneumococcal disease and IPD incidence rates in Alberta First Nations communities and Alberta off-reserve population, 2005–2010



# of On-Reserve Cases	41	41	47	33	26	17
First Nations (On-Reserve) Rates	6.9	6.7	7.6	5.2	4	2.6
Alberta Off-Reserve Rates	1.1	1.5	1.7	1.2	1	0.9

Source: Health Canada, FNIH – Alberta Region; Alberta Health Services; AANDC, Indian Registry Population File

(Figure 4.1.20). People with chronic conditions like diabetes and heart, liver, and kidney damage are at higher risk of infection.

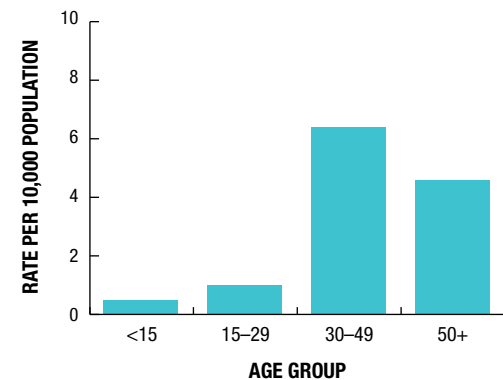
## Notes:

- » In 2010, pneumococcal immunization switched to the pneumococcal conjugate vaccine (PCV13), which protects against 13 pneumococcal bacteria.
- » The information provided is based on reported cases which are dependent on health care providers ordering tests to identify organisms (bacteria, virus, etc).
- » Alberta off-reserve population (Figure 4.1.19) includes non-First Nations and First Nations living off-reserve in Alberta.
- » When a person has the potential to be identified, exact numbers are not reported for counts of less than five.

<sup>70</sup> Public Health Agency of Canada. 2007. Pneumococcal Vaccine. [www.phac-aspc.gc.ca/publicat/cig-gci/p04-pneu-eng.php](http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-pneu-eng.php). Accessed November 2011.

Figure 4.1.20

Age-specific rates of invasive pneumococcal disease reported in Alberta First Nations communities, 2010



n = 17 cases

Source: Health Canada, FNIH – Alberta Region; AANDC, Indian Registry Population File

# Invasive Group A Streptococcal Infection

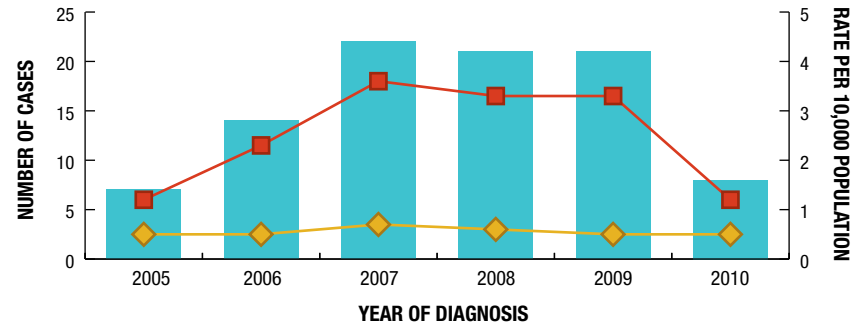
Invasive group A streptococcal (iGAS) infection occurs when the *streptococcal pyogenes* bacteria get past the defences of an infected person and invades a normally sterile site. Although healthy people can get iGAS infection, people with chronic illnesses like cancer, diabetes, and heart or lung disease and those who use medications such as steroids are at higher risk. There is no vaccine against iGAS infection.

## WHAT DOES THIS MEAN?

- There were eight iGAS cases reported in 2010.
- Invasive group A streptococcal disease (iGAS) has consistently been among the top five non-BBP/STI notifiable diseases reported by First Nations communities since 2005. It is encouraging to see that the overall rate has substantially declined over the past four years.
- The iGAS rates among First Nations communities continue to exceed those among the Alberta off-reserve population (Figure 4.1.21).
- The majority of iGAS cases occurred in those aged 50 years and older (Figure 4.1.22). This may be due to the existence of underlying chronic conditions like diabetes and heart, liver, and kidney damage.

Figure 4.1.21

Number of on-reserve cases of invasive group A streptococcal infection and iGAS incidence rates in Alberta First Nations communities and Alberta off-reserve population, 2005-2010



# of On-Reserve Cases	7	14	22	21	21	8
First Nations (On-Reserve) Rates	1.2	2.3	3.6	3.3	3.3	1.2
Alberta Off-Reserve Rates	0.5	0.5	0.7	0.6	0.5	0.5

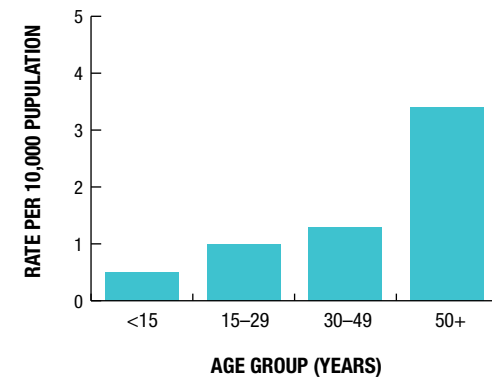
Source: Health Canada, FNIH – Alberta Region; Alberta Health Services; AANDC, Indian Registry Population File

## Notes:

- » BBP/STI = Bloodborne Pathogens/ Sexually Transmitted Infections
- » The information provided is based on reported cases. It is recognized that not everyone with symptoms seeks out medical attention, nor are all affected individuals symptomatic. When outbreaks occur, public health focuses on prophylaxis, if indicated. Seldom are secondary cases identified.
- » Alberta off-reserve population (Figure 4.1.21) includes non-First Nations and First Nations living off-reserve in Alberta.
- » The information provided is based on reported cases which are dependent on health care providers ordering tests to identify organisms (bacteria, virus, etc.).

Figure 4.1.22

Age-specific rates of invasive group A streptococcal infection reported in Alberta First Nations communities, 2010



n = 8 cases

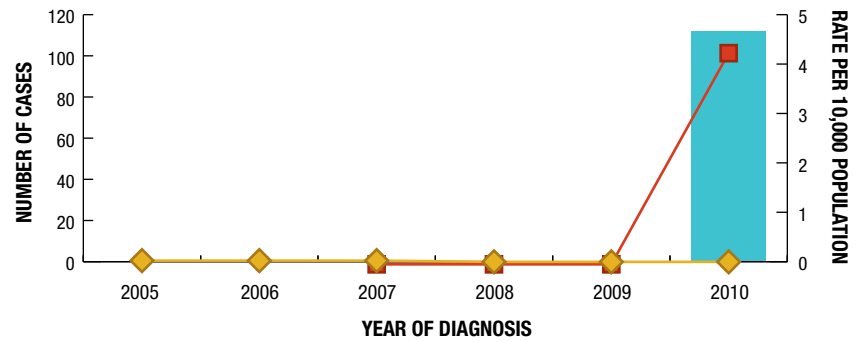
Source: Health Canada, FNIH – Alberta Region; AANDC, Indian Registry Population File

# Enteric Diseases

Enteric diseases affect the intestines and can cause bloating, nausea, diarrhea (stool may also contain blood), abdominal cramps, fever and chills. Most commonly, these diseases can be waterborne, foodborne, or transmitted from person-to-person and may also be related to sanitary and environmental conditions.

Figure 4.1.23

Number of on-reserve cases of shigellosis and shigellosis incidence rates in Alberta First Nations communities and Alberta off-reserve population, 2005–2010



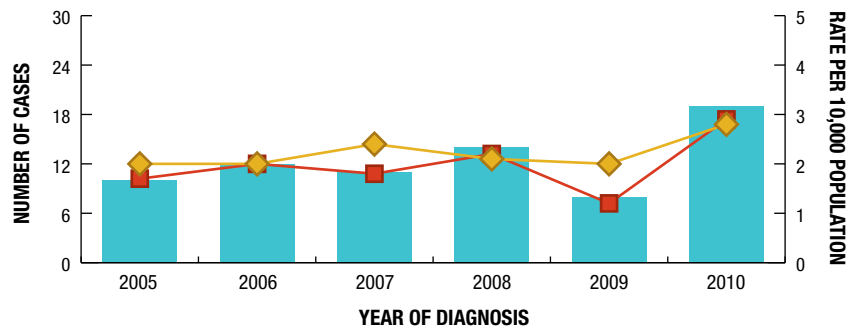
# of On-Reserve Cases	<5	<5	0	0	0	112
First Nations (On-Reserve) Rates	NR	NR	0.0	0.0	0.0	17.1
Alberta Off-Reserve Rates	0.3	0.3	0.3	0.2	0.2	0.2

NR - not reportable, counts less than five

Source: Health Canada, FNIH – Alberta Region; Alberta Health Services; AANDC, Indian Registry Population File

Figure 4.1.24

Number of on-reserve cases of salmonellosis and salmonellosis incidence rates in Alberta First Nations communities and Alberta off-reserve population, 2005–2010



# of On-Reserve Cases	10	12	11	14	8	19
First Nations (On-Reserve) Rates	1.7	2.0	1.8	2.2	1.2	2.9
Alberta Off-Reserve Rates	2.0	2.0	2.4	2.1	2.0	2.8

Source: Health Canada, FNIH – Alberta Region; Alberta Health Services; AANDC, Indian Registry Population File



## WHAT DOES THIS MEAN?

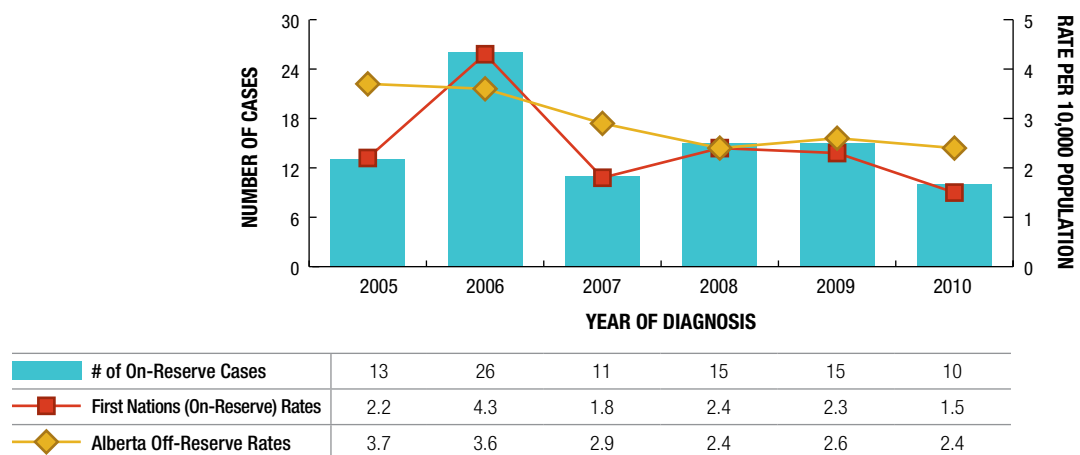
- In 2010, a shigellosis outbreak began in multiple Alberta First Nations communities (Figure 4.1.23). Prior to this, shigellosis had not been reported in Alberta First Nations communities since 2006. The last large shigellosis outbreak in Alberta region occurred in 1998–99.
- A salmonellosis outbreak in one First Nations community resulted in a higher number of cases being reported (Figure 4.1.24) in 2010. However, the salmonellosis rate among First Nations on-reserve was comparable or less than the rate in the Alberta off-reserve population.
- In Alberta First Nations communities, the rates of campylobacteriosis continued to remain below the rates reported in the Alberta off-reserve population (Figure 4.1.25).

### Notes:

- » Alberta off-reserve population (Figures 4.1.23, 4.1.24, and 4.1.25) includes non-First Nations and First Nations living off-reserve in Alberta.
- » The information provided is based on reported cases which are dependent on health care providers ordering tests to identify organisms (bacteria, virus, etc.).
- » Exact numbers are not reported for counts of less than five to ensure privacy of individuals.

Figure 4.1.25

Number of on-reserve cases of campylobacteriosis and campylobacteriosis incidence rates in Alberta First Nations communities and Alberta off-reserve population, 2005–2010



Source: Health Canada, FNIH – Alberta Region; Alberta Health Services; AANDC, Indian Registry Population File



# Sexually Transmitted Infections

Sexually transmitted infections (STI) are the most frequently occurring notifiable infectious diseases in Alberta, accounting for almost two-thirds of all reported diseases in Alberta. These infections (chlamydia, gonorrhea, and syphilis) are all preventable and mostly curable. If untreated, these infections can result in serious complications for the infected person, including transmission.

## WHAT DOES THIS MEAN?

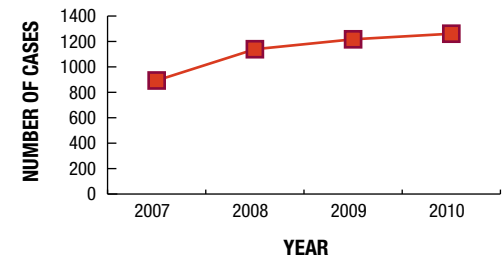
- In 2010, there were a total of 1,261 cases of STIs reported among Alberta First Nations living on-reserve (Figure 4.1.26).
  - » The largest number of infections were of chlamydia (1,002 cases, 79%), followed by gonorrhea (240 cases, 19%), and syphilis (19 cases, <2%).
- Since 2007, STI rates among Alberta First Nations living on-reserve increased, although the numbers appeared to plateau in 2009 and 2010 (Figure 4.1.26).
- On Alberta First Nations reserves, 70% of STIs were reported in females; the majority of these cases were 15–29 years of age (Figure 4.1.27).
- In 2010, STI cases ranged from infancy to 65 years of age. Females aged 15–19 years have the highest number of STI cases overall. In males, STIs were highest in the 20–24 year age group (Figure 4.1.27).
- Considering that only 30% of the cases of STIs were among males, this raises concern around the awareness in this group of the importance for getting tested and treated. Awareness, detection and treatment are key interventions to reducing infection rates.
- In Alberta First Nations communities, the rate of chlamydia increased steadily since 2007 and at a faster rate than in the Alberta off-reserve population (Table 4.1.5).
- In 2010, the rates of gonorrhea and syphilis in Alberta First Nations communities declined and were the lowest since 2007 (Table 4.1.5).

### Notes:

- » Alberta off-reserve population includes non-First Nations and First Nations living off-reserve in Alberta.
- » For this section of the report, the term First Nations represents First Nations living on-reserve in Alberta.

Figure 4.1.26

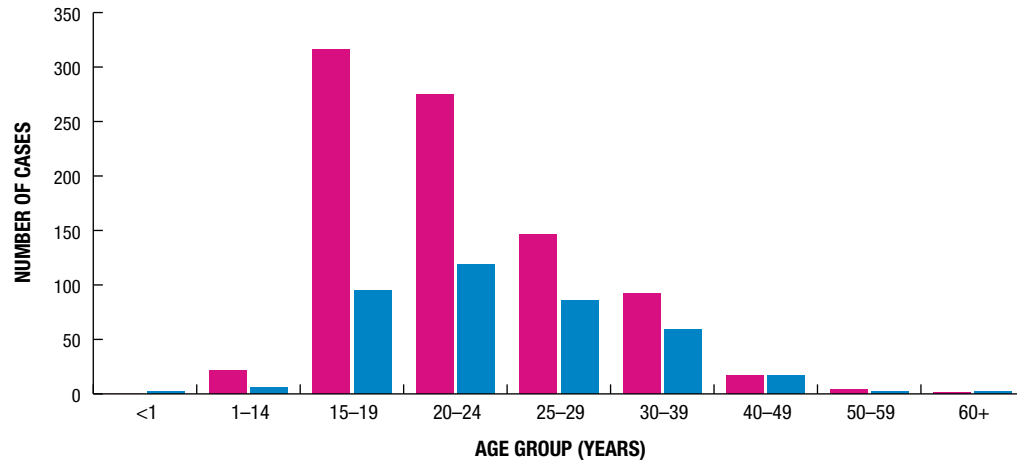
Number of new cases of sexually transmitted infections in Alberta First Nations communities, 2007–2010



Source: Alberta Health Services

**Figure 4.1.27**

Distribution of new cases of sexually transmitted infections in Alberta First Nations communities, by age and gender, 2010



	<1	1-14	15-19	20-24	25-29	30-39	40-49	50-59	60+
<b>Females</b>	0	22	316	275	146	92	17	<5	<5
<b>Males</b>	<5	6	95	119	86	59	17	<5	<5

n = 1,261 cases  
**Source:** Alberta Health Services

**Table 4.1.5**

Rates of new cases of chlamydia, gonorrhea, and syphilis in Alberta First Nations communities and Alberta off-reserve population, 2007–2010.

		Year (Rate per 10,000)				
		Disease	2007	2008	2009	2010
Alberta First Nations On-Reserve	Chlamydia	106.4	130.1	144.0	152.5	
	Gonorrhea	35.7	46.9	40.8	36.5	
	Syphilis	1.7	3.0	4.1	2.8	
		2007	2008	2009	2010	
Alberta Off-Reserve Population	Chlamydia	31.4	32.7	35.6	32.9	
	Gonorrhea	5.8	5.3	3.6	2.5	
	Syphilis	0.7	0.6	0.7	0.4	

**Source:** Alberta Health Services

# Chlamydia

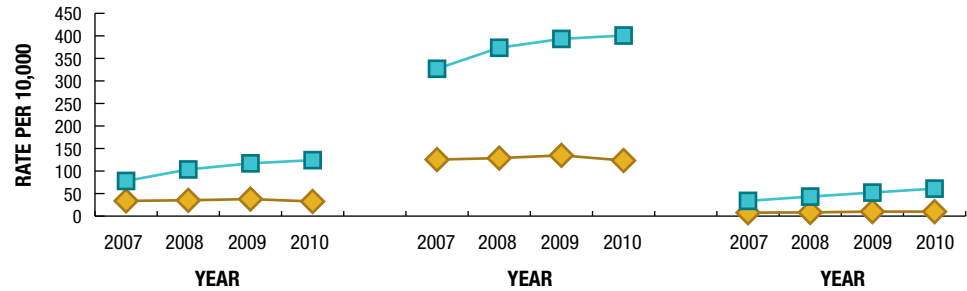
*Chlamydia trachomatis* is a bacterial infection that if untreated can cause infertility and pelvic inflammatory disease in women, as well as conjunctivitis and pneumonia in babies. Many infected people can be asymptomatic, especially males, which emphasizes the importance of preventive education and routine screening programs, and testing and treating those infected.

## WHAT DOES THIS MEAN?

- In 2010, 1,002 infections of chlamydia were diagnosed in First Nations people living on-reserve in Alberta. One of these cases were in an infant reported on-reserve, who acquired the disease through the birthing process.
- Chlamydia rates in First Nations communities continued to increase over time (Figures 4.1.28 and 4.1.29).
- In First Nation communities, the rates of chlamydia were highest in the 20–29 year age group and among females (Figure 4.1.28). Although the testing for chlamydia has become easier and less invasive, the impact of improved testing as it relates to the number of people being tested is unknown. The impact on the overall rate of chlamydia being reported is also unknown.

Figure 4.1.28

Age-specific rates of new cases of chlamydia in Alberta First Nations communities and Alberta off-reserve population, 2007–2010



Age Group (years)	<20				20–29				30+			
First Nations (On-Reserve)	78.0	103.5	117.1	124.2	327.0	373.6	393.3	400.8	33.8	43.3	52.2	61.0
Alberta Off-Reserve	33.8	35.1	37.8	32.4	125.4	128.7	134.8	123.4	7.6	8.2	10.0	9.9

n = 1,002 cases in Alberta First Nations communities in 2010  
 Source: Alberta Health Services; AANDC, Indian Registry Population File

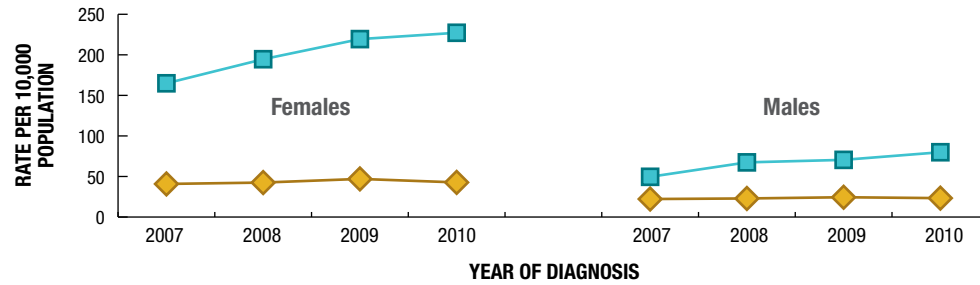
- Chlamydia rates were nearly three times higher for females than for males, leading to the need for more routine testing for males (Figure 4.1.29).

## Notes:

- » Alberta off-reserve population includes non-First Nations and First Nations living off-reserve in Alberta.

**Figure 4.1.29**

Rates of new cases of chlamydia in Alberta First Nations communities and Alberta off-reserve population, by gender, 2007–2010



	Females				Males			
—■— First Nations (On-Reserve)	164.9	194.6	219.4	227.2	49.6	67.4	70.5	79.9
—◆— Alberta Off-Reserve	40.8	42.5	47.0	42.7	22.2	22.9	24.4	23.3

n = 736 female cases and n = 266 male cases in Alberta First Nations communities in 2010

Source: Alberta Health Services; AANDC, Indian Registry Population File





# Gonorrhoea

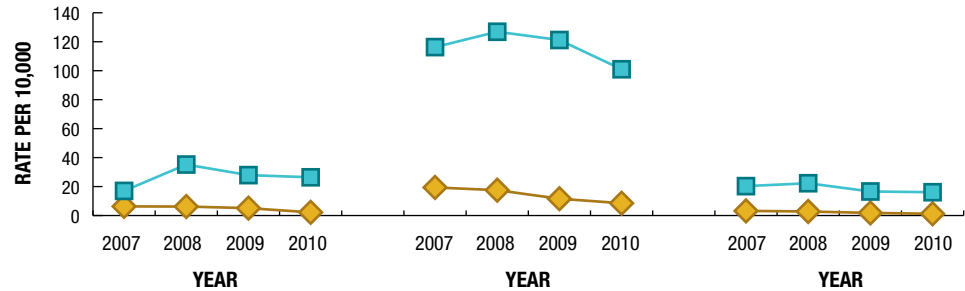
Gonorrhoea is a bacterial infection that affects the genital tract and can cause severe infection if not detected and treated. Infection in males is usually symptomatic, while infection in females is often asymptomatic. Education about STIs needs to focus on risk behaviours and appropriate preventive measures, as well as testing and treatment recommendations.

## WHAT DOES THIS MEAN?

- In 2010, 240 cases of gonorrhoea were diagnosed in First Nations people living on-reserve in Alberta.
- While the rates of gonorrhoea were highest in the 20–29 year age group, the rates continued to decrease over time (Figure 4.1.30).
  - » This is a trend we hope to continue seeing as certain strains of gonorrhoea are known to be resistant to the only available medication.
  - » The concern arises as the 20–29 year age group are primarily the child-bearing years, placing female and male reproductive systems at risk for infertility.

Figure 4.1.30

Age-specific rates of new cases of gonorrhoea in Alberta First Nations communities and Alberta off-reserve population, 2007–2010



Age Group (Years)	<20				20–29				30+			
First Nations (On-Reserve)	17.0	35.2	27.9	26.4	116.3	126.9	121.2	101.0	20.3	22.3	16.6	16.1
Alberta Off-Reserve	6.3	6.2	5.1	2.2	19.4	17.5	11.6	8.5	3.2	2.8	1.8	1.2

n = 240 cases in Alberta First Nations communities in 2010  
 Source: Alberta Health Services; AANDC, Indian Registry Population File

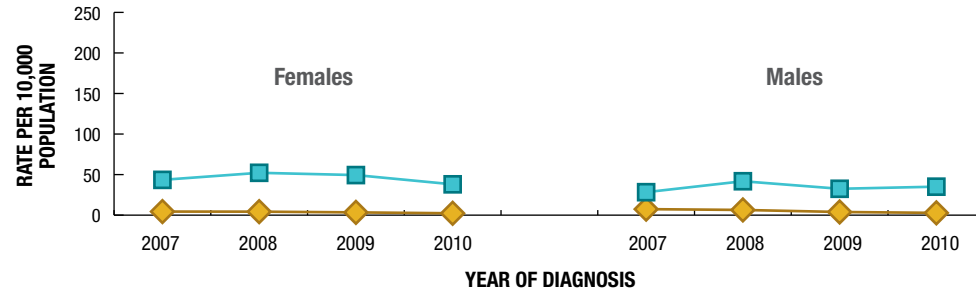
- In 2010, gonorrhoea rates were comparable between First Nations males (35.1 per 10,000 males) and females (38.0 per 10,000 females); this is similar to the rates in the Alberta off-reserve population (Figure 4.1.31).
- Compared to the Alberta off-reserve population (Figure 4.1.30) gonorrhoea rates for First Nations on-reserve were 13 and 17 times higher for males and females, respectively, in 2010.

## Notes:

- » Alberta off-reserve population includes non-First Nations and First Nations living off-reserve in Alberta.

**Figure 4.1.31**

Rates of new cases of gonorrhoea in Alberta First Nations communities and Alberta off-reserve population, by gender, 2007–2010



	Females				Males			
Year	2007	2008	2009	2010	2007	2008	2009	2010
First Nations (On-Reserve)	43.5	52.2	49.4	38.0	28.3	41.8	32.5	35.1
Alberta Off-Reserve	4.4	4.3	3.4	2.3	7.4	6.4	3.9	2.8

n = 123 female cases and n = 117 male cases in Alberta First Nations communities in 2010

Source: Alberta Health Services; AANDC, Indian Registry Population File



# Syphilis

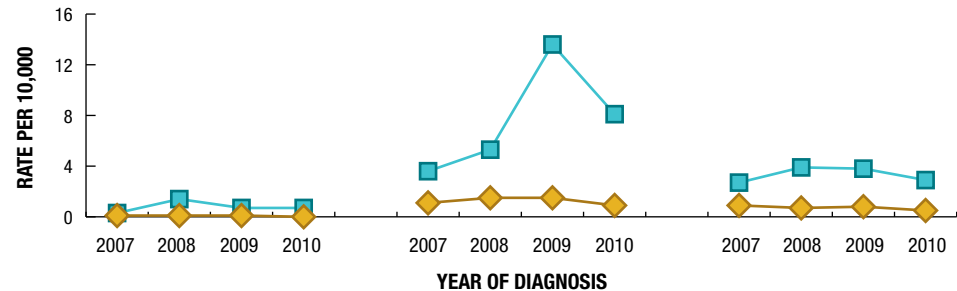
Syphilis is caused by the bacteria *treponema pallidum*, often called “the great imitator” because it has so many signs and symptoms similar to other infections. Initial infection can cause almost unnoticeable symptoms, which if not detected and treated, and eventually lead to very serious complications and ultimately death. Babies can be infected before birth or during the birthing process (congenital syphilis) and can develop very serious health complications or even death before birth or soon after.

## WHAT DOES THIS MEAN?

- In 2010, 19 cases of syphilis were diagnosed in First Nations people living on-reserve in Alberta (Figure 4.1.32). Of these cases, there was one congenital syphilis case reported, the first case since 2007.
  - » This highlights the importance of prenatal care, and testing not only for the women but for their partners as well, ultimately contributing to healthier communities.
- From 2009–2010, syphilis rates for Alberta First Nations living on-reserve decreased in the 20–29 and 30 and over age groups; this is a similar trend in the Alberta off-reserve population (Figure 4.1.33). High

Figure 4.1.32

Age-specific rates of new cases of syphilis in Alberta First Nations communities and Alberta off-reserve population, 2007-2010



Age Group (Years)	<20				20–29				30+			
First Nations (On-Reserve)	0.3	1.4	0.7	0.7	3.6	5.3	13.6	8.1	2.7	3.9	3.8	2.9
Alberta Off-Reserve	0.1	0.1	0.1	0.0	1.1	1.5	1.5	0.9	0.9	0.7	0.8	0.5

n = 19 cases in Alberta First Nations communities in 2010  
 Source: Alberta Health Services; AANDC, Indian Registry Population File

- rates in 2009 were attributable to a syphilis outbreak that occurred in one Alberta First Nations community.
- In 2010, there were 14 new cases of syphilis among females and five new cases among males in Alberta First Nation communities.
- The rate of syphilis for First Nations females on-reserve was nearly three times higher than the rate for First Nations males on-reserve (Figure 4.1.33). This raises the concern of whether males are aware of the importance of testing and treatment.

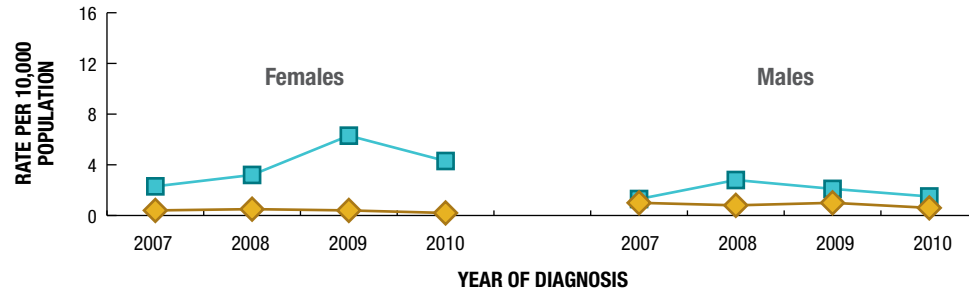
- From 2009–2010, syphilis rates declined among both First Nations males and females living on-reserve (Figure 4.1.33). Targeted education programs and increased awareness in the communities may be reflected in the decreased number of cases.

## Notes:

- » Alberta off-reserve population includes non-First Nations and First Nations living off-reserve in Alberta.

**Figure 4.1.33**

Rates of new cases of syphilis in Alberta First Nations communities and Alberta off-reserve population, by gender, 2007–2010



	Females				Males			
	2007	2008	2009	2010	2007	2008	2009	2010
First Nations (On-Reserve)	2.3	3.2	6.3	4.3	1.3	2.8	2.1	1.5
Alberta Off-Reserve	0.4	0.5	0.4	0.2	1.0	0.8	1.0	0.6

n = 14 female cases and n = 5 male cases in Alberta First Nations communities in 2010

Source: Alberta Health Services; AANDC, Indian Registry Population File



# HIV Infection and AIDS

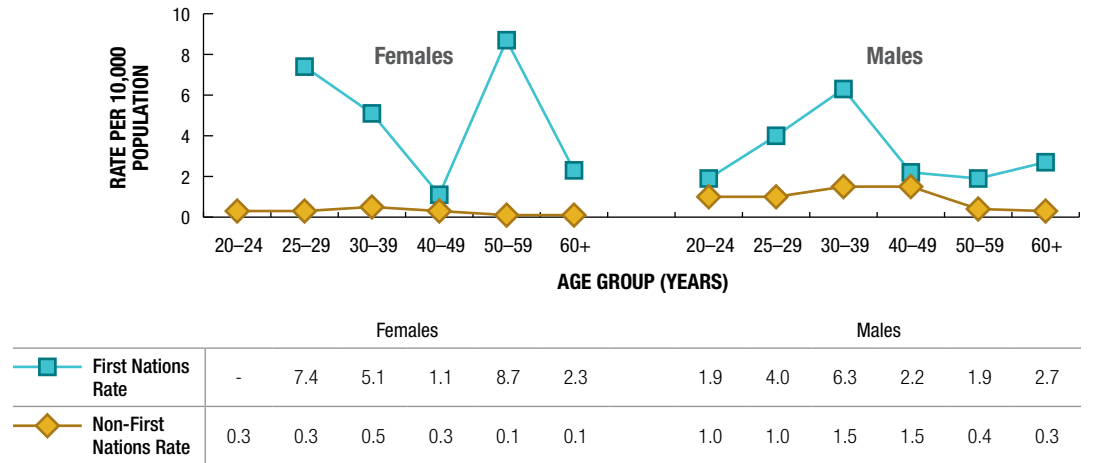
The Human Immunodeficiency Virus (HIV) is the virus that can lead to Acquired Immune Deficiency Syndrome (AIDS). This virus can be transmitted through direct contact with blood and body fluids, and while the amount of virus present in the blood can be managed, there is still no cure. If left untreated, an individual will experience severe, rare diseases because the virus destroys the body's immune system, affecting the ability to fight off infection.

## WHAT DOES THIS MEAN?

- In 2010, there were 29 cases of HIV identified as Alberta First Nations compared to 163 cases among non-First Nations.
  - » Eight of the 29 HIV cases were identified as First Nations living on-reserve.
- Less than five cases of AIDS in 2010 were identified as First Nations living on-reserve in Alberta, while 24 cases were identified in the non-First Nations population of Alberta.
- In 2010, the HIV infection rate was approximately four times higher in the First Nations (on-and-off reserve) population (2.2 per 10,000) compared to the non-First Nations population (0.5 per 10,000).

Figure 4.1.34

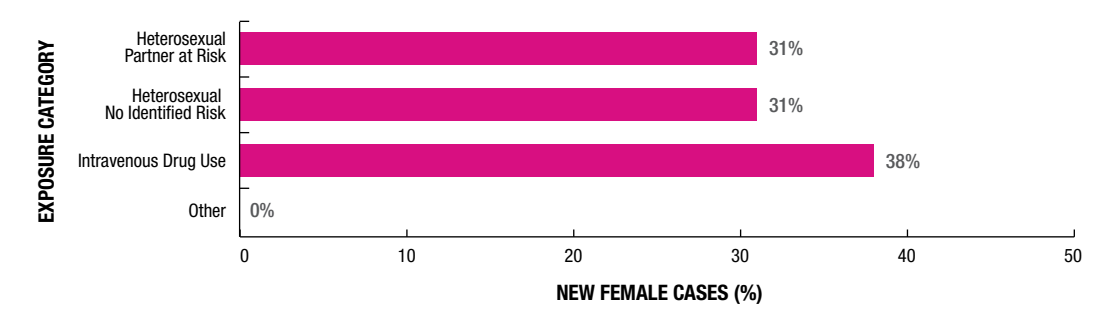
Age-specific rates of new cases of HIV infection, First Nations and Non-First Nations, Alberta, by age and gender, 2010



n = 29 First Nations cases in 2010  
 Source: Alberta Health Services; AANDC, Indian Registry Population File

Figure 4.1.35

Distribution of new cases of HIV infection among First Nations and non-First Nations females, Alberta, by risk exposure category, 2010

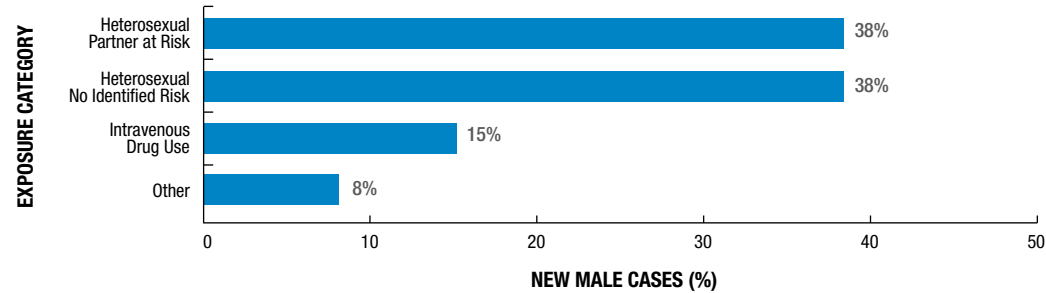


n = 16 First Nations female cases  
 Source: Alberta Health Services



Figure 4.1.36

Distribution of new cases of HIV infection among First Nations males, Alberta, by risk exposure category 2010



n = 13 First Nations male cases

Source: Alberta Health Services

- The Alberta First Nations being infected with HIV differed between the genders. In 2010, women aged 25–29 years and 50–59 years had the highest rates of infection. In Alberta First Nations men, those aged 30–39 years had the highest HIV infection rates (Figure 4.1.34).
- Alberta First Nations living both on- and off-reserve had higher rates of HIV infection compared to the non-First Nations population, across all age groups (Figure 4.1.34). This highlights the need for continued HIV prevention strategies for Alberta First Nations.
- In 2010, the main risk factors in HIV-infected Alberta First Nation women were injection drug use and at-risk partners (Figure 4.1.35).
- In 2010, the main risk factor in HIV infected Alberta First Nation men was having a partner at risk (Figure 4.1.36).

**Notes:**

- » For this section of the report, the term First Nations refers to all Alberta First Nations, regardless if they live on- or off-reserve.

# Hepatitis C

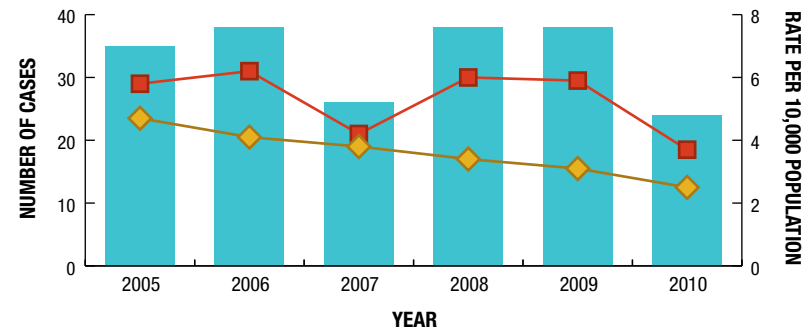
Hepatitis C (HCV) is a virus that attacks the liver and can cause liver damage (cirrhosis), chronic liver disease, liver failure, and liver cancer. Symptoms and complications of HCV can show up more than twenty years after infection. HCV is transmitted through infected blood, mainly from injection drug use through sharing needles, syringes, and other drug equipment. HCV can also be spread by body piercing, sharing tattoo ink and needles, and sharing personal hygiene items including toothbrushes, razors, and nail clippers. HCV treatment is complex and varies according to genotype – therefore not all HCV types are treatable. As there is no vaccine for HCV, the best defence is prevention.

## WHAT DOES THIS MEAN?

- In 2010, 24 cases of hepatitis C were reported among Alberta First Nations living on-reserve.
- HCV cases decreased from 2009–2010 (Figure 4.1.37).

Figure 4.1.37

Number of on-reserve cases of Hepatitis C and HCV incidence rates in Alberta First Nations communities and Alberta off-reserve population, 2005–2010.



■ First Nations On-Reserve Cases	35	38	26	38	38	24
—■ First Nations On-Reserve Rates	5.8	6.2	4.2	6.0	5.9	3.7
—◆ Alberta Off-Reserve Rates	4.7	4.1	3.8	3.4	3.1	2.5

Source: Alberta Health Services; AANDC, Indian Registry Population File

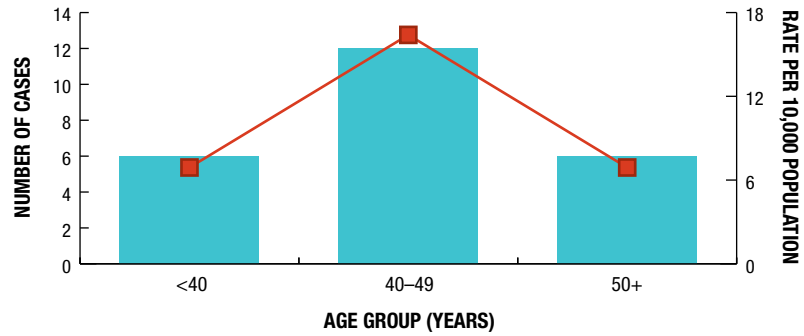
- The rate of HCV was consistently higher in Alberta First Nations compared to Alberta non-First Nations, although this gap appeared to be narrowing (Figure 4.1.37).
  - » In 2010, the rate of HCV infections in Alberta First Nations communities were almost double the rate in the non-First Nations population. The difference in HCV infections is narrowing in recent years (Figure 4.1.37).
- HCV infection was most prominent in the 40–49 year age group (Figure 4.1.38). This is to be expected as HCV symptoms usually develop between 15–20 years post exposure. However, recent research has shown HCV symptoms are becoming more evident sooner.

## Notes:

- » Alberta off-reserve population includes non-First Nations and First Nations living off-reserve in Alberta.

**Figure 4.1.38**

Distribution of new cases of hepatitis C in Alberta First Nations communities, by age, 2010

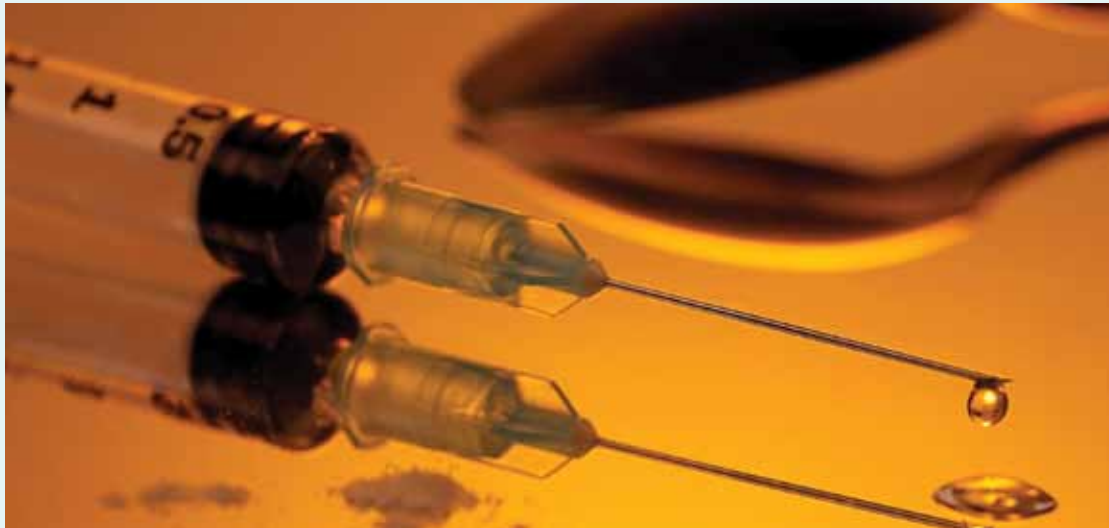


<span style="color: #00A0C0;">■</span> # of On-Reserve Cases	6	12	6
<span style="color: #D9534F;">—■</span> First Nations (On-Reserve) Rates	6.9	16.4	6.9

n = 24 cases

NR - not reportable, counts less than five

Source: Alberta Health Services; AANDC, Indian Registry Population File



# Mucopurulent Cervicitis and Non-Gonococcal Urethritis

**Mucopurulent cervicitis (MPC) is a sexually transmitted infection found in females that is caused by a bacteria that is often unknown. Cervicitis refers to the inflammation of the cervix. MPC is treated with antibiotics.**

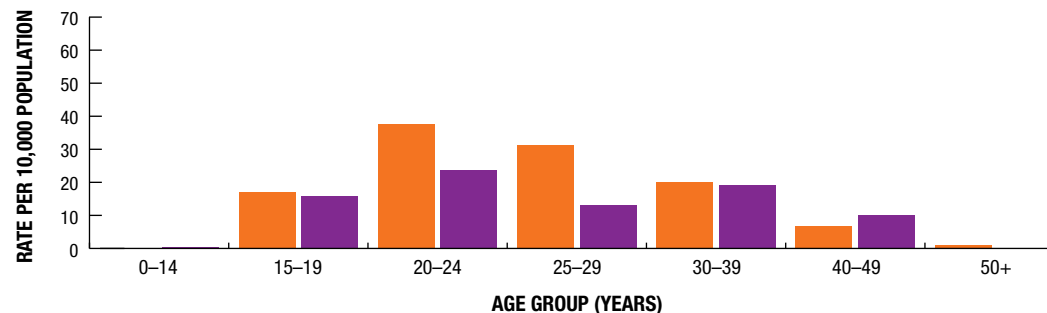
**Non-gonococcal urethritis (NGU) is a sexually transmitted infection found in males. NGU is caused by bacteria other than gonorrhoea. Urethritis is the inflammation of the urethra. Like MPC, NGU is treated with antibiotics.**

## WHAT DOES THIS MEAN?

- There was a decrease in the number of cases of mucopurulent cervicitis among Alberta First Nations females from 2009–10 (Figure 4.1.39). (74 cases to 58 cases)
- Females aged 20–24 years had the highest infection rate compared to the other age groups. This trend is consistent in 2009 and 2010 (Figure 4.1.39).
  - » This trend raises concerns as MPC is associated with higher risk of poor pregnancy outcomes, upper genital tract infection and transmission of HIV.

Figure 4.1.39

Age-specific rates of new cases of mucopurulent cervicitis among Alberta First Nations females, 2009–2010



	0-14	15-19	20-24	25-29	30-39	40-49	50+
2009	0.0	17.2	37.5	31.2	20.2	6.7	1.1
2010	0.5	15.7	23.7	13.0	19.3	10.0	0.0

n = 74 cases in 2009 and n = 58 cases in 2010

Source: Alberta Health Services; AANDC, Indian Registry Population File

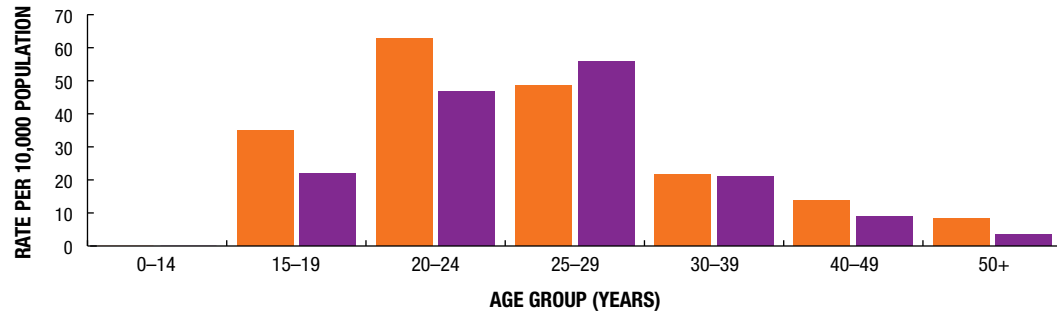
- A decreasing trend was also seen from 2009–10 (120 cases to 98 cases) among First Nations males infected with non-gonococcal urethritis (Figure 4.1.40).
- The rate of newly diagnosed non-gonococcal urethritis was highest in the 20–29 year age group (Figure 4.1.40).

## Notes:

- » For this section of the report, the term First Nations refers to all Alberta First Nations, regardless if they live on-or off-reserve.

Figure 4.1.40

Age-specific rates of new cases of non-gonococcal urethritis among Alberta First Nations males, 2009–2010



	0-14	15-19	20-24	25-29	30-39	40-49	50+
2009	0.0	34.9	62.8	48.5	21.7	13.7	8.2
2010	0.0	21.9	46.7	55.7	21.0	8.9	3.4

n = 120 cases in 2009 and n = 98 cases in 2010

Source: Alberta Health Services; AANDC, Indian Registry Population File



# Tuberculosis

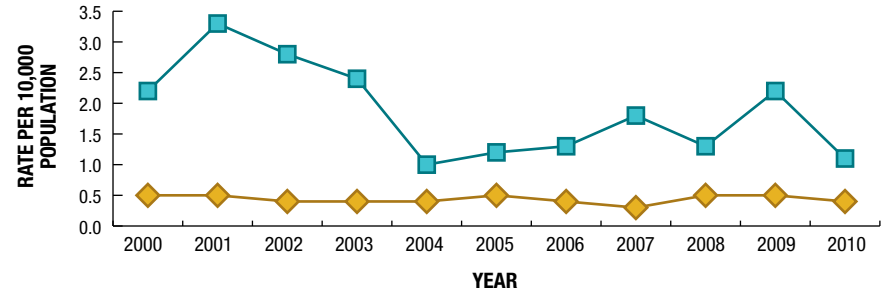
Tuberculosis (TB) is a preventable, contagious disease that can be treated and cured with medication. Early diagnosis and treatment of TB disease is the most effective method of preventing the spread of infection.

## WHAT DOES THIS MEAN?

- In 2010, there were seven active cases of TB reported among First Nations living on-reserve in four communities, a rate of 1.1 per 10,000 population (Figure 4.1.41). Five of these cases were among males. Four of the seven cases were over 60 years of age and one case was under the age of 14 (pediatric TB). Assessment of the data from 2006–2010 showed TB cases occurred in various age groups.
- The rate of active TB in First Nations communities in Alberta in 2010 was nearly three times higher than the rate in the Alberta general population.
- From 2000–2010, the average case rate of active TB in Alberta First Nations communities was 19 cases per 10,000, nearly five times the average case rate in the Alberta general population (4 cases per 10,000).
- Among the 48 cases from 2006–2010, 43 cases had at least one risk factor (Figure 4.1.42).

Figure 4.1.41

Rates of active tuberculosis cases in Alberta First Nations communities and Alberta general population, 2000–2010



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
First Nations On-Reserve Rates	2.2	3.3	2.8	2.4	1.0	1.2	1.3	1.8	1.3	2.2	1.1
# Alberta General Population Rates	0.5	0.5	0.4	0.4	0.4	0.5	0.4	0.3	0.5	0.5	0.4

Source: Alberta Health Services; AANDC, Indian Registry Population File; AHW, Population File

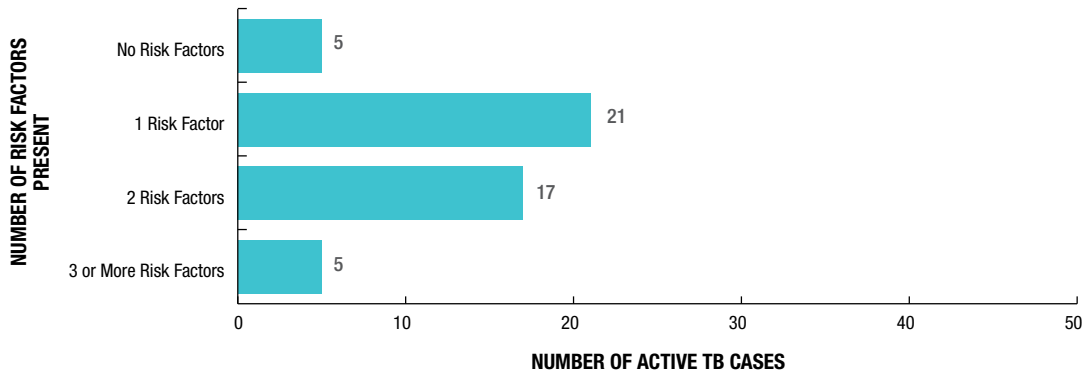
- » The most common risk factors among cases (2006–2010) were contact with an active case in the last two years (25%), history of alcohol or other substance abuse (22%), diabetes (17%), and previous fibronodular chest x-ray (17%) (Figure 4.1.43).

## Notes:

- » For this section of the report, the term “Alberta general population” refers to all Albertans, **including** First Nations regardless if they live on- or off-reserve.

**Figure 4.1.42**

Distribution of active tuberculosis cases, in Alberta First Nations communities, by number of risk factors present, 2006–2010

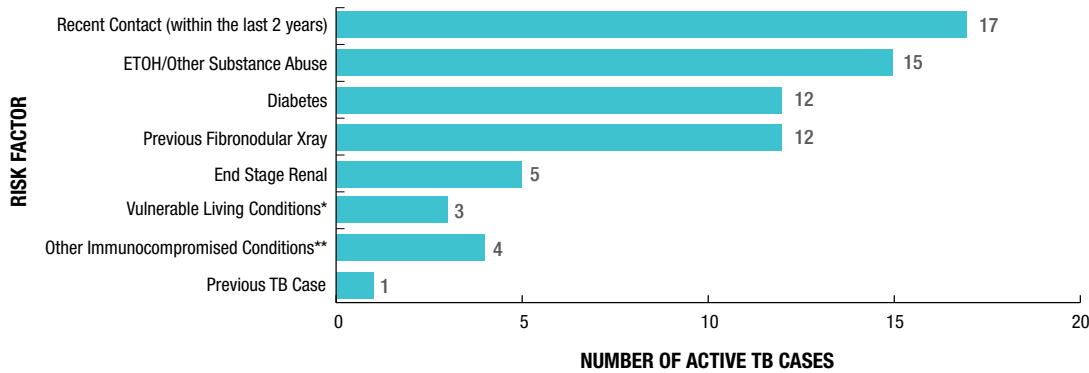


Source: Alberta Health Services; AANDC, Indian Registry Population File



**Figure 4.1.43**

Distribution of risk factors among active tuberculosis cases in Alberta First Nations communities, 2006–2010



n = 69 instances of risk factors present, some cases have multiple risk factors

\*Vulnerable living conditions include homelessness and cases living in institutional settings such as long-term care facilities or correctional settings.

\*\*Other immunocompromised conditions include underweight, HIV present, and lung cancer.

Source: Alberta Health Services; AANDC, Indian Registry Population File

# Preventive Treatment for Tuberculosis and Preschool Tuberculosis Screening

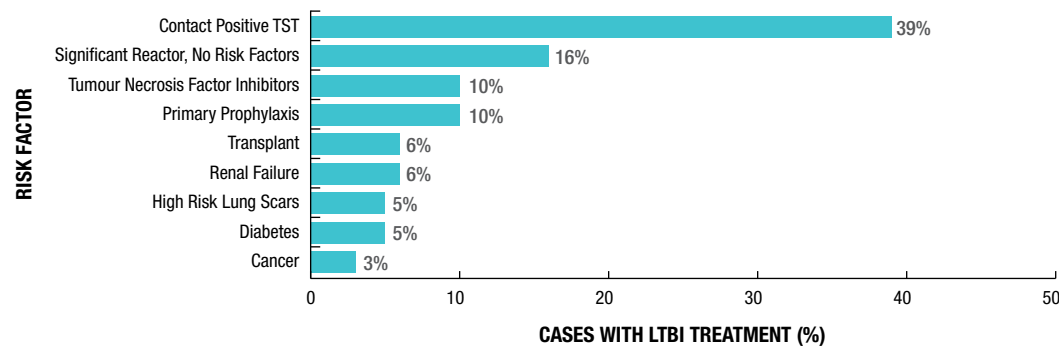
People become infected with tuberculosis (TB) when they breathe in the bacterium *Mycobacterium tuberculosis* which causes TB, but most do not develop the active disease. This condition is referred to as “inactive” or “latent TB infection” (LTBI). Persons with LTBI do not exhibit disease symptoms and cannot spread the disease to others. However, up to 10% of persons with LTBI may develop active disease during their lifetime.

## WHAT DOES THIS MEAN?

- In 2010, 62 individuals were recommended for LTBI treatment. This is a decrease from the 199 individuals recommended in 2009.
- For 40% of individuals recommended for LTBI treatment, the reason was related to possible contact with another active TB case (Figure 4.1.44).
- Of the individuals with LTBI in 2010, 41 individuals (66%) started treatment and 20 (34%) refused or had not yet started.
- Of the individuals who started LTBI treatment in 2010, 12 (29%) completed an adequate course of treatment and 26 (63%) were still undergoing treatment at the end of 2010.

Figure 4.1.44

Reasons for recommending treatment for individuals with latent tuberculosis infection in Alberta First Nations communities, 2010



n = 62 individuals with LTBI  
Source: Alberta Health Services

- Individuals recommended for LTBI treatment ranged in age from less than one year to 71 years, with the largest proportion of cases occurring in males over 50 years of age (Figure 4.1.45).
- Preschool tuberculosis screening was recommended for 33 communities and reports were received from 29 of these communities in 2010.
- In the communities that conducted the preschool tuberculosis screening program, screening levels were well below target (Figure 4.1.46). Twenty percent of eligible two-year-olds and 23% of eligible five-year-olds had TB skin test (TST) results read in 2010.

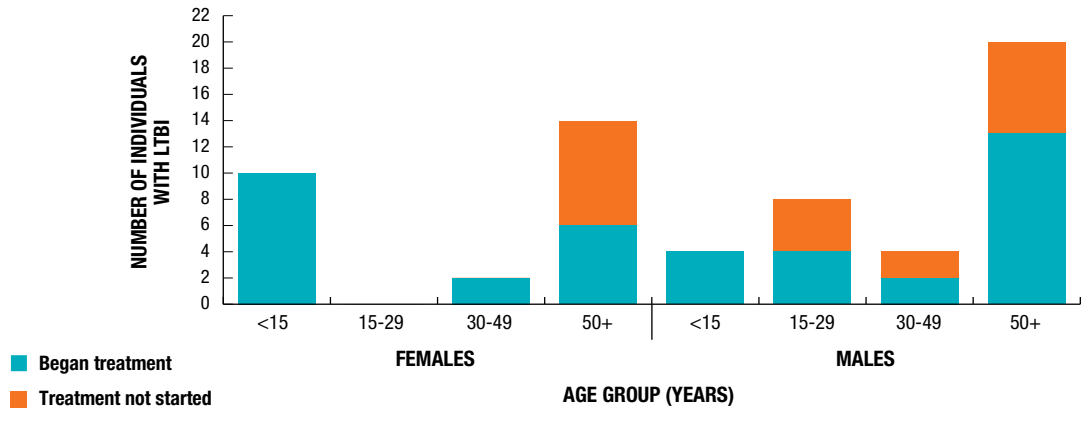
- Of the 2,062 children screened, there were no positive reactors in 2010.

## Notes:

- » Preschool screening recommendations are reviewed annually and screening has been discontinued in some communities.
- » Four communities with high rates of active disease and good uptake of the vaccine continue to offer BCG vaccination to all babies born based on annual assessment of risk.
- » TST = Tuberculin Skin Test

**Figure 4.1.45**

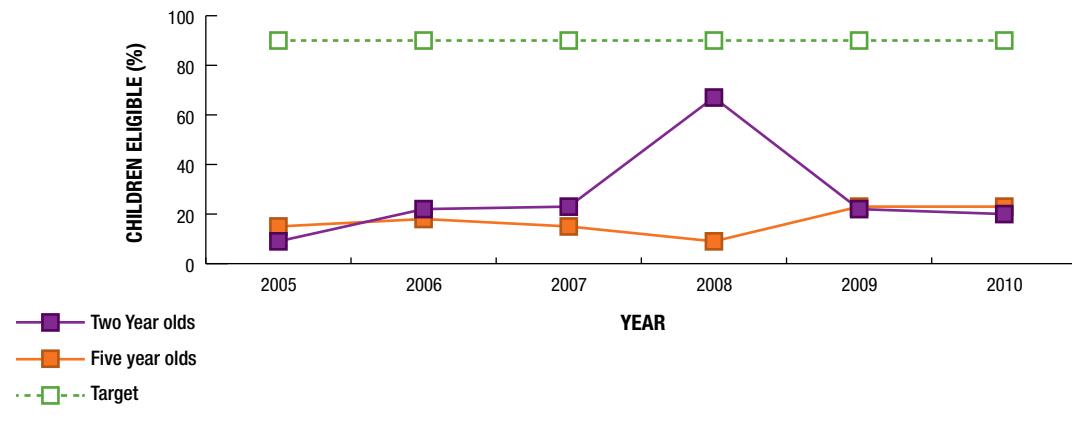
Distribution of individuals with latent tuberculosis infection in Alberta First Nations communities who were recommended for treatment, by age and gender, 2010



n=62 individuals with LTBI  
 Source: Alberta Health Services

**Figure 4.1.46**

Proportion of eligible two- and five-year olds screened in Alberta First Nations communities, 2005–2010



Source: Health Canada, FNIH – Alberta Region

# Animal Bites

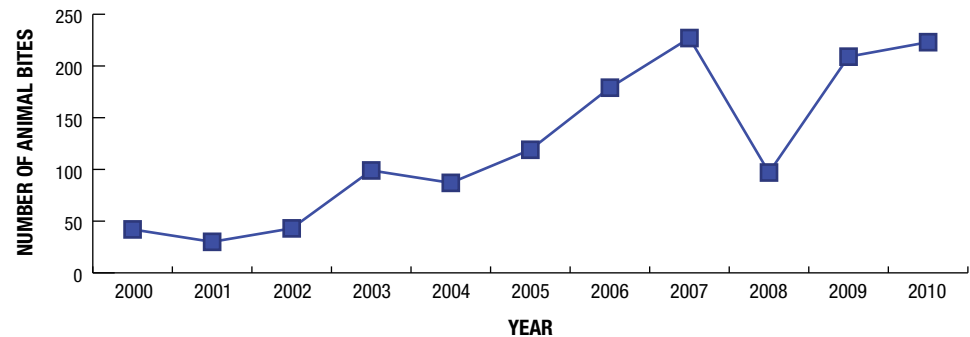
Animals may carry infectious diseases such as rabies. The risk of infection decreases with earlier detection and treatment. Animal bites may also result in serious injuries.

## WHAT DOES THIS MEAN?

- The number of reported animal bites in Alberta First Nations communities increased from 2000–2010 (Figure 4.1.47). During that period, 1,355 animal bites were reported.
- In 2010, there were a total of 231 animal bites, an 11% increase from 2009.
- Similar to 2009, the proportions of male victims continue to be higher than female victims, for all age groups except the 40 years and over age group (Figure 4.1.48).
- For two victims of animal bites, the series of rabies vaccine were administered.
- Consistent with previous years, almost all (93%) animal bites were from dogs. Eighteen per cent of the dogs had been involved in previous attacks.
- In almost 12% of dog bites reported, the dogs were strays.
- The reports indicated that an animal was provoked in 154 cases, 23 of these involving children 10 years of age and younger.

Figure 4.1.47

Number of reported animal bites in Alberta First Nations communities, 2000–2010



Source: Health Canada, FN/NIH – Alberta Region

- For the health and safety of Alberta First Nations, communities need to ensure appropriate animal control measures. There may be opportunities to collaborate with animal control facilities in larger centres or nearby municipalities. In addition, public education as to how to train and interact with animals may help to reduce animal bites.
- In 2010–11, the “Alberta Spay and Neuter Task Force” held dog clinics in two First Nations communities. At these clinics a total of 337 animals were spayed/neutered.

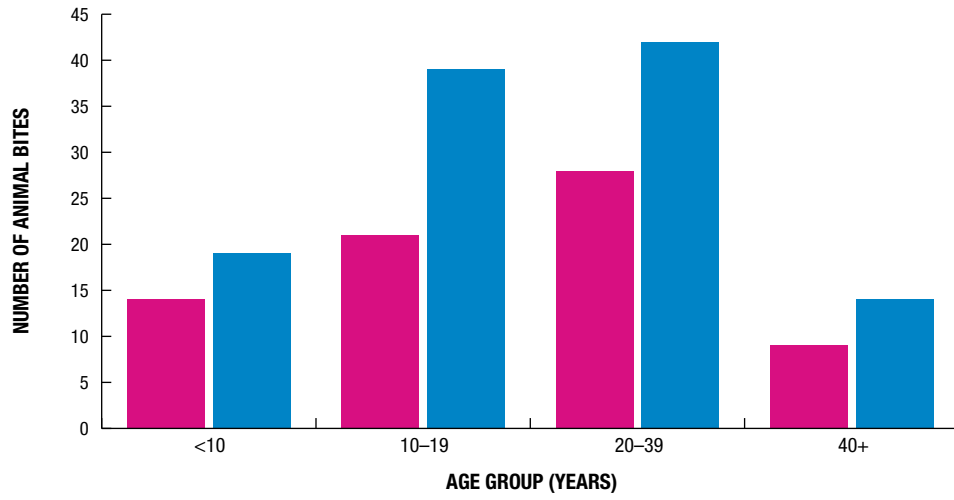
## Notes:

» A **provoked attack** is one where the human did something to “provoke” the animal (even if the action was unintentional) and the attack would be the animal’s normal response to such a human action.



**Figure 4.1.48**

Distribution of individuals\* with reported animal bites in Alberta First Nations communities, by age and gender, 2010



Female	14	21	28	9
Male	19	39	42	14

n = 227 cases; data are not included for two females with age unknown and two cases with gender unknown.

Source: Health Canada, FNIH – Alberta Region



## ENVIRONMENTAL PUBLIC HEALTH

### Recognition of Award-Winning Environmental Public Health Services

#### EPHS Team Receives INAC Alberta Regional Director General's Award: National Assessment of Water and Wastewater Systems in First Nations Communities

The Environmental Public Health Services (EPHS) team received the INAC (Indian and Northern Affairs Canada, now known as Aboriginal and Northern Development Canada) Alberta Regional Director General's Award as members of the Alberta Region First Nations Waste Water Action Plan (FNWWAP) Team, for their role in the National Assessment of Water and Wastewater Systems in First Nations Communities.

Assessments were carried out in all 45 First Nations communities in Alberta Region, and included 81 public water systems and 79 community wastewater systems. The assessments also considered, to a lesser extent, private water and sewage disposal systems. A team approach was arranged for the majority of assessments carried out in Alberta, including representatives from respective First Nations, First Nations Technical Services Advisory Group Circuit Riders Trainers, and regional INAC staff. The role of the EPHS team included data

collection, coordinating and contributing to field visits, and reviewing draft reports.

The Environmental Health Officers (EHO) played an integral role in the national assessments carried out between September 2009 and November 2010, often working well into the night and travelling to remote areas in inclement weather. This award also highlights the spirit of cooperation and dedication that exists within the Alberta Region to improve public health in our First Nations communities.

#### EPHS Receives Health Canada's Alberta Regional Director's Award for Excellence in Innovation: Alberta Region Safe Drinking Water Program

Alberta Region is a leader when it comes to ensuring water data quality, and this is in large part due to the dedication and creativity of First Nations and Inuit Health Environmental Public Health Services and their *Safe Drinking Water Program*. In 2010, the program faced the challenge to repatriate its custom water data systems back to Health Canada. The Alberta region EPHS team found solutions to ensure critical data were available, current, and accurate, while building up in-house skills to maintain the system. The quality of water data and management remains stronger than ever in Alberta. Data sharing

agreements were signed with six First Nations and additional resources for First Nations were secured. This has paved the way for evidence-based decision making at both the program and community levels. The *Drinking Water Safety Program*, in direct partnership and collaboration with the First Nations, has contributed to improving drinking water safety in the present and the future.

### Public Health Major Occurrences

#### SHIGELLOSIS OUTBREAK

Shigellosis is an easily transmissible diarrheal illness that sometimes results in community outbreaks which may last for extended periods of time, despite intensive control measures.

On October 26, 2010, two laboratory confirmed cases of shigellosis (*Shigella sonnei*) were reported from two separate households in an Alberta First Nations community. The investigation identified 21 other individuals experiencing similar illness and was connected to the initial cases. A scan of schools, childcare facilities, and other public facilities in the community indicated increased levels of diarrheal illness in recent weeks. An outbreak team consisting of community health and First Nations and Inuit Health staff

interviewed ill individuals, communicated with the public, and raised awareness on community-wide programs implemented to control the spread of shigellosis.

Between October 2010 and March 2011, there were 80 confirmed cases and 113 probable cases of shigellosis, primarily in two Alberta First Nations communities. The majority of the cases were in individuals aged 0–14 years old. In total, by the end of March 2011, six Alberta First Nations communities had at least one confirmed case. There have been no complications or deaths associated with the shigellosis outbreak, although some individuals have been hospitalized due to dehydration. Extraordinary efforts have been undertaken by community health staff, over a significant period of time, to limit the health impact of this illness in affected communities.

This outbreak serves as a reminder that illness in schools and child-care facilities are a good indicator of illness in a community as a whole. Ongoing surveillance in these settings, and a strong reporting relationship between schools/child-care facilities and local community health staff, are very important factors in the prompt identification and response to communicable disease outbreaks. As of November 2011, shigellosis continues to impact Alberta First Nation communities.

## SALMONELLA ENTERICA OUTBREAK

On October 13, 2010, a laboratory confirmed case of salmonella was reported in an Alberta First Nations community. Three additional laboratory confirmed cases of salmonella were reported on the next day. Initial investigations by the community's health staff identified that all four cases had attended the same traditional feast at a private residence. An outbreak response team of community health and First Nations and Inuit Health staff was assembled to investigate and stop further spread of illness. In total, between October 3 and October 25, 2010, seven cases of *Salmonella enterica* were confirmed. Ten probable cases were also identified. The investigation findings indicated that the illnesses were likely linked to traditional feasts that are held throughout the month of October in multiple private households in honour of deceased relatives. Fifteen of the seventeen (88%) cases attended at least one feast in the community during the outbreak period, and the majority of the cases (71%) attended the same feast.

This outbreak highlighted the importance of food safety practices at community events, regardless of whether they are private or public events. The local environmental health officer is available to provide general food safety workshops, to interested community members prior to these feasts, to reduce the risk of foodborne illness.

## WILD FIRE

First reports of a wild fire in a community were received on the April 17, 2010. The fire was reported to have originated as a result of domestic garbage being burned in a steel drum outside a single family dwelling. Due to extreme environmental conditions the fire soon covered six square miles and produced dense smoke that blanketed most of the reserve. An air quality advisory was issued on April 20, 2010 as the wild fires produced smoke, a health hazard due to the fine particulate matter and other compounds contained in it, an air quality advisory was issued on April 20, 2010. The community declared a state of local emergency on the same day. Approximately 100 community volunteers helped battle the fire along with firefighting crews and private contractors from neighbouring communities.

The wild fire and dense smoke resulted in the evacuation of approximately 60 families, the loss of at least one house, several injuries due to smoke inhalation, and more than 1000 acres burnt. Of the 60 evacuated families, 20 households were housed in nearby hotels due to health-related issues, with all others being forced to stay at the reception centre that was set up at a local school.

Some hot spots inside the perimeter of the fire which had been driven down into the ground later flared up. Firefighting efforts and clean up continued through to the end of May 2010.

# Community Sampling and Testing: Public and Semi-Public Water Systems

Access to a safe drinking water supply is a basic need for good health. With growing populations and stresses placed upon drinking water supplies, safeguards such as routine water sampling must be in place to prevent waterborne diseases and ensure safe drinking water. Regular water sampling, which includes bacteriological and chemical testing according to a set schedule and protocol, is extremely important to protect the health of communities. The quality of the treated water must meet the *Guidelines for Canadian Drinking Water Quality*<sup>71</sup>. The rate of microbiological sampling is used as the performance indicator for each community and has implications for public health as well as community funding.

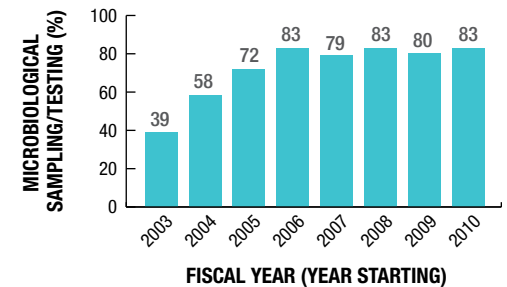
## WHAT DOES THIS MEAN?

- In Alberta First Nations communities, microbiological testing rates for public and semi-public water supplies have plateaued at around 80% since 2006, remaining below the target of 100% (Figure 4.2.1).
- In the 2010–11 fiscal year, 83% of routine scheduled water microbiological samples were tested (Figure 4.2.1).
- A total of 77 public water systems were scheduled to be **chemically** tested:
  - » 60 (78%) were sampled twice,
  - » 16 (21%) were sampled once,
  - » One was not sampled at all.
- While this represents a significant improvement over previous years, steps are being taken by the community EHO to achieve the twice per year target according to schedule.
- Seventy seven of the public water systems in Alberta First Nations were identified as requiring disinfection by-products (DBP) monitoring the in 2010–11 fiscal year, with quarterly completion rates ranging between 82%–95%.
- In 2010–11, there were 917 water samples (5% of total collected) submitted to the Alberta Provincial Laboratory for Public Health (ProvLab) that were not tested. Over half of these samples are due to samples being received more than 24 hours after collection (Figure 4.2.2). Despite being

71 Guidelines for Canadian Drinking Water Quality. [www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/2010-sum\\_guide-res\\_recom/index-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/2010-sum_guide-res_recom/index-eng.php).

Figure 4.2.1

Routine public and semi-public water microbiological sampling/testing levels achieved in Alberta First Nations communities, fiscal years 2003–2010



Source: Health Canada, ELPHIS Database

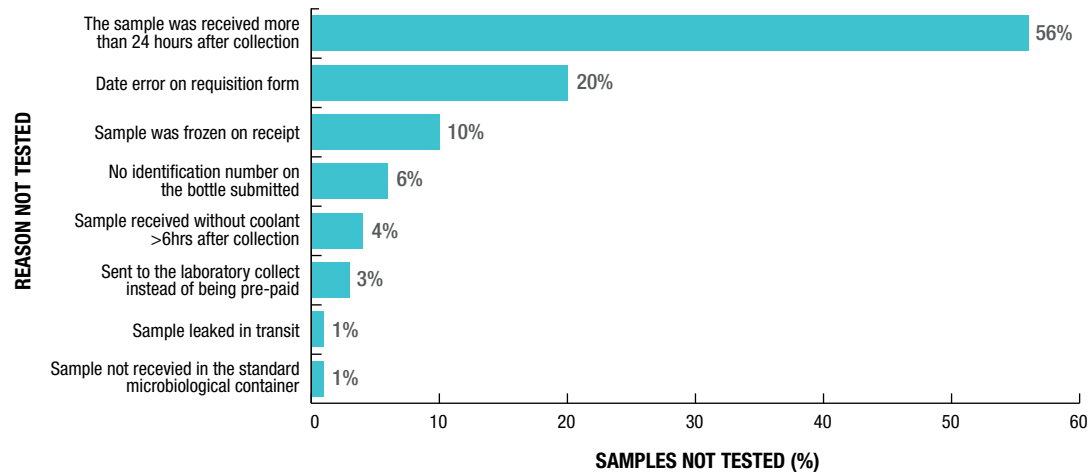
collected and sent, the samples took too long to arrive at the laboratory, not meeting the ProvLab receipt of samples protocol.

## Notes:

- » The water microbiological testing rate is calculated by averaging the annual testing rates for each Alberta First Nations community.
- » Chemical sampling of public water systems is required on a scheduled basis twice per year in First Nations communities, ideally once in the summer and once during the winter months. Parameters for chemical water sample tests are listed in the *Guidelines for Canadian Drinking Water Quality*.
- » The chemical parameters have guidelines that are listed as “aesthetic objectives” or “maximum acceptable concentrations” (health-related parameters). The maximum acceptable concentrations are based on scientific research and in most cases are set according to safe levels of consumption for a lifetime (70 years).

Figure 4.2.2

Distribution of reasons for bacteriological samples not tested by provincial laboratory, routine samples only, 2010–2011



n = 917 samples

Source: Health Canada, ELPHIS Database

- » Trihalomethanes and haloacetic acids are disinfection by-products (DBPs), i.e. a group of organic and inorganic substances that can form during a reaction between a disinfectant such as chlorine and naturally present organics in the water. The risks from DBPs are much less than the risks from consuming water that has not been disinfected. The risks from a **lifetime consumption** of treated water with high levels of DBPs may increase the risk of certain cancers such as urinary bladder cancer.





# Achieving Water Sampling Targets

Routine water sampling is required for public and semi-public water systems in all First Nations communities and these samples are submitted for microbiological testing. The goal is to have all communities submitting water samples on a scheduled basis. Water sampling and testing are necessary to determine the safety of the drinking water and to support informed decisions that protect the public's health.

## WHAT DOES THIS MEAN?

- In fiscal year 2010–11, five communities (Bigstone, Meander River, Morley, Piikani, and Tsuu T'ina) are to be congratulated for meeting the 100% target for submitting routine scheduled water samples.
  - » A total of seventeen communities are also to be commended for achieving the 90% target for water testing (Figure 4.2.3 and Table 4.2.1).

Figure 4.2.3

Alberta First Nations communities achieving ≥90% of routine microbiological water sampling/testing goals, fiscal year 2010–2011



n = 22 communities  
 Source: Health Canada, ELPHIS Database

Table 4.2.1

Alberta First Nations communities achieving ≥90% of routine microbiological water sampling/testing goals or had significant improvement, fiscal year 2010–2011

Routine Water Sampling/Testing ≥ 90% Target	Major Improvement in Sampling/Testing
Alexis Nakota Sioux Nation Beaver Lake Cree Nation Bigstone Cree Nation Blood Tribe Driftpile First Nation Ermineskin Cree Nation Whitefish (Goodfish) Lake First Nation Dene Tha' First Nation–Hay Lakes Kapawe'no First Nation Kehewin Cree Nation Louis Bull Tribe Dene Tha' - Meander River Montana Cree Nation Stoney Tribal Administration - Morley Paul First Nation Piikani Nation Samson Cree Nation Siksika Nation Sturgeon Lake Cree Nation Sucker Creek First Nation Swan River First Nation Tsuu T'ina Nation	Fort Mckay First Nation Horse Lake First Nation Little Red River – John D'Or

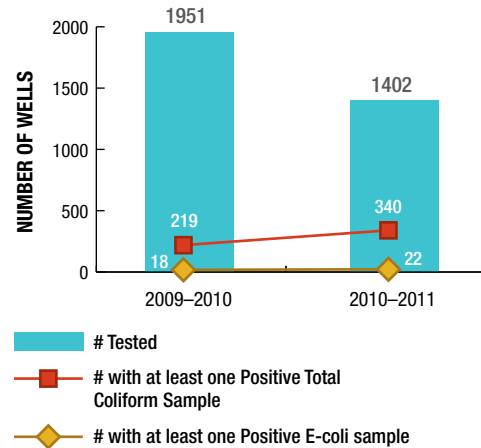
Source: Health Canada, ELPHIS Database

# Community Sampling and Testing: Private Water Systems

A private water system may serve a single residence, building, lot, and/or workplace. Private water supplies are served by a variety of water source such as wells, springs, rivers, and lakes. It is estimated that approximately two-thirds of houses in Alberta First Nations communities are served by private water supplies (wells or cisterns). If private water supplies are not properly constructed and maintained, issues with water quality can pose a health risk to the occupant. Testing private water systems on a scheduled basis is paramount to ensure proper monitoring for bacteria or other physical and chemical components to maintain adequate protection against harmful contaminants. With bacteriological water testing, the levels of total coliforms and *E.coli* are monitored and reported. The presence of total coliforms and *E.coli* within a drinking water system is an indicator of contaminated water.

Figure 4.2.4

Bacterial sampling of wells in private water systems in Alberta First Nations communities, fiscal years 2009–2010 and 2010–2011



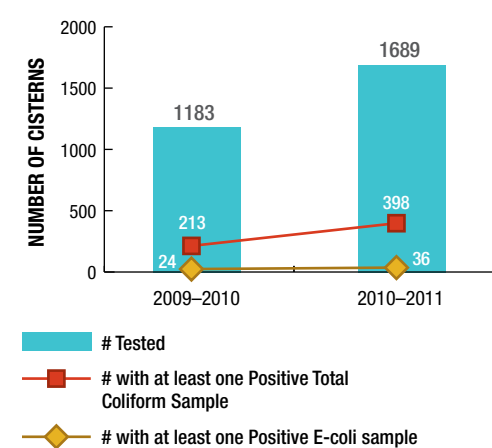
Source: Health Canada, ELPHIS Database

## WHAT DOES THIS MEAN?

- In fiscal year 2010–11, 24% of tested cisterns and wells within private water systems in First Nations communities were positive for total coliforms (Figures 4.2.5 and 4.2.6). These findings are higher than in the previous year and illustrate that roughly one-quarter of all private drinking water systems tested had bacteriological contamination. Private drinking water supplies can be more susceptible to contamination, especially if there are concerns about construction, maintenance, or extreme amounts of precipitation (or any combination of these factors).

Figure 4.2.5

Microbiological sampling of cisterns in private water systems in Alberta First Nations communities, fiscal years 2009–2010 and 2010–2011



Source: Health Canada, ELPHIS Database

- Of those First Nations houses that had at least one positive test for total coliforms, 6% of wells and 9% of cisterns also tested positive for *E.coli*. This is a slight decrease from last year levels.
- In Alberta First Nations communities, a greater proportion of private cisterns are positive for *E.coli* compared to wells (Figures 4.2.4 and 4.2.5). Cisterns are more likely to become contaminated with bacteria compared to groundwater wells.

# Drinking Water Advisories: Public and Semi-Public Water Systems

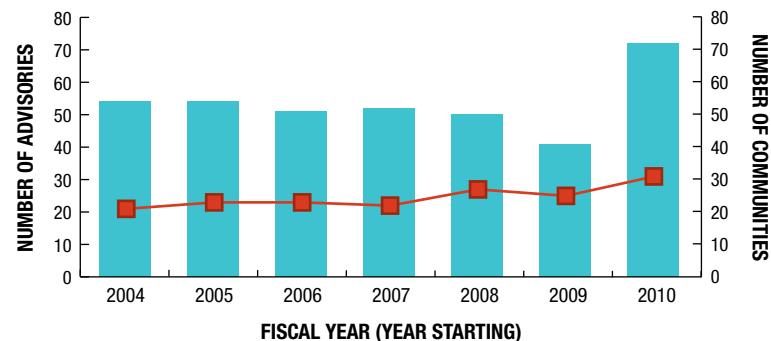
Drinking water advisories (DWAs) are issued by environmental health officers with the purpose of alerting the public about the safety of a particular drinking water supply.

## WHAT DOES THIS MEAN?

- In fiscal year 2010–11 there were 72 drinking water advisories occurring in 31 Alberta First Nations communities (Figures 4.2.6 and 4.2.7). The majority (93%) of DWAs were boil-water advisories; the others were do-not-drink advisories.
- Of the 72 advisories in 2010–11, 31% were carried forward from the previous year. Twenty-eight DWAs (39%) were still active as of March 31, 2011.
- In Alberta First Nations communities, the duration of DWAs ranged from two days to 1,739 days (4 years and 9 months), with a median duration of 60 days (this includes advisories that were active as of March 31, 2011).
- In 2010–11, there was a large increase in the total number of DWAs in Alberta First Nation communities (Figure 4.2.6). Some contributing factors were the increase in short-term DWAs in public water systems from fiscal years 2009–10 to 2010–11, as well as an increase in long-term advisories active from previous years.

Figure 4.2.6

Drinking water advisories in Alberta First Nations communities, fiscal years 2004–2010



# Drinking Water Advisories	54	54	51	52	50	41	72
# of Communities	21	23	23	22	27	25	31

Source: Health Canada, CNPHI Water Advisory Database

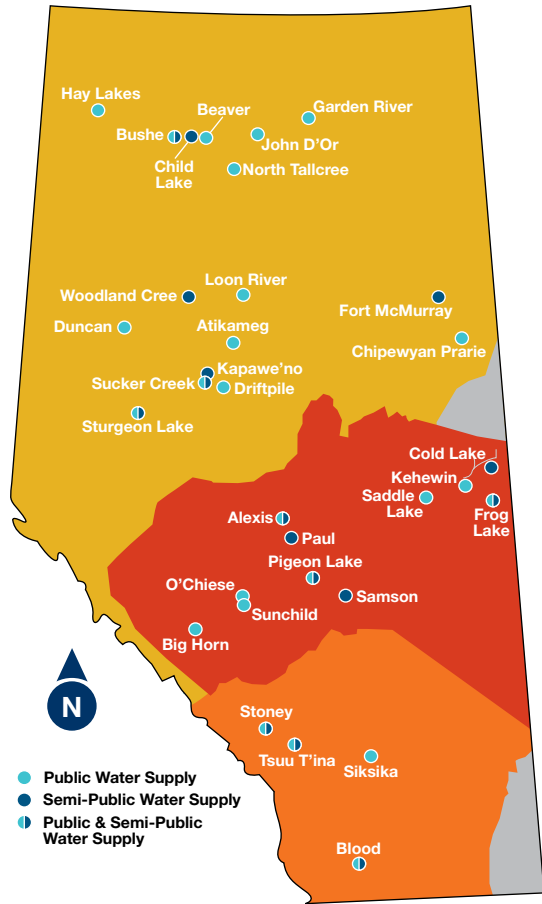
- Forty-eight percent of public water system DWAs were due to line breaks or loss of pressure in the system, an increase from last year (25%). In addition, five of the DWAs (7%) were directly attributable to power loss during extreme weather events.
- Twelve distinct public water systems had recurring drinking water advisories in fiscal 2010–11 (a combination of do-not-drink and boil-water advisories).
- Five do-not-consume advisories were issued, while none were issued in the previous fiscal year.
- Of the 22 DWAs issued before fiscal 2010–11, six were rescinded and 16 were still active, as of March 31, 2011.

## Notes:

- » A DWA is usually associated with a specific water system in a community. There may be multiple water systems in a community, but an advisory may only apply to a portion of that community (for example, part of a distribution system or a pumphouse that serves 10 homes).
- » Public water supply refers to drinking water that services more than five buildings or facilities and involves the distribution of water through pipes or other constructed conveyances; usually serving from 50–1,000 people.
- » Semi-public water supply refers to a system that provides water to the public for human consumption, potentially, but not necessarily through pipes or other constructed conveyances; usually serving less than 50 people. In addition, the public has reasonable expectation of access to the water.

**Figure 4.2.7**

Alberta First Nations communities with at least one drinking water advisory, by water system type, fiscal year 2010–2011



n = 31 communities

Source: Health Canada, CNPHI Water Advisory Database



# Reasons for Drinking Water Advisories in 2010–2011

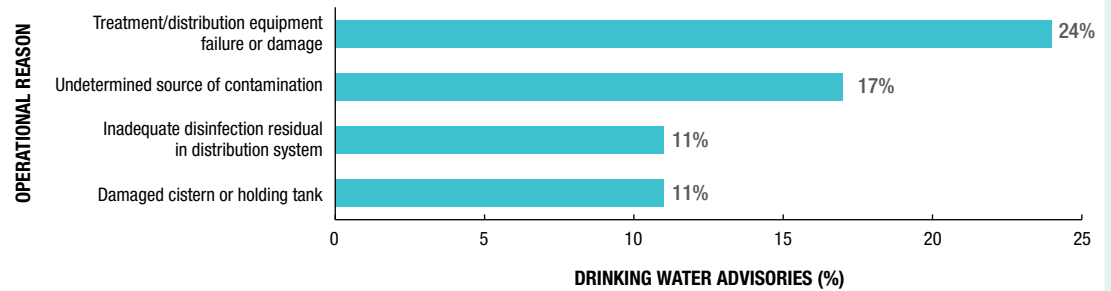
A drinking water advisory (DWA) can be issued for a number of reasons, including operational and/or water quality issues. Operational reasons refer to equipment and processes that normally are involved in the safe production of drinking water. Water quality reasons refer to the impact or finding in the treated water, and are often the consequence of operational issues.

## WHAT DOES THIS MEAN?

- In Alberta First Nations communities during 2010–11, the most often reported operational reasons for DWAs were: damage or failure of the treatment/distribution equipment (24%), undetermined source of contamination (17%), damaged cistern or holding tank (11%), and inadequate disinfection residual in the distribution system (11%) (Figure 4.2.8).
- The majority of the water quality concerns resulted from total coliforms (bacteria) being detected in the drinking water supply (33%) (Figure 4.2.9).
- In 2010–11, DWAs issued for total coliforms found in the drinking water supply were primarily found in semi-public water systems versus public (over 50% more).

Figure 4.2.8

Distribution of drinking water advisories in Alberta First Nations communities, by most frequently reported operational reasons, fiscal year 2010–2011



n = 72 advisories

Source: Health Canada, CNPHI Water Advisory Database

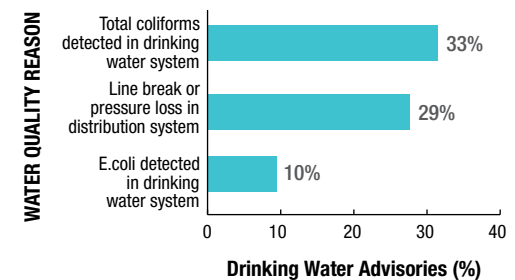
- DWAs issued because of the detection of *E. coli* in the drinking water system were more frequently found in semi-public water supply systems (18%) than in public water supply systems (5%) during 2010–11. The presence of *E. coli* in a semi-public water system is likely due to lack of treatment and disinfection.
- Fifteen DWAs were issued for cisterns (in both public and semi-public water supplies) in Alberta First Nation communities during 2010–11 (Figure 4.2.10).

## Notes:

- » It is important to note that a cistern is not a true water source as water is delivered via a water truck. The water truck may receive water from various types of water treatment plants (surface or ground water).

Figure 4.2.9

Distribution of drinking water advisories in Alberta First Nations communities, by most frequently reported water quality reasons, fiscal year 2010–2011



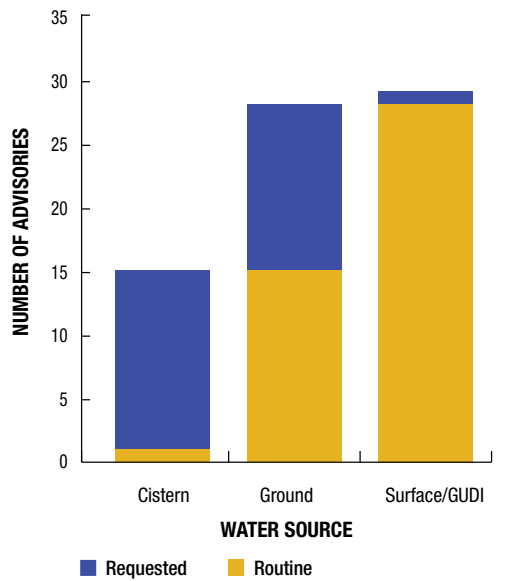
n = 72 advisories

Source: Health Canada, CNPHI Water Advisory Database



**Figure 4.2.10**

Drinking water advisories in Alberta First Nations communities, by type of water supply and source, fiscal year 2010–2011



n = 72 advisories

Source: Health Canada, CNPHI Water Advisory Database



# Reasons for Drinking Water Advisories: Public Water Supplies

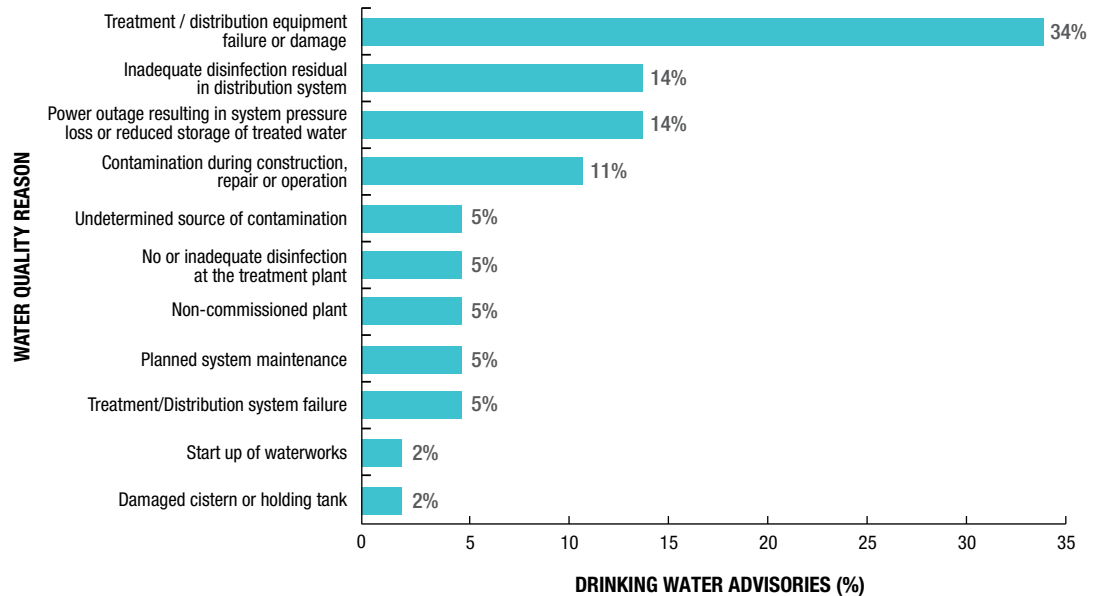
A public water system is a drinking water supply that services more than five buildings or facilities and involves the distribution of water through pipes or other constructed conveyances (such as water trucks) to at least five different places. This drinking water supply type usually serves from 50–1,000 people.

## WHAT DOES THIS MEAN?

- In the fiscal year 2010–11, 44 DWAs were related to public systems in Alberta First Nation communities; compared to 20 issued in 2009–10.
- In 2010-11, the duration of the water advisories ranged from two days to 1,301 days (3 years, 6 months). The median duration was 9.5 days, compared to 60 days for all advisories.
- Of the 44 advisories issued, 28 were less than 15 days duration, six were 15 to less than 90 days, and 10 were 90 days or greater.
- Of the DWAs issued for public water systems, 64% (28/44) issued had a source that was surface water or groundwater under the direct influence of surface water source (Figure 4.2.10).

Figure 4.2.11

Distribution of drinking water advisories in public water supply systems of Alberta First Nations communities, by operational reason, fiscal year 2010–2011

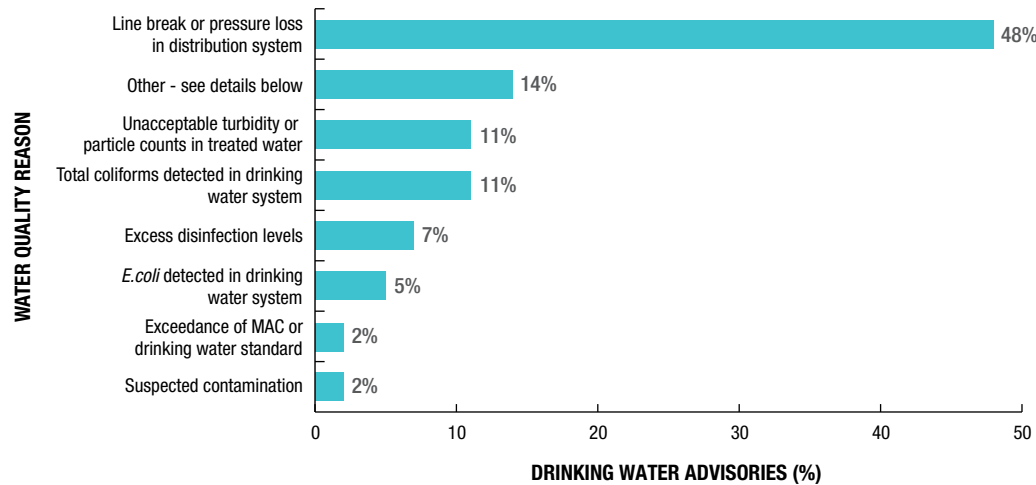


n = 44 advisories  
 Source: Health Canada, CNPHI Water Advisory Database

- The majority (62%) of DWAs in public water systems were issued for the following operational reasons (Figure 4.2.11):
  - » Treatment/distribution equipment failure or damage (34%).
  - » Inadequate disinfection residual in distribution system (14%).
  - » Power outage resulting in system pressure loss or reduced storage of treated water (14 %). This may be the main contributing factor for the increase in DWAs related to public systems.

**Figure 4.2.12**

Distribution of drinking water advisories in public water supply systems of Alberta First Nations communities, by water quality reason, fiscal year 2010–2011



n = 44 advisories

Source: Health Canada, CNPHI Water Advisory Database

- When the DWAs issued due to line breaks or loss of pressure in the distribution system were reviewed for their associated operational reasons, the following reasons were commonly cited:
  - » Treatment/distribution equipment failure or damage (43%).
  - » Power outage resulting in system pressure loss or reduced storage of treated water (29%).
  - » Contamination during construction, repair, or operation (14%).
  - » Planned system maintenance (9%).
  - » Undetermined source of contamination (5%).
- The most frequent water quality reason reported for DWAs in public water systems were due to line breaks or loss of pressure in the distribution system (48%) (Figure 4.2.12). This is an increase compared to last year when 25% of DWAs were attributed to this reason.

# Reasons for Drinking Water Advisories: Semi-Public Water Supplies

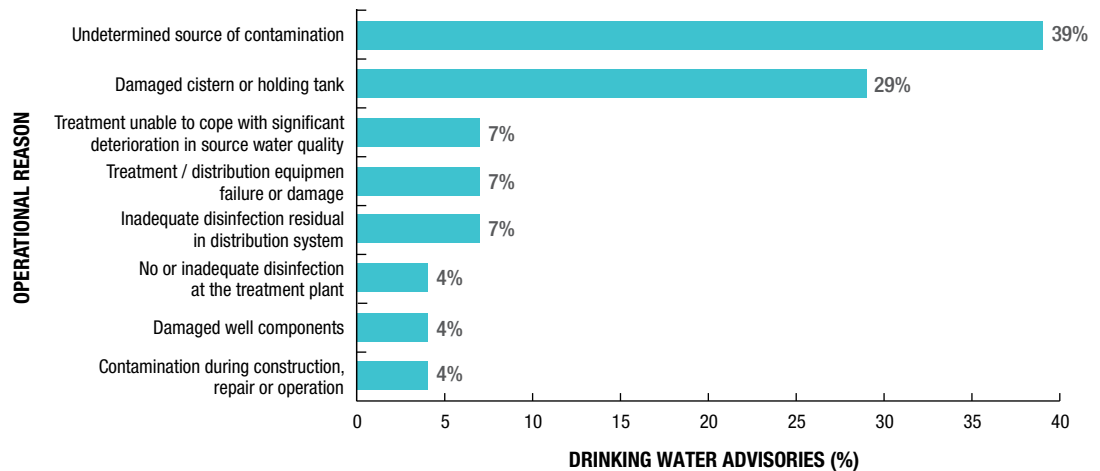
A semi-public system provides water to the public for human consumption, possibly but not necessarily, through pipes or other constructed conveyances, such as cisterns or wells. This drinking water supply type usually serves a smaller population (<50), but the public has a reasonable expectation of access.

## WHAT DOES THIS MEAN?

- Semi-public systems are usually serviced by a cistern or a well and less frequently by surface water source.
- Twenty-eight DWAs were related to semi-public water system types. Twenty-nine percent of these DWAs were the result of a damaged cistern or holding tank (Figure 4.2.13).
- Two water quality reasons were mainly responsible for the semi-public advisories (Figure 4.2.14):
  - » Detection of total coliforms (75%).
  - » Identification of *E.coli* in the drinking water system (18%).

Figure 4.2.13

Distribution of drinking water advisories in semi-public water supply systems of Alberta First Nations communities, by operational reason, fiscal year 2010–2011

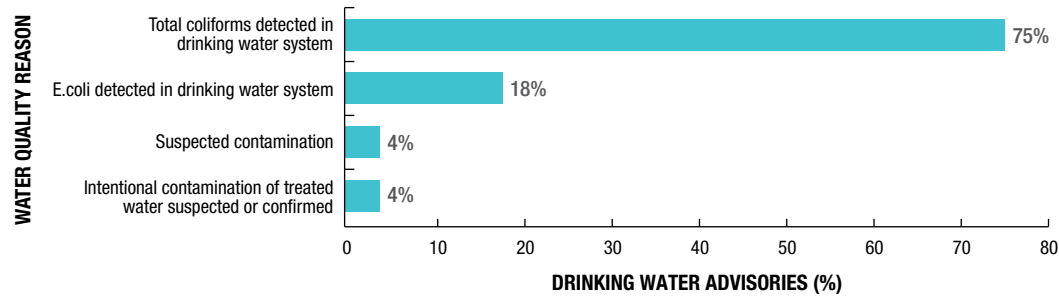


n = 28 advisories  
 Source: Health Canada, CNPHI Water Advisory Database

- Upon further analysis of these advisories, the detection of total coliforms in the drinking water system often resulted from damage to a cistern and undetermined source of contamination. Once a cistern is damaged, it is more vulnerable to contamination.
- Forty-six percent of DWAs issued in the semi-public systems were due to contamination in groundwater source (Figure 4.2.10).
- Only one advisory for the semi-public systems was issued for groundwater under direct influence and surface water.
- Advisories lasted longer in semi-public systems compared to public systems (median of 506 days versus 60 days, respectively).

Figure 4.2.14

Distribution of drinking water advisories in semi-public water supply systems of Alberta First Nations communities, by water quality reason, fiscal year 2010–2011



n = 28 advisories

Source: Health Canada, CNPHI Water Advisory Database

#### Notes:

- » Cisterns are prone to contamination if not properly installed and/or maintained. Surface runoff and soil can enter through improperly sealed joins, cracks, and/or missing/broken lids and vents. As the access opening is most often above ground, the cistern is also potentially accessible to the general public and animals.
- » Wells may be contaminated due to a contaminated aquifer, cracked well casings, missing cover, improper drilling/construction technique, lack of well seal, etc.





# Facility Inspections: Food Services, Institutions, Waste Disposal Sites

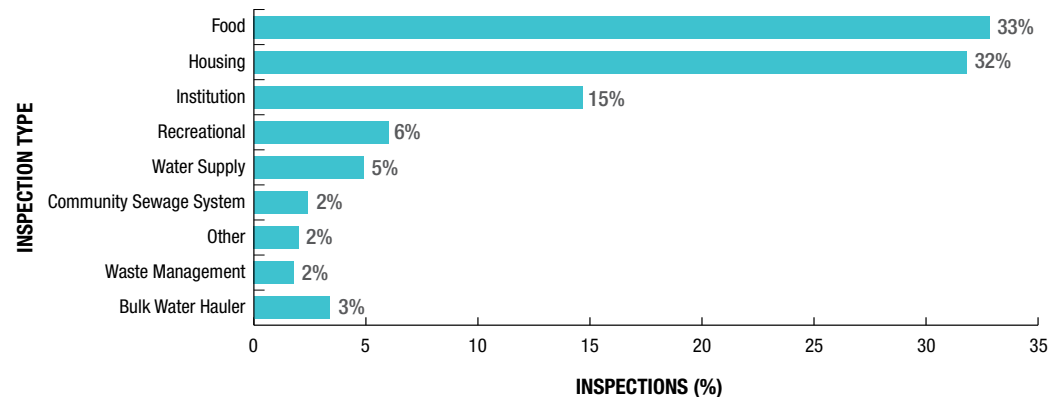
Inspections of facilities are conducted on a routine basis as outlined in community-specific environmental public health workplans. They are carried out in accordance with the *Alberta Public Health Act* standards and regulations. The act and its supporting regulations are used as guides for minimum requirements to protect the health and safety of the public.

## WHAT DOES THIS MEAN?

- In Alberta First Nation communities, a total of 2,281 facility inspections were carried out in fiscal 2010–11, compared to 2,355 in fiscal 2009–10. The majority (65%) of these inspections were food facilities and houses (Figure 4.2.15).
- In 2010–11, food inspections comprised approximately 33% of all inspections in Alberta First Nations communities (Figure 4.2.15). Nearly 48% (359) of food facility inspections were completed in community food service facilities such as restaurants, school lunch programs, and daycare kitchens (Figure 4.2.16).

Figure 4.2.15

Distribution of facility inspections conducted in Alberta First Nations communities, by type, fiscal year 2010–2011



n = 2,281 inspections

Source: Health Canada, Hedgehog Inspection Database

- In Alberta First Nations communities, mobile food vendors, such as those present at powwows, constituted the second largest food facility group receiving inspections (34%) in 2010–11 (Figure 4.2.16). This number represents all mobile food vendor inspections regardless of the reason for inspection.
- In retail and food service facilities in 2010–11, the majority of inspections were routine. Requests (not scheduled) were the leading reason for inspections conducted in mobile vendor facilities (Figure 4.2.16), requiring follow-up inspections to assess outstanding deficiencies.

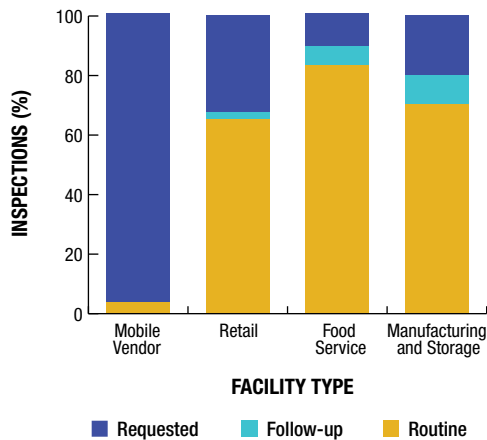
- Alberta First Nations institutions, including community care facilities like Head Start and daycares, health care facilities, continuing care centres, and schools accounted for 15% of inspections in 2010–11 (Figure 4.2.15).
- Of the 335 institutional facility inspections (regardless of inspection reason), the majority were conducted in community care facilities (41%) and schools (41%).
- In each of these types of facilities, a large proportion of inspections was routine-based (Figure 4.2.17).
- A total of 55 routine inspections were completed at community solid waste facilities in 2010–11, an increase of 77% from 2009–10. The proper operation and monitoring of solid waste disposal facilities continue to be significant public health concerns in many parts of the Alberta Region.

**Notes:**

- » Improperly sited and poorly designed and/ or maintained waste disposal sites may contribute to contamination of ground and surface water supplies, resulting in potentially serious human health impacts. Additional nuisance problems are often associated with poorly managed waste sites and include concerns with odour, litter, noise, traffic, and air quality.

**Figure 4.2.16**

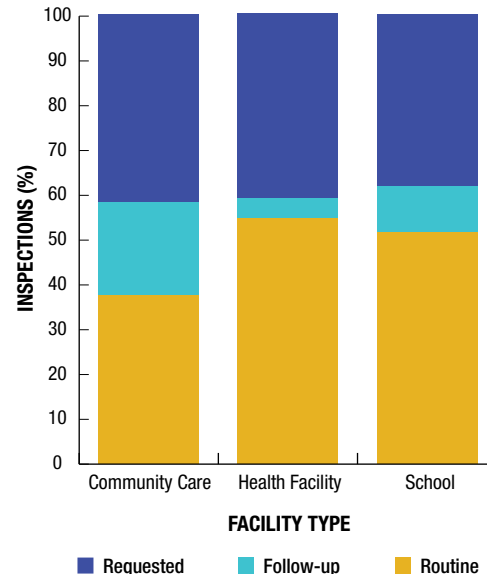
Distribution of food facility inspections in Alberta First Nations communities, by type of facility and inspection, fiscal year 2010–11



n = 751 inspections  
Source: Health Canada, Hedgehog Inspection Database

**Figure 4.2.17**

Distribution of institutional facility inspections in Alberta First Nations communities, by type of facility and inspection, fiscal year 2010–2011



n = 335 inspections  
Source: Health Canada, Hedgehog Inspection Database

# Housing Inspections

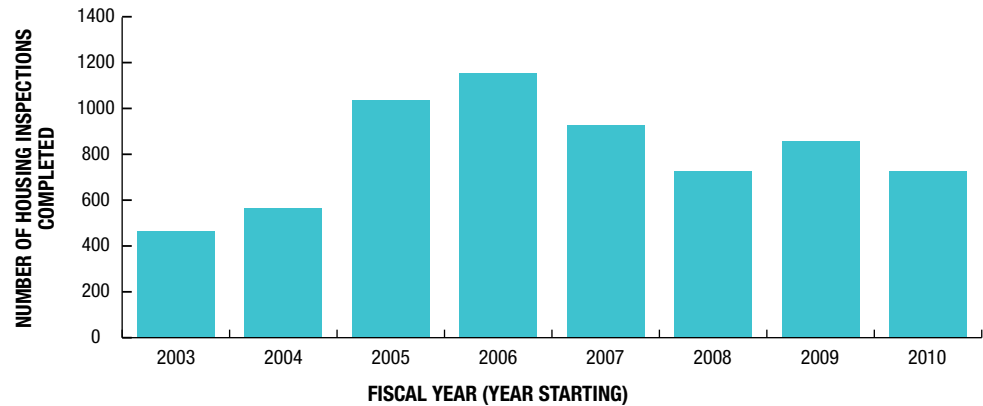
The Ottawa Charter for Health Promotion lists shelter or housing as a prerequisite for a foundation to improve health. The condition of the inspected house is compared to the standards set in the Minimum Housing and Health Standards under the *Alberta Public Health Act*. The limits set in these standards are intended to establish the minimum conditions essential for good health and to make housing safe, sanitary, and fit for human habitation.

## WHAT DOES THIS MEAN?

- In fiscal year 2010–11, 727 housing inspections were completed in the Alberta First Nations communities (Figure 4.2.18); this is slightly lower than in 2009–10.
- Over half (58%) of the deficiencies observed in First Nations housing inspections were related to interior and exterior housing structural issues (Table 4.2.2). When exterior deficiencies are not addressed, they can often lead to interior structural issues in a house.
- Reported deficiencies of windows, doors, decks/steps/patios/cladding, and gutters/downspouts/extensions make up 77% of all observations related to the exterior of a house (Figure 4.2.19).

Figure 4.2.18

Completed housing inspections (non-routine) requested by Alberta First Nations communities, fiscal years 2003–2004 to 2010–2011



n = 727 inspections  
 Source: Health Canada, Hedgehog Inspection Database

- The entry of moisture into the building through damaged windows, doors, and gutters/downspouts/extensions that are not functioning properly is of concern to public health.
- If exterior deficiencies allow moisture to enter a home, then the interior of the house will also be compromised by the presence of moisture, predisposing building materials to deterioration due to water damage and potential mould. These deficiencies pose safety concerns and require targeted prevention measures.
- Of the 28% of interior deficiencies observed during inspections: floors (19%), flood or moisture damage (18%), and walls (15%) were the top three

deficiencies (Figure 4.2.20). These three interior deficiencies are all potentially related to exterior deficiencies and/or to one another, and can result in the (further) rapid deterioration of building materials and place the health of occupants at risk.

## Notes:

- » In First Nations communities, housing inspections are carried out only upon request.
- » An observation (Table 4.2.2) may be reported more than once in a house (e.g. structural damage in two different places in the same house), thus the number of observations exceeds the number of inspections.

**Table 4.2.2**

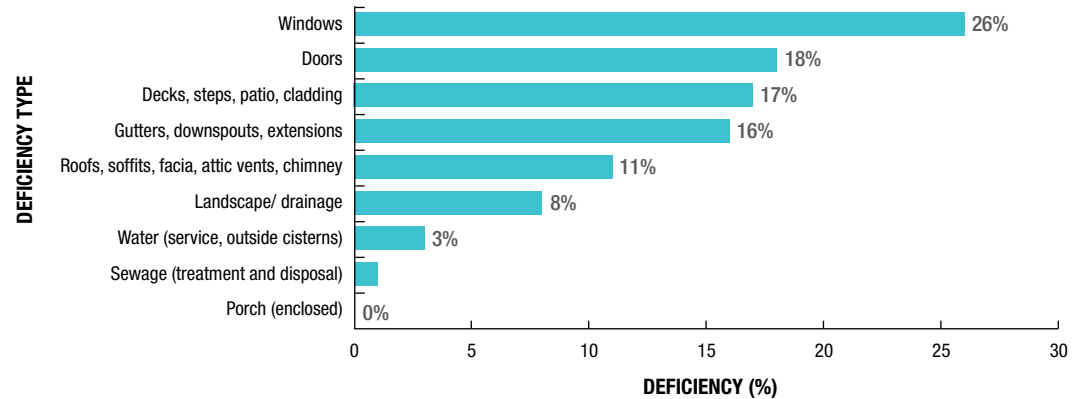
Deficiencies observed in housing inspections in Alberta First Nations communities, by category, fiscal year 2010–2011

Observation	Frequency	Percentage
Exterior	1,041	30
Structure (interior)	967	28
Mould	214	6
Water system	212	6
Waste water system	194	6
Ventilation system	131	4
Pest control	131	4
Operational	126	4
Heating system	118	3
Electrical system	108	3
Structure/equipment	82	2
Occupancy, indoor air quality, design	71	2
Required appliances/fixtures	66	2
Sewage disposal	7	<1
Total potential public health concerns	3,473	100

n = 727 inspections  
 Source: Health Canada, Hedgehog Inspection Database

**Figure 4.2.19**

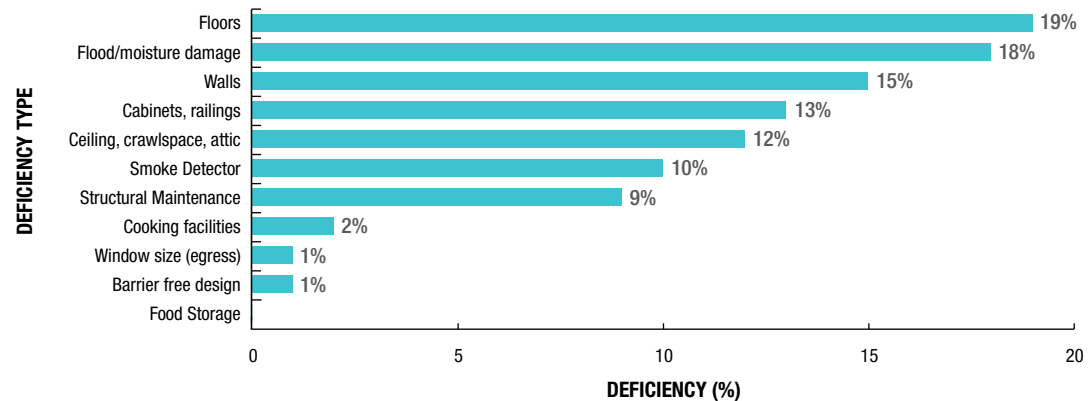
Distribution of deficiencies observed for exterior sites of houses inspected in Alberta First Nations communities, fiscal year 2010–11



n = 1,041 deficiencies  
 Source: Health Canada, Hedgehog Inspection Database

**Figure 4.2.20**

Distribution of deficiencies observed for interior sites of houses inspected in Alberta First Nations communities, fiscal year 2010–2011



n = 967 deficiencies  
 Source: Health Canada, Hedgehog Inspection Database

# Private Sewage Disposal System Inspections

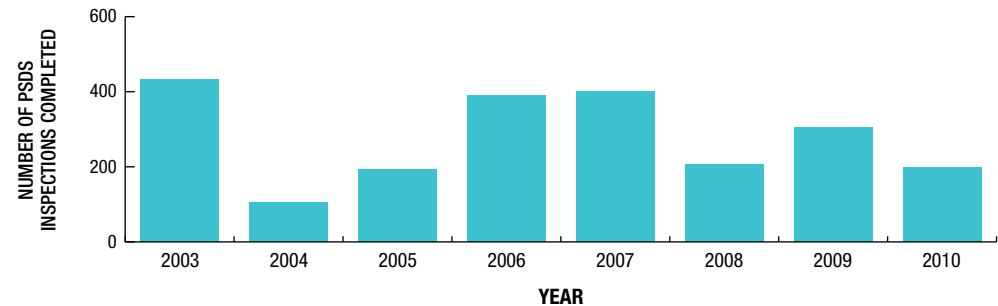
Private sewage disposal system (PSDS) inspections are completed for new and replacement sewage systems at the request of First Nations communities and may involve several inspections for each location, from pre-site to final installation inspection.

## WHAT DOES THIS MEAN?

- In 2010–11, 199 private sewage disposal system inspections were completed in the Alberta First Nations communities (Figure 4.2.21); a 35% decrease from 2009–10. These are carried out at the request of the communities.

Figure 4.2.21

Private sewage disposal system inspections completed, Alberta First Nations communities, fiscal years 2003–2004 to 2010–2011



n = 199 inspections

Source: Health Canada, Hedgehog Inspection Database





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**Alberta First Nations population:** *all Alberta First Nations, regardless if they live on or off reserve.*

**Alberta First Nations on-reserve population:** *all First Nations living on reserve in Alberta.*

**Alberta general population:** *the entire population in the province of Alberta.*

**Alberta non-First Nations population:** *the population of Alberta minus the Alberta First Nations population.* The Alberta non-First Nations population may include some First Nations who are registered to bands of other provinces and live in Alberta.

**Alberta off-reserve population:** *the non-First Nations and First Nations populations living off-reserve in Alberta.*

**chlamydia:** *the most commonly reported sexually transmitted infection in Canada.* It is caused by bacteria transmitted by sexual contact or from infected mothers to their babies during delivery. Babies born to females with untreated chlamydia infections can develop eye or lung problems after birth. If left untreated in adults, chlamydia can also lead to long-term complications, such as pelvic inflammatory disease in women and urinary problems in men.

**cistern/holding tank:** *used to store treated water delivered from water haulers, generally constructed from concrete, fiberglass, or*

*polyethylene.* As additional handling is required, such as transferring water from a reservoir to a truck and then from the truck to the cistern, there are more opportunities for contamination to occur. It is important to note that a cistern is not a true water source as it can have its water from a surface or ground water treatment plant.

**cold chain break:** *occurs when vaccines are exposed to temperatures outside of the recommended range of 2°C to 8°C.* Each cold chain break incident is assessed to determine if the vaccine can still be used or if it must be discarded.

**confidence interval (CI) (95% level):** *is a range of values within which we are 95% confident, or sure, that the “true” result lies.* A narrow 95% CI allows for more precision in interpretation. Wide 95% CIs often occur when there are a small number of cases.

**diphtheria:** *a serious, sometimes fatal, disease affecting the upper respiratory tract and is caused by a type of bacterium.* Routine immunization has been in place for many years in Canada; as a result there are currently less than five cases reported nationally each year.

**fiscal year:** *the 12-month period beginning April 1 of a given year to March 31 of the following year.*

**genital human papillomavirus (HPV):** *the most common sexually transmitted infection.* HPV is responsible for a large proportion of cervical cancers and genital warts. The HPV vaccine, a new vaccine that prevents several genital cancers, especially those of the cervix, became available in Alberta in the fall of 2008 and was offered to Grade 5 girls in schools across the province. Research is underway to examine the possibility of extending this vaccine to boys of the same age group to prevent HPV-related cancers, such as penile cancer.

**gonorrhea:** *a sexually transmitted infection (STI) caused by bacteria.* This STI is usually easily treated with antibiotics. However, many strains of the bacteria that cause gonorrhea have become resistant to antibiotics. Complications similar to that noted for chlamydia can also arise if left untreated. Use of a condom is an effective way to prevent transmission of this disease, thus promotion of safe-sex programs can play an integral part in reducing the incidence of this and other STIs.

**groundwater:** *found underground, in the spaces between the rocks and soil, called aquifers.* This drinking water source type is less vulnerable to contamination than other water source types.

**groundwater under the direct influence (GUDI):** *groundwater source is located close enough to nearby surface water, such as a*



river or lake, to receive direct surface water recharge. This drinking water source type is vulnerable to contamination.

**H1N1:** a subtype of influenza A virus. It was the most common cause of human influenza in 2009. In June 2009, the World Health Organization declared the new strain of swine-origin H1N1, which spread worldwide, as a pandemic. The H1N1 influenza pandemic was declared over in August 2010.

**Haemophilus influenzae type b (Hib):** the leading cause of bacterial meningitis prior to introduction of this vaccine. Hib infection can result in severe neurologic outcomes and approximately 5% of cases are fatal. Routine immunization against Hib has led to a significant reduction in the incidence of this disease in Canada.

**hepatitis B:** an acute illness caused by several viruses, one being the hepatitis B virus. It has a case fatality rate of 1%–2%, which increases with age. The incidence of hepatitis B has been decreasing in all age groups in recent years, coinciding with the increasing use of the vaccine.

**HIV infection:** a disease caused by the human immunodeficiency virus (HIV). This chronic progressive illness gradually destroys the immune system, making infected people vulnerable to opportunistic infections and cancers. When the body can no longer fight infection, the disease is known as AIDS (Acquired Immunodeficiency Syndrome).

On average, it takes more than 10 years to progress from initial HIV infection to AIDS. However, this progression occurs much faster in younger age groups like children. There is no cure for AIDS and currently no vaccine against HIV infection.

**immunization coverage rates:** the percentage of individuals within a specific age group immunized as recommended.

**immunization target rates:** the percentage of the population that is required to be immunized to obtain the optimal protective effects of vaccines.

**immunization uptake rates:** The percentage of individuals within a specific age group that have started the recommended vaccines.

**influenza:** a respiratory disease caused by influenza A and B viruses and occurs in Canada every year, generally during the late fall and winter months. These viruses change constantly and a new vaccine is developed every year. Immunization against influenza must therefore be administered annually in order to provide optimal protection. In Canada, 2,500–4,000 deaths occur due to seasonal influenza every year, in addition to many more thousands who are hospitalized or require intensive care.

**invasive meningococcal disease (IMD):** can cause very serious infections similar to pneumococcal organisms and can result in death, even with appropriate treatment. It is also most common in young children,

especially those less than one year of age. It is contagious and can be spread through coughing and sneezing, similar to the common cold. The incidence of meningococcal disease has been very low in recent years, with an average of 298 cases reported annually in Canada. In addition, IMD cases have a seasonal variation with the majority of cases occurring in the winter months. Meningococcal C vaccine is recommended for routine immunization of infants.

**invasive pneumococcal disease (IPD):** common in very young children, the elderly, and specific populations such as First Nations on-reserve populations. Pneumococcal organisms are the leading cause of some very serious infections, including infection of the brain (meningitis), bloodstream (bacteremia), lungs (bacterial pneumonia), or middle ear (otitis media). IPD infection rates in First Nations communities throughout Alberta are four to six times higher than the provincial rate.

**measles:** a viral disease which is the leading cause of vaccine-preventable deaths in children worldwide. In Canada, the number of measles cases decreased rapidly with the introduction of the measles vaccine and the addition of a second dose to the routine immunization schedule in 1996/1997.

**mumps:** an acute infectious disease caused by a virus with an average of 87 cases reported annually in Canada.

**neoplasm:** *a tumor; an abnormal growth of tissue. A neoplasm may be benign or malignant (cancer).*

**pertussis:** *a highly communicable respiratory disease, also known as whooping cough, that is particularly severe among infants. In the last 50 years, the incidence of pertussis has decreased by more than 90%. However, outbreaks continue to occur throughout Canada, including several in Alberta in the past year.*

**poliomyelitis:** *a disease caused by a virus. The disease has not been reported in Canada for many years due to a very effective immunisation program.*

**prediabetes:** *a practical and convenient term for impaired fasting glucose and impaired glucose tolerance, conditions that place individuals at risk of developing diabetes and its complications.*

**private water supply:** *services an individual facility that serves a single residence (including residences that have up to four units in their building footprint), building, lot, workplace or similar place, and where the public does not have any interest in such a water supply. Private water supply drinking water advisories that are issued by Environmental Public Health Services refer to groups of homes serviced by a water truck. This drinking water supply type will usually service less than 10 people.*

**provoked animal attack:** *an attack where the human did something to “provoke” the animal (even if the action was unintentional) and the attack would be the animal’s normal response*

*to such a human action. Examples of such human actions could include: attempting to corner or trap an animal, entering an area that the animal considers its territory (e.g. dog in a yard) or approaching an animal’s litter, coming too close to an injured animal, trying to break up a fight between two animals, picking up an animal and attempting to take it elsewhere, petting an unfamiliar animal, interfering with an animal’s food, and interfering/wrestling with an animal’s owner.*

**public water supply:** *drinking water supply that services more than five buildings or facilities and involves the distribution of water through pipes or other constructed conveyances (such as water trucks) to at least five different places. This drinking water supply type usually serves from 50 to 1,000 people.*

**rubella:** *a viral disease with an average annual incidence of 0.08 per 100,000 in 1998 and 0.03 per 100,000 in 2004.*

**semi-public water supply:** *system for the provision of water to the public for human consumption, potentially, but not necessarily, through pipes or other constructed conveyances, such as cisterns or wells. This drinking water supply type usually serves a smaller population (<50), but the public has a reasonable expectation of access.*

**statistical significance:** *a result that is unlikely to have occurred by chance. Where differences between genders or between First Nations and non-First Nations are compared, the word significant is used only if there is a*

*statistically significant difference. Statistical significance in this report is assessed using confidence intervals at the 95% level.*

**surface water:** *water from sources such as rivers, lakes, streams, dugouts. This drinking water source type is vulnerable to contamination.*

**syphilis:** *the least frequently reported sexually transmitted infection, although there are concerns it may be on the rise. Even though rates in recent years were still very low, given the potentially serious consequences of this disease, ongoing monitoring is important.*

**tetanus:** *a disease that can often be fatal and is most frequently caused by a wound becoming contaminated with a bacterium that is commonly found in soils and human or animal feces. In Canada, there has been a considerable decline in cases since development of the vaccine, with fewer than 10 cases per year since the early 1970’s. vaccine management: the process of vaccine distribution, from ordering vaccines to the time they are administered.*

**varicella:** *a common childhood disease, also known as chickenpox. The percentage of children who have had the infection increases with age. A reliable history of varicella disease in those more than 12 months of age is adequate evidence of immunity, and there is little value of administering the vaccine to such persons. A history of varicella disease is therefore obtained prior to immunization.*

## APPENDIX 3

## Acronyms Used in this Report

AANDC	Aboriginal and Northern Development Canada	HCV	Hepatitis C Virus
ADSS	Alberta Diabetes Surveillance System	Hib	<i>Haemophilus Influenzae Type b</i> (Vaccine)
AHCIP	Alberta Health Care Insurance Plan	ICD-9	International Classification of Diseases – Version 9
AHS	Alberta Health Services	ICD-10	International Classification of Diseases – Version 10
AHW	Alberta Health and Wellness	HIV	Human Immunodeficiency Virus
AVS	Alberta Vital Statistics	HPV	Human Papillomavirus (Vaccine)
BBP	Bloodborne Pathogen	iGAS	Invasive Group A Streptococcal (Infection/Disease)
CCB	Cold Chain Break (Vaccine Management)	IMD	Invasive Meningococcal Disease
CDC	Communicable Disease Control	IPD	Invasive Pneumococcal Disease
CHR	Community Health Representative	IRS	Indian Registry System
CHN	Community Health Nurse	LLA	Lower Limb Amputation
CKD	Chronic Kidney Disease	LTBI	Latent Tuberculosis Infection
CNPHI	Canadian Network of Public Health Intelligence	MAC	Maximum Acceptable Concentration
CSA	Canadian Standards Association	MenC	Meningococcal Serogroup C (Conjugate Vaccine)
CVD	Cardiovascular Disease	MMR	Measles, Mumps, and Rubella (Vaccine)
DBPs	Disinfection By-Products	MPC	Mucopurulent Cervicitis
dTap	Diphtheria, Tetanus, and Acellular Pertussis (Vaccine)	MVC	Motor Vehicle Collision
DTaP-IPV	Diphtheria, Tetanus, Acellular Pertussis, and Inactive Polio Vaccine	NDSS	National Diabetes Surveillance System
DWA	Drinking Water Advisory	NGU	Non-Gonococcal Urethritis
EHO	Environmental Health Officer	NIHB	Non-Insured Health Benefits (Program)
ELPHIS	Environmental Public Health Information Suite	PCV7/13	Pneumococcal Conjugate 7-Valent/13-Valent (Vaccine)
EPHS	Environmental Public Health Services	PPV23	Pneumococcal Polysaccharide 23-Valent (Vaccine)
ESRD	End-Stage Renal Disease	PSDS	Private Sewage Disposal System
FNIH	First Nations and Inuit Health	PYLL	Potential Years of Life Lost
FNMD	First Nations Mortality Database	SC	Series Complete (Immunization)
FNWWAP	First Nations Waste Water Assessment Program	STI	Sexually Transmitted Infection
GUDI	Groundwater Under the Direct Influence	TB	Tuberculosis
HBV	Hepatitis B Virus (Vaccine)	TST	Tuberculin Skin Test
		VZV	Varicella-Zoster Virus (Vaccine and/or History of Varicella Disease)

## APPENDIX 4

## Alberta Region Health Protection Contact Information

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